

elm creek Watershed Management Commission

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February 6, 2019

Representatives
Elm Creek Watershed Management
Commission Hennepin County, MN

*The meeting packets for these meetings may
be found on the Commission's website:
<http://www.elmcreekwatershed.org/minutes--meeting-packets.html>*

Dear Representatives:

A **regular meeting** of the Elm Creek Watershed Management Commission will be held on **Wednesday, February 13, 2019, at 11:30 a.m.** in the Mayor's Conference Room at Maple Grove City Hall, 12800 Arbor Lakes Parkway, Maple Grove, MN.

The **Technical Advisory Committee (TAC)** will meet at 10:00 a.m., prior to the regular meeting. TAC meeting materials may also be found on the Commission's website.

Please email me at judie@jass.biz to confirm whether you or your Alternate will be attending the TAC and the regular meetings.

Thank you.

Regards,



Judie A. Anderson

Administrator

JAA:tim

Encls: Meeting Packet

cc: Alternates

HCEE

Jeff Weiss

BWSR

TAC Members

TRPD

Diane Spector

DNR

City Clerks

MPCA

Met Council

Official Newspaper

Z:\Elm Creek\Meetings\Meetings 2019\02 Notice_reg and TAC meetings.docx

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AGENDA

Regular Meeting

February 13, 2019

1. Call Regular Meeting to Order.
 - a. Approve Agenda.*
2. Consent Agenda.
 - a. Minutes last Meeting.*
 - b. Treasurer's Report and Claims.**
3. Open Forum.
4. Action Items.
 - a. Project Reviews – see Status Report.*
 - b. Resolution 2019-01.*
 - c. Local Plans.
 - 1) Rogers.*
 - d. Work Plans.
 - 1) 2018 in Review.*
 - 2) Draft 2019.*
5. Old Business.
6. New Business.
7. Communications.
 - a. I-94 UBOL Resurfacing Project Maple Grove to Rogers.*
8. Education.
 - a. WMWA Update.**
9. Grant Opportunities and Updates.
 - a. FEMA Floodplain Mapping – *see Staff Report*.
 - b. Fish Lake Alum Project.
 - 1) Annual Report.*
 - 2) 2018 Report Card.*
 - c. Elm Creek Reach D Weekly Report.*
10. Project Reviews – *also see Staff Report*.*

| 10. Project Reviews. (See Staff Report.*) | | | | | | |
|---|--|--|--|----|----------|---------------------------------|
| a. | | | | AR | 2013-046 | Woods of Medina, Medina. |
| b. | | | | | 2014-015 | Rogers Drive Extension, Rogers. |

*in meeting packet
**available at meeting

| | | | | | | |
|-----|---|---|---|----|-----------|---|
| c. | | | | | 2015-004 | Kinghorn Outlet A, Rogers. |
| d. | | | | AR | 2015-030 | Kiddiegarten Child Care Center, Maple Grove. |
| e. | | | | AR | 2016-002 | The Markets at Rush Creek, Maple Grove. |
| f. | | | | | 2016-005W | Ravinia Wetland Bank Plan, Corcoran. |
| g. | | | | | 2016-040 | Kinghorn 4th Addition, Rogers. |
| h. | | | | | 2016-047 | Hy-Vee North, Maple Grove. |
| i. | | | R | AR | 2016-052 | The Woods at Rush Creek, Maple Grove. |
| j. | | | | AR | 2017-014 | Laurel Creek, Rogers. |
| k. | | | | AR | 2017-016 | Territorial Woods, Maple Grove. |
| l. | | | | AR | 2017-017 | Mary Queen of Peace Catholic Church, Rogers. |
| m. | | | | AR | 2017-021 | Hindu Society of MN Staff Housing, Maple Grove. |
| n. | | | | AR | 2017-029 | Brayburn Trails, Dayton. |
| o. | | | R | AR | 2017-034 | Plymouth Memory Care, Plymouth. |
| p. | | | R | AR | 2017-037 | Corcoran L-80 Lift Station MCES Project 808520, Corcoran. |
| q. | | | R | AR | 2017-038 | Bass Lake Estates, Corcoran. |
| r. | | | | | 2017-039 | Rush Creek Apartments, Maple Grove. |
| s. | | E | | | 2017-050W | Ernie Mayer Wetland/floodplain violation, Corcoran. |
| t. | | | | AR | 2018-001 | Rush Creek Commons, Maple Grove. |
| u. | | | | | 2018-004 | Rush Creek Restoration, Maple Grove. |
| v. | | | | | 2018-005 | Sundance Greens, Dayton. |
| w. | | | | | 2018-014 | Refuge at Rush Creek, Corcoran. |
| x. | | | | AR | 2018-018 | Summers Edge Phase II, Plymouth. |
| y. | | | | | 2018-020 | North 101 Storage, Rogers. |
| z. | | | | | 2018-021 | 113th Lane Extension/Brockton/101, Rogers. |
| aa. | | | | AR | 2018-026 | Windrose, Maple Grove. |
| ab. | | | | AR | 2018-028 | Tricare Third Addition, Maple Grove. |
| ac. | A | E | | | 2018-033 | Cloquet Island Estates, Dayton. |
| ad. | | | | | 2018-038 | Vincent Woods of Roger. |
| ae. | | | | AR | 2018-043 | BeeHive Homes, Maple Grove. |
| af. | | | | AR | 2018-044 | OSI Phase II, Medina. |
| ag. | | | | | 2018-046 | Graco, Rogers |
| ah. | | | | AR | 2018-048 | Faithbrook Church Phase 2, Dayton. |
| ai. | | | | | 2018-052 | Rogers Tennis Center, Rogers. |
| aj. | | | | | 2018-053 | Elm Creek Stream Stabilization, Champlin. |
| ak. | | | | | 2018-054W | C&D Order 9120 Trail Haven Road, Corcoran. |
| al. | A | E | | | 2019-001 | Fernbrook View Apartments, Maple Grove. |
| am. | A | E | | | 2019-002 | Parkside Villas, Champlin. |
| an. | | | | | 2019-003 | Rogers High School Tennis Court, Rogers. |
| ao. | | | | | 2019-004 | Rogers Middle School Chiller Units, Rogers. |

A = Action item E = Enclosure provided I = Informational update will be provided at meeting RPFI - removed pending further information
R = Will be removed RP= Information will be provided in revised meeting packet..... D = Project is denied AR awaiting recordation

11. Other Business.

- a. Responses to Solicitation of Interest Proposals.*
- b. Nomination of Officers. Election of Officers will occur at March meeting.

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*in meeting packet
**available at meeting

CHAMPLIN - CORCORAN - DAYTON - MAPLE GROVE - MEDINA - PLYMOUTH - ROGERS

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Minutes Regular Meeting January 9, 2019

I. A regular meeting of the Elm Creek Watershed Management Commission was called to order at 11:30 a.m., Wednesday, January 9, 2019, in the Emergency Operations Center, Maple Grove City Hall, 12800 Arbor Lakes Parkway, Maple Grove, MN, by Chairman Doug Baines.

Present were: Bill Walraven, Champlin; Tom Anderson, Corcoran; Doug Baines, Dayton; Joe Trainor, Maple Grove; Elizabeth Weir, Medina; Fred Moore, Plymouth; James Kujawa, Jason Swenson, and Kirsten Barta, Hennepin County Dept. of Environment and Energy (HCEE); Brian Vlach, Three Rivers Park District (TRPD); Jeff Weiss, Barr Engineering; and Judie Anderson, JASS.

Not represented: Rogers.

Also present: Todd Tuominen, Champlin; Kevin Mattson and Jon Bottema, Corcoran; Derek Asche and Mark Lahtinen, Maple Grove; Catherine Cesnik, Vanessa Strong, and Ben Scharenbroich, Plymouth; Andrew Simmons, Rogers; and Dave Spatafore and Joe Randall, Fish Lake Area Residents Association (FLARA).

A. Motion by Weir, second by Walraven to approve the **revised agenda**.* *Motion carried unanimously.*

B. Motion by Walraven, second by Weir to approve the **minutes*** of the December 14, 2018, regular meeting. *Motion carried unanimously.*

C. Motion by Walraven, second by Moore to approve the January **Treasurer's Report and Claims*** totaling \$56,748.49. *Motion carried unanimously.*

II. Open Forum - Fish Lake.

Spatafore spoke to the Commissioners regarding the **carp population** in Fish Lake. Carp assessment studies completed by WSB and Associates for Fish and Rice Lakes in 2018 showed that common carp biomasses in the two lakes were above the ecological threshold that potentially can have impacts on water quality and aquatic vegetation within each lake. It is anticipated that a carp study or carp removal efforts will occur in 2019.

A carp study would be a cost-share project between the City of Maple Grove, FLARA and RLAA (Rice Lake Area Association). Spatafore expressed concern that it will be difficult for FLARA to contribute to all of the different projects they are currently involved with and also pay the increased amount of their cost-share for the 2019 alum treatment.

Two bids were received for the second alum treatment. HAB Aquatic Solutions, the contractor who performed the first treatment, submitted the lowest bid - \$199,092.00.

elm creek Watershed Management Commission

Regular Meeting Minutes – January 9, 2019

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Asche addressed the proposed increase in **cost-share contributions by the parties to the Fish Lake Alum Treatment Cooperative Project Agreement** due to a significant increase in the cost of the second alum treatment. The original cost-share amount was \$300,000. With the inclusion of the second treatment, the cost-share amount has risen to \$375,471. FLARA is seeking assistance from the other parties to the agreement (the Board of Water and Soil Resources [BWSR], the Commission, the City of Maple Grove, and Three Rivers Park District) in order to reduce their cost-share portion so that they can continue to fund the other water resource activities in their budget.

Barta noted that Hennepin County funds may be available to pay for those other FLARA activities, freeing up additional funds to commit to the second alum treatment.

Motion by Trainor, second by Weir directing Staff to pursue this added source of funding and to allocate \$18,867.75 from the Commission's operating budget line item, *Projects ineligible for ad valorem*, to fund the Commission's portion of the proposed increased cost-share. *Motion carried unanimously.*

III. Action Items.

A. Resolution 2019-01 Regarding the Role of the ... Commission as the Local Government Unit* Motion by Weir, second by T. Anderson to table approval of the resolution to the February meeting in order to insert language pertaining to the administration of outstanding projects. *Motion carried unanimously.*

B. Champlin Local Plan. Staff received the draft Champlin Surface Water Management Plan on November 29, 2018. Based on their review, the plan meets the requirements for a community's stormwater management plan as outlined in MS103B.231 and.235. Staff also noted it has not yet received Met Council's comments on the plan. Motion by Walraven, second by Weir to approve the Champlin plan contingent upon addressing Staff's comments as outlined in their memo dated January 4, 2019 and any pertinent comments received from the Metropolitan Council. *Motion carried unanimously.* [Met Council's comments were received January 10, 2019. Six items required responses.]

C. Motion by Weir, second by Walraven to make the following annual appointments:

1. Official newspaper – *Osseo-Maple Grove Press*.
2. Official depositories – US Bank and the 4M fund.
3. Deputy Treasurer – Judie Anderson.
4. Auditor – Johnson & Company, Ltd.

Motion carried unanimously.

IV. Old Business.

V. New Business.

VI. Water Quality.

A. Included in the meeting packet is the January 2, 2019 weekly construction update* provided by Lucius Jonett, Wenck Associates, on the City of Plymouth's **streambank stabilization project**. Stabilization work should be substantially completed by early March 2019. Follow-up vegetation work will continue through mid-June.

elm creek Watershed Management Commission

Regular Meeting Minutes – January 9, 2019

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B. The **Buffer Law** requirements going forward require Staff to check each parcel in the county at least once every three years and spot check up to 15% of the parcels. Hennepin County staff have opted to section the county into thirds and check 1/3 each year, beginning in 2019. Those residents identified to have spot checks done will be notified by letter. A copy of the buffer inspection map* is included in the packet.

VII. Grant Opportunities and Updates.

A. FEMA Floodplain Mapping. Preparation of the Hydrologic Model (HEC-HMS) utilizing mapping information from GIS continues. Model outputs will be shared at future meetings as they become available.

B. Clean Water Fund Grants. Staff's application for a BWSR Clean Water Fund grant to implement the recently completed **North Fork Rush Creek SWA** was approved for funding at the full amount requested - \$142,110.00. A 25% match is required. The Rural Conservationist will take the lead on recruiting and implementing projects.

VIII. Education and Public Outreach - West Metro Water Alliance (WMWA).

A. Watershed PREP and Education and Outreach Events. Educators are currently scheduling spring classroom visits. The final results for 2018 have been tallied. Overall, 143 fourth grade classes with 3,593 students participated in Lesson 1: *What is a watershed and why do we care?* Of those participants, 1,755 students in 69 classrooms also received Lesson 2: *Water, the incredible journey*. The Educators also participated in four community events. The educators are also available to table at city and school events; contact Amy Juntunen at amy@jass.biz. In 2019 the educators will be putting together some potential presentations for lake associations.

B. Ten Things You Can Do Brochure. Final edits to the text have been made to the popular brochure that WMWA first developed in 2009, and is used extensively locally and metro wide. In general, the text is being refreshed and condensed, and additional emphasis is being placed on water conservation, proper deicer use, and lawn turf alternatives. The group is working with Hennepin County to update the design and layout and it is expected that Hennepin County will print the brochure at no cost to the watershed organizations.

C. Website/Social Media. The website Google Analytics for 2018 along with the Facebook insights for the last 28 days for both Shingle Creek Commission and WMWA are included in Staff's memo.* There were almost 2,500 unique visitors to the website last year. Winter is a slow time for social media about water quality. At the January 8, 2019 meeting, WMWA agreed to again hire Dawn Pape to prepare 1-2 Facebook and Twitter postings per week for 2019 about water quality, AIS, salt use, natural resources issues, and the Pledge to Plant campaign. The contract also provides for one boosted post per month. Pape has been managing social media for the Bassett Creek Commission and has found that boosting one or two posts per month dramatically increases reach and engagement.

D. 2019 Budget. Each of the four watersheds budgeted funds for 2019 WMWA administrative/technical services, Watershed PREP, and Special Projects based on estimated 2019 needs. Based on actual expenses for 2018 and taking into account unspent funds available to carry over to 2019, WMWA recommends a 2019 budget of \$36,000. The Shingle Creek Commission acts

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as the fiscal agent for WMWA and invoices the other three watersheds at the beginning of the year and in the third quarter of the year if necessary. An initial invoice for 2019 of \$12,000 for administrative/technical services and \$8,000 for Watershed PREP will be mailed this month. Each WMO pays one-fourth of the cost of WMWA programming.

E. The **next WMWA meeting** is scheduled for 8:30 a.m., Tuesday, February 12, 2019, at Plymouth City Hall.

IX. Communications.

A. Beginning in 2020, the Minnesota Pollution Control Agency (MPCA) will officially begin its work for the **Second Cycle (Cycle II) for the Mississippi River – Twin Cities HUC8 Level watershed**. As with Cycle I, the Cycle II process will contain the following watershed scale elements: 1) Intensive Watershed Monitoring, 2) Waterbody Assessment and Impairment Listing, 3) Stressor Identification, and 4) TMDL and WRAPS Development. During the first two monitoring seasons (2020 and 2021) the MPCA's Surface Water Monitoring group will conduct biological and chemical sampling at sites throughout the watershed's streams and lakes. While the basic watershed framework between Cycle I and II will largely remain the same, the Cycle II monitoring plan may differ from Cycle I depending on the data needs of MPCA and local partners.

Cycle II will begin with a kickoff meeting sometime in late January/early February to present MPCA's initial site selections as well as outline the process for local partners to submit a proposal for their monitoring needs. MPCA is inviting representatives from watershed organizations, agencies, etc. involved in or interested in surface water monitoring efforts to respond to a Doodle poll to choose one of two dates to attend a kickoff meeting at the MPCA Central Office in St. Paul. Individuals are asked to respond to the Doodle poll by Friday, January 11. Questions should be directed to Eric Alms, eric.alm@state.mn.us.

B. **A Simple Horse Manure Composting System.*** A flyer describing the composting system developed by LuAnn Brenno on their hobby farm in western Hennepin County was included in the packet.

X. Other Business.

A. The following **projects** are discussed in the January Staff Report.* ("W" denotes wetland project.)

1. 2013-046 Woods of Medina, Medina.
2. 2014-015 Rogers Drive Extension, Rogers.
3. 2015-004 Kinghorn Outlet A, Rogers.
4. 2015-030 Kiddiegarten Child Care Center, Maple Grove.
5. 2016-002 The Markets at Rush Creek, Maple Grove.
6. 2016-005W Ravinia Wetland Bank, Corcoran.
7. 2016-040 Kinghorn 4th Addition, Rogers.
8. 2016-047 Hy-Vee Maple Grove #1, Maple Grove.
9. 2016-052 The Woods at Rush Creek, Maple Grove.
10. 2017-014 Laurel Creek, Rogers.
11. 2017-016 Territorial Woods, Maple Grove.
12. 2017-017 Mary Queen of Peace Catholic Church, Rogers
13. 2017-019 Medina Senior Living Community, Medina.

elm creek Watershed Management Commission

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14. 2017-021 Hindu Society of MN Staff Housing, Maple Grove.
15. 2017-029 Brayburn Trails, Dayton.
16. 2017-034 Plymouth Memory Care, Plymouth.
17. 2017-037 L-80 Lift Station MCES, Corcoran.
18. 2017-038 Bass Lake Estates, Corcoran.
19. 2017-039 Rush Creek Apartments, Maple Grove.
20. 2017-050W Ernie Mayer Wetland/floodplain violation, Corcoran.
21. 2018-001 Rush Creek Commons, Maple Grove.
22. 2018-004 Rush Creek Restoration Project, Maple Grove.
23. 2018-005 Sundance Greens, Dayton.
24. 2018-014 Refuge at Rush Creek, Corcoran.
25. 2018-018 Summers Edge Phase III, Plymouth.
26. 2018-020 North 101 Storage, Rogers.
27. 2018-021 113th Lane Extension, Brockton Lane/CSAH101 Intersection, Rogers.
28. 2018-026 Windrose, Maple Grove.
29. 2018-028 Tricare Third Addition, Maple Grove.
30. 2018-032 Encore Development, Corcoran.
31. 2018-033 Cloquet Island Estates, Dayton.
32. 2018-035 Edgewater East, Maple Grove.
33. 2018-038 Vincent Woods, Rogers.
34. 2018-043 Bee Hive Homes, Maple Grove.
35. 2018-044 OSI Phase II, Medina.
36. 2018-046 Graco Expansion, Rogers.
37. 2018-048 Faithbrook Church, Phase 2, Dayton.
38. 2018-049 Pheasant Ridge 2nd Addition, Corcoran.
39. 2018-051 23405 CR10 Wetland Delineation, Corcoran.
40. 2018-056 Rogers Tennis Courts, Rogers.
41. 2018-053 Elm Creek Restoration, Champlin.
42. 2018-054W Cease and Desist Order, 9120 Trail Haven Road, Corcoran.

B. Topics for the **next Technical Advisory Committee meeting**, February 13, 2019, will include 1) potential SWA, 2) CIPs, and 3) internal load projects.

C. **Solicitation of interest proposals** for technical, legal and administrative services will be published in the January 14, 2019 edition of the *State Register*.

D. **Nomination of officers** will be accepted at the February meeting; **elections** will occur at the March meeting.

E. **Adjournment.** There being no further business, the meeting was adjourned at 12:40 p.m.

Respectfully submitted,



Judie A. Anderson

Recording Secretary//JAA:tim

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STAFF REPORT February 7, 2019

2014-015 Rogers Drive Extension, Rogers. This project involves improvements along Rogers Drive from Vevea Lane to Brockton Lane. The project is located east of I-94, south of the Cabela development. The total project area is 8.0 acres; proposed impervious surfaces total 5.6 acres. Site plans received July 1, 2014 meet the requirements of the Commission with the exception of the nutrient control. The Commission approved the site plan contingent upon the City deferring 4.6 lbs. of phosphorus for treatment in future ponding opportunities as the easterly corridor of Rogers Drive develops. 2.3 lbs. will be accounted for in the Kinghorn Spec. Building site plan, with 2.3 lbs. still outstanding. This item will remain on the report until the total deferral is accounted for.

2015-004 Kinghorn Outlot A, Rogers. This is a 31-acre site located between the Clam and Fed Ex sites on the west side of Brockton Road and I-94. The proposed site will have two warehouse buildings with associated parking and loading facilities. In June 2015 the Commission approved this project with three conditions. Revisions have yet to meet the Commission's approval conditions. This project was extended by the City of Rogers earlier this year. It will remain active on the Staff Report.

2016-005W Ravinia Wetland Replacement Plan, Corcoran. In December 2016 the Commission approved Staff's findings and recommendations on this wetland replacement plan. Final wetland impacts are 1.22 acres. Wetland credits created on site will be 4.01 acres. Excess credits of 0.75 acres are proposed to be used on Lennar's Laurel Creek development in Rogers (2017-014). All approval contingencies have been met and construction completed.. Vegetation planting and management took place throughout 2017. Barr Engineering is providing monitoring to ensure the replacement meets the performance standards of the approved plans. *Their first annual report was submitted to the US Army Corps of Engineers on February 7, 2019.*

2016-040 Kinghorn 4th Addition, Rogers. This is a 13.7-acre parcel located in the northwest corner of the intersection of Brockton Lane and Rogers Drive. An industrial warehouse with 8.8 acres of new impervious area is proposed for the site. The plan includes the use of a NURP pond and a biofiltration basin to meet Commission requirements for rates, water quality and abstraction. The adjacent site is likely to be developed in the near future and some of the stormwater features were oversized to accommodate future development. In November 2016 the Commission approved the project conditioned on: 1) approval of only this phase; future phases will need additional review and approval; 2) final modifications to the hydrologic modeling; 3) additional details are provided for a proposed water re-use system; 4) an O&M Plan for the pond and biofiltration basin is completed and recorded on the final plat; 5) modification of the storm sewer system to maximize the area draining to the NURP pond; and 6) receipt and review of wetland-related documentation if wetlands are present. Condition #1 required no action, so has been met. Condition #2 has been met for the current design; however, any future design modifications will require additional review. Conditions #3-6 remain outstanding and are expected to be addressed during final design. Staff has discussed the project with

RULE D - STORMWATER MANAGEMENT
RULE E - EROSION AND SEDIMENT CONTROL
RULE F - FLOODPLAIN ALTERATION

RULE G - WETLAND ALTERATION
RULE H - BRIDGE AND CULVERT CROSSINGS
RULE I - BUFFERS

Italics indicates new information

indicates enclosure

the City and been in contact with the project engineer to receive an update, but no new information has been provided.

2016-047 Hy-Vee North Maple Grove. The applicant is proposing to disturb 13 acres of a 20.4-acre site located at the northeast corner of Maple Grove Parkway and 99th Avenue for the purpose of constructing a grocery store, fuel station, convenience store and parking facilities. Staff sent preliminary review comments and requested revisions on December 14. In their findings dated January 10, 2017, Staff recommended approval of this project subject to (1) receipt, approval, and recordation of an Operations and Maintenance Plan for the pond and the iron-enhanced filtration system, (2) revisions for items relating to buffer requirements and erosion and sediment control as enumerated in the findings, and (3) receipt of a signed and dated final plan set. The Commission approved Staff's recommendations at their January 11, 2017 meeting with the additional requirement that the Commission receive and comment on a WCA impact notice. No new information has been received to date.

2017-039 Rush Creek Apartments, Maple Grove. This project is located in the southwest quadrant of the intersection of Bass Lake Road (CSAH 10) and Troy Lane (CSAH 101). The project area is 8.2 acres in size and includes two phases of construction. Phase I is 236 apartment units located on 6.0 acres; Phase II is a future 76-unit apartment building located on 2.2 acres in Outlot C of this development. The Commission will review this project for conformance to Rules D, E and I. Findings with no recommendations dated November 15, 2017, were provided to the applicant and the City. The applicant requested and was granted an extension of the deadline per MN statute 15.99 to December 31, 2018. *According to the agent for this project, a new layout and project application was submitted to Maple Grove in January 2019. If the application remained active at the City and the applicant requests an extension, this project will be reviewed under 2017-039. If not, this project will be denied and a new project number assigned. Staff is awaiting clarification from the City.*

2017-050W Ernie Mayers Wetland/floodplain violation, Corcoran. The City of Corcoran contacted the Commission in December 2017 concerning drainage complaints on Mayers' property. Multiple violations appear to have occurred on land owned by Mayers. Technical Evaluation Panels were held on December 11, 2017, January 30, 2018, May 22, 2018 and July 20, 2018 to assess the nature and extent of the violations. A restoration order was issued to Mayers giving him until September 15, 2018 to respond or restore the violation areas to their original conditions. A request from Mayers' attorney for an extension to November 1, 2018 was granted by the DNR.

On October 30 an appeal to the restoration order was received by BWSR. *BWSR issued an order of abeyance (stay) on the appeal until April 1, 2019. An application for replacement plan was received from Mayers on January 29, 2019. The application addresses the wetland fill (4:1 replacement request) and drain tile (disable existing tile) impacts, but requests additional time to submit an application to address the ditch (WCA jurisdiction) and floodplain (Commission jurisdiction) impacts. A technical evaluation panel is being scheduled for the week of February 18th to address the replacement plan and provide guidance to the LGU. Note: the City of Corcoran will be taking over the WCA LGU responsibilities on this project on March 1, 2019.*

2018-004 Rush Creek Restoration Project, Maple Grove. The City is proposing to restore 2,400 feet of Rush Creek just north of Territorial Road adjacent to the Enclave on Rush Creek development. This is within the Three River Parks corridor that was obtained when the development was platted and is being reviewed for compliance with the Commission's grading and floodplain requirements. Staff has completed its review. This item was pulled from the agenda at the Commission's June 2018 meeting due to concerns from a partner

agency. The City and Three Rivers Park District are in the process of working through their concerns. If available, an update will be provided to the Commission at their meeting.

2018-005 Sundance Greens, Dayton. This site consists of seven parcels totaling 310 acres. Approximately half is the Sundance Golf course and the other half is agricultural land. The applicant is proposing a long-term, phased residential development with 665 residential units while maintaining a portion (9 of the 18 holes) of the golf course. Total new impervious area will be 71 acres. This review will cover Commission Rules D, F, and I. Only the Sundance Greens West (phase I grading) erosion and sediment control plans are being reviewed at this time for the Commission's requirements for erosion control. Future phasing of the grading plans must be submitted separately for the Commission's review for Rule E and consistency with other approvals from the Commission. In their findings dated October 3, 2018, Staff approved the grading and erosion control plans for Sundance West. No other action is requested at this time for the remainder of the site pending (1) receipt of final erosion control plans for each phase as it's developed; (2) fulfillment of stormwater management requirements per item #11 of their findings; (3) receipt of wetland buffers plans meeting the Commission's requirements; and (4) receipt of floodplain mitigation plans meeting Commission's requirements. This project was extended to March 9, 2019 by the applicant. *No new information has been received as of this update.*

2018-014 Refuge at Rush Creek (formerly Fehn Meadows 2nd Addition), Corcoran. The site is currently a 63-acre agricultural property located west of Cain Road on CR 117. The applicant proposes to subdivide the site into 14 residential lots. Public road and trail access will impact two wetland basins, totaling 16,537 SF of type 1 wetland impacts. Replacement at a 2:1 ratio in Bank Service Area (BSA) 7, Major Watershed 20 (Metro Mississippi), is proposed. The wetland replacement plan has been noticed per WCA requirements. The Commission approved this project with conditions at their August meeting: (1) Certification from MN BWSR that 0.7593 acres of wetland banking credits from account #1643 have been transferred for use on this site or an escrow of \$90,000 is received from the applicant, (2) Preservation and buffer areas meet the Commission and City requirements for buffer and preservation, (3) \$4,000 per acre escrow is secured by the ECWMC for buffer/preservation compliance and 5-year monitoring plan, and (4) operation and maintenance plans for stormwater ponds are approved by the Commission and City and recorded on the property title. *No new information has been received as of this update.*

2018-020 North 101 Storage, Rogers. This is an existing 3-acre lot in the northwest corner of Highway 101 and CR144. The current land use is a combination of mini-storage units and outdoor storage. The site is proposed for complete demolition and the construction of seven new mini-storage buildings. At their July meeting the Commission approved Staff findings dated July 9, 2018, pending four items relating to abstraction requirements and the infiltration system. The applicant requested and was granted an extension for this project approval to December 31, 2019, provided the review process with the City of Rogers does not expire.

2018-021 113th Lane Extension/Brockton/101, Rogers. The City is proposing to extend 113th Lane to provide a second access to the proposed second phase of the Laurel Creek development. The proposed road will extend from Brockton Lane to the development entrance. It will include a 4-lane divided roadway; an off-road trail north of 113th Lane; and construction of an intersection meeting County turn-lane requirements. The project will create 2.13 acres of new impervious surface. The project was conditionally approved at the July Commission meeting. The conditions include submittal of signed final plans and finalization of the wetland mitigation plan. The project has been delayed until 2019, so submittals to meet the conditions have not yet been received.

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2018-033 Cloquet Island Estates, Dayton. This is a proposal to develop approximately 77 acres of farmland near the intersection of North Diamond Lake Road and Dayton River Road. It will include the construction of 193 single-family homes and increase impervious area by approximately 24.4 acres. Stormwater will be managed through seven wet detention ponds, one filtration bench, and one new infiltration bench. The developer submitted a revised plan on December 21. *Staff's review is included in the February meeting packet with a recommendation for a conditional approval.*

2018-038 Vincent Woods, Rogers. This is a 19 acre parcel that was previously approved for eight apartment buildings by the Commission in 2015. The new site plans propose two apartment buildings with 4.25 acres of impervious areas. The project includes two stormwater ponds to provide water quality treatment and a filtration bench has been proposed in one of the ponds to meet the abstraction requirements which were not in place as of the last project approval. The Commission approved the project at their September 2018 meeting subject to the submittal of minor revisions. Staff is working with the applicant on these items. Staff approval to begin grading prior to final approval was also provided. Staff recently received revised information to review for conformance with the minor revisions requested.

2018-046 Graco Expansion, Rogers. This project is the expansion of an existing building. The site is located in an area that has regional ponding provided for rate control purposes, but does need to account for water quality and abstraction requirements on site prior to discharging offsite as part of the improvements. The Commission considered this project at their October meeting and granted conditional approval. Conditions of approval were to submit a SWPPP plan meeting requirements, clarify maintenance responsibilities for the iron enhanced sand filter, and the City of Rogers to submit a letter stating their intentions to provide the water quality deficit in an upcoming project. This item will remain on the Staff report until such time as the water quality deficit has been made up. *Staff confirmed several minor plan revisions remain in conformance with the original approval of the project in December.*

2018-052 Rogers Tennis Courts, Rogers. This is a 13-acre lot owned by the City of Rogers just north of Rogers High School. In 2017 Staff approved some initial grading on the site provided future grading and stormwater management is reviewed and approved by the Commission. This is the City's submittal for the final grading and stormwater management on the property. The initial project review did not meet the Commission's requirements. *Revised plans were submitted on February 6, 2019, not in time to be included in this month's packet. Rogers requested an extension to the 15.99 deadline to March 27, 2019.*

2018-053 Elm Creek Restoration, Champlin. The proposed project is phase 3 of Champlin's improvement projects within the Elm Creek watershed. This project includes 2,580 LF (linear feet) of stream bank restoration of Elm Creek, including approximately 950 LF west of Cartway Trail, 950 LF east of Cartway Trail, and 680 LF of the existing oxbow located at the northwest corner of the Mill Pond. Staff is completing its review of the project and will bring forth a recommendation at the February Commission meeting.

2018-054W Cease and Desist Order 9120 Trail Haven Road, Corcoran. The DNR issued a cease and desist order for wetland drainage work being done on PIDs 1011923310008 and 1011923330003. The landowner is working to replace an existing drain tile inlet that controls the water elevation on an existing wetland. In doing so their work drained a portion of the wetland. Staff met with the landowner and *issued a letter of voluntary compliance* to restore the area to its original condition. Ultimately the inlet will need to be set at an elevation to ensure the existing wetland remains at its historic elevation and boundary. *Staff will follow up with Corcoran to ensure this project is inspected when the work is completed. This item will be removed from the report.*

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2019-001 Fernbrook View Apartments, Maple Grove. This is a 4.85-acre rural residential lot located at the NE intersection of CSAH 81 at Fernbrook Lane. The applicant proposes to construct a 2-story, 42-unit apartment building. The review is for compliance to the Commission's 3rd Generation STWMP Rules and Standards, Rules D, E and I. The project review and a contingent approval are included in this month's packet.

2019-002 Parkside Villas, Champlin. This is two adjacent rural parcels totaling 13.9 acres that are proposed to be split into 56 single-family residential lots. It is located on the east side of Goose Lake Road just south of its intersection with Elm Road (CR 202). The review is for compliance to the Commission's 3rd Generation STWMP Rules and Standards Rule D and Rule E. The project review and a contingent approval are included in this month's packet.

2019-003 Rogers High School Tennis Courts., Rogers. The project area is just north of the east parking lot on the high school property. The developed site will include eight tennis courts, a reconstructed bituminous path, concrete sidewalk, and concrete viewing area between the courts. The disturbed area is approximately 2.91 acres and is currently occupied by athletic fields. Runoff drains north towards an existing onsite stormwater management pond. New impervious area will be 1.49 acres. Commission standards require reviews for erosion and sediment controls and stormwater management. The site plans were not received in time to be included in this month's packet. It will be presented at the March meeting.

2019-004 Rogers Middle School Chiller Unit Project, Rogers. This project will disturb over an acre of land, but will actually decrease the impervious area on the Middle School Site. Staff will review for erosion and sediment controls only.

FINAL RECORDINGS ARE DUE ON THE FOLLOWING PROJECTS: (Staff reached out to the cities for an update on these projects on February 5, 2019.)

2013-046 Woods of Medina, Medina. In January 2015 the Commission approved this project with two conditions. This project remained active throughout this period with the final plat recently approved by the City. No significant changes were made to the original plans. The two conditions were 1) compliance to the WCA requirements and 2) final approval and recording of the O & M plans. The WCA condition has been met with only the O&M plan condition remaining. *On February 5, 2019 Dusty Finke reported that the City is awaiting final plat application for this project.*

2015-030 Kiddiegarten Child Care Center, Maple Grove. Approved December 9, 2015. If the City does not take over the operation and maintenance of the underground system and the sump catch basins, an O&M agreement for the underground trench/pond system must be approved by the Commission and the City and recorded with the title. *On February 5, 2019 Derek Asche contacted the owner requesting a copy of the recorded maintenance agreement.*

2016-002 The Markets at Rush Creek, Maple Grove. This is a proposal to develop 40 acres of a 123-acre PUD located in the southwest quadrant of the intersection of CSAH 101 and CSAH 10. In 2016 the Commission granted Staff authority to administratively approve the project and report any updates. Updated plans with some minor layout revisions were reviewed by Staff and administratively approved on July 24, 2018, contingent upon the Operation and Maintenance Plan approval and recordings. *On February 5, 2019 Derek Asche contacted the project manager requesting a copy of the recorded maintenance agreement.*

2016-052 The Woods at Rush Creek, Maple Grove. In March 2017, the Commission approved Staff's findings and recommendations dated February 15, 2017. Outstanding items are the biofiltration pond, O & M plans, and recording. *These items have been received and this project will be removed from the report.*

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2017-014 Laurel Creek, Rogers. In June 2017 the Commission approved this project with four conditions. All contingency items have been provided with the exception of the O&M agreement which is being negotiated by the City as to whether the City or the HOA will be responsible for the operation and maintenance of the stormwater management facility. On August 31, 2017, Andrew Simmons responded that the O&M agreement is still being negotiated.

2017-016 Territorial Woods, Maple Grove. Approved at the September 13, 2017 Commission meeting contingent upon receipt of an O & M agreement meeting the Commission's rules. The agreement was approved by the City and is in the process of being recorded. *On February 5, 2019 Derek Asche contacted the project manager requesting a copy of the recorded maintenance agreement. The applicant responded on February 7, 2019. The City will draft an agreement and forward to the applicant for execution.*

2017-017 Mary Queen of Peace Catholic Church, Rogers. In June 2017 the Commission granted Staff approval authority pending satisfactory compliance with Staff's findings. All items from the findings have been completed with the exception of the O&M agreement for the stormwater facilities. On June 7, 2018 Andrew Simmons reported that the Church is in the process of revising the stormwater management plan for the site to include water reuse instead of biofiltration pond. The Commission should receive a revised application in the near future. There are also underlying utility easement issues with this project that are holding up the final recording of the plat against which to record the maintenance agreement. *On February 5, 2019 Andrew Simmons reported that the final plat has yet to be recorded.*

2017-021 Hindu Society of MN, Maple Grove. At their June 14, 2017 meeting, the Commission approved this project per Staff's recommendations. All the recommendations have been met with the exception of the O&M plan agreements. *On February 5, 2019 Derek Asche contacted the project manager requesting a copy of the recorded maintenance agreement.*

2017-029 Brayburn Trails, Dayton. At their August 2017 meeting the Commission approved Staff's findings dated August 2, 2017 with five conditions. All of the conditions have been met with the submission of revised plans, with the exception of the final recordings of the O&M agreements and easements. On March 7, 2018, the City reported: final plat approval has not been granted, easements will be recorded as plats are approved. Ponds will be maintained by the City of Dayton. An agreement, and additional easement, will be required for a water re-use system within one of the ponds (between the City and HOA). This system is not part of the first addition – the timing of said improvements/agreement is unknown. Construction is expected to start in 2018.

On February 7, 2019, Jason Quisberg provided the following information: The 1st Addition was scaled back from what was proposed; associated construction activity is significantly completed. Extension of trunk utilities through Sundance Golf Course are complete. The proposed 2nd Addition is under review. Improvements to 117th Avenue (East French Lake Road to Fernbrook Lane) will be part of the work done with the 2nd Addition. Construction start anticipated this spring. Pond easements are being recorded with the platting process for each addition (those [that are] part of the 1st Addition are in place). The water re-use system is not part of the 2nd Addition (will be with future addition).

2017-034 Plymouth Memory Care, Plymouth. This project was approved by the Commission at its September 2017 meeting subject to the receipt of an O&M agreement acceptable to the Commission. On June 7, 2018, city staff reported that the applicant is working with them to finalize the maintenance agreement. *On February 5, 2019 Ben Scharenbroich provided a copy of the recorded agreement. This project will be removed from the report.*

2017-037 Corcoran L-80 Lift Station, Corcoran. Staff recommended the Commission approve this project contingent upon the project meeting the Commission wetland buffer requirements. This item was approved by the Executive Committee of the Commission in October 2017. Revised plans meet the Commission's buffer requirements with the exception of the final easement recordings. On March 6, 2018, city staff informed the Commission that they are working with a land surveyor and will complete the recordings before construction is completed. *On February 5, 2019 Kevin Mattson provided a copy of the recorded conservation easement. This project will be removed from the report.*

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2017-038 Bass Lake Estates, Corcoran. At their March 14, 2018 meeting, the Commission approved Staff's findings which recommended approval contingent upon the applicant recording the maintenance agreements and easements within 90 days of final plat recording. *On February 5, 2019 Kevin Mattson provided copies of the recorded documents. This project will be removed from the report.*

2018-001 Rush Creek Commons, Maple Grove. Approved at the February 14, 2018 meeting contingent upon meeting the Commission's operation and maintenance requirements on the stormwater facilities, i.e., all ponds and biofiltration basins must have drainage and utility easements and operation and maintenance agreements over them. These must be recorded on the property title and a copy of the recordings must be provided to the Commission within 90 days after final plat approval. *On February 5, 2019 Derek Asche contacted the project manager requesting a copy of the recorded maintenance agreement.*

2018-018 Summers Edge Phase III, Plymouth. The Commission approved Staff's recommendations at their June 13, 2018 meeting, subject to receipt of final easements over the wetland buffers within 90 days of final platting in a format acceptable to the Commission. *On February 5, 2019 Ben Scharenbroich provided an unsigned copy of the final plat.*

2018-026 Windrose, Maple Grove. The Commission approved Staff's finding and recommendations dated July 20, 2018. Final plan approval is contingent upon verification of the wetland approvals by the City of Maple Grove and the approval and recording of the operation and maintenance plan on the filter basins. *On February 5, 2019 Derek Asche reported that the City will receive the agreement for the filter basins with the grading permit application.*

2018-028 Tricare Third Addition, Maple Grove In their findings dated August 7, 2018, Staff recommended approval contingent on approval and recordation of the operations and maintenance plan on the filter basins. The Commission further recommended that the City of Maple Grove consider an oil/debris type of separator in the parking lot manhole. *Derek Asche contacted the project manager on February 5, 2019. It is a condition of the grading permit that the maintenance agreement is provided.*

2018-043 BeeHive Homes, Maple Grove. This project was approved by the Commission at their October meeting contingent on an approved stormwater system O&M plan being recorded on the property title or the City accepting O&M plan responsibility. *On February 5, 2019 Derek Asche reported that the City and the applicant each have a signed, unrecorded copy of the agreement. It is the latter's responsibility to have the agreement recorded; however, if that does not occur the City will record its copy.*

2018-044 OSI Phase II, Medina. Staff findings dated October 9, 2018 were approved by Commission at their October meeting contingent upon receipt of an approved stormwater system operation and maintenance plan being recorded on the property title. *On February 5, 2019 Dusty Finke reported that the City is awaiting final plat application for this project.*

2018-048 Faithbrook Church, Phase 2, Dayton. This is an application for review of an expansion of an existing church located northeast of the intersection of Fernbrook Lane and Elm Creek Road. The Commission approved this project at their November meeting conditioned upon receipt of a SWPPP meeting NPDES requirements and the City of Dayton accepting maintenance responsibility or recording a modified O&M plan for the stormwater features on the site in a form acceptable to the Commission. On February 7, 2019, Jason Quisberg reported that this project has gone idle; it is believed to be due to funding needs of the applicant. It is expected activity will resume this spring, with potential construction this summer.

LOCAL PLANS

Champlin. Approved January 9, 2019.

Corcoran. Approved November 14, 2018.

Dayton Surface Water Management Plan. Approved October 10, 2018.

Maple Grove Draft Surface Water Management Plan. Approved November 14, 2018.

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Medina. Approved December 8, 2017.

Plymouth. Approved November 14, 2018.

Rogers. 2040 Comprehensive Plan received January 2, 2019. Staff findings included in February meeting packet.

FEMA FLOODPLAIN MAPPING

Elm Creek Floodplain Mapping: *GIS work and integration with the HEC-HMS model continues in February. Staff plans to share initial hydrology results at the March meeting.*

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RESOLUTION 2019-01
REGARDING THE ROLE
OF THE ELM CREEK WATERSHED MANAGEMENT COMMISSION
AS THE LOCAL GOVERNMENT UNIT
TO ADMINISTER THE WETLAND CONSERVATION ACT OF 1991

WHEREAS, the Minnesota Wetland Conservation Act of 1991 (WCA) requires local government units (LGUs) to implement the rules and regulations promulgated by the Board of Water and Soil Resources (BWSR) pertaining to wetland draining, filling and excavation; and

WHEREAS, the WCA and Minnesota Rule Chapter 8420 authorizes a city to contract with and delegate to a watershed management organization local government unit responsibilities; and

WHEREAS, by Resolution 1993-124, the City of Corcoran (City) designated the Elm Creek Watershed Management Commission (Commission) to server as its Local Government Unit; and

WHEREAS, on December 13, 2017, the Commission voted to invoice back to the member cities all future costs for WCA LGU activities performed by the Commission where the Commission is designated as the LGU for said communities; and

WHEREAS, it is the intention of the Commission and the City that effective March 1, 2019, the City will re-assume primary LGU responsibilities under the WCA and no longer delegate that primary role to the Commission, and the Commission will continue to provide the City with technical and support services as customarily provided to member communities

NOW, THEREFORE BE IT RESOLVED, by the Elm Creek Watershed Management Commission, as follows:

1. Effective March 1, 2019, the Commission will continue to provide services to the City of Corcoran as the Local Government Unit under the Watershed Conservation Act and will invoice back to the City all costs related to its role as the Local Government Unit for the Wetland Conservation Act.
2. Effective March 1, 2019, the Commission will continue to provide services to the City for wetland replacement monitoring for the Ravinia Development as approved by the Commission under project 2016-005W.
3. Effective March 1, 2019, the City will assume LGU responsibilities for the Ernie Mayers Access Drive wetland violation reviewed by the Commission under project 2017-050W with administrative support provided by Commission staff.
4. Effective March 1, 2019, the City will assume LGU responsibilities for the Bellwether 2nd project reviewed by the Commission under project 2018-032 Encore and participate in any pre-application meetings to facilitate the transition.

Adopted by the Commissioners of the Elm Creek Watershed Management Commission the thirteenth day of February, 2019.

_____, Chairman

Attest:

_____, Administrator

**STATE OF MINNESOTA
COUNTY OF HENNEPIN**

I, Judie A. Anderson, do hereby certify that I am the custodian of the minutes of all proceedings had and held by the Board of the Elm Creek Watershed Management Commission, that I have compared the above resolution with the original passed and adopted by the Board of said Commission at a regular meeting thereof held on the thirteenth day of February, 2019, at 11:30 a.m., that the above constitutes a true and correct copy thereof, that the same has not been amended or rescinded and is in full force and effect.

IN WITNESS WHEREOF, I have hereunto placed my hand and signature this thirteenth day of February, 2019.

Judie A. Anderson

(NO SEAL)

elm creek Watershed Management Commission

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DATE: JANUARY 30, 2019
TO ELM CREEK WATERSHED COMMISSION
FROM: JIM KUJAWA
RE: CITY OF ROGERS DRAFT 2040 COMPREHENSIVE PLAN

Background

Commission staff reviews Member Community Comprehensive Plans for conformance with the Commission's 3rd Generation Stormwater Management Plan. The review focuses on the requirements of the communities as outlined in MS 103B.231 and .235.

Updates to the local stormwater management plans are expected to include:

- Updated land use, hydrologic, and hydraulic data, and existing or potential water resource related problems that may have changed since the last LWMP.
- An explanation of how the member city will help to implement the actions set forth in the Commission's Plan, including specifically addressing adoption and enforcement of a manure management ordinance.
- Show how the member city will act to achieve the load reductions and other actions identified in and agreed to in TMDL Implementation Plans.
- Updated Implementation Plan identifying the specific structural, nonstructural, and programmatic solutions to the problems and issues identified in the LWMP.
- Set forth an implementation program including a description of adoption or amendment of official controls and local policies necessary to implement the Rules and Standards; programs; policies; a capital improvement plan; and estimates of cost and funding mechanisms.

Information

Staff received the draft Roger 2040 Comprehensive Plan for review and comment on January 2, 2019. Staff concentrated on Chapter 8, Water Resources, in said plan.

Based on our review, none of the requirements from MS 103B are addressed in this draft plan.

Action

None required at this time.

jck

elm creek

Watershed Management Commission

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2018 WORK PLAN IN REVIEW

Minnesota Rule 8410.0150 requires the Commission to submit to the Board of Water and Soil Resources a financial report, activity report and audit report for the preceding fiscal year. 8410.0150 Subp. 3 outlines the content of the annual activity report. It includes an assessment of the previous year's annual work plan and development of a projected work plan for the following year.

Following is a summary of the work undertaken by the Elm Creek Watershed Management Commission in 2018 to meet the goals, objectives, and projected work plan outlined in its *2017 Annual Report*. The Commission identified the following activities for 2018:

- Continue to review local development/redevelopment plans for conformance with the standards outlined in the Commission's Third Generation Watershed Management Plan. Review the current project review fee schedule for fiscal conformity. *Fifty-four projects were reviewed by the Commission in 2018. The Commission does not have a permit program. The current fee schedule was not reviewed in 2018.*
- Continue to serve as the local government unit (LGU) for administering the Wetland Conservation Act (WCA) for the City of Corcoran. *The Commission continued to serve as the LGU for Corcoran. In 2018 Technical staff assisted approximately 50 landowners/agency/developer contacts with wetland-related questions. On behalf of the Commission they reviewed the following types of wetland applications: 47 wetland boundary/type; ten no-loss, three exemptions, three sequencing, and three wetland replacement plans. Wetland impacts totaled 40,240 SF; wetland replacement totaled 78,698 SF. Five WCA violations were investigated and resolved. Two others were determined to not be WCA/Commission violations. One violation is on-going. The Commission was involved in 12 Technical Evaluation Panels (TEPs) throughout the watershed. The Elm Creek Watershed Management Commission does not have a wetland banking program.*
- Enter into a new five-year cooperative agreement with Three Rivers Park District (TRPD) to share in the costs of conducting lake and stream monitoring in the watershed. *A new five-year cooperative agreement was approved at the Commission's March 14, 2018 meeting. Under the agreement TRPD will be responsible for monitoring three of twelve sampling stations every year for continuous flow measurements. The Commission may request the collection of water quality nutrient data at the continuous flow monitoring stations under the agreement. Water quality nutrient analysis requested for the flow measurement sites would be analyzed for Total Phosphorus, Soluble Reactive Phosphorus, Total Nitrogen, and Total Suspended Solids.*

TRPD will also be responsible for monitoring four of fifteen lakes in the Elm Creek watershed annually plus other specific lakes that have been approved for monitoring by the Commission. The four Category I "sentinel" lakes will be monitored every year; the eight Category II lakes that have had data collected within the last ten years will be monitored occasionally; and the three Category III lakes that currently have insufficient data for an assessment determination of trophic conditions will be monitored within the next five-year cycle. The water quality constituents that will be analyzed for surface samples on all lakes (classified as deep or shallow) will include total phosphorus, soluble reactive phosphorus, total

nitrogen, and chlorophyll-a. Those lakes that are classified as deep lakes will also have water quality samples collected at the top of the hypolimnion and 1-m from the bottom, and will be analyzed for total phosphorus and soluble reactive phosphorus.

In addition, under the agreement, the Commission and the Park District will provide financial support to assist the monitoring efforts of the USGS stream gauging station on Elm Creek within the Elm Creek Park Reserve.

- Conduct lake and stream monitoring programs to track water quality and quantity conditions. *The Commission undertook stream monitoring for continuous flow at monitoring sites DC on Diamond Creek, RT on Rush Creek main stem, and EC77 on Elm Creek above Rice Lake. In 2018, there were no water quality samples collected for analysis of nutrients that were requested under the Commission's contract. However, continuous flow and water quality nutrient data was collected for a separate contract agreement with the City of Plymouth at three sampling sites that were within the Elm Creek Watershed. A total of 74 water quality samples (27 composite storm event and 47 grabs) were collected for the analysis of nutrients from these three sampling sites in 2018. In addition, a dissolved oxygen (DO) longitudinal survey was conducted on Diamond Creek. The Commission monitored the four sentinel lakes (Fish, Weaver, Diamond, and Rice Lake-main basin) on a bi-weekly basis for water quality. There was a total of 78 water quality samples collected and analyzed water quality nutrients for the four lakes monitored in 2018. A point-intercept aquatic vegetation survey was also completed on Diamond Lake in the spring and fall for 2018. All monitoring outlined in this section was conducted in cooperation with Three Rivers Park District.*
- Fund the monitoring of two lakes through Metropolitan Council's Citizen Assisted Monitoring Program (CAMP). *Lake Jubert was monitored through the CAMP program in 2018.*
- Continue to operate the monitoring station in Champlin in cooperation with the United States Geological Survey (USGS). *Discharge measurements were made to define changes to the stage-discharge relation over the range of flows that occurred in order to compute an accurate record of streamflow. Twelve manual samples were collected monthly to represent the variations in hydrologic conditions that occur during the year. A refrigerated automatic sampler was used to collect eight composited samples of runoff events. Composite samples were collected during increasing or peak streamflow, when many selected concentrations are expected to be greatest. Samples are analyzed for Total Phosphorus, Dissolved Phosphorus, Total Ammonia plus Organic Nitrogen, Dissolved Ammonia Nitrogen, Dissolved Nitrite plus Nitrate Nitrogen, Total Suspended Solids, Volatile Suspended Solids,* Oxygen Demand, Dissolved Chloride, Water Temperature,* Specific Conductance, pH, and Dissolved Oxygen.**
*(*Denotes not auto-sampled.)*
- Promote river stewardship through Hennepin County's RiverWatch program with three sites in 2018. *Seven sites were monitored through RiverWatch in 2018 – Crow River at St. Michael Water Treatment Plant (CR-2); Rush Creek on west side of 101st Lane, Maple Grove (RC-1b); Rush Creek on east side of 101st Lane, Maple Grove (RC-1a); Elm Creek at Peony Lane behind Wayzata High School in Plymouth (EC-2); Elm Creek downstream from Rice Lake in Maple Grove (EC-4); Elm Creek at the Maple Grove Arboretum in Maple Grove (EC-6); and Rush Creek at the Elm Creek Park Reserve in Maple Grove (RC-3). County staffers also hosted a streamside survey with a group of 4th graders on Elm Creek.*
- Participate in the MN Wetland Health Evaluation Program (WHEP) with four wetlands in 2018. *Five sites were monitored as part of the WHEP program in 2018 – (EC-1) Blundell Restoration, (EC-2) Bulduc Restoration, and (EC-3) Bulduc wetland, all in the City of Rogers; (EC-4) Cedar Hollow, Plymouth; and (EC-5) Northwest Greenway, also in Plymouth.*
- Assist member communities in preparing and adopting their local water management plans. Under Rule 8410.0160, subp. 6, local plans must be approved by the Commission by December 31, 2018. *At year-*

end the Commission had reviewed and approved the local surface water plans of the cities of Corcoran, Dayton, Maple Grove, Medina, and Plymouth. The plans for Champlin and Rogers were under review on December 31.

- Conduct the biennial solicitation of interest proposals for administrative, legal, technical and wetland consultants. *This task was not required in 2018. Solicitations for 2019-2020 will be published in the January 14, 2019 edition of the State Register.*
- Continue as a member of the West Metro Water Alliance (WMWA). *Continued to support the WMWA Educator Program and contributed to its e-newsletter Water Links. Promoted the Watershed PREP program to reach every 4th grade science class in the watershed. Participated in the Planting for Clean Water project. Conducted native plant sales at various city events around the watershed. Chairman Doug Baines attended the monthly WMWA meetings to represent the Commission.*
- Co-sponsor Rain Garden Workshops in conjunction with WMWA as part of the Commission's Education and Public Outreach Program. *WMWA sponsored four Resilient Yard workshops and two Turf Alternative workshops presented by Metro Blooms in 2018. In the Elm Creek watershed Resilient Yard workshops were held in Champlin on April 4 and in Plymouth on April 17.*
- Continue as a member of Blue Thumb and WaterShed Partners and a partner in the NEMO (Nonpoint Education for Municipal Officials) program. *These memberships were renewed in 2018 with Staff regularly attending Blue Thumb and WaterShed Partner meetings.*
- Develop a model manure management ordinance/policy regulating the placement of new small nonfood animal operations using the City of Medina ordinance as a reference. *At their September 12, 2018 meeting the Commission adopted a "Recommended Livestock Management Policy." It was transmitted to the member cities for its adoption or adoption of other ordinances and practices that will accomplish its objectives.*
- Work in partnership with the University of Minnesota's agriculture specialist to help build relationships with the agricultural community in the watershed in order to encourage TMDL implementation. *This is an ongoing activity.*
- Work with the Hennepin County Rural Conservation Specialist. *The Rural Conservation Specialist assisted cities as they worked to incorporate the Commission's Recommended Livestock Management Policy into their own ordinances/policies. She also assisted landowners to identify BMPs for implementation as part of the Rush Creek Subwatershed Assessment and in other areas of the watershed.*
- Seek grant funding to assist with the costs associated with projects identified on the Commission's Capital Improvement Program (CIP). *A call for CIPs went out to the cities in January 2018. Proposed CIPs and CIP updates were reviewed for inclusion on the Commission's CIP by the Technical Advisory Committee (TAC) and their recommendation forwarded to the Commission. This activity required a Minor Plan Amendment to the Commission's Third Generation Watershed Management Plan to add eight new projects and shift funding for two existing projects. A public meeting was held on May 9, 2018, to hear the proposed amendment, which was adopted by the Commission on that date.*
- Undertake the Internal Phosphorus Loading Control Project on Fish Lake. *This project spans the years 2017-2019. An initial alum treatment occurred in September 2017. In 2018 TRPD collected sediment cores to determine the effectiveness of the first alum treatment by analyzing the Al:P binding capacity, determine the alum dosage calculations, and monitored the in-lake water quality. A report was completed for the sediment analysis study in 2018. At year-end the Commission sought bids to conduct the second treatment, which will occur in spring 2019.*

- Undertake the Rush Creek Headwaters Subwatershed Assessment Project. *In December 2017 an Open House was held for property owners living in the Corcoran portion of the Study Area. The approximately 50 folks who attended the Open House shared information about known problems, issues, and observations about conditions in their area. Wenck Associates and the Core Team reviewed this information as they moved forward with the assessment. The final report was published in July 2018 and identified high priority projects, along with their cost-benefit, across the Study Area.*
- Continue to support City-sponsored projects using the ad valorem funding mechanism. *At a public hearing on September 12, 2018, the Commission approved four projects for ad valorem funding. On November 6, 2018, the County Board approved the Commission's request to fund the following:*
 - Project 2018-01: Rush Creek Main Stem Stream Stabilization Phase 3, Maple Grove. Stabilize and restore approx. 11,000 feet of Rush Creek stream bank. Estimated project cost is \$1,650,000, with \$1,575,000 borne by the City of Maple Grove and other sources and \$75,000 by the Commission through the ad valorem process.*
 - Project 2018-02: Elm Creek Stream Restoration Reach D, Plymouth. Stabilize and restore 3,850 feet of stream bank. Estimated project cost is \$850,000, with \$637,500 borne by the City of Plymouth and other sources and \$212,500 by the Commission through the ad valorem process.*
 - Project 2018-03: Elm Creek Stream Restoration Phase III, Champlin. Restore streambank and aquatic habitat on 2,287 LF of streambank. Estimated project cost is \$400,000, with \$300,000 borne by the City of Champlin and other sources and \$100,000 by the Commission through the ad valorem process.*
 - Project 2018-04: Downs Road Trail Rain Gardens, Champlin. Construct rain gardens and other BMPs for areas tributary to Mill Pond and Elm Creek, include in Elm Creek Mill Pond Education Program. Estimated project cost is \$300,000, with \$225,000 borne by the City of Champlin and other sources and \$75,000 by the Commission through the ad valorem process.*
- Adopt a 2019 operating budget. *At its June 13, 2018 regular meeting, the Elm Creek Watershed Management Commission approved a 2019 operating budget totaling \$943,296. The budget is based in part on the projected costs found in the Implementation section of the Commission's Third Generation Watershed Management Plan and includes Capital Improvement Projects totaling \$462,500. To fund the 2019 operating budget the Commission approved an increase in member assessments to \$230,400, a 2.40% increase over the 2018 assessments.*
- Continue to populate and maintain the Commission's website www.elmcreekwatershed.org to provide news to residents, students, developers and other individuals interested in the water resources of the watershed. *Using the tool Weebly, continued to update and enhance the website, adding links to other websites as well as to other useful information.*
- Publish an annual activities report summarizing the Commission's yearly activities and financial reporting. *The 2018 Annual Activity Report will be available on the Commission's website by the April 30, 2019 statutory deadline.*
- The Commission will continue to meet with representatives from the Board of Water and Soil Resources, other water management organizations, counties, and cities regarding a possible move from a competitive funding model towards a more systematic Clean Water Funding model for local water management authorities on a watershed basis. *On May 16, 2018 Hennepin County convened a formal meeting of eligible participants in the Board of Water and Soil Resources' (BWSR's) Watershed-Based Funding Pilot Program. Prior to the convening meeting a working group of representatives of the 11 watersheds in the county met informally to identify potential funding options for the \$1,018,000 allocated to Hennepin County watersheds for state fiscal years 2018 and 2019. The working group identified three potential options for allocating those funds: (1) Set aside a funding amount for chloride*

management, allocate the balance on either (2) or (3); (2) Allocate the full amount to basins based 50% land area/50% tax base; basin WMOs would then allocate based on their own strategies; and (3) Allocate the full amount to WMOs based 50% land area/50% tax base. For this pilot program it was a consensus to proceed with Options (1) and (3). The Elm Creek Stream Restoration Project Phase IV in Champlin was selected for funding through the pilot program. Funding for this project will total \$134,486.

Activities that were not included in the 2018 Work Plan:

- *The Federal Emergency Management Agency (FEMA) awarded the Minnesota Dept. of Natural Resources (MnDNR) a grant to update the Special Flood Hazard Areas in the Twin Cities HUC8 watershed. Pass-through grants were provided so that WMOs can complete some or all of this work. FEMA's plan was to leverage existing data wherever possible so the Twin Cities WMOs within the HUC8 watershed were approached to see if they have any data that can support this effort. Since leveraged data will reduce overall project cost, WMOs providing data were offered the remaining funds allotted for that watershed for such activities as flood risk reduction or communication activities. All deliverables must be submitted to MnDNR by April 2020. Cost estimates were based on MnDNR staff developing new hydrologic and hydraulic models using HEC-HMS and HEC-RAS, delineating all floodplains and x-section shapefiles, and developing the depth grids. Unused funds will be passed through to the WMO for those activities described above.*

The Commission's Technical Staff, working with MnDNR, put together a scope of work and cost estimate. Hennepin County staff have the capacity and will do the work. The total budget for this project is \$92,772.45 and does not require a local match. A contract agreement in the foregoing amount was approved and executed by the Commission at their May 9, 2018 meeting.

- *At the July meeting the Commission approved a request from the City of Dayton to undertake a subwatershed assessment (SWA) of the Diamond Lake watershed. The Hennepin County Rural Conservationist volunteered to write the application. The County submitted this SWA to the Metro Conservation District (MCD) as a placeholder for future SWA funding.*
- *On December 19, 2019 the BWSR Board approved an application from the MCD for implementation of the existing Rush Creek SWA which will be managed by Hennepin County. The application was funded in the full amount requested - \$142,110.00, with a required match of 25%.*
- *The City of Corcoran requested that grant finding be sought for a South Fork Rush Creek Subwatershed Assessment. This project will not be submitted until implementation occurs on the North Fork SWA. It was agreed that it would be advantageous to work on the North Fork SWA first to see what kind of results are obtained or what lessons could be applied to future projects.*
- *Contributed \$500 from the Education Budget for the 15th Annual Crow-River Clean-up Day on September 15, 2018. Donations are used to provide food, beverages and T-shirts with donor logos for every volunteer in the event. In the past 14 years nearly 3400 volunteers from 30 communities have donated their time to remove 67 tons of garbage and debris from 503 miles of shoreline of the Crow River and its tributaries.*
- *The City of Maple Grove also requested funding assistance from the Commission to complete a subwatershed assessment for Fish Lake. The SWA will consist of hydrologic and water quality models to verify existing watershed conditions for the lake. The City's consultant estimates the cost to complete the SWA to be \$35,000. The City's request was approved at the Commission's October meeting.*
- *In response to the increasing number of SWA requests from cities, Staff implemented a system for applications to bring before the Commission for consideration in the early part of the year to determine funding and better align with grant application due dates for BWSR accelerated implementation*

grants. In addition to creating a more structured timeline, priorities and criteria for selection were agreed upon by the Commission to aid in the selection of which SWA applications would be funded. The first round of applications is due January 15, 2019.

- *On November 14, 2018, the Commission adopted a Capital Improvement Program Closed Project account policy. In addition to creating a closed project account, the policy also addresses the issue of insufficient tax settlements received from the County, and will be in place beginning with the 2019 levy (payable 2020).*

The 2018 Work Plan accomplishments were accepted at the [REDACTED] meeting and are described in more detail in the Commission's 2018 Annual Activity Report.

elm creek

Watershed Management Commission

Z:\Elm Creek\Work Plans\2018 EC Work Plan in Review.doc2/4/2019 5:24 PM

DRAFT 2019 WORK PLAN

Minnesota Rule 8410.0150 requires the Commission to submit to the Board of Water and Soil Resources a financial report, activity report and audit report for the preceding fiscal year. 8410.0150 Subp. 3 outlines the required content of the annual activity report. It includes an assessment of the previous year's annual work plan and development of a projected work plan for the following year. The 2018 Work Plan accomplishments were accepted at the [REDACTED] 2019 meeting.

The Commission's Third Generation Watershed Management Plan identifies issues, priorities and goals for the ten-year period 2015-2024. As a reminder, they are enumerated on the last pages of this memo.

Following is a projected work plan for 2019. Please review and be prepared to make modifications at the February meeting.

1. Continue to review local development/redevelopment plans for conformance with the standards outlined in the Commission's Third Generation Watershed Management Plan. Review the current project review fee schedule for fiscal conformity.
2. Continue to serve as the local government unit (LGU) for administering the Wetland Conservation Act (WCA) for the City of Corcoran on three projects that were carried over as the City transitioned to becoming its own LGU for WCA. Costs associated with these projects will be billed back to the City.
3. Continue to partner with the Three Rivers Park District (TRPD) to share in the costs of conducting lake and stream monitoring in the watershed. Under a five-year cooperative agreement approved in 2018 TRPD will be responsible for monitoring three of twelve sampling stations every year for continuous flow and monitor water quality nutrient data upon request from the Commission. TRPD will also be responsible for monitoring four of fifteen lakes in the Elm Creek watershed annually plus other specific lakes that have been approved for monitoring by the Commission. In addition, the Commission and the Park District will provide financial support to assist the monitoring efforts of the USGS stream gauging station on Elm Creek within the Elm Creek Park Reserve.
4. Fund the monitoring of one lake through Metropolitan Council's Citizen Assisted Monitoring Program (CAMP).
5. Continue to operate the monitoring station in Champlin in cooperation with the United States Geological Survey (USGS).
6. Promote river stewardship through Hennepin County's RiverWatch program with three sites in 2019.
7. Participate in the MN Wetland Health Evaluation Program (WHEP) with four wetlands in 2019.
8. Complete the review of member communities' local water management plans. Under Rule 8410.0160, subp. 6, local plans were to be approved by the Commission by December 31, 2018. At 2018 year-end the plans for Champlin and Rogers were still under review.
9. Conduct the biennial solicitation of interest proposals for administrative, legal, technical and wetland consultants.

10. Continue as a member of the West Metro Water Alliance (WMWA).
11. Co-sponsor Rain Garden Workshops in conjunction with WMWA as part of the Commission's Education and Public Outreach Program.
12. Continue as a member of Blue Thumb and WaterShed Partners and a partner in the NEMO (Nonpoint Education for Municipal Officials) program.
13. Continue to work in partnership with the University of Minnesota's agriculture specialist to help build relationships with the agricultural community in the watershed in order to achieve TMDL load reductions.
14. Work with the Hennepin County Rural Conservation Specialist. Assist landowners in identifying BMPs for implementation throughout the watershed.
15. Seek grant funding to assist with the costs associated with projects identified on the Commission's Capital Improvement Program (CIP). Adopt Minor Plan Amendments to support proposed CIPs and CIP updates.
16. Conduct a second alum treatment as part of the Internal Phosphorus Loading Control Project on Fish Lake.
17. Undertake high priority projects identified in the Rush Creek Headwaters Subwatershed Assessment.
18. Continue to support City-sponsored projects using the ad valorem funding mechanism. Conduct public hearings for identified projects.
19. Adopt a 2020 operating budget.
20. Continue to populate and maintain the Commission's website www.elmcreekwatershed.org to provide news to residents, students, developers and other individuals interested in the water resources of the watershed.
21. Publish an annual activity report summarizing the Commission's yearly activities and financial reporting.
22. Work to identify projects eligible for BWSR Watershed-Based funding. In 2018 the Commission was a recipient of \$134,486 to fund Phase IV of the Elm Creek Stream Restoration Project in Champlin through the Board of Water and Soil Resources (BWSR) Watershed-Based Funding pilot program. The pilot program extends through December 31, 2020. BWSR is now meeting with a group comprised of representatives of each of the groups of stakeholders to try to come to a consensus recommendation on how to fund future projects under this program.
23. Continue to update the Special Flood Hazard Areas on the FEMA Floodplain maps located within the watershed into current modeling packages. The Federal Emergency Management Agency (FEMA) awarded the Minnesota Department of Natural Resources (MnDNR) a grant to update the Special Flood Hazard Areas in the Twin Cities HUC8 watershed. Pass-through grants were provided so that WMOs can complete this work. The total budget for this project in Elm Creek is \$92,772.45 and does not require a local match. The term of the contract extends into the year 2020.
24. Support the City of Maple Grove as it undertakes a subwatershed assessment for that portion of Fish Lake within the Elm Creek watershed.
25. Prioritize subwatershed assessment applications received in the first round of SWA Cost Share Applications.
26. What else??

Issues

The Commission, along with the Citizen and Technical Advisory Committees (CAC and TAC), identified the following issues during the planning process:

Water quality—numerous lake and stream impairments, impact of land use changes, stream stability issues

Agricultural impacts on water quality—need to increase agricultural BMPs, develop effective mechanisms to encourage voluntary adoption, more effective outreach

Funding—maintaining a sustainable funding level; funding capital projects

Other issues—lack of information and knowledge of water quality issues and actions by multiple stakeholders; need to be realistic and prioritize actions; increase member city involvement; foster collaboration with other agencies

Priorities

Through the identification of these issues, the Commission developed the following priorities to guide water resources planning and management functions:

Begin implementing priority projects in 2015, providing cost-share to member cities to undertake projects to help achieve WRAPS lake and stream goals

Use results of WRAPS study to establish priority areas, complete subwatershed assessments to identify specific BMPs that feasibly and cost-effectively reduce nutrient and sediment loading to impaired water resources

Develop model manure management ordinance to regulate placement of new small non-food animal operations using the City of Medina ordinance as a guide; require member cities to adopt that or other ordinances and practices to accomplish its objectives

Partner with other organizations to complete pilot project for targeted fertilizer application, increase and focus outreach to agricultural operators

Continue participating in joint education and outreach activities with WMWA and other partners

Goals

Water Quantity

Maintain post-development 2-year, 10-year, and 100-year [peak rate of runoff](#) at pre-development level for the critical duration precipitation event.

Maintain post-development [annual runoff volume](#) at pre-development volume.

Prevent [loss of floodplain storage](#) below the established 100-year elevation.

Reduce [peak flow rates](#) in Elm, Diamond, and Rush Creeks and tributary streams to the Crow and Mississippi and preserve conveyance capacity.

Water Quality

Improve [Total Phosphorus concentration](#) in the impaired lakes by 10% over the 2004-2013 average by 2024.

Maintain or improve [water quality](#) in the lakes and streams with no identified impairments.

Conduct a [TMDL/WRAPS progress review](#) every five years following approval of the TMDLs and WRAPS studies.

Use information in the WRAPS to [identify high priority areas](#) where the Commission will partner with cities and other agencies to provide technical and financial assistance.

Groundwater

Promote [groundwater recharge](#) by requiring abstraction/infiltration of runoff from new development/redevelopment.

Protect [groundwater quality](#) by incorporating wellhead protection study results into development and redevelopment Rules and Standards.

Wetlands

Preserve the existing [functions and values](#) of wetlands within the watershed.

Promote the [enhancement or restoration](#) of wetlands in the watershed.

Drainage Systems

Continue current Hennepin County jurisdiction over [county ditches](#) in the watershed.

Operations and Programming

Identify and operate within a [sustainable funding level](#) that is reasonable to member cities.

Foster [implementation of priority TMDL and other implementation projects](#) by sharing in their cost and proactively seeking grant funds.

Operate a [public education and outreach program](#) to supplement NPDES Phase II education requirements for member cities.

Operate a [monitoring program](#) sufficient to characterize water quantity, water quality, and biotic integrity in the watersheds and to evaluate progress toward meeting goals.

Maintain [rules and standards for development and redevelopment](#) consistent with local and regional TMDLs, federal guidelines, source water and wellhead protection requirements, nondegradation, and ecosystem management goals.

Serve as a [technical resource](#) for member cities.

Watershed Management Commission

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DATE: JANUARY 22, 2019
TO ELM CREEK WATERSHED MANAGEMENT COMMISSION
FROM: JIM KUJAWA
RE: 1-94 UBOL RESURFACING MAPLE GROVE TO ROGERS AND BROCKTON INTERCHANGE EAW

Background

The extent of the study limits for the environmental assessment for the I-94 UBOL project are from the I-494/I-694 interchange in Maple Grove, at the eastern limit of the project to just west of the TH 101 interchange in Rogers at the western limit of the project, including the ramps along I-94 in this segment. In addition, the assessments study limits include the new Brockton interchange/Dayton Parkway are between Brockton Lane on the west to CSAH 81 in the City of Dayton.

The project will consist of the following components;

- Resurfacing of 9.6 miles of both eastbound and westbound I-94 between the I-494/I-694 interchange in Maple Grove and TH 101 in Rogers via an unbonded concrete overlay (UBOL).
- The Brockton/I-94 interchange
- The construction of additional 12-foot-wide travel lanes with 10-foot-wide shoulders on both eastbound and westbound I-94 between TH 610 and TH 101.
- In-kind reconstruction of shoulder on both the inside and outside lanes
- Addition of bridge struts to the BNSF Railroad Bridge, CSAH 81 bridge, the existing Brockton Lane North overpass bridge and the Weaver Lake Road bridge.
- Full-depth pavement reconstruction or overlays of the interchange ramps at Weaver Lake Road, Maple Grove Parkway, and CSAH 81.
- Construction of center median barrier from east of the Brockton interchange to west of CSAH 81.
- Full-depth pavement reconstruction at the parking lot and entrance/exit ramp to the Elm Creek Rest Area.
- Construction of 12 additional truck parking spaces at the Elm Creek Rest Area.
- Construction of a deer compost area in the City of Dayton.

- Construction of a commercial vehicle inspection site on westbound I-94 just north of CSAH 81 in Rogers.
- Pedestrian improvements to meet ADA requirements within the limits of the project within MnDOT right of way.
- Replacement of culverts along the I-94 corridor.
- Stormwater treatment via wet ponds and infiltration basins.
- Approximately 229 acres of land will be disturbed on this project.
- This project will increase impervious surface coverage by 33.7 acres.

Information

Commission staff sent the following comments to MnDOT on January 22, 2019 for their consideration;

On behalf of the Elm Creek Watershed Management Commission (ECWMC), please find my comments as they relate to the I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange EAW. The EAW was reviewed for compliance to the Commission's Third Generation Stormwater Management Plan, Appendix C-Rules and Standards. Based on EAW and the ECWMC standards I have the following comments:

ECWMC Floodplain Rule F;

- 1) There are several FEMA flood zones along this corridor. The EAW addresses the requirements of the Commission for floodplain impacts (i.e. compensatory floodplain mitigation is provided at a 1:1 ratio by volume). In addition, it addresses the Commission's standards for floodway impacts, albeit in the Municipalities section of the report.*
- 2) The ECWMC has two upland storage areas in Maple Grove that are not considered FEMA floodplains but are regulated as floodplains in the ECWMC stormwater management plan (see attached map). These are located at;*
 - a. West of I-94 along DNR protected waters 27-027100 and 27-027400. The ECWMC 100-year elevation on this basin is 922.5 (1929 NAVD), and*
 - b. Just south of the intersection of CSAH 30 along DNR unnamed stream M-062-008. The ECWMC 100-year elevation along this basin is 903.5 (1929 NAVD)*
- 3) ECWMC and FEMA floodplain elevations and impacts must be determined by the existing elevations as determined by LiDAR or a current topography survey, not by the FEMA overlay map.*

ECWMC Stormwater Management Rule D.

- 1) Abstraction; ECWMC requires 1.1" abstraction for no more than 48 hours for all new impervious surfaces. 33.7 acres of new impervious area will require ~134,565 cubic feet of abstraction.*
- 2) Water Quality; ECWMC requires post-development total phosphorus and suspended solids to be equal to or less than pre-development loads.*

ECWMC Stormwater Management Rule D

- 1) Abstraction; ECWMC requires 1.1" abstraction for no more than 48 hours for all new impervious surfaces. 33.7 acres of new impervious area will require ~134,565 cubic feet of abstraction.*
- 2) Water Quality; ECWMC requires post-development total phosphorus and suspended solids to be equal to or less than pre-development loads.*

a. Ponds proposed for stormwater treatment must be designed to NURP standards or better with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event or BMPs providing a similar level of treatment- 80-85% TSS removal and 60% TP removal.

3) Rate Controls; ECWMC requires post development flow rates be equal to or less than pre-development flow rates for the 2, 10 and 100-year storm events.

ECWMC Erosion and Sediment Control, Rule E;

1) Erosion control plans must use Best Management Practices and be consistent with the NPDES General Construction Permit requirements.

Temporary Impervious Areas During Construction;

1) Where permanent BMP's are not designed to treat temporary increases for new impervious areas to widen and/or accommodate traffic during construction (i.e. temporary traffic lanes etc.), abstraction, TP and TSS loads must be accounted for on these temporary areas and temporary BMP's designed to offset said loads.

Final site plans must be submitted to the Elm Creek Watershed Management Commission (ECWMC) for review and approval.

Thank you for the opportunity to comment on this EAW. Please contact me if you have any questions on this information.

Action; For informational purposes only. None necessary

JCK

item 07a



item 07a



**Figure 6A - Chosen Alternative
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange**
S.P. 2780-97
MnDOT and City of Dayton, Minnesota



Figure 6B - Chosen Alternative
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange

item 07a



Figure 6C - Chosen Alternative
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
S.P. 2780-97
MnDOT and City of Dayton, Minnesota



**Figure 6D - Chosen Alternative
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange**
S.P. 2780-97
MnDOT and City of Dayton, Minnesota



Figure 6E - Chosen Alternative
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
S.P. 2780-97
MnDOT and City of Dayton, Minnesota

item 07a



Figure 6F - Chosen Alternative
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
 S.P. 2780-97
 MnDOT and City of Dayton, Minnesota

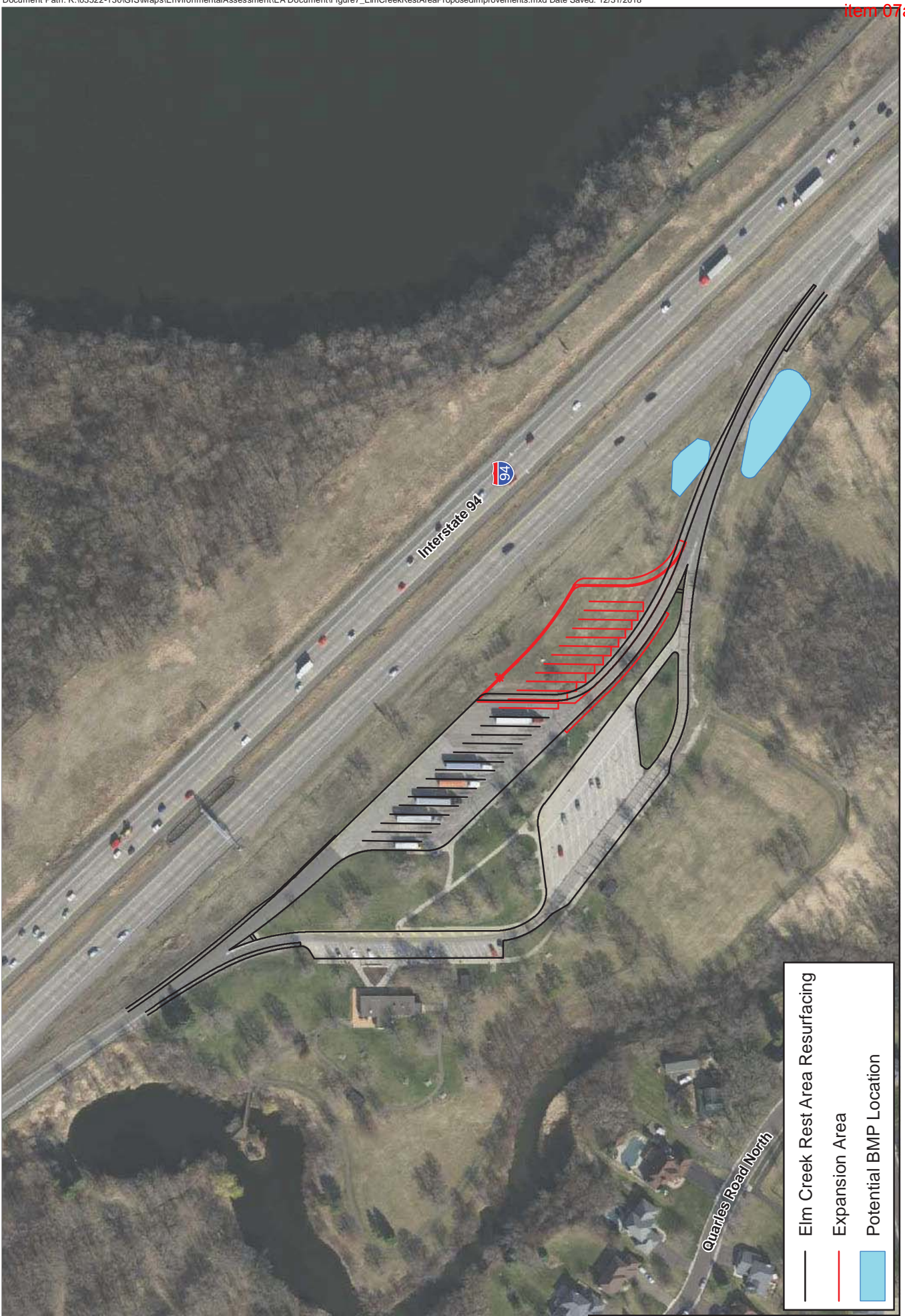


**Figure 6G - Chosen Alternative
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange**

S.P. 2780-97

MnDOT and City of Dayton, Minnesota

item 07a



- Elm Creek Rest Area Resurfacing
- Expansion Area
- Potential BMP Location

Figure 7 - Elm Creek Rest Area Proposed Improvements
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
S.P. 2780-97
MnDOT and City of Dayton, Minnesota



0 350 Feet
1 inch = 350 feet

**Figure 8 - Commercial Vehicle Inspection Site
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
S.P. 2780-97
MnDOT and City of Dayton, Minnesota**



Figure 9 - Deer Compost Area
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
S.P. 2780-97
MnDOT and City of Dayton, Minnesota

Elm Creek Watershed Management Commission
Internal Phosphorus Load Control for
Fish Lake, Hennepin County
Annual Progress Report
2018



Submitted
To



Submitted
By



Fish Lake Alum Treatment Annual Progress Report 2018

Fish Lake (DNR # 27-118-00) is located in the City of Maple Grove in Hennepin County. The lake area is 238 acres in surface area and has a maximum depth of 61 feet and a percent littoral area (water depth of < 15 feet) representing 38% of the lake area. The lake is included on the MPCA's 303(d) list as impaired for aquatic recreation due to excessive nutrients in 2008. Fish Lake was included in the watershed restoration and protection strategies (WRAPS) and the total daily maximum load (TMDL) studies that were completed by the Elm Creek Watershed Management Commission in partnership with MPCA in 2017. As part of preparation of the TMDL for Fish Lake, sediment cores were collected and analyzed in 2012 by William James at the University of Wisconsin-Stout. The sediment cores were used to measure aerobic and anaerobic sediment phosphorus release rates for the estimation of internal phosphorus loading to support the development of the Fish Lake TMDL. The WRAPS/TMDL studies identified internal loading as comprising about 70% of the total phosphorus load affecting surface water quality and included a recommendation to treat the lake with alum to achieve the MPCA water quality standards. The sediment cores were used to develop the alum dosing options to address the internal phosphorus load. Based on the sediment core analysis, it was recommended to treat the lake with alum to achieve a sediment delivery rate of 80 grams of Al/m² in areas of the lake 20 feet or deeper, which translated to a liquid alum application rate of 1,583 gallons/acre of commercial grade alum over 120 acres of the lake surface.

An adaptive management approach was used for the implementation of the Fish Lake Alum treatment. The current scientific literature indicates that multiple smaller doses spread out over a period of years improve the effectiveness of an alum treatment compared to administering the alum in one large dose at a single point in time. It has also been documented that phosphorus binding efficiency and capacity on the alum floc depends to a large extent on the rapidity of exposure to phosphorus after the alum application. Thus, the application of alum during late summer peak in hypolimnetic phosphorus accumulation can promote immediate exposure of the settling alum floc to soluble phosphorus for rapid binding and maintenance of a much higher phosphorus adsorption capacity after deposition on to the sediment surface. It was recommended by William James to conduct two separate alum treatments during periods of peak anoxia with high hypolimnetic phosphorus concentrations at a delivery rate of 40 grams Al/m² over a three-year time period. This would allow the opportunity to monitor changes in water quality and conduct a comprehensive study to measure alum effectiveness at controlling internal loading. Based on the outcome of the study, the second alum treatment could then be adjusted accordingly in order to maximize potential treatment effectiveness.

HAB Aquatic Solutions was awarded the contract and completed the first alum application in mid-September (September 18th-September 21st) of 2017. The treatment barge (Figure 1) computer was pre-programmed with bathymetry data that adjusted the target alum dosage rate of 40 grams/m² based on water depth and travel speed. There was 95,349 gallons of alum applied (22 tanker trucks) to 120 acres of Fish Lake at depths greater than 20 feet (Table 1; Figure 2). HAB Aquatic Solutions provided a map of the actual treatment area (Figure 3). The Fish Lake Area Residents Association (FLARA) scheduled a media event on September 20th with partner representatives from Elm Creek Watershed Commission, City of Maple Grove, Three Rivers Park District and HAB Aquatic Solutions. There were

approximately 15 home owners that attended the media event. The CCX news station featured a story about the alum treatment while conducting interviews with local partners and home owners.



Figure 1: HAB Aquatic Solutions treatment barge used for the Fish Lake alum application in 2017

Table 1: Fish Lake alum treatment application in 2017.

| Date | Hours of Application | Alum Applied (gallons) | Area Applied (acres) | Alum Truck Deliveries |
|-----------|----------------------|------------------------|----------------------|-----------------------|
| 9/18/2017 | 12:35 - 20:25 | 19,800 | 50.2 | 6 |
| 9/19/2017 | 6:55 - 21:00 | 30,668 | 77.8 | 7 |
| 9/20/2017 | 7:40 - 21:35 | 29,385 | 74.3 | 7 |
| 9/21/2017 | 7:35 - 13:05 | 15,496 | 39.1 | 2 |
| Total | | 95,349 | 241.4 | 22 |

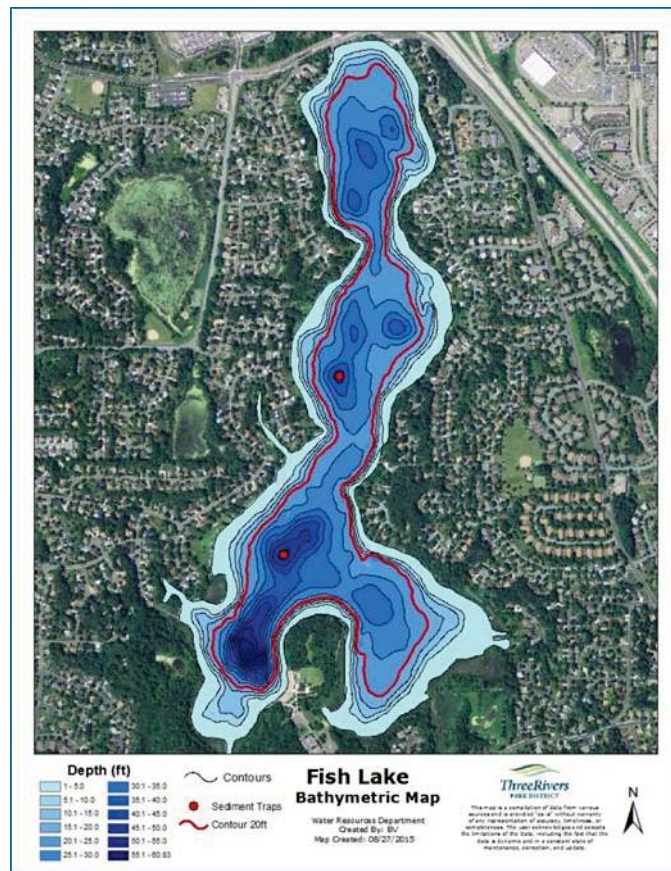


Figure 2: Fish Lake alum proposed treatment area and sediment trap location.

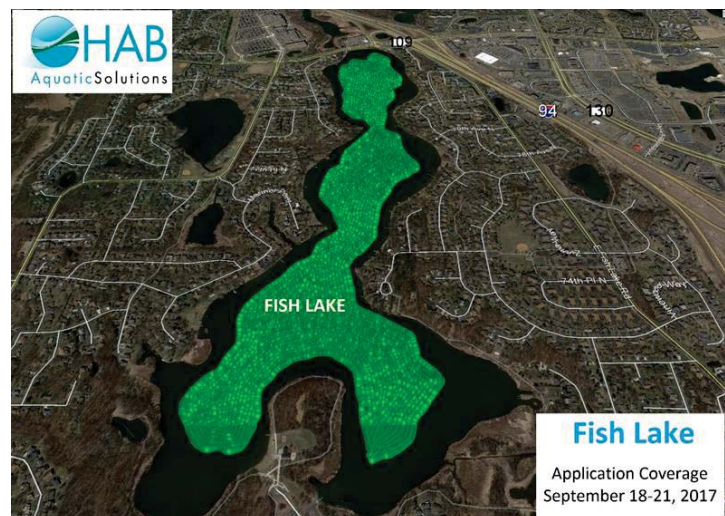


Figure 3: Fish Lake alum application coverage September 18-21, 2017.

Three Rivers Park District and the University of Wisconsin-Stout conducted a two-phased study to determine the effectiveness of the alum application in controlling internal phosphorus load. The specific details of the study proposal are referenced in Appendix A. Phase 1 of the study involved the deployment of sediment traps above the sediment surface in two different locations of Fish Lake (Figure 2) prior to the alum application to determine the Al:P binding capacity ratio immediately after the first alum treatment. Phase 2 of the study involved collection of sediment cores in the same locations as the sediment traps to measure phosphorus sediment flux and the Al:P binding capacity ratio the following summer in 2018. Three Rivers Park District also monitored the change in water quality in response to the fall alum treatment performed in 2017. Water samples were collected bi-weekly at the surface from May through September in 2018. Surface water samples were analyzed for total phosphorus, soluble reactive phosphorus, total nitrogen, and chlorophyll-a. The water clarity/transparency was also measured with a secchi disk. The surface water quality constituents were compared to the MPCA state water quality standards. Water samples were also collected at the top of the hypolimnion and 1-m from the bottom to estimate the change in hypolimnetic phosphorus due to sediment release during anoxic conditions in 2018.

The report for the Phase 1 portion of the study are referenced in Appendix B. The sediment traps were collected 1 week after the alum application to allow for the complete settling of the alum floc in 2017. The samples were analyzed for dry mass, total aluminum, aluminum-bound phosphorus, and the Al:P binding ratio. The sediment trap analysis was compared to the changes in the phosphorus vertical profile before and after the alum application. The results indicate that the alum application was effective at removing phosphorus as the alum floc settled throughout the water column (Figure 4). A summary of the findings from the Phase 1 portion of the project are below.

- There were significant decreases in hypolimnetic phosphorus, and it was estimated that 33% to 41% of the total phosphorus and 29% to 44% of the soluble reactive phosphorus was bound by the alum floc during deposition through the hypolimnion.
- Aluminum bound phosphorus in the sediment traps accounted for most of the hypolimnetic total phosphorus (60% to 80%) and soluble reactive phosphorus (79% to 88%).
- The Al:P binding ratios in the sediment traps was approximately 20:1 for both stations.

The report for Phase 2 portion of the study are referenced in Appendix C. Sediment samples were collected from the two sediment trap locations the following summer of 2018. This was the first summer following the fall alum treatment in 2017. The phosphorus flux from the sediments was measured under anerobic conditions within the laboratory. The sediments were further analyzed for phosphorus fractionation and total aluminum to determine Al:P binding ratios. The results indicated that there was continual binding of phosphorus on the Alum floc layer between the first alum treatment (September 2017) and August 2018. A summary of the findings from the Phase 2 portion of the project are below.

- The rates of diffusive phosphorus flux under anaerobic conditions were extremely low after late summer 2017 alum treatment.
- The total aluminum was greatest at the surface of the sediments suggesting that the alum floc layer was located primarily on top of the original sediment surface. This alum concentration was similar to the concentration measured in the sediment traps during Phase 1 of the study.
- There was considerable phosphorus bound to the Aluminum on the alum floc over time.

- The Al:P ratio declined from 19:1 to 16:1 at station 1 and from 21:1 to 18:1 at station 2 in approximately 1 year. Declining Al:P ratios suggested that binding sites were continuing to be efficiently filled via phosphorus diffusing from underlying sediments.

The study results suggest the application of alum during the late summer stratified period and floc deposition through the phosphorus-rich hypolimnion lead to considerable binding of internal phosphorus loads, a relatively low Al:P ratio, and suppression of hypolimnetic phosphorus accumulation (Table 2; Figure 4). The goal with the Fish Lake alum treatment was to maintain high phosphorus binding efficiency of the alum floc by exposing it to high concentrations of hypolimnetic phosphorus immediately after application. The decrease in the hypolimnetic phosphorus concentrations suggest that alum application has significantly reduce the internal loading within Fish Lake (Figure 4). Based on the results of the study, William James recommends completing the second alum treatment during a period of summer anoxia when the hypolimnetic phosphorus is at its highest to achieve optimal binding capacity. The second alum treatment for Fish Lake is planned for the summer of 2019.

Table 2: Area-weighted concentrations of Al, Al-bound P, and the Al:P ratio at station 1 and 2 after the alum application in Fish Lake (September 2017).

| Months after Alum Application | Station 1 | | | Station 2 | | |
|-------------------------------------|---------------------------|-----------------------------------|---------------|---------------------------|-----------------------------------|---------------|
| | Al (g/m ²) | Al-bound P (g/m ²) | Al:P Ratio | Al (g/m ²) | Al-bound P (g/m ²) | Al:P Ratio |
| 0.8 months | 26 | 1.35 | 19.3 | 31.4 | 1.48 | 21.2 |
| 10.8 months | 32.4 | 2.07 | 15.7 | 30.6 | 1.71 | 17.9 |

The success of the alum treatment was further confirmed through the in-lake water quality monitoring efforts in 2018. The Fish Lake water quality report card shows the annual changes in water quality (Appendix D). The in-lake water quality conditions achieved the phosphorus state water quality standards throughout the entire season of 2018 (Figure 5). The hypolimnetic phosphorus concentrations were also the lowest recorded since monitoring has occurred. Despite the lake meeting phosphorus water quality standards in 2018, there was an algal bloom in August of 2018 that resulted in chlorophyll-a concentrations exceeding the state water quality standard (Figure 5). This algal bloom occurrence has been observed the first year in other lakes that have recently had alum treatments. William James has observed rare algal blooms the first year after the alum treatments for Half Moon Lake and Cedar Lake in Wisconsin, and speculated that the algal species (otherwise rare in community assemblage) temporarily exploits a niche and dominates the first year after treatment. The rare algal specie appears to be a one-time occurrence that disappears the following year. The Three Rivers Park District will continue to monitor the water quality in-lake response to the second alum treatment that is planned for the summer of 2019.

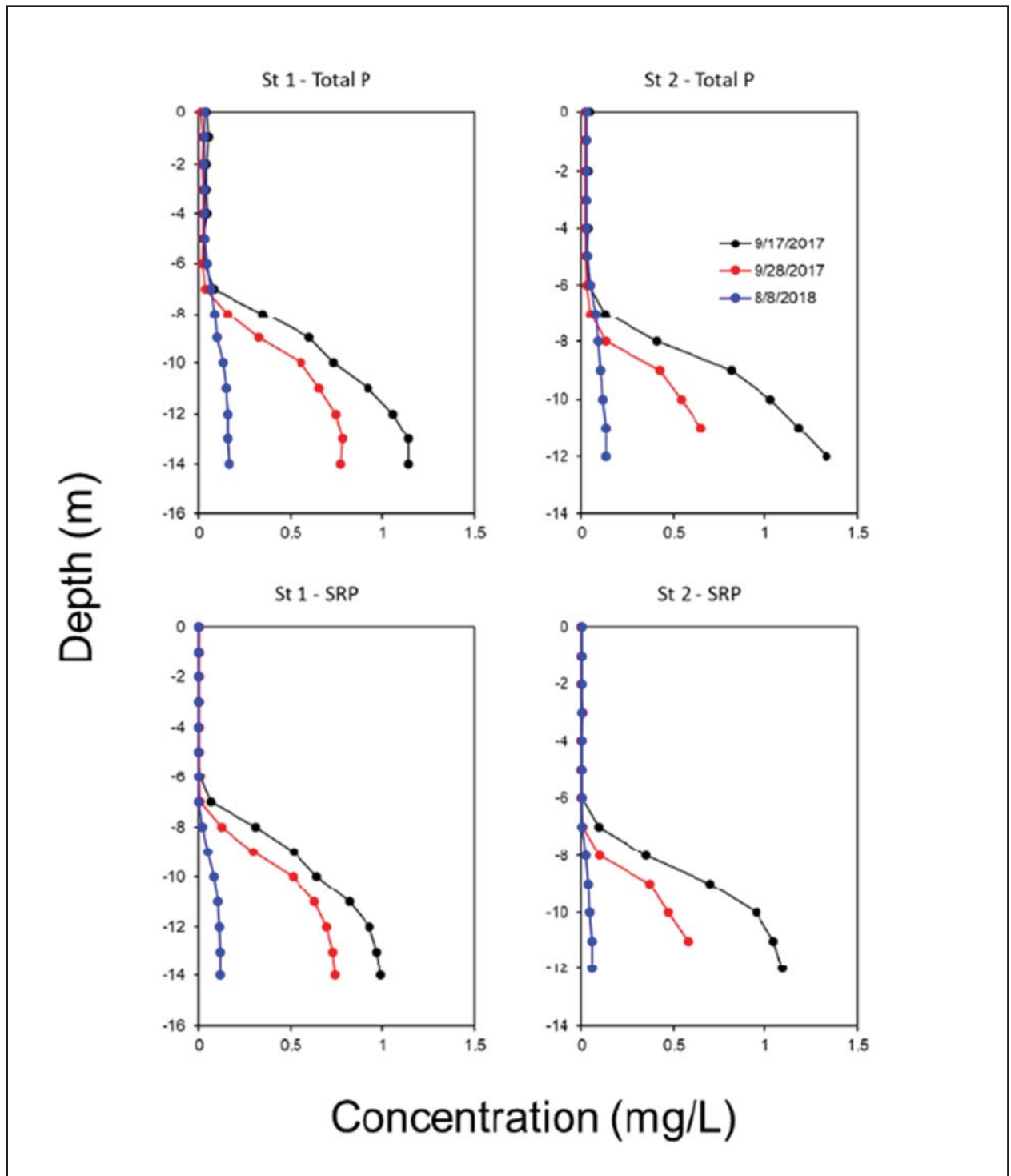


Figure 4: Hypolimnetic vertical variations in total phosphorus and soluble reactive phosphorus concentrations for station 1 and 2 that occurred prior to and after the alum treatment in September of 2017.

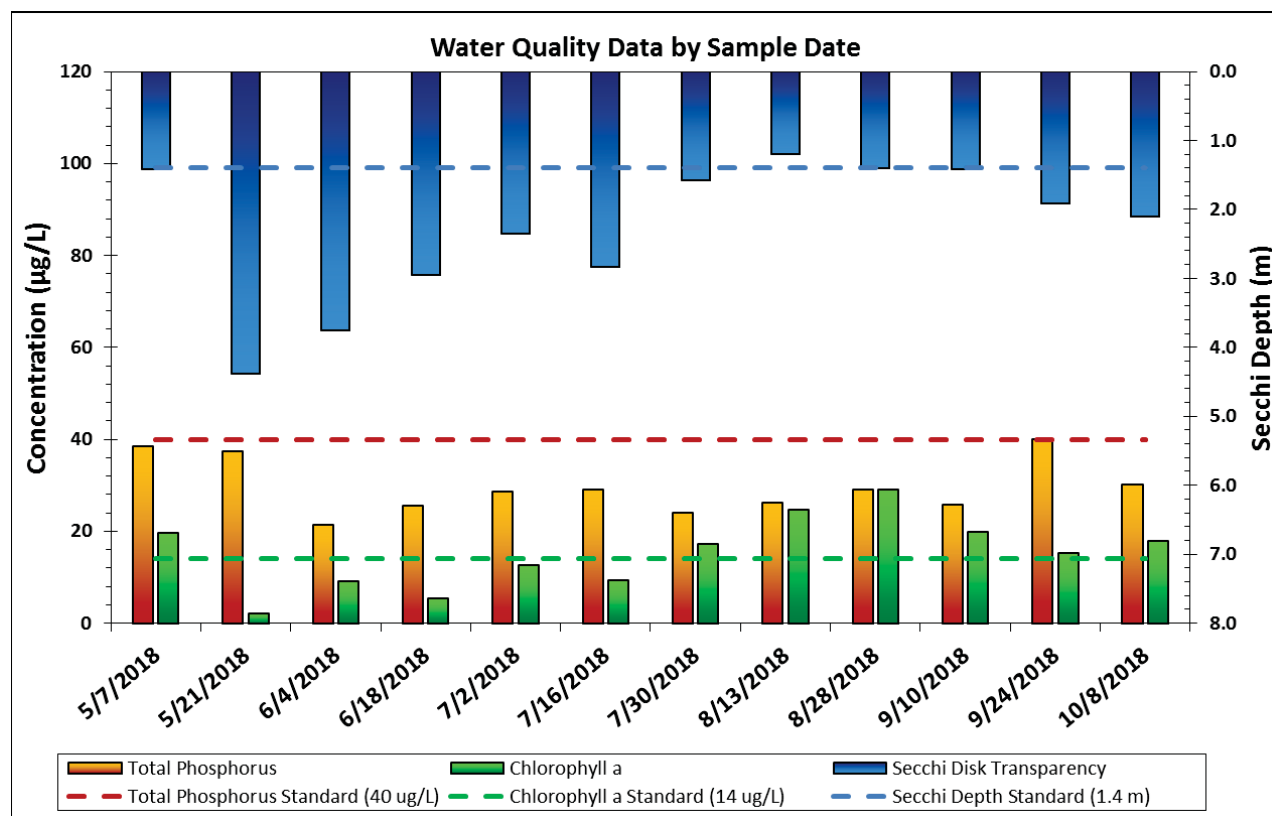


Figure 5: Fish Lake seasonal changes in total phosphorus, chlorophyll-a, and secchi depth for 2018.

APPENDIX A

Effectiveness of Late Summer Aluminum Sulfate Application to Fish Lake, MN Research Proposal



Effectiveness of Late Summer Aluminum Sulfate Application to Fish Lake, MN

PROPOSAL OF RESEARCH

13 August, 2017

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1.0 BACKGROUND.

Application of Al salts has been an effective management strategy for controlling internal P loading in lakes (Cooke et al. 2005, Huser et al. 2016). However, P binding efficiency on the $\text{Al}(\text{OH})_3$ floc and overall longevity depends to a large extent on the rapidity of exposure to P after $\text{Al}(\text{OH})_3$ formation. de Vicente et al. (2008a) found that Al binding efficiency for P can decrease by up to 75% within a short period of time (< 30 d) if not exposed to P, due to polymerization into a more ordered crystalline structure. Since newly formed Al flocs are generally less dense than surficial sediment, they can typically settle on top rather than sink or mix into sediment after application, resulting in much slower exposure to P via upward diffusion (James 2017). Under this scenario, polymerization leads to greatly decreased Al floc binding efficiency for P and shortened longevity. Thus, application during the late summer peak in hypolimnetic P accumulation can promote immediate exposure of the settling Al floc to soluble P for rapid binding and maintenance of a much higher P adsorption capacity after deposition onto the sediment surface.

2.0 PURPOSE.

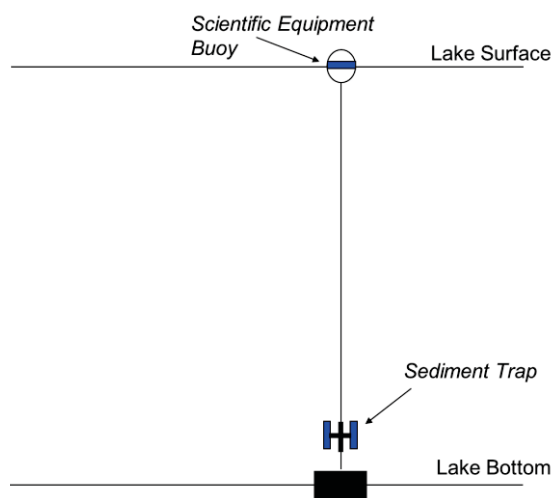
Historically, late summer Al application have typically been avoided due to concerns over unnecessarily filling binding sites with hypolimnetic P rather than sediment mobile P. There is little information on the effectiveness of this application strategy in controlling internal P loading. However, findings over the last decade have suggested rapid exposure to and binding of P is desirable to both reduce polymerization and maintain higher P binding efficiency after deposition. Late summer application of Al to Fish Lake during peak hypolimnetic P accumulation provides an opportunity to examine the extent of P binding onto the Al floc during and after a late summer alum treatment to Fish Lake. The objectives of these investigations are to specifically:

1. determine the Al:P binding ratio of newly-formed $\text{Al}(\text{OH})_3$ that has been exposed to peak hypolimnetic P using sediment traps deployed shortly before Al application
2. examine the extent of hypolimnetic P removal as a result of the Al application, and
3. monitor vertical variations total Al, mobile P, and Al-bound P in the sediment column and rates of P release from sediment several months after treatment.

3.0 SCOPE OF WORK.

Task 1. Al:P binding ratio in the newly-formed Al floc

Sediment traps will be deployed above the sediment surface in the deep south basin and central basin of Fish Lake shortly before the start of Al application. The traps will be secured to a plastic-coated steel cable, anchored with concrete block, and buoyed at the surface.



Traps will be collected ~ 1-2 weeks after application and Al floc deposition. The contents will be analyzed for dry mass, total Al, Al-bound P, and the Al:P binding ratio. Results from this task will be compared with changes in the hypolimnetic SRP vertical profile before and after the Al application (see Task 2) to estimate the mass of hypolimnetic P sequestered by the settling Al floc.

Task 2. Changes in the hypolimnetic soluble reactive P (i.e., SRP or ortho-P)

Vertical variations in in situ variables (temperature and dissolved oxygen) and hypolimnetic SRP will be collected at 1-m intervals the 2 sediment trap stations during trap deployment and retrieval. In situ measurements will be collected using a YSI 6600 data sonde calibrated against Winkler titrations. Samples for SRP will be collected using a peristaltic pump and tygon tubing. Water samples will be field-filtered under anoxic conditions using a 60-cc syringe and 0.45 μm syringe filter. Filtered samples will be stored on ice and analyzed using standard methods (APHA 2016) within 24 hours. Changes in the mass of SRP as a result of Al application will be calculated in conjunction with *Task 1* to estimate the Al:P binding ratio and Al-bound P sequestered as a result of treatment.

Task 3. Rates of diffusive P flux under anaerobic conditions

Intact replicate (duplicates) sediment cores will be collected from the two established stations in Fish Lake for the determination of rates of P release from sediment under controlled laboratory conditions. Sampling will occur during the summer 2018, nearly one year after the initial Al application, to quantify the initial Al treatment effectiveness in controlling anaerobic diffusive P flux. All cores will be carefully drained of overlying water in the laboratory and the upper 10 cm of sediment will be transferred intact to a smaller acrylic core liner (6.5-cm dia and 20-cm ht) using a core remover tool. Surface water collected from each lake will be filtered through a glass fiber filter (Gelman A-E), with 300 mL then siphoned onto the sediment contained in the small acrylic core liner without causing sediment resuspension. They will be placed in a darkened environmental chamber and incubated at a constant temperature to reflect summer conditions. The oxidation-reduction environment in the overlying water will be controlled by gently bubbling air (oxic) or nitrogen (anoxic) through an air stone placed just above the sediment surface in each system. Bubbling action will insure complete mixing of the water column but not disrupt the sediment. For each station, duplicate cores will be subjected to oxic conditions and additional duplicate cores will be subjected to anoxic conditions.

Water samples for soluble reactive P will be collected from the center of each system using an acid-washed syringe and filtered through a 0.45 μm membrane syringe filter. The water volume

removed from each system during sampling will be replaced by addition of filtered lake water preadjusted to the proper oxidation-reduction condition. These volumes are accurately measured for determination of dilution effects. Soluble reactive P is measured colorimetrically using the ascorbic acid method (APHA 2005). Rates of P release from the sediment ($\text{mg m}^{-2} \text{d}^{-1}$) are calculated as the linear change in mass in the overlying water divided by time (days) and the area (m^2) of the incubation core liner. Regression analysis is used to estimate rates over the linear portion of the data.

Task 4. Sediment chemistry

Additional sediment cores collected at the two stations in 2018 will be sectioned vertically over the upper 20-cm layer to evaluate variations in sediment physical-textural and chemical characteristics. These cores will be sectioned at 1-cm intervals over the first 6 cm and at 2-cm intervals below that sediment depth.

A known volume of sediment will be dried at 105°C for determination of moisture content, wet and dry bulk density, and burned at 550°C for determination of loss-on-ignition organic matter content (Avnimelech et al. 2001, Håkanson and Jansson 2002; Table 2). Phosphorus fractionation will be conducted according to Hietjes and Lijklema (1980), Psenner and Puckso (1988), and Nürnberg (1988) for the determination of ammonium-chloride-extractable P (loosely-bound P), bicarbonate-dithionite-extractable P (i.e., iron-bound P), and sodium hydroxide-extractable P (i.e., aluminum-bound P). A subsample of the sodium hydroxide extract will be digested with potassium persulfate to determine nonreactive sodium hydroxide-extractable P (Psenner and Puckso 1988). Labile organic P is calculated as the difference between reactive and nonreactive sodium hydroxide-extractable P. Additional sediment will be sent to Pace Analytical Services, Inc. (1800 Elm Street SE, Minneapolis, MN 55414) for analysis of total Al.

Sediment chemistry information will be used to estimate the Al:P binding ratio in the Al floc and the location of the Al floc in relation to the original sediment surface.

Task 5. Reporting

A summary report containing figures and tables that Task 1 and 2 will be provided in February, 2018. A comprehensive report that includes Task 3 and 4 will be provided at the end of the study in December, 2018.

| Sediment Chemistry Price List | | | | | | |
|-------------------------------|------|---------------------------------------|--|----------------------|----------|---------|
| Task | Year | Variable | Unit | Each | Quantity | Total |
| 1 | 2017 | Sediment Traps | Field deployment | per hour | 4 | \$400 |
| | | | Total Al | per sample | 2 | \$110 |
| | | | Al-bound P | per sample | 2 | \$110 |
| 2 | 2017 | Water Column | SRP | per sample | 20 | \$310 |
| 4 | 2018 | Textural and Physical Characteristics | Moisture Content-Bulk Density | per sediment section | 16 | \$240 |
| | | | Loss-on-ignition Organic Matter | per sediment section | 16 | \$240 |
| 4 | 2018 | Sediment Total Metals | Total Al | per sediment section | 16 | \$880 |
| 4 | 2018 | Sediment Phosphorus Extractions | Biologically-labile Phosphorus | per sediment section | 16 | \$2,160 |
| 3 | 2018 | Sediment Flux or Internal Loading | Incubation for rates of soluble reactive P release | per 10 cm core | 4 | \$2,160 |
| 5 | 2017 | Reporting | | per hour | 8 | \$800 |
| 5 | 2018 | Reporting | | per hour | 8 | \$800 |
| Total | 2017 | | | | | \$1,730 |
| Total | 2018 | | | | | \$6,480 |

APPENDIX B

Effectiveness of a Late Summer Aluminum Sulfate Application in Binding Hypolimnetic Phosphorus in Fish Lake, MN

Phase 1

Interim Report



Effectiveness of a Late-Summer Aluminum Sulfate Application in Binding Hypolimnetic Phosphorus in Fish Lake, MN: Phase 1 Interim report



Sediment trap deployment in Fish Lake, Minnesota

10 April, 2018

University of Wisconsin - Stout
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BACKGROUND

Application of Al salts has been an effective management strategy for controlling internal phosphorus (P) loading in lakes (Cooke et al. 2005, Huser et al. 2016). However, P binding efficiency and capacity on the $\text{Al}(\text{OH})_3$ floc depend to a large extent on the rapidity of exposure to P after $\text{Al}(\text{OH})_3$ formation. Berkowitz et al (2006) and de Vicente et al. (2008a) found that Al binding efficiency for P can decrease by up to 75% within a short period of time (< 30 d) if not exposed to P, due to polymerization into a more ordered crystalline structure and increased tortuosity (diffusive path length). Since newly formed Al flocs are generally less dense than surficial sediment, they can typically settle on top rather than sink or mix into sediment after application, resulting in much slower exposure to P via upward diffusion (James 2017). Under this scenario, polymerization leads to greatly decreased Al floc binding sites for P and shortened longevity. Thus, application during the late summer peak in hypolimnetic P accumulation can promote immediate exposure of the settling Al floc to soluble P for rapid binding and maintenance of a much higher P adsorption capacity after deposition onto the sediment surface.

An alum dosage of at least 80 g/m^2 was proposed to control internal P loading in Fish Lake, MN. In addition, the dosage was split into two 40 g/m^2 applications: the first application occurred in early fall 2017 (18 September) during peak anoxia and soluble P accumulation in the hypolimnion and the second application to occur in 2019.

PURPOSE

Historically, late summer Al application have typically been avoided due to concerns over unnecessarily filling binding sites with hypolimnetic P rather than sediment mobile P. There is little information on the effectiveness of this application strategy in controlling internal P loading and improving the overall Al:P binding ratio. However, findings over the last decade have suggested rapid exposure to and binding of P is desirable to both reduce polymerization and maintain higher P binding efficiency after deposition. Late summer application of Al to Fish Lake during peak hypolimnetic P accumulation provides an opportunity to examine the extent of

P binding onto the Al floc during and after a late summer alum treatment to Fish Lake. The objectives of these investigations were to specifically:

1. determine the Al:P binding ratio of newly-formed $\text{Al}(\text{OH})_3$ that has been exposed to peak hypolimnetic P from sediment traps deployed shortly before Al application,
2. examine the extent of hypolimnetic P removal as a result of the 40 g/m^2 Al application, and,
3. monitor vertical variations total Al, mobile P, and Al-bound P in the sediment column and rates of P release from sediment approximately one year after the first treatment.

This first interim report will address objectives 1 and 2 above.

METHODS

Al:P binding ratio in the newly-formed Al floc

Sediment traps were deployed ~ 2-m above the sediment surface in the deep south basin and central basin of Fish Lake one day before the start of Al application which occurred on 18 September, 2017 (Fig. 1). The traps were secured to a plastic-coated steel cable, anchored with a

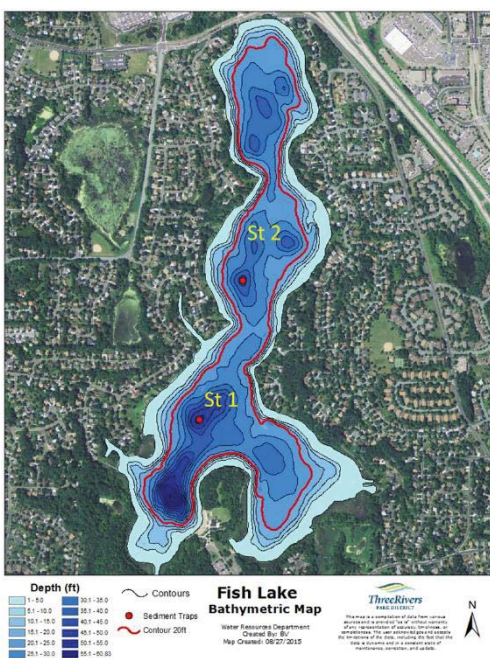


Fig. 1. Bathymetric map showing station locations for vertical water chemistry profiles and sediment trap deployment.

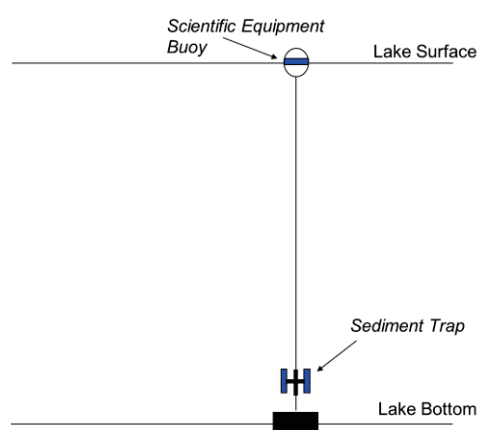


Fig. 2. Schematic depicting the sediment trap deployment system.

concrete block and buoyed at the surface (Fig. 2).

Trap contents were emptied on day 11 and day 25 after application and Al floc deposition (Fig. 3). In the laboratory, ~ 90% of the overlying water was decanted and the remaining slurry was



Fig. 3. Trap material in laboratory settling columns.

dried at 105 C in a crucible, then weighted to the nearest 1 mg for determination of total dry mass deposition. Dried slurry was then ground with a mortar and pestle for analysis. Phosphorus bound to aluminum (Al) was extracted in a 1 N NaOH solution as modified by Psenner and Puckso (1988). For Al-bound P determination, 25 mL of 1 N NaOH were added to a 50 mL centrifuge tube containing ~ 25 mg of dried sample and gently shaken for 24 h. The sample was

then centrifuged, digested with potassium persulfate, and analyzed for total P using the ascorbic acid method (APHA 2011). Another subsample was sent to the University of Minnesota Research Analytical Laboratory for analysis of total Al using ICP-AES after microwave-assisted acid digestion. Deposition rates ($\text{mg/m}^2 \text{ d}$) were calculated as $[\text{concentration (mg/g)} \cdot \text{total dry mass (g)}] \div [\text{trap opening area (m}^2) \cdot \text{deployment days (d)}]$. The Al:P ratio was estimated as Al \div aluminum-bound P (Al:P binding ratio).

In situ changes in phosphorus mass during alum application

Vertical variations in in situ variables (temperature and dissolved oxygen) and hypolimnetic total P and SRP were collected at 1-m intervals at the two sediment trap stations during trap deployment (17 September) and the first retrieval data (28 September). In situ measurements were collected using a YSI 6600 data sonde calibrated against Winkler titrations. Samples for total P and SRP were collected using a peristaltic pump and tygon tubing. Water samples for SRP analysis were field-filtered under anoxic conditions using a 60-cc syringe and 0.45 μm syringe filter. Samples were stored on ice and analyzed using the ascorbic acid method (APHA 2011) within 24 hours. Total P was digested with potassium persulfate according to APHA (2011).

Changes in the mass of total P and SRP (g/m^2) as a result of Al application were calculated as:

$$P (\text{g/m}^2) = \sum_{z=0}^{\text{bottom}} C \cdot I$$

Where C = concentration (mg/L or g/m^3) at depth z (m) and I = depth interval (m).

RESULTS AND INTERPRETATION

One day before Al application (17 September, 2017), both basins were strongly stratified (Fig. 4). Although the hypolimnion was located below ~ 9 m, anoxia extended to near the base of the

epilimnion at ~ the 6-m depth (Fig. 5). Density stratification was still strong ~ 10 days after Al application with anoxic conditions between the lake bottom and ~ 7 m (Fig. 4 and 5).

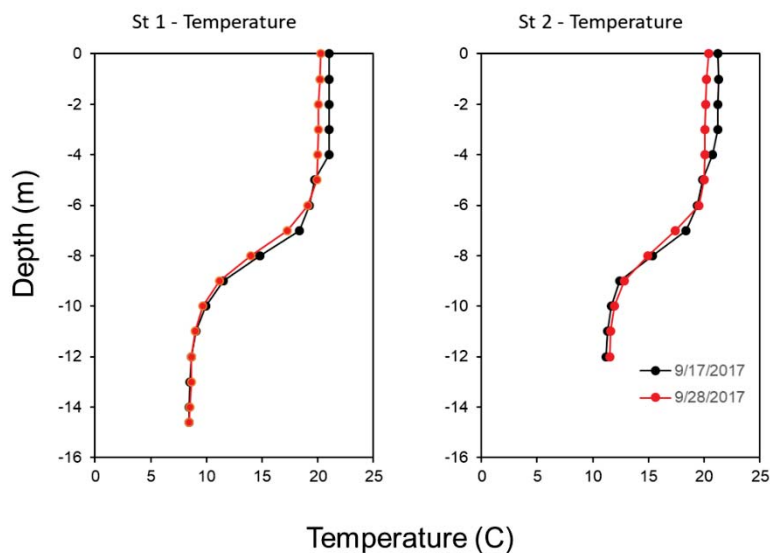


Fig. 4. Vertical variations in temperature at station 1 and 2 on various dates in 2017.

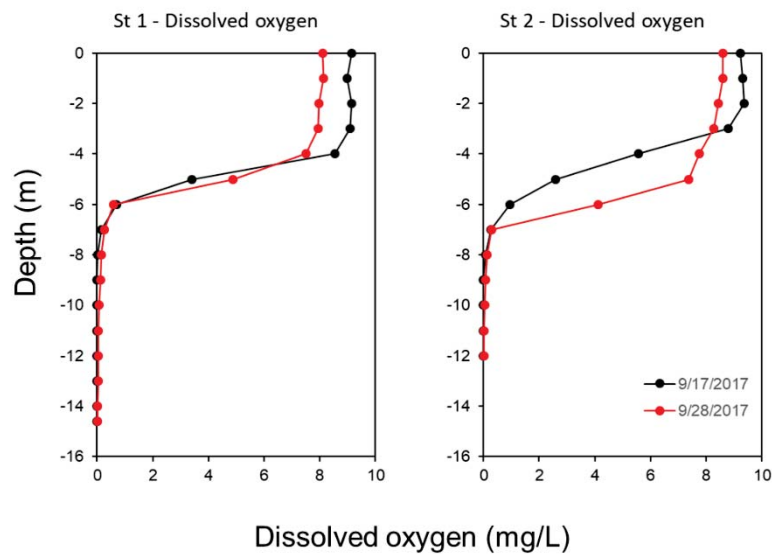


Fig. 5. Vertical variations in dissolved oxygen at station (St) 1 and 2 on various dates in 2017.

Total P and SRP concentrations increased with increasing depth between ~ 7 m (i.e., within the metalimnion) and the sediment-water interface at each station one day before alum application

(Fig. 6). In particular, total P exceeded 1 mg/L while SRP was > 0.5 mg/L immediately above the sediment surface on 17 September, 2017. In addition, hypolimnetic SRP accounted for 76% to 91% of the total P.

Alum application during the week of 18-22 September resulted in declines in hypolimnetic P by 28 September (Fig. 6). Additional information collected by Three Rivers Park District indicated that deposition of the Al floc and binding of hypolimnetic P was probably complete by 22 September (Fig. 7). Thus, $\sim 33\%$ (St. 1) to 41% (St. 2) of the total P and 29% (St. 1) to 44% (St. 2) of the SRP was bound by the Al floc during deposition through the hypolimnion.

P removed from the hypolimnion during Al application ranged between 1.91 g/m^2 and 1.61 g/m^2 total P and $\sim 1.39 \text{ g/m}^2$ SRP at station 1 and 2, respectively (Fig. 6). Al-bound P (i.e., 1 N NaOH-extractable P) collected in sediment traps accounted for most of the hypolimnetic SRP (79% to 88%) and $\sim 60\%$ to 80% of the hypolimnetic total P (Fig. 8).

The total Al concentration in the traps (17 September to 13 October) was $26.02 \text{ g/m}^2 (\pm 2.15 \text{ SD})$ at station 1 and $31.36 \text{ g/m}^2 (\pm 0.20 \text{ SD})$ at station 2 (Fig. 8). Thus, traps accounted for $\sim 65\%$ to 78% of the target Al concentration to each basin (i.e., 40 g/m^2). Reasons for the differences are not known but could be attributed to incomplete deposition of micro Al flocs at the time of trap retrieval. Very fine $\text{Al}(\text{OH})_3$ colloids may have not settled within the 24-d period covered by trap deployment. Independent analysis of Al in sediment cores (scheduled for the summer of 2018)

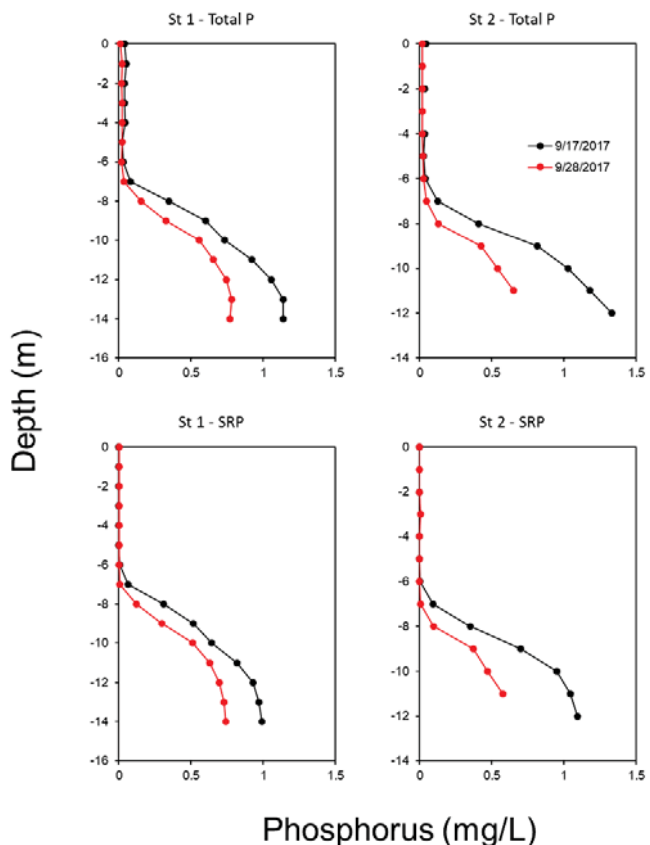


Fig. 6. Vertical variations in total phosphorus (P) and soluble reactive P (SRP) at station 1 and 2 on various dates in 2017. Samples were analyzed at the University of Wisconsin – Stout.

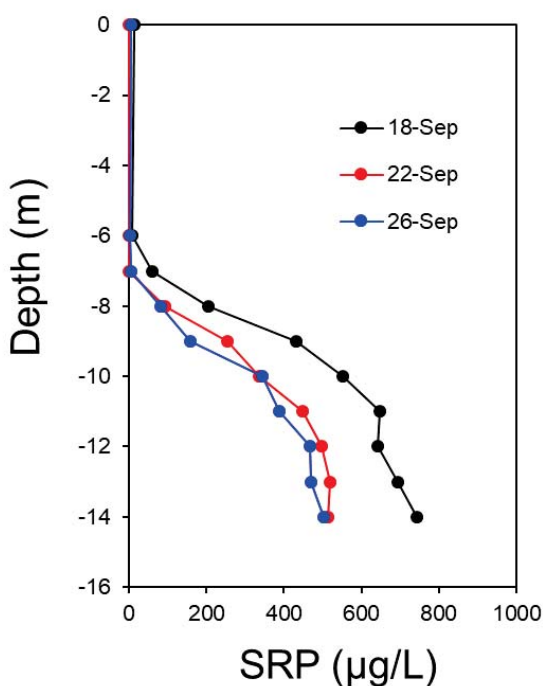


Fig. 7. Vertical variations in total phosphorus (P) and soluble reactive P (SRP) at station 1 on various dates in 2017. Samples were analyzed at the Three Rivers Park District Laboratory.

Al floc in the absence of bound P can result in crystallization and loss of binding efficiency and available binding sites for P (Berkowitz et al. 2006, de Vicente et al. 2008a).

Although data are very limited, Al:P ratios tend to be much higher ($> 100:1$) for freshly formed amorphous flocs, due to lack of exposure to hypolimnetic P (Dugolpolski et al. 2008). For instance, application of Al to Half Moon Lake, Wisconsin, coincided with an Al:P ratio of ~ 200 - $300:1$ in sediment trap material (James unpublished, James 2017). The high ratio was due to low SRP concentrations in the lake water column during application.

Application of Al during the fall period and floc deposition through the P-rich hypolimnion resulted in considerable binding of internal P loads and a relatively low Al:P ratio of $23:1$ molar. Perhaps application of a lower dose relative to hypolimnetic P would have resulted in an even lower Al:P ratio (Huser 2017). De Vicente et al. (2008b) found that freshly formed Al flocs exposed to SRP maintained adsorption capacity for longer periods of time (> 6 months) and

will be used to estimate Al concentration nearly one year after the initial application. The Al:P binding ratio (i.e., stoichiometric mass ratio of Al associated with one part P) in the trap material was $\sim 20:1$ mass or $23:1$ molar at both stations (Fig. 8).

Al:P binding ratios reported in the literature vary widely from $\sim 2:1$ to $> 100:1$ molar, depending on time since application. The ratio tends to decline as the Al floc continues to bind P at the sediment interface and can be $< 15:1$ several years after treatment (Rydin et al. 2000, Reitzel et al. 2005, Huser et al. 2011, Huser 2012). Additions of low Al doses relative to sediment mobile P concentration also tend to result in low Al:P ratios (Lewandowski et al. 2003). Aging of the

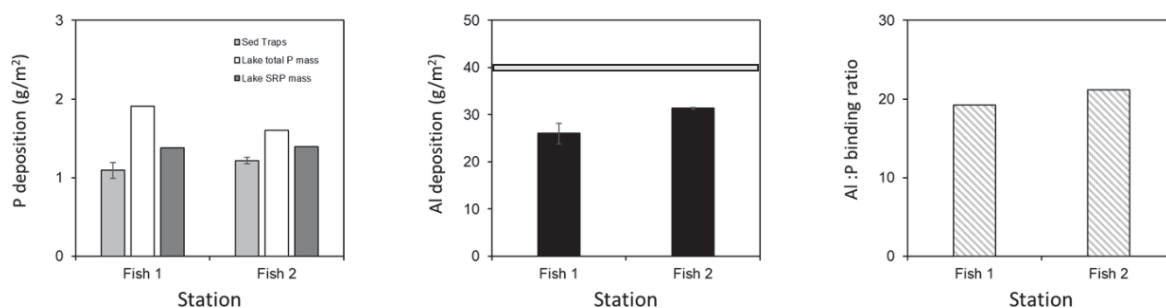


Fig. 8. A comparison of phosphorus deposition into sediment traps (1 N NaOH extraction) versus loss of total phosphorus (P) and soluble reactive P (SRP) from the water column (left panel), total aluminum (Al) deposition (middle panel), and the Al:P binding ratio (i.e., total Al ÷ NaOH-extractable P) of sediment trap contents at station 1 and 2 in Fish Lake, MN. Horizontal bar in middle panel denotes the target Al dose.

reduced crystallization. Our goal with the Fish Lake treatment was to maintain high P binding efficiency of the Al floc by exposing it to high concentrations of hypolimnetic SRP immediately after application. Effectiveness of this application strategy will be evaluated in 2018.

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APPENDIX C

**Effectiveness of a Late Summer Aluminum Sulfate
Application in Binding Hypolimnetic Phosphorus in
Fish Lake, MN
Phase 2
Interim Report**



Effectiveness of a Late-Summer Aluminum Sulfate Application in Binding Hypolimnetic Phosphorus in Fish Lake, MN: Phase 2 Interim report



Sediment phosphorus diffusive flux incubation systems with visible surface alum floc

20 January, 2019

University of Wisconsin - Stout
Sustainability Sciences Institute Discovery Center
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BACKGROUND

Application of Al salts has been an effective management strategy for controlling internal phosphorus (P) loading in lakes (Cooke et al. 2005, Huser et al. 2016). However, P binding efficiency and capacity on the $\text{Al}(\text{OH})_3$ floc depend to a large extent on the rapidity of exposure to P after $\text{Al}(\text{OH})_3$ formation. Berkowitz et al (2006) and de Vicente et al. (2008a) found that Al binding efficiency for P can decrease by up to 75% within a short period of time (< 30 d) if not exposed to P, due to polymerization into a more ordered crystalline structure and increased tortuosity (diffusive path length). Since newly formed Al flocs are generally less dense than surficial sediment, they can typically settle on top rather than sink or mix into sediment after application, resulting in much slower exposure to P via upward diffusion (James 2017). Under this scenario, polymerization leads to greatly decreased Al floc binding sites for P and shortened longevity. Thus, application during the late summer peak in hypolimnetic P accumulation can promote immediate exposure of the settling Al floc to soluble P for rapid binding and maintenance of a much higher P adsorption capacity after deposition onto the sediment surface.

An alum dosage of at least 80 g/m^2 was proposed to control internal P loading in Fish Lake, MN. In addition, the dosage was split into two 40 g/m^2 applications: the first application occurred in early fall 2017 (18 September) during peak anoxia and soluble P accumulation in the hypolimnion and the second application to occur in 2019.

PURPOSE

Historically, late summer Al application have typically been avoided due to concerns over unnecessarily filling binding sites with hypolimnetic P rather than sediment mobile P. There is little information on the effectiveness of this application strategy in controlling internal P loading and improving the overall Al:P binding ratio. However, findings over the last decade have suggested rapid exposure to and binding of P is desirable to both reduce polymerization and maintain higher P binding efficiency after deposition. Late summer application of Al to Fish Lake during peak hypolimnetic P accumulation provides an opportunity to examine the extent of

P binding onto the Al floc during and after a late summer alum treatment to Fish Lake. The objectives of these investigations were to specifically:

1. determine the Al:P binding ratio of newly-formed $\text{Al}(\text{OH})_3$ that has been exposed to peak hypolimnetic P from sediment traps deployed shortly before Al application,
2. examine the extent of hypolimnetic P removal as a result of the 40 g/m^2 Al application, and,
3. monitor vertical variations total Al, mobile P, and Al-bound P in the sediment column and rates of P release from sediment approximately one year after the first treatment.

This second interim report will address objectives 2 and 3 above.

METHODS

Sediment diffusive phosphorus flux under anaerobic conditions

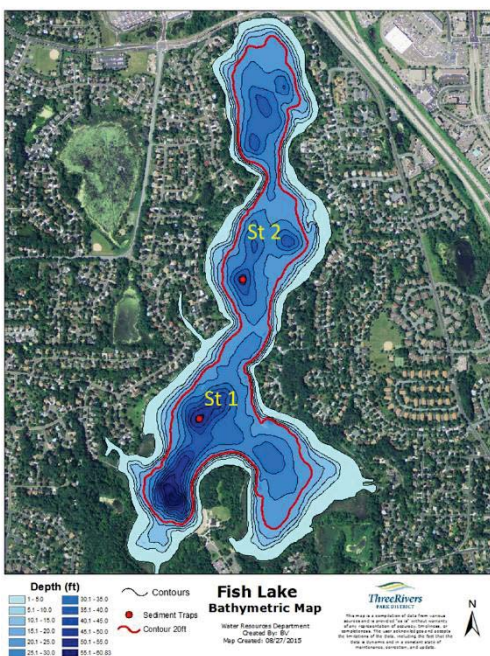


Fig. 1. Bathymetric map showing station locations for vertical water chemistry profiles and sediment core collection.

Three intact sediment cores were collected from stations 1 and 2, located in the deep south and central basins, for the determination of rates of diffusive P flux from sediment under controlled laboratory conditions (Fig. 1). Cores were carefully drained of overlying water in the laboratory and the upper 10 cm of sediment was transferred intact to a smaller acrylic core liner (6.5-cm dia and 20-cm ht) using a core remover tool. Surface water collected from each lake was filtered through a glass fiber filter (Gelman A-E), with 300 mL then siphoned onto the sediment contained in the small acrylic core liner without causing sediment resuspension. They were placed in a darkened environmental chamber and incubated at a constant temperature of $\sim 12^\circ\text{C}$ to reflect summer hypolimnetic conditions. The oxidation-reduction environment in the overlying water was

controlled by gently bubbling nitrogen (anaerobic with 300 ppm CO₂ to maintain pH) through an air stone placed just above the sediment surface in each system. Bubbling action insured complete mixing of the water column but did not disrupt the sediment.

Water samples for soluble reactive P were collected from the center of each system using an acid-washed syringe and filtered through a 0.45 µm membrane syringe filter. The water volume removed from each system during sampling was replaced by addition of filtered lake water preadjusted to the proper oxidation-reduction condition. These volumes were accurately measured for determination of dilution effects. Soluble reactive P was measured colorimetrically using the ascorbic acid method (APHA 2011). Rates of diffusive P flux from the sediment (mg/m² d) were calculated as the linear change in mass in the overlying water divided by time (days) and the area (m²) of the incubation core liner. Regression analysis was used to estimate rates over the linear portion of the data.

Sediment chemistry

Additional sediment cores collected at station 1 and 2 for analysis of sediment chemistry were sectioned at 1-cm intervals over the upper 6 cm, and at 2 to 2.5-cm intervals thereafter. Subsamples were dried at 105 °C to a constant weight and burned at 550 °C for determination of moisture content, sediment density, and organic matter content (Håkanson 1977). Phosphorus fractionation were conducted according to Hietjes and Lijklema (1980), Psenner and Puckso (1988), and Nürnberg (1988) for the determination of ammonium-chloride-extractable P (1 M NH₄Cl; loosely-bound P), bicarbonate-dithionite-extractable P (0.11 M BD; iron-bound P), and sodium hydroxide-extractable P (1 N NaOH; aluminum-bound P). Dried and ground subsamples were sent to the University of Minnesota Research Analytical Laboratory for analysis of total Al using ICP-OES after microwave-assisted acid digestion.

Water chemistry

Vertical variations in in situ variables (temperature and dissolved oxygen) and total P and SRP were collected at 1-m intervals at the 2 stations on 8 August, 2018. In situ measurements

were collected using a YSI 6600 data sonde calibrated against Winkler titrations. Samples for total P and SRP were collected using a peristaltic pump and tygon tubing. Water samples for SRP analysis were field-filtered under anoxic conditions using a 60-cc syringe and 0.45 μm syringe filter. Samples were stored on ice and analyzed using the ascorbic acid method (APHA 2011) within 24 hours. Total P was digested with potassium persulfate according to APHA (2011). Changes in the mass of total P and SRP (g/m^2) as a result of Al application were calculated as:

$$P (\text{g}/\text{m}^2) = \sum_{z=0}^{\text{bottom}} C \cdot I$$

Where C = concentration (mg/L or g/m^3) at depth z (m) and I = depth interval (m).

RESULTS AND INTERPRETATION

Rates of diffusive P flux under anaerobic conditions were low ~ 1 year after the late summer 2017 alum treatment at means of ~ 0.7 to $0.8 \text{ mg}/\text{m}^2 \text{ d}$ (Table 1). Rates varied between $0.22 \text{ mg}/\text{m}^2 \text{ d}$ and $1.61 \text{ mg}/\text{m}^2 \text{ d}$ among replicates. While P mass accumulation was relatively low in systems and mean concentrations at the end of the incubation period were only $\sim 0.065 \text{ mg}/\text{L}$, one replicate from each station exhibited notably higher diffusive P flux at $> 1 \text{ mg}/\text{m}^2 \text{ d}$ compared to the others (Fig. 1). Overall, mean diffusive P flux $< 1 \text{ mg}/\text{m}^2 \text{ d}$ suggested the $40 \text{ g}/\text{m}^2$ alum treatment in 2017 was effective in suppressing internal P loading in Fish Lake in 2018.

Table 1. Rates of diffusive phosphorus flux under anaerobic conditions measured ~ 10.8 months after $40 \text{ g}/\text{m}^2$ alum treatment.

| Statistic | Station 1 ($\text{mg}/\text{m}^2 \text{ d}$) | Station 2 ($\text{mg}/\text{m}^2 \text{ d}$) |
|-----------|---|---|
| Rep 1 | 0.46 | 0.22 |
| Rep 2 | 1.53 | 1.61 |
| Rep 3 | 0.36 | 0.37 |
| Mean | 0.78 | 0.73 |
| STDERR | 0.38 | 0.44 |

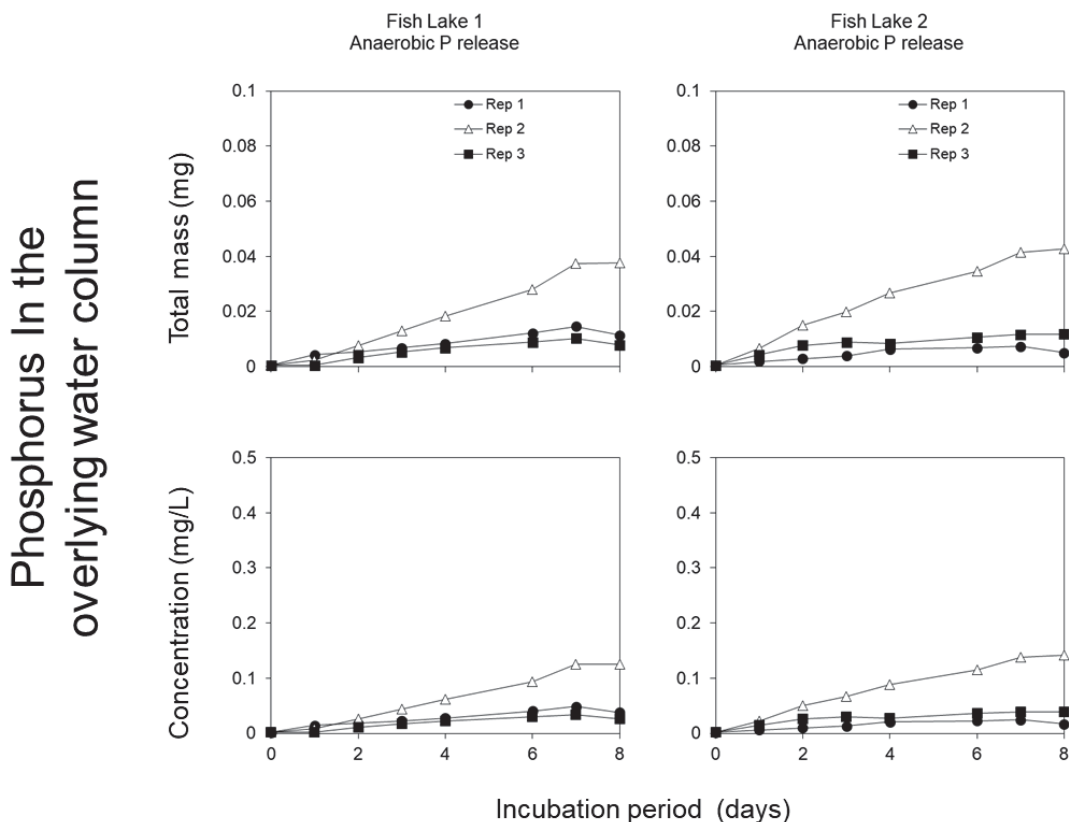


Fig. 2. Changes in soluble reactive phosphorus mass (upper panels) and concentration (lower panels) in the overlying water column under anaerobic conditions versus time for sediment cores collected in Fish Lake ~ 1 y after alum treatment.

In the vertical sediment column, total Al was greatest at the surface and declined in concentration over the upper 3 cm to background levels, suggesting the Al floc layer was located

Table 2. Area-weighted concentrations of Al, Al-bound P, and the Al:P ratio at station 1 and 2 shortly after (0.8 months) and nearly 1 year (10.8 months) after alum application to Fish Lake (September, 2017).

| Months after Al application | Station 1 | | | Station 2 | | |
|-----------------------------|------------------------|--------------------------------|------------|------------------------|--------------------------------|------------|
| | Al (g/m ²) | Al-bound P (g/m ²) | Al:P ratio | Al (g/m ²) | Al-bound P (g/m ²) | Al:P ratio |
| 0.8 months ¹ | 26 | 1.35 | 19.3 | 31.4 | 1.48 | 21.2 |
| 10.8 months ² | 32.4 | 2.07 | 15.7 | 30.6 | 1.71 | 17.9 |

¹from sediment trap material collected shortly after alum application (James 2017)

²from sediment cores collected nearly 1 year after alum application (this study)

on top of the original sediment surface (Fig. 3). Al concentrations exceeded 50 mg/g in the upper 1-cm sediment layer compared to background concentrations < 10 mg/g at sediment depths deeper than 3 to 4 cm. The Al concentration over the upper 3 cm was ~ 30 g/m² at both stations, similar to the concentration measured in the sediment traps shortly after Al application (Table 2 and James 2018). Aluminum-bound P exhibited concentration maxima at the sediment surface in conjunction with peak sediment Al, indicating considerable P was bound to the Al floc (Fig. 3). Aluminum-bound P concentrations in the Al floc layer (i.e., upper 3 cm) were 2.07 g/m² at station 1 and 1.71 g/m² at station 2 (Table 2).

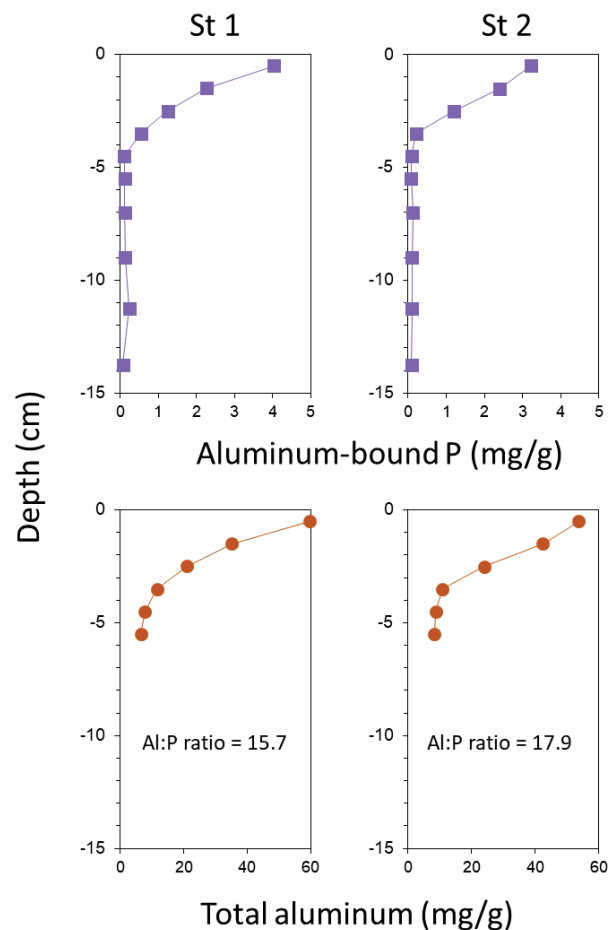


Fig. 3. Vertical variations in aluminum-bound phosphorus (P, upper panels) and sediment total aluminum (lower panels) concentrations for sediment cores collected at station 1 and 2 in Fish Lake in August 2018 (~ 1 year after 40 g/m² alum treatment).

Interestingly, the aluminum-bound P concentration increased in the Al floc layer between September 2017 and August 2018, suggesting continued P binding on the Al floc over time (Table 2, Fig. 4). Aluminum-bound P in August 2018 represented a 53 and 16% increase over concentrations measured in sediment trap material shortly after Al application in September 2017. As a result, the Al:P ratio declined from an initial ~ 19:1 to ~ 16:1 at station 1 and from an initial 21:1 to 18:1 at station 2 in ~ 1 year. Declining Al:P ratios suggested that binding sites were continuing to be efficiently filled via P diffusing from underlying sediments. In addition, low Al:P ratios were directly attributed to application and immediate sequestration of late summer peak P concentrations in the anoxic hypolimnion. In contrast, James (2017) reported a much higher Al:P binding ratio (36:1) in the Al floc of Half Moon Lake ~ 3 years after application. In that research, exposure to and binding

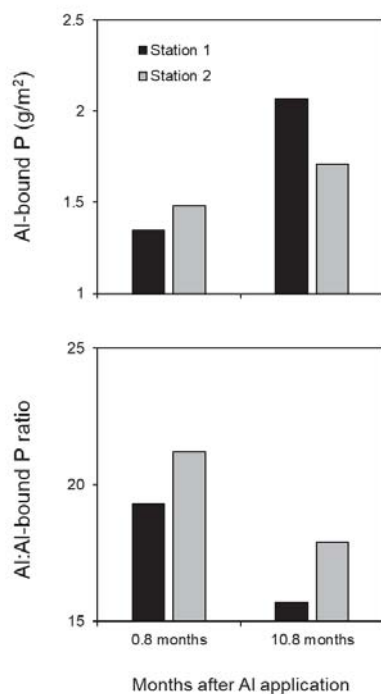


Fig. 4. Changes in the aluminum-bound phosphorus (Al-bound P) and the Al:Al-bound P ratio as a function of time after initial alum application. Concentrations determined 0.8 months after treatment were derived from sediment trap material while those concentrations measured 10.8 months after treatment came from sediment core material.

of P by the Al floc occurred via much slower upward diffusion, which probably resulted in $\text{Al}(\text{OH})_3$ crystallization, loss of binding sites, and P binding inefficiency.

Al:P binding ratios reported in the literature vary widely from $\sim 2:1$ to $> 100:1$ molar, depending on time since application. The ratio tends to decline as the Al floc continues to bind P at the sediment interface and can be $< 15:1$ several years after treatment (Rydin et al. 2000, Reitzel et al. 2005, Huser et al. 2011, Huser 2012). Additions of low Al doses relative to sediment mobile P concentration also tend to result in low Al:P ratios (Lewandowski et al. 2003, Huser 2017). Aging of the Al floc in the absence of bound P can result in crystallization and loss of binding efficiency and available binding sites for P (Berkowitz et al. 2006, de Vicente et al. 2008a).

Although data are very limited, Al:P ratios tend to be much higher ($> 100:1$) for freshly formed amorphous flocs, due to lack of exposure to hypolimnetic P (Dugolpolski et al. 2008). For instance, application of Al to Half Moon Lake, Wisconsin, coincided with an Al:P ratio of $\sim 200\text{-}300:1$ in sediment trap material (James unpublished, James 2017). The high ratio was due to low SRP concentrations in the lake water column during application.

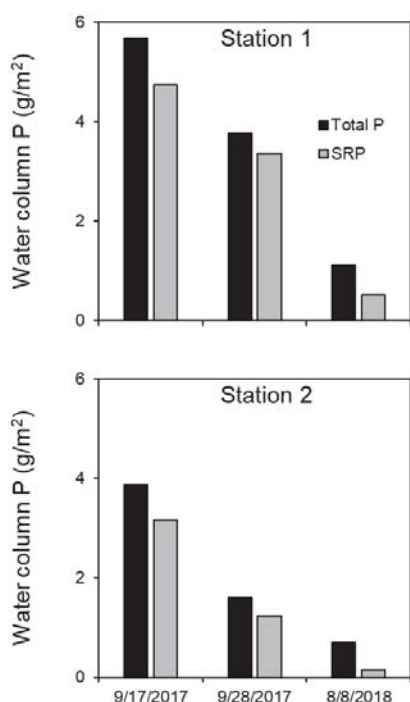


Fig. 6. Changes in area-weighted water column total phosphorus (P) and soluble reactive P (SRP) before (9/17/17) and after (9/28/17 and 8/8/18) a 40 g/m² alum treatment to Fish Lake.

considerable binding of internal P loads, a relatively low Al:P ratio, and suppression of hypolimnetic P accumulation. De Vicente et al. (2008b) found that freshly formed Al flocs

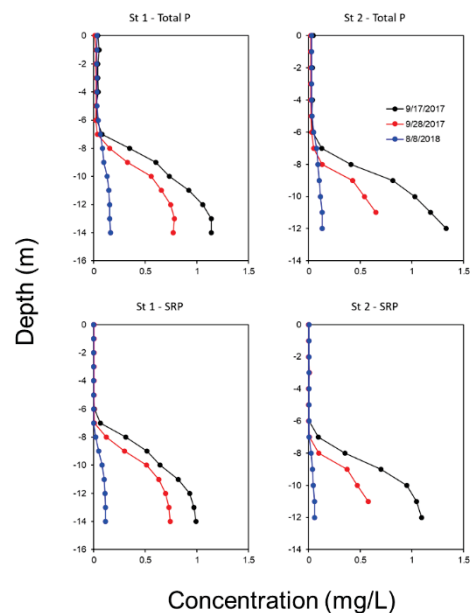


Fig. 5. Vertical variations in total phosphorus (P) and soluble reactive P (SRP) at station 1 and 2 on various dates in 2017-18. Samples were analyzed at the University of Wisconsin – Stout.

Total P and, in particular, SRP concentrations were very low in the hypolimnion

of Fish Lake in August 2018 compared to the pretreatment period of 17 September 2017 (Fig. 5).

Bottom SRP concentrations were < 0.150 mg/L in August 2018 compared to > 1.00 mg/L before Al application in September 2017. Declines in area-weighted total P and SRP were also pronounced nearly 1 year after Al treatment (Fig. 6). For instance, total P declined by $\sim 80\%$ while SRP declined by $\sim 90\text{-}95\%$ in August 2018 from pretreatment peaks in September 2017.

These results further suggested that application of alum during the late summer stratified period and floc deposition through the P-rich hypolimnion can lead to

exposed to SRP maintained adsorption capacity for longer periods of time (> 6 months) and reduced crystallization. Our goal with the Fish Lake treatment was to maintain high P binding efficiency of the Al floc by exposing it to high concentrations of hypolimnetic SRP immediately after application.

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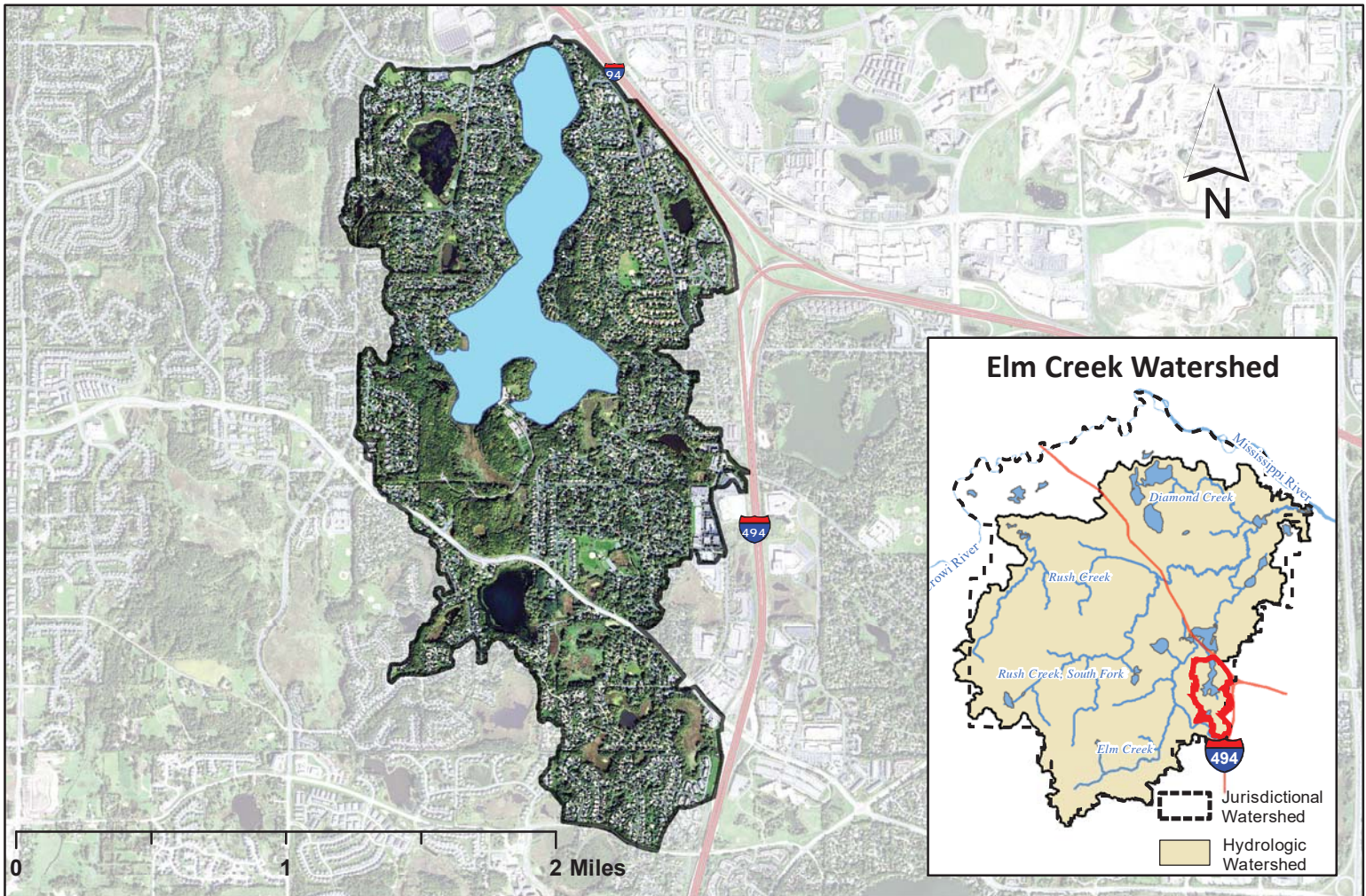
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APPENDIX D

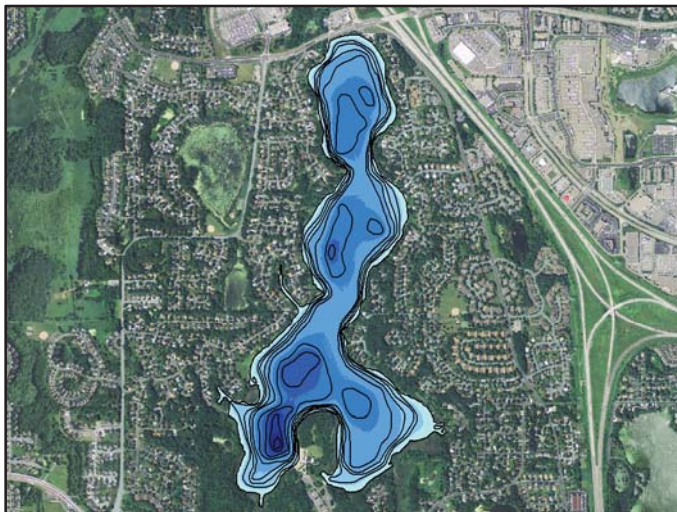
Fish Lake Water Quality Report Card

Fish Lake Watershed Map

item 09b1)

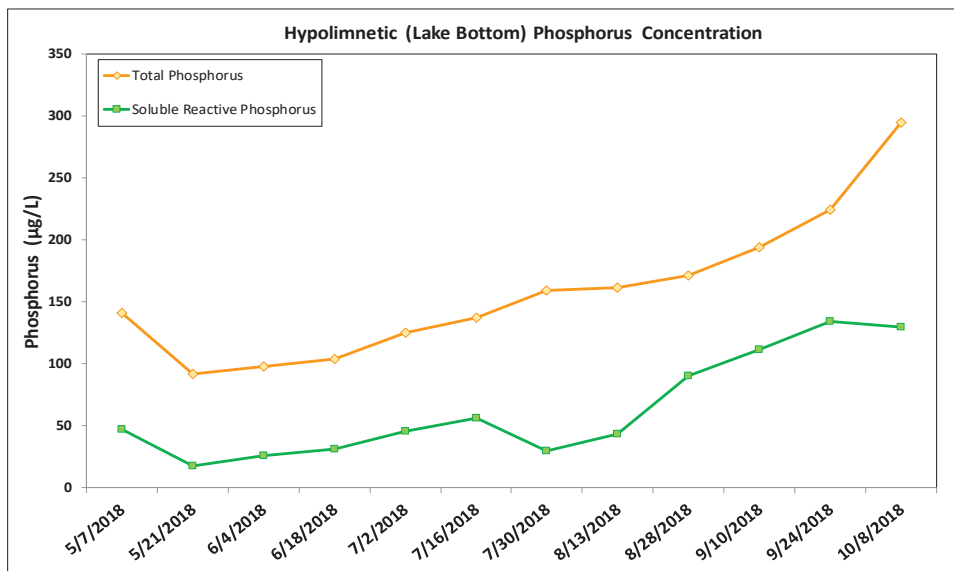
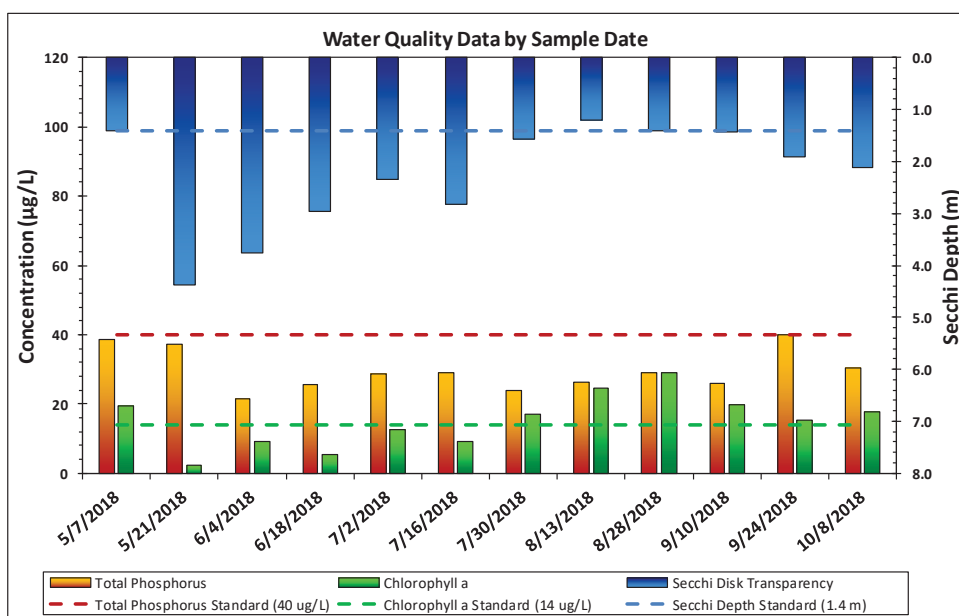
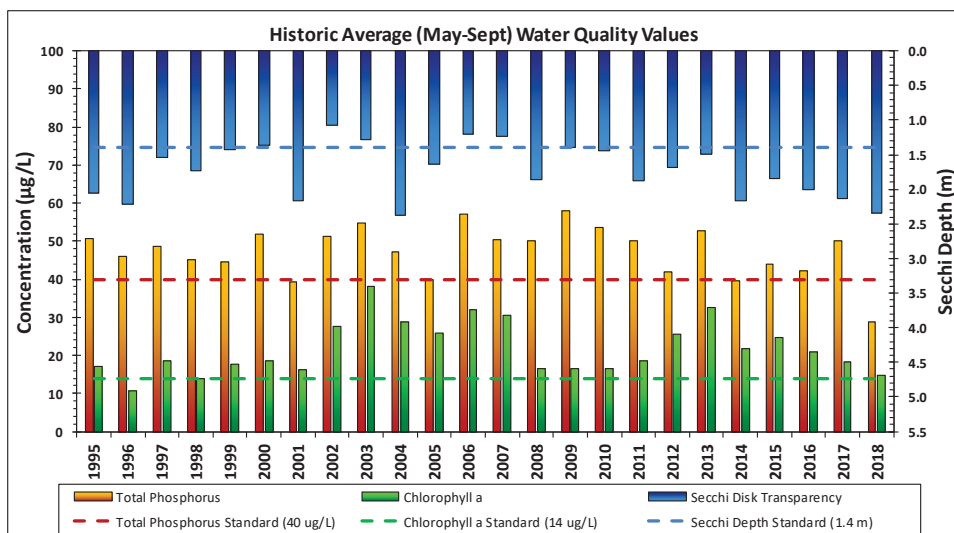


Fish Lake Bathymetry



Lake and Watershed Characteristics

| | |
|---------------------------|-----------------------|
| DNR # | 27011800 |
| Watershed Area | 1,611 Acres |
| Lake Area | 232 Acres |
| Percent Littoral Area | 32% |
| Average Depth | 20.5 ft. |
| Maximum Depth | 62 ft. |
| Watershed Area:Lake Area | 6.9:1 |
| Impairment Classification | Excess Nutrients 2008 |
| Classification | Deep Lake |



| Fish Lake Water Quality Report Card | | | | |
|-------------------------------------|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 1995 | C | B | C | C+ |
| 1996 | C | B | B | B- |
| 1997 | C | B | C | C+ |
| 1998 | C | B | C | C+ |
| 1999 | C | B | C | C+ |
| 2000 | C | B | C | C+ |
| 2001 | C | B | C | C+ |
| 2002 | C | C | D | C- |
| 2003 | C | C | C | C |
| 2004 | C | C | B | C+ |
| 2005 | C | C | C | C |
| 2006 | C | C | C | C |
| 2007 | C | C | C | C |
| 2008 | C | B | C | C+ |
| 2009 | C | B | C | C+ |
| 2010 | C | B | C | C+ |
| 2011 | C | B | C | C+ |
| 2012 | C | C | C | C |
| 2013 | C | C | C | C |
| 2014 | C | C | C | C |
| 2015 | C | C | C | C |
| 2016 | C | C | C | C |
| 2017 | C | B | C | C+ |
| 2018 | B | B | B | B |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality

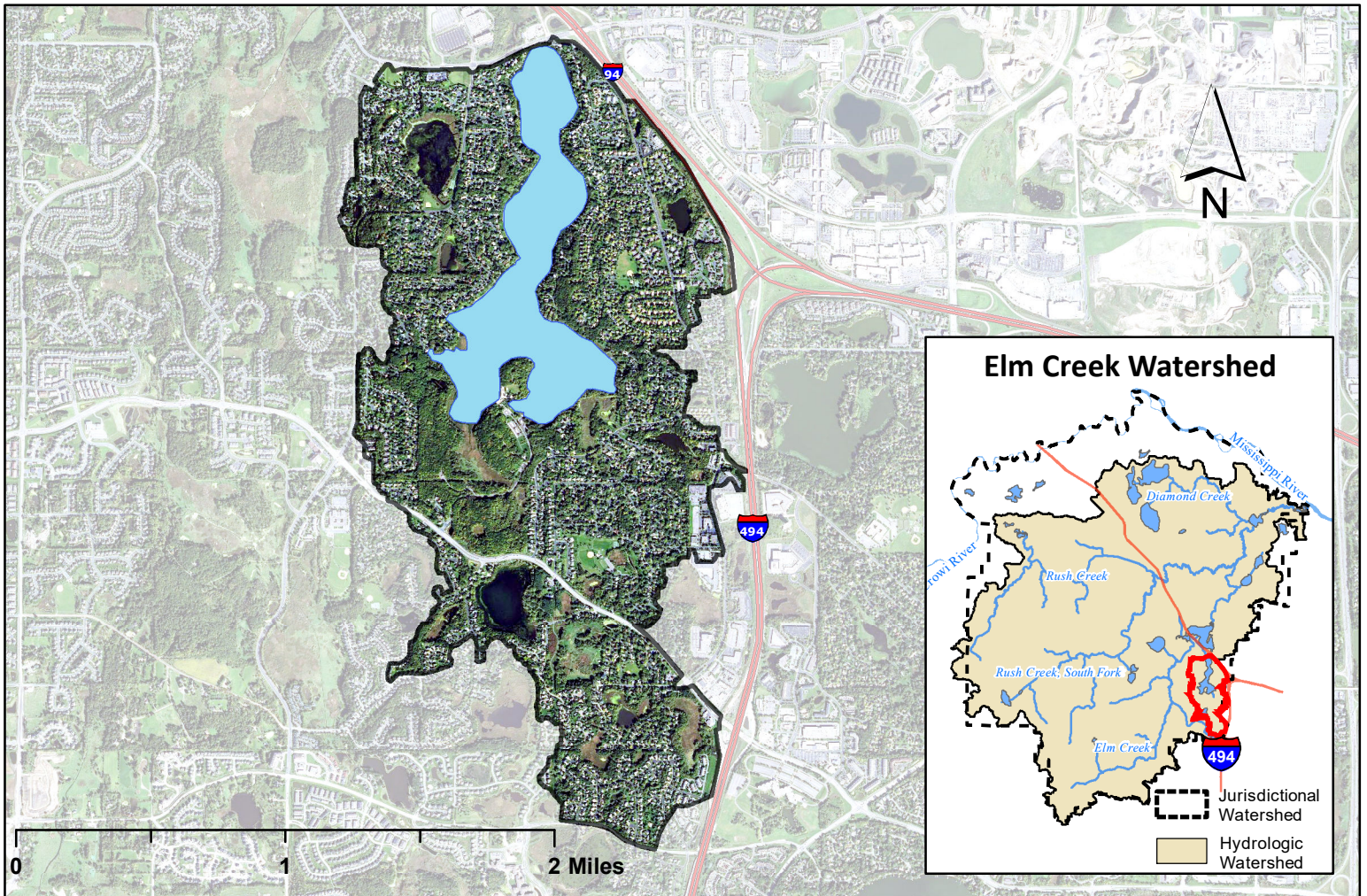


Division of Water Resources

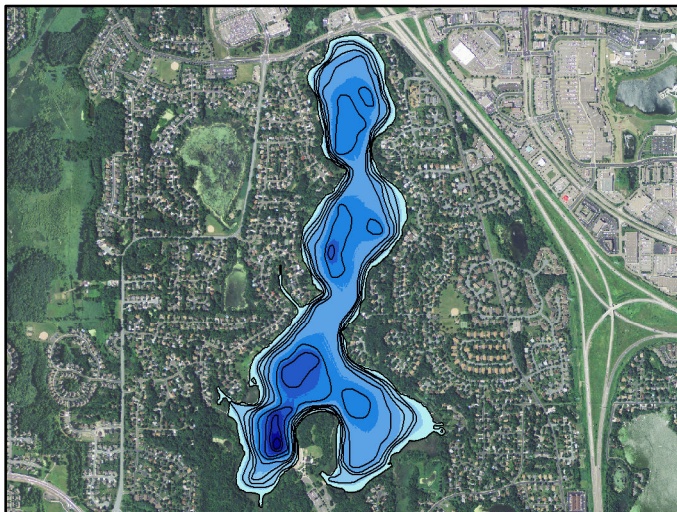
December 2018

Fish Lake Watershed Map

item 09b2)

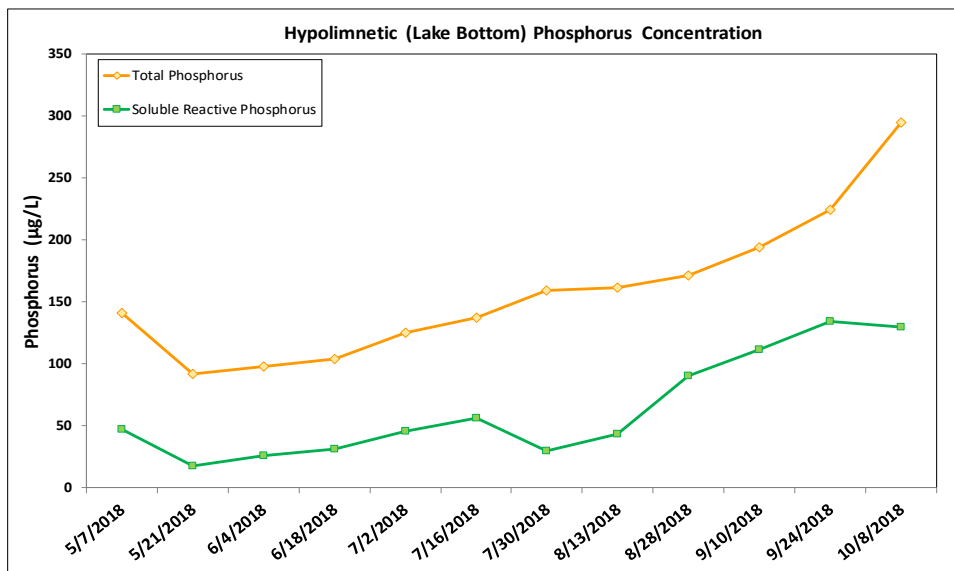
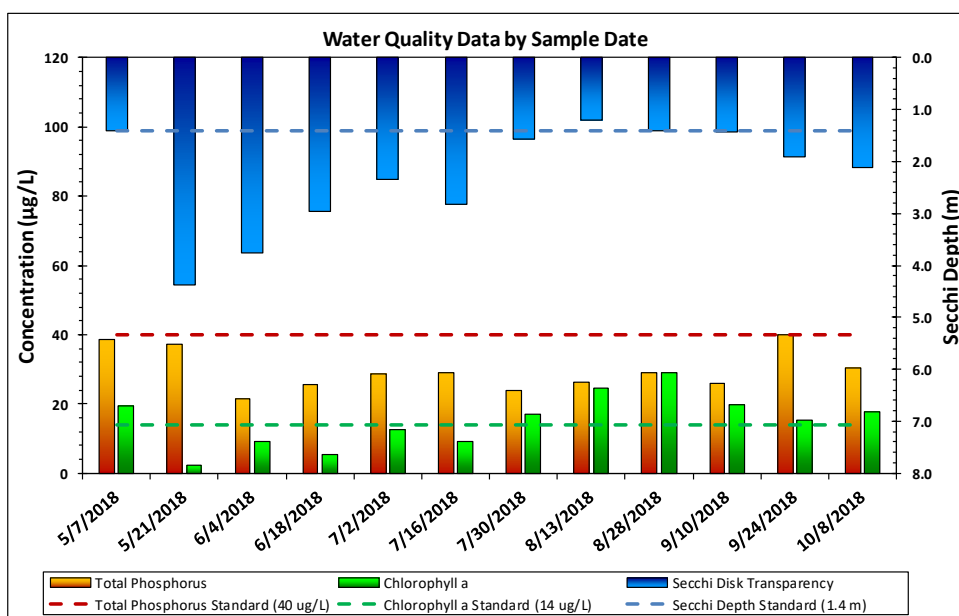
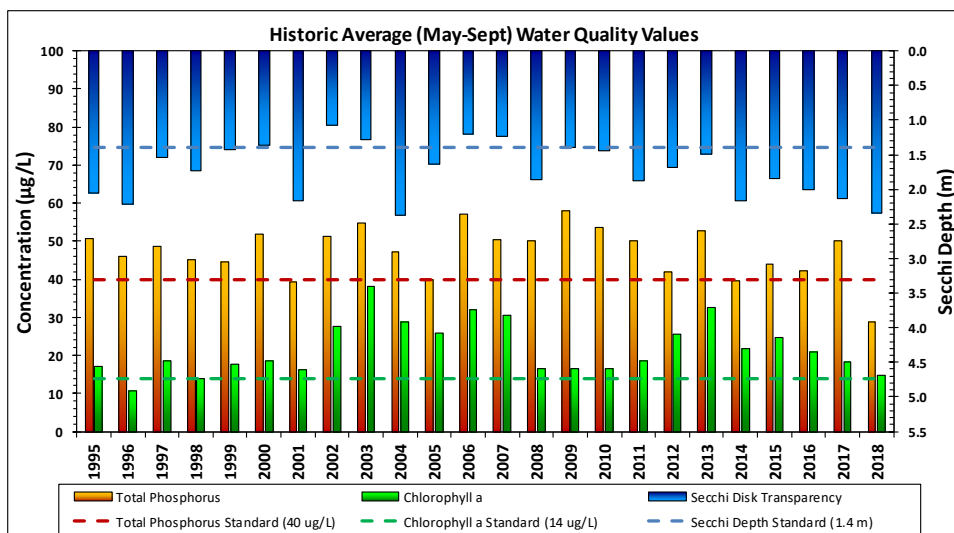


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| Fish Lake Water Quality Report Card | | | | |
|-------------------------------------|----|-------|--------|-----------|
| Year | TP | Chl-a | Secchi | Avg Grade |
| 1995 | C | B | C | C+ |
| 1996 | C | B | B | B- |
| 1997 | C | B | C | C+ |
| 1998 | C | B | C | C+ |
| 1999 | C | B | C | C+ |
| 2000 | C | B | C | C+ |
| 2001 | C | B | C | C+ |
| 2002 | C | C | D | C- |
| 2003 | C | C | C | C |
| 2004 | C | C | B | C+ |
| 2005 | C | C | C | C |
| 2006 | C | C | C | C |
| 2007 | C | C | C | C |
| 2008 | C | B | C | C+ |
| 2009 | C | B | C | C+ |
| 2010 | C | B | C | C+ |
| 2011 | C | B | C | C+ |
| 2012 | C | C | C | C |
| 2013 | C | C | C | C |
| 2014 | C | C | C | C |
| 2015 | C | C | C | C |
| 2016 | C | C | C | C |
| 2017 | C | B | C | C+ |
| 2018 | B | B | B | B |
| MPCA Standard | C | B | C | C+ |

Met Council Grading System for Lake Water Quality



Division of Water Resources

December 2018



Responsive partner. Exceptional outcomes.

Weekly Construction Meeting

Date January 23, 2019PROJECT: Elm Creek Rest.Day

| | | | | | | |
|---|---|---|----------|----|---|---|
| S | M | T | W | Th | F | S |
|---|---|---|----------|----|---|---|

JOB NO. City Project 18011CLIENT City of Plymouth, MN

Weather

CONTRACTOR Sunram Construction, Inc.

Temp. °F

Wind

Humidity

PROJECT MANAGER Lucius Jonett

| | | | | | |
|---------------|--------------|-----------|------------|----------|------|
| Bright Sun | Sunny | Over-Cast | Rain | Snow | |
| <32 | 32 - 50 | 50 - 70 | 70-85 | 85 - 100 | >100 |
| Still | Moder | High | Report No. | | |
| Dry | Moder | Humid | | | |

| Average Field Force | | | |
|---------------------------|----------------|--|---------|
| Name of Contractor | Administration | Labor | Remarks |
| Sunram Construction, Inc. | | Bill Robertson (Foreman) Tyler (Operator) | |
| | | | |

| Visitors | | | |
|-------------------|---------------|------------------|---------|
| Time | Name | Representing | Remarks |
| 2:30 pm – 3:30 pm | Lucius Jonett | Wenck Associates | |

Equipment at the Site:

Large excavator, front end loader and two skid steers with multiple attachments (Sunram Construction)

Construction Activities:

Wenck Site Visits Since Last Weekly Meeting

- 01-21-2019 – Ed & Lucius onsite to review and approve completed work, to review progress with Tyler and answer any questions & complete staking of bank stabilization practices.

Accomplished Since January 16, 2019

- Sunram Construction worked every weekday except Tuesday January 22, 2019 due to weather and travel condition for the crew coming from Southern MN which received more snow and freezing rain than the metro area did.
- Sunram has completed bank stabilization work from station 1+50 to 29+00 (approximately 66% complete) and completed bid alternate #1 touchup work from 44+18 to 85+18. All streambank stabilization types have been installed: coir log toe, vegetated riprap, rootwads with log toe, graded bank, grade control structures, and boulder toe work.
- Landbridge Ecological was onsite Tuesday January 22, 2019 and has completed seed and erosion control blanket installation of the bank stabilization work from station 1+50 to 26+00.
- Wenck has completed all bank stabilization work staking.
- Channel restoration work goes from 1+50 to 44+18, plus bid alternate #1 (riprap touchup from 44+18 to 85+18) & bid alternate #2 (iron enhanced sand filter) work.

Items to be discussed and verified at the next weekly construction meeting:

- Spring revegetation and hydroseeding. Coordination for site access between Landbridge Ecological and Sunram and walkthrough of the challenging areas that don't have access. Determine if there is spring work that will take place of if special coordination is needed with Sunram to strategically place a construction access for their winter work that could dual purpose for Landbridge's spring work or if a temporary spring crossing or two needs to be made.

Will Accomplish Next Week

- Both Sunram and Landbridge will be onsite Thursday January 24 to work as far as possible, but will probably shutdown Friday and possibly next week due to the subzero temperatures forecasted. Lucius and Bill will coordinate on when the crews will return.

Field Condition Updates

- The extended forecast is showing temps around -10 for a while starting later this week. The contractor will not be working when the temperatures are below zero (-10) and resume next week when it warms up to around 0.

Project Input Needed

- Several haul roads have been graded throughout the project for construction access. Is the City or School interested in keeping these graded-out paths? If yes, the contractor would grade the uphill and downhill slopes and then revegetate the new "trails." If no, the contractor will regrade the roads out and return them to the pre-existing hillside slopes before revegetating.

Other Issues/Concerns

- Items noted on our walkthrough and approval of work completed:
 - Lathes were set with survey ribbon for 4 areas where additional seed and erosion control blankets need to be installed.
 - Existing pile of sediment control logs to be placed on the edge of access path/top of slope when winter work is complete.
 - 3 or 4 City Wetland buffer signs are knocked over/broken off and it is unclear who has knocked them down. They will need to be replaced.
- Prior to final stabilization in the spring with seed and hydromulch, we will be requiring the contractor to walk through the entire project:
 - To make sure all random pieces of riprap are removed from the access and revegetation areas (can be placed on the banks or in the channel where ever there is other riprap)
 - To collect and remove all pieces of trash and debris, even if it is not their own. Just so that for one day, the creek is picked up, knowing more stuff will float downstream. But we want to make sure all random stakes, staples and construction debris is removed. In addition to whatever plastic bottles, balls and other trash is hanging around.

DISTRIBUTION

1. Project Manager
2. Field Office
3. File
4. Client

By: Lucius Jonett Title Project Manager



From: Lucius N. Jonett <ljonett@wenck.com>
Sent: Thursday, February 07, 2019 8:49 AM
To: Ben Scharenbroich (bscharenbroich@plymouthmn.gov) <bscharenbroich@plymouthmn.gov>; Scott.Gengler@wayzata.k12.mn.us; JONATHAN DEUTSCH (jon.deutsch@wayzata.k12.mn.us) <jon.deutsch@wayzata.k12.mn.us>; Bradley.berghuis@wayzataschools.org; Nate Herman <nate@gonyeacompany.com>; Judie Anderson <judie@jass.biz>; Vanessa Strong <vstrong@plymouthmn.gov>
Cc: Ed A. Matthiesen <emathiesen@wenck.com>; bill.robertson39@gmail.com
Subject: Elm Creek Weekly Construction Meeting Notes 2019-02-06

All,

Meeting notes from Wednesday's weekly construction meeting. Things are progressing, but winter conditions (snow, traffic and upcoming cold) have limited the rock delivery to the project. A key component of the bank stabilization work remaining:

1. The contractor did what they could excavating a back water pool and shaping the side gully and then placing the limited rock that was delivered.
2. Project input needed from the City and School - Several haul roads have been graded throughout the project for construction access. Is the City or School interested in keeping these graded-out paths? If yes, the contractor would grade the uphill and downhill slopes and then revegetate the new "trails." If no, the contractor will regrade the roads out and return them to the pre-existing hillside slopes before revegetating. I recommend keeping the haul routes in place until spring revegetation is complete (not needing to be completed as part of substantial completion) to help the reveg contractor access areas that need hydromulching. Then Sunram and Landbridge can work together, restoring the access routes and revegetating their way out together. Unless someone wants to keep the routes graded as is, but there is some time to discuss.

Next planned site visit is Monday or Tuesday next week, once we have confirmed rock deliveries to the site have resumed..

Fun photo is attached, showcasing the regraded side swale (vegetated riprap lined with visible rock check dams to slow water shed drainage) and a long shot of the restored and stabilized creek work to date (looking upstream).

Thank you,

Lucius Jonett, PLA (MN, ND, IA)
Landscape Architect / Associate



ljonett@wenck.com **D | 763-479-4254 C | 715-207-9850**
1800 Pioneer Creek Center | Maple Plain, MN 55359



elm creek

Watershed Management Commission

ADMINISTRATIVE OFFICE
 3235 Fernbrook Lane
 Plymouth, MN 55447
 PH: 763.553.1144
 FAX: 763.553.9326
 Email: judie@jass.biz

TECHNICAL OFFICE
 Hennepin County DES
 701 Fourth Street South, Suite 700
 Minneapolis, MN 55415-1600
 PH: 612.348-7338
 FAX: 612.348.8532
 Email: james.kujawa@co.hennepin.mn.us

Cloquet Island Estates Development *Dayton* *Project #2018-033*

Project Overview: NDI Development is working with Sathre-Bergquist, Inc. to design a residential development on approximately 77 acres within the Elm Creek watershed north of N. Diamond Lake Road and west of Dayton River Road. The project will include construction of 193 new single family homes. Storm water controls will be completed by the construction of 7 new wet detention ponds, one new filtration bench, one new infiltration basin, and storm sewer connecting storm water features and the new development. The project will add approximately 24.4 new acres of impervious area. Currently, the site is covered primarily with small grain row crop, a wetland on the south side, woods/grass along the border of the wetland and coulee, and a farmstead in the northeast corner. NRCS Soil Survey data as well as soil boring investigations indicate that the site varies in soil conditions from silty clay to poorly graded sandy soils. The drainage way that splits the site provides an approximate break between the clay soils on the west and the sand found on the east. The majority (72 acres) of the development area drains to the drainage ditch that splits the site and flows north. A small area (5 acres) of the site drains to the south, into Wetland 1 located along N. Diamond Lake Rd.

Applicant: Scott Weidema, NDI Development, 17600 113th Avenue North, Maple Grove, MN 55369

Engineer/Agent: Christian Froemke, Sathre-Bergquist, Inc., 150 South Broadway Ave. S, Wayzata, MN 55391

Exhibits:

- 1) ECWMC Request for Plan Review and Approval and fee of \$3,883 were received on July 10, 2018.
- 2) Storm Water Management Plan, prepared by Advanced Engineering and Environmental Services, Inc., dated August 7, 2018.
 - a. Project Background
 - b. Storm water Requirements Summary
 - c. Drainage Summary and Storm water Management Design

- d. Soil Survey Report
 - e. XPSTORM Electronic Models
 - f. Geotechnical Report, including soil borings
 - g. P8 modeling results for existing and proposed conditions
 - h. HydroCAD report for Pond 5N (infiltration) and Pond 4N (filtration) rating curve computations and NURP Pond design
 - i. Pond outlet structure details
- 3) Cloquet Island Estates grading plan, signed and dated May 23, 2018.

Findings:

Storm water Management

- 1) The entire site is 77.7 acres. The impervious area will increase from approximately 0 acres to approximately 24.4 acres (31.5%).
- 2) NRCS Soil Survey data as well as soil boring investigations indicate that the site varies in soil conditions from silty clay to poorly graded sandy soils. The drainage way that splits the site provides an approximate break between the clay soils on the west and the sand found on the east.
- 3) Storm water will be managed on the site through seven wet detention ponds, an infiltration basin, and two filtration benches.
 - a) Seven new storm water detention ponds will be constructed on the site with Pond 5N serving as a dual pretreatment wet pond and infiltration basin. The wet detention basins will be lined with clay in order to maintain a permanent pool.
 - b) Soil investigations within Pond 5N show poorly graded sands with no groundwater encountered. Therefore, groundwater is not an issue at the Pond 5N infiltration basin location.
 - c) Pond 1N & 4N incorporate filtration benches to increase the pollutant removal efficiency of the system to meet the water quality analysis.
- 4) Rate controls meet the Commission's standards as the peak runoff rates leaving the site via the north drainage ditch for the 2-, 10-, and 100-year events are all less than peak rates to the north for existing conditions. Flows to the south under existing conditions will be routed to the north under proposed conditions. Peak flows to the north are as follows:

| | 2-yr Peak Flow (cfs) | | 10-yr Peak Flow (cfs) | | 100-yr Peak Flow (cfs) | |
|--------------|----------------------|------------------|-----------------------|------------------|------------------------|------------------|
| Site Outflow | Existing-North | Proposed - North | Existing-North | Proposed - North | Existing-North | Proposed - North |
| | 89 | 50 | 207 | 92 | 454 | 276 |

- 5) The City of Dayton has indicated they secure easements over the storm water ponds and will be responsible for maintenance of the storm water management system.

- 6) Water quality and volume loads are estimated as follows:

| Condition | TP Load (lbs./yr)* | TSS Load (lbs./yr)* |
|---------------------------------|--------------------|---------------------|
| Pre-development Load | 19.6 | 6,210 |
| Post-development Load | 62.4 | 19,463 |
| Post-development Discharge | 15.1 | 2,771 |
| Post-development Load Reduction | 76% | 86% |
| Net Change from Pre-development | -4.5 | -3,439 |

*Value using p8 Model

- 7) The 1.1" abstraction requirement off the total impervious area (24.4 acres) is proposed to be achieved using an infiltration basin at a location where Type A soils exist.

Wetland and Stream Buffer

- 8) The City of Dayton will be the LGU for the WCA. Therefore, a wetland delineation is not required.

Erosion and Sediment Control

- 9) The erosion and sediment control plan is consistent with current best management practices.

Wetland Impacts

- 10) It appears the project will impact +/- 955 sf of an existing 0.97 acre wetland (Wetland #1) (2%) for a new turning lane. The impacts are under 1,000 sq. ft. so it is covered under the de minimis rule. Nonetheless, this issue should come to a formal resolution to either modify the project or get a confirmation of the de minimis rule from the LGU.

Floodplain Impacts

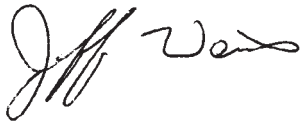
- 11) There is no construction within the 100-year floodplain.

Recommendation:

We recommend approval of the project with the following conditions:

- 1) Make final revisions to the modeling to more accurately model the overall system and ensure results are not adversely impacted. Recommended changes include:
 - a. Capturing water in biofiltration features to be routed within the system as designed rather than losing the volume like an infiltration feature.
 - b. Modify modeling of ponds such that the starting elevation in the pond is equal to the outlet elevation.

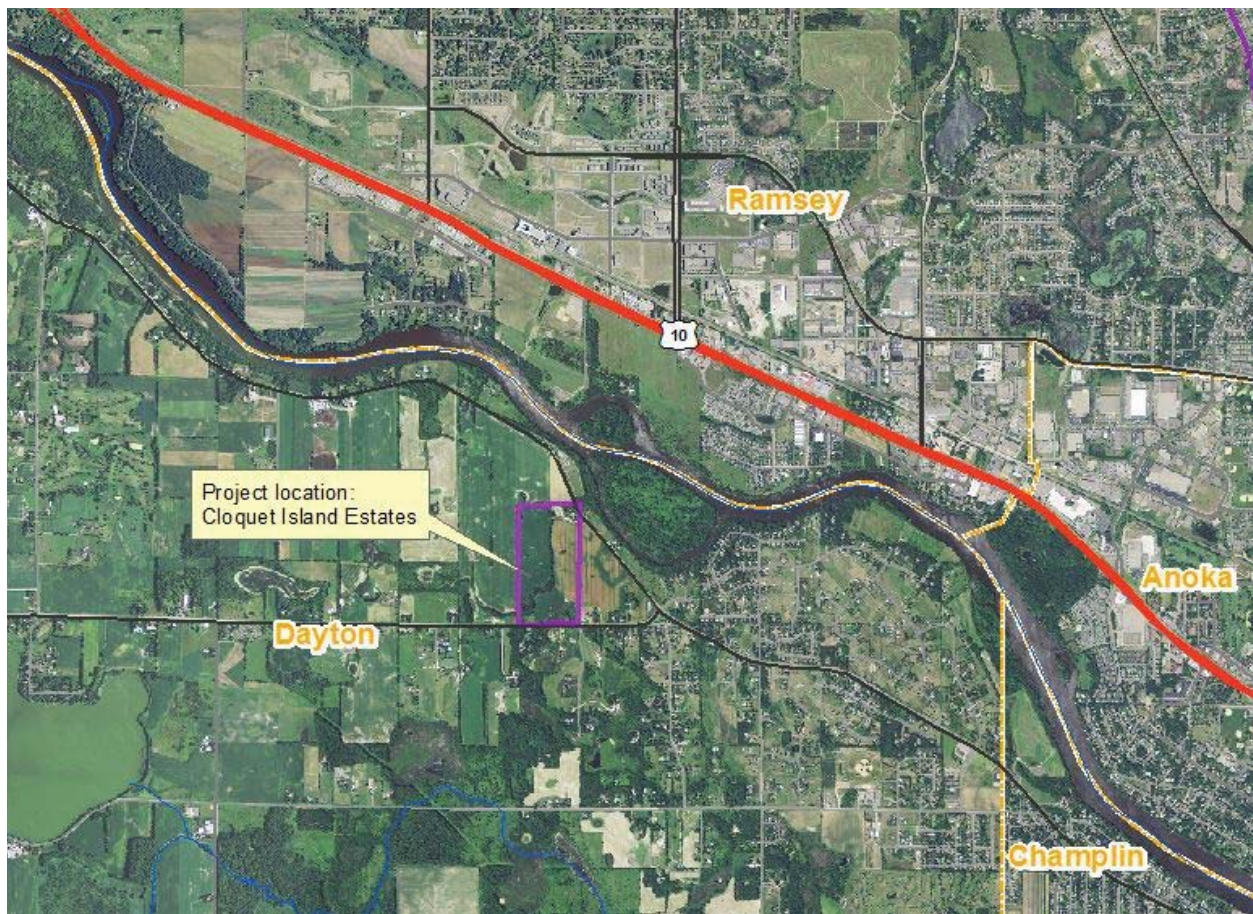
- 2) Show pond emergency overflow locations and elevations on the grading plan to confirm that they will overflow at elevations below the nearest low opening.

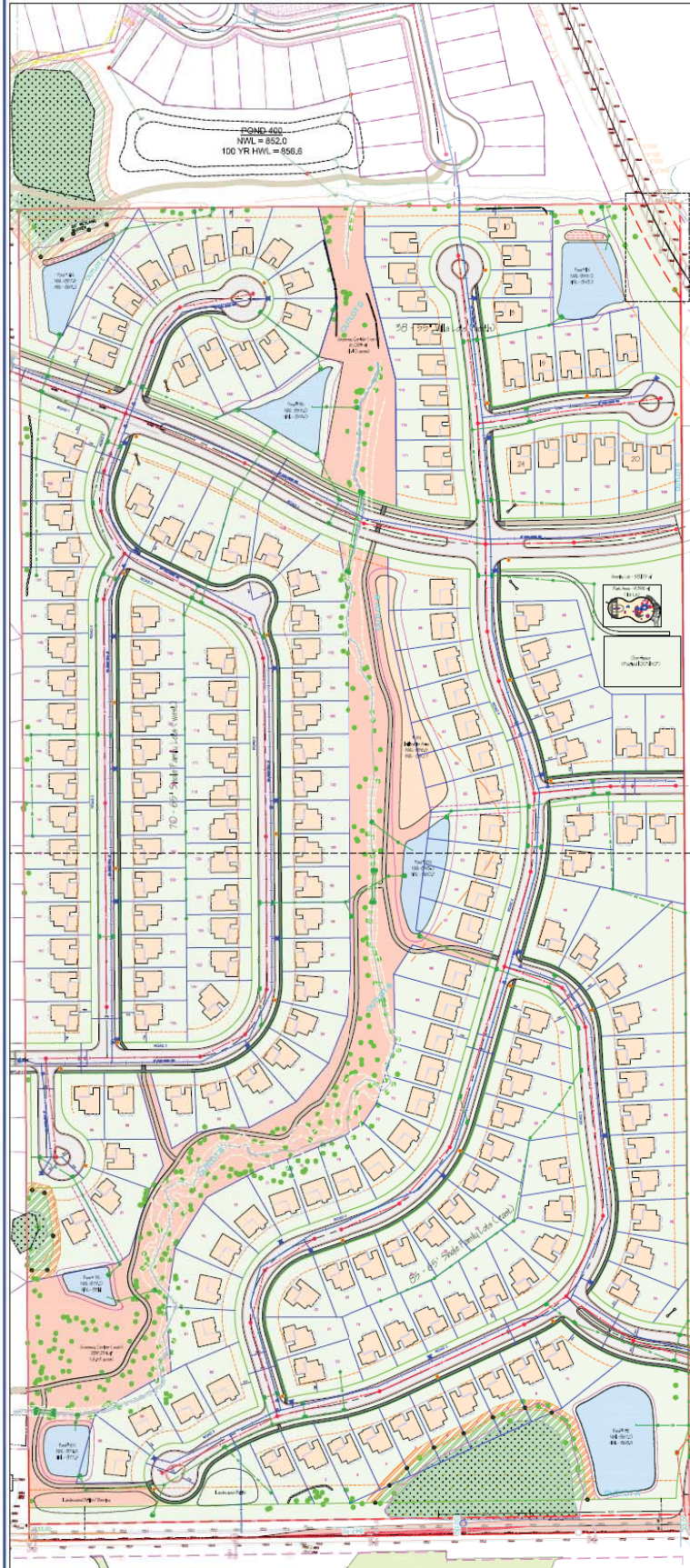


Jeff Weiss, P.E.
Barr Engineering Company
Advisor to the Commission

Feb 07, 2019
Date

Site Location Map





Fernbrook View Apartments
Maple Grove, Project #2019-001

Project Overview: This is a 4.85 acres rural residential lot located at the NE intersection of CSAH 81 at Fernbrook Lane in Maple Grove. The applicant proposes to construct a 2 story, 42-unit apartment building. This review will for compliance to the Commission's 3rd Generation STWMP Rules and Standards, Rule D (stormwater management), Rule E (erosion and sediment controls), and Rule I (buffer strips)

Applicant: Arrow Companies, Steve Fischer, 7365 Kirkwood Court, #335, Maple Grove, MN 55369. Phone: 763-424-6355. Email: sfixcher@arrowcos.com

Agent/Engineer: Loucks Associates, Zach Webber, 7200 Hemlock Lane, #300, Maple Grove, MN 55369. Phone: 763-496-6753. Email: zwebber@loucksinc.com

Exhibits:

- 1) ECWMC Request for Plan Review and Approval dated November 13, 2018, received January 10, 2019.
- 2) Site Plans. Latest revision date of January 4, 2019.
 - a. Sheet C1-1, Existing Conditions
 - b. Sheet C1-2, Demolition Plan
 - c. Sheet C2-1, Site Plan
 - d. Sheet C3-1, Grading Plan
 - e. Sheet C3-2, SWPPP Plan
 - f. Sheet C3-3, SWPPP Notes
 - g. Sheet C4-1, Sanitary Sewer & Watermain Plans
 - h. Sheet C4-2, Storm Sewer Plans
 - i. Sheets C8-1 to C8-3, Details
 - j. Sheet L1-1, Landscape Plan.
- 3) Architectural Site Plans, Latest revision date of January 3, 2019.
 - a. Architecture Site Plan Sheet A1.1
 - b. Architecture Sidewalk and Roof Plan A1.2
- 4) Fernbrook View Apartments Stormwater Management Plan dated November 13, 2018, revised January 4, 2019.
- 5) Correspondence from Loucks Associates to the City of Maple Grove regarding Fernbrook View Apartments response to City Comments, dated January 4, 2019.

Findings:

- 1) A complete set of plans was received January 10, 2019. The initial decision period per MN Statute 15.99 is March 11, 2019.
- 2) Current land use is rural residential, 4.85-acre parcel area. Approximately 0.34 acres is hard surface, 2.6 acres cropland, 0.90 acres wetland and 1.0-acre grass/woodland.
- 3) Proposed land use is multifamily residential (PUD). 1.84 acres will be impervious, 0.92 acres will remain wetland and 2.09 acres will be grass/landscaped.
- 4) This site drains directly into a small unnamed creek in the southeast corner of the property. This creek flows southeast for approximately 1,900 feet where it goes under the CSAH 81/I-610 ROW for about 900 feet. From there it flows about 1300 feet in the ditch between the 610 ROW and RR ROW before entering Elm Creek on the south side of the I-610 ROW.

Stormwater Management

- 5) Two permanent BMP's are proposed on site for stormwater management.
 - a. A NURP/Filtration basin is proposed to treat 3.35 acres for abstraction, flow rates, total phosphorus and total suspended solids
 - b. A soil amendment/filtration trench is proposed to treat 0.25 acres of impervious areas for phosphorus and suspended solids.
- 6) No information is provided on the long-term operation and maintenance of the pond and filter trenches. If the City of Maple Grove does not provide this service, the applicant is required to provide an O&M agreement for review and approval by the City and Watershed. The approved agreement must be recorded on the property title.
- 7) The soil amendment/filtration trench next to the building does not appear to meet standards for this BMP. Assumed rate controls and water quality benefits will be minimized by this BMP due to;
 - a. the slope of the trench (~2.6%). Ponding will only occur for approximately the last 50 feet on this trench.
 - b. the void ratio of the amended soil mix (30-35%). 100% ratio appears to be used for storage availability in HydroCAD.
 - c. an actual exfiltration rate will be limited by the ponding capability.
 - d. Assumes the trench depth at 1.5'. Details show 1.0'
- 8) Abstraction requirements will be 7,365 cubic feet (1.1" of runoff on 1.84 acres of new impervious area). Actual abstraction provided will be 7,588 cubic feet.
 - a. The draw down on the pond for abstraction requirements will not occur until the water in the pond gets high enough to drain into the filter trench. Based on the details and grading plans, this appears to be at or near 901.3 (weir elevation), not 900.7 as designed.
 - i. Site plans details or cross sections will need to show specific elevations on the filter trench to ensure the proper elevation is set on the filter trench to ensure that it will be inundated for the 48-hour drawdown period.
- 9) Water quality analysis;
 - a. Post-development TP and TSS will be equal to or less than pre-development load. This will meet the Commission's standards.
 - b. ECWMC requires that NURP pond mean average depth be 4.0'.

Stormwater Summary

| Condition | TP Load* (lbs/yr) | TSS Load** (lbs/yr) | Abstraction (cu. ft.) | Filtration (cu. ft.) | Annual Volume** (ac. ft.) |
|-------------------------------|------------------------------|--------------------------------|----------------------------------|---------------------------------|--------------------------------------|
| Pre-development (baseline) | 4.9 | 601 | N/A | N/A | 4.06 |
| Post-development without BMPs | 8.3 | 817 | N/A | 7,365 | 5.51 |
| Post-development with BMPs | 3.8 | 146 | N/A | 7,588 | 5.20 |
| Net Change | -1.1 | -455 | N/A | -223 | +1.14 |

*based on NURP and staff analysis

** based on MIDS

10) Rate Controls will meet the Commission requirements. (note, these may change slightly based on item 7 above)

| | 2-yr (cfs) | 10-yr (cfs) | 100-yr (cfs) |
|-------------------------------|-------------------|--------------------|---------------------|
| Pre-Development Rates | 5.9 | 14.0 | 31.8 |
| Post-Development Rates | 4.7 | 13.3 | 26.1 |

Wetland Buffers

11) The on-site wetland will not be impacted. Buffers will be established around this wetland to meet the Commission's standard widths of 10' minimum and 25' average.

Erosion and Sediment Controls

12) Erosion and sediment control plans meet the Commission's requirements.

Recommendation:

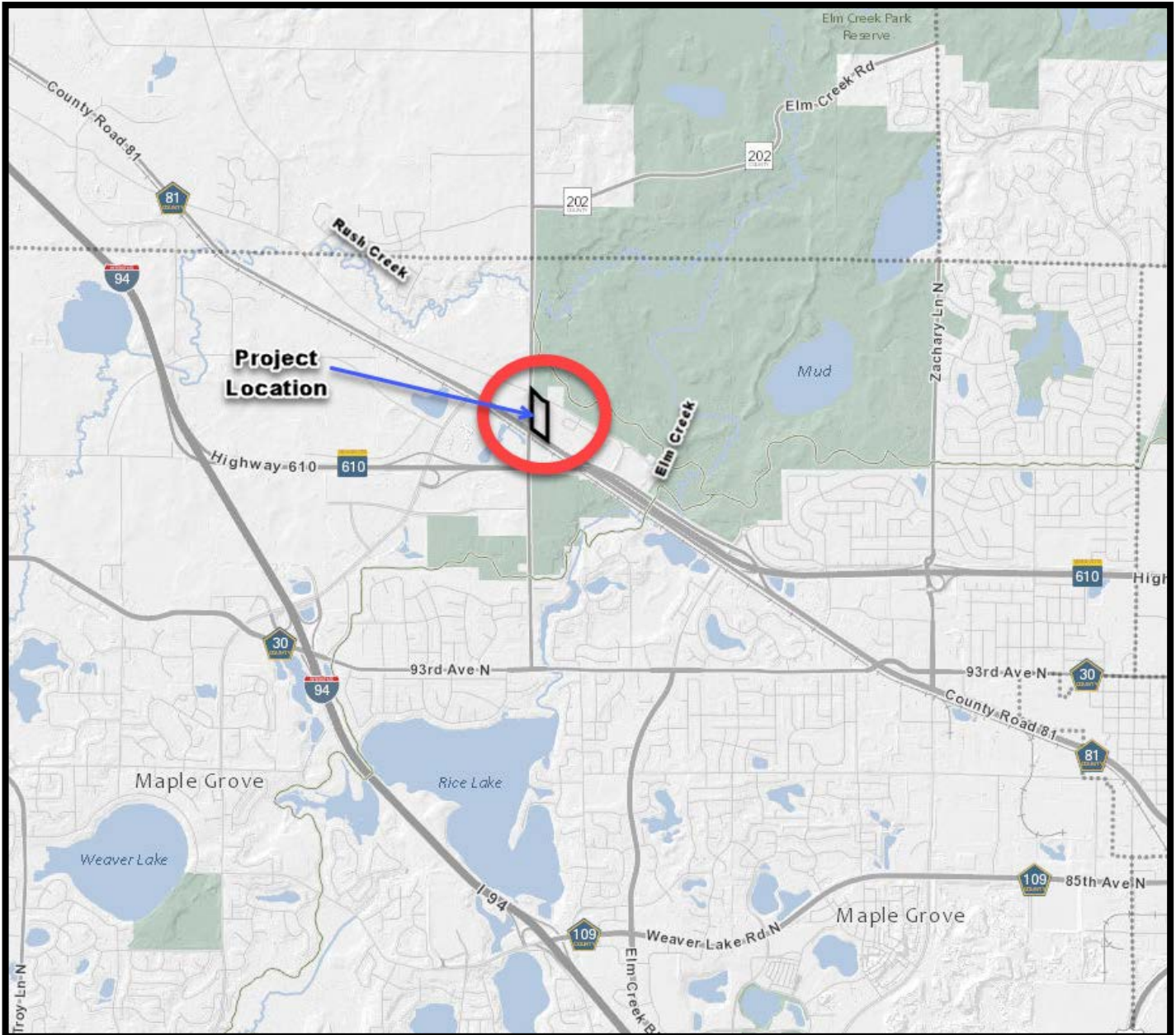
- 1) The Commission recommends the applicant pursue utilizing water from the NURP pond for irrigation needs for this property.
- 2) Long term operation and maintenance on the stormwater basin must be addressed
- 3) Mean average pond depth must meet the Commission standard.
- 4) Pond filter bench details must be provided.

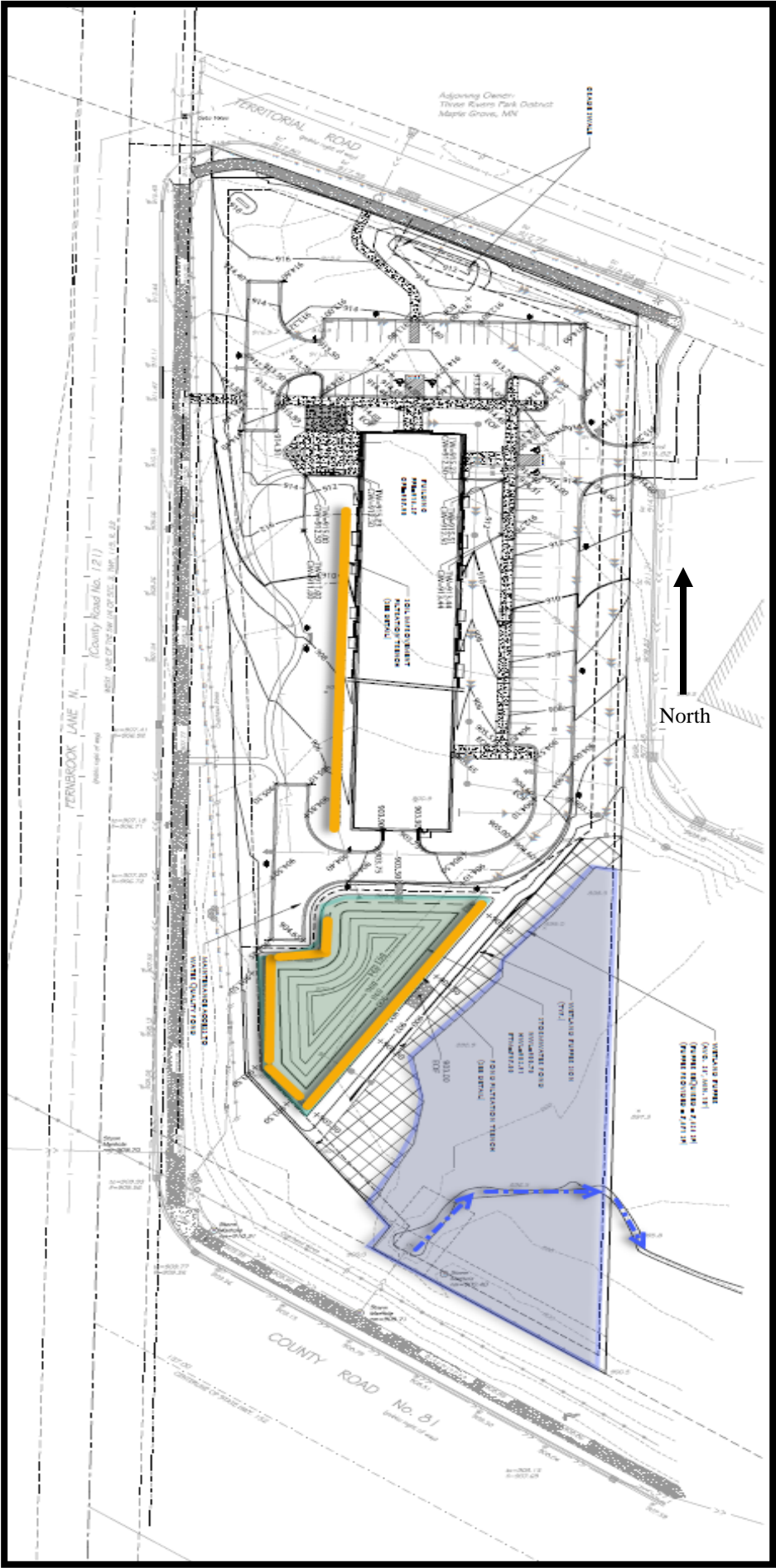
Hennepin County
Department of Environment and Energy
Advisor to the Commission



January 24, 2019
Date

LOCATION MAP





elm creek

Watershed Management Commission

item 10am

ADMINISTRATIVE OFFICE
3235 Fernbrook Lane
Plymouth, MN 55447
PH: 763.553.1144
E-mail: judie@jass.biz

TECHNICAL OFFICE
Hennepin County Public Works
Department of Environment and Energy
701 Fourth Ave. South, Suite 700
Minneapolis, MN 55415
PH: 612.348.7338
E-mail: james.kujawa@hennepin.us

Parkside Villas Champlin, Project #2019-002

Project Overview: This is two adjacent rural parcels that total 13.9 acres that are proposed to be split into 56, single family residential lots. It is located on the east side of Goose Lake Road just south of its intersection with Elm Road (CR 202). This review will for compliance to the Commission's 3rd Generation STWMP Rules and Standards Rule D (stormwater management) and Rule E (erosion and sediment controls).

Applicant: Landmark Development, Nathan Fair, 13432 Hanson Blvd. NW, Andover, MN 55304. Phone: 763-421-5435. Email: nathanfair@edinarealty.com

Agent/Engineer: Odell Consulting LLC, Matt Johnson, 826 County Road D W. St. Paul, MN 55126. Phone: 763-360-8454. Email: odellconsultingmn@gmail.com

Exhibits:

- 1) ECWMC Request for Plan Review and Approval dated January 15, 2019, received January 23, 2019.
- 2) Site Plan Information.
 - a. Sheets 12 and 13 of 16, Grading Plans by Sathre-Bergquist. No date or signature.
 - b. Sheet 14 of 16, Erosion Control Plan by Sathre-Bergquist. No date or signature.
- 3) Storm Water Management Plan by Odell Consulting LLC dated January 9, 2019.

Findings:

- 1) A complete set of plans was received January 23, 2019. The initial decision period per MN Statute 15.99 is March 24, 2019.
 - 2) Current land use is rural agriculture with one farmstead (13.9 acres). Approximately 1.1 acres is farmstead (0.1-acre impervious area) and 12.8 acres cropland.
 - 3) Proposed land use is 56 single family homes and their associated infrastructure. 5.0 acres will be impervious, with the remaining area (8.9 acres) being lawn/landscaped areas.
 - 4) This site drains north into Elm Creek Park Reserve. The water flows through a series of wetlands for approximately ½ mile until it gets into the Haydens Lake basin of Elm Creek.
- Stormwater Management
- 5) Two permanent BMP's are proposed on site for stormwater management.
 - a. A NURP pond that is proposed to treat 13.15 acres from this site for rate controls, total phosphorus and suspended solids, and

- b. An irrigation system that utilizes the stormwater runoff in the NURP pond for volume management by irrigating 8.9 acres of the lawn areas in this development.
- 6) No information is provided on the long-term operation and maintenance of the pond and irrigation system. If the City of Champlin does not provide this service for the pond or irrigation system, the applicant is required to provide an O&M agreement for review and approval by the City and Watershed. The approved agreement must be recorded on the property title.
- 7) The outlet to the new stormwater pond will concentrate the water in one location where it flows into the Three Rivers Park District property. The park has existing trails where the outlet is directed. Because of these concentrated flows and the existing trial system, we recommend the applicant work with Three Rivers Park to direct these flows under the trail before releasing it into the downstream channel area in the Park.
- 8) Abstraction requirements will be 20,245 cubic feet (based on 1.1" of runoff on 5.07 acres of new impervious area). Actual abstraction (based on Ramsey/Washington Metro Watershed District Reuse Credit Calculator) from irrigating 8.9 acres on site will be 48,945 cubic feet. This will meet the Commission's requirements.
- 9) Water quality analysis;
 - a. TP and TSS loads will be less after development than before based on the MPCA MIDS model (see summary below). This will meet the Commission's standards.
 - b. NURP pond efficiency will be 60%. This will meet the Commission standards.
- 10) Flow rates for the 2, 10 and 100-year, 24-hour storm events will be approximately ½ of pre-development flows (see rate summary below).

Stormwater Summary

| Condition | TP Load* (lbs/yr) | TSS Load* (lbs/yr) | Abstraction (cu. ft.) | Annual Volume* (ac. ft.) |
|-------------------------------|-------------------|--------------------|-----------------------|--------------------------|
| Pre-development (baseline) | 6.3 | 1145 | 20,245 required | 7.72 |
| Post-development without BMPs | 13.1 | 2375 | 20,245 | 16.02 |
| Post-development with BMPs | 3.8 | 481 | 48,945 | 5.16 |
| Net Change | -2.5 | -664 | -28,700 | -2.56 |

*based on MPCA MIDS

Flow Rate Summary

| | 2-yr (cfs) | 10-yr (cfs) | 100-yr (cfs) |
|-------------------------------|-------------|-------------|--------------|
| Pre-Development Rates | 16.3 | 32.5 | 69.3 |
| Post-Development Rates | 7.4 | 16.4 | 35.6 |

- 11) Erosion and sediment control plans meet the Commission's standard for Rule E.
- 12) There are no floodplains on this site.
- 13) Champlin is their own LGU in charge of administering the MN WCA. No wetland impacts are anticipated in the development of this site.

Recommendation: Approval conditioned upon;

- 1) Long term operation and maintenance on the stormwater basin and irrigation system must be addressed per item 6.
- 2) The Commission recommends the applicant work with the Three Rivers Park District and City of Champlin to safely outlet the pond water below the trail system adjacent to the property line.

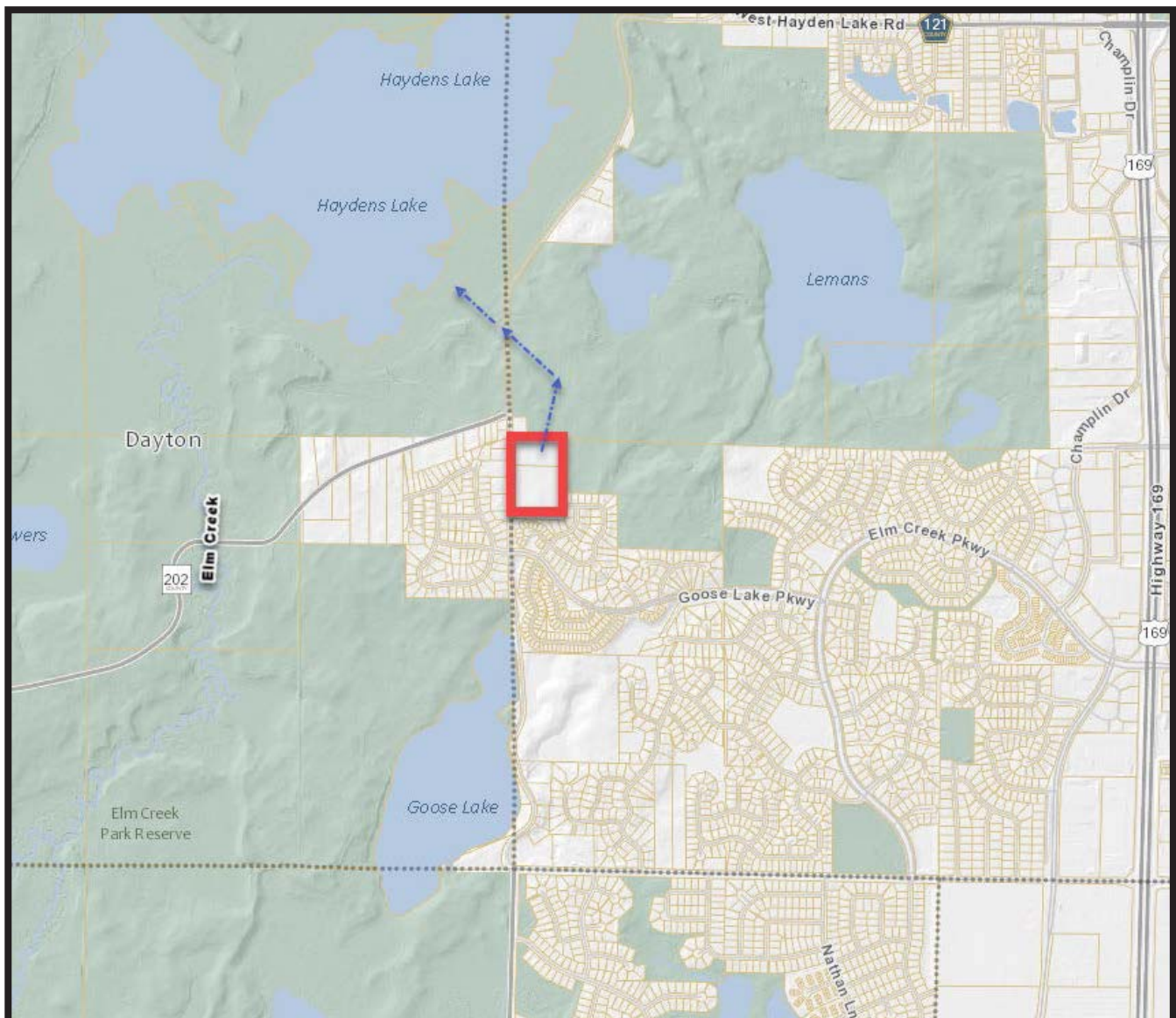
Hennepin County
Department of Environment and Energy
Advisor to the Commission



January 29, 2019

Date

LOCATION MAP



2015 Aerial Photo



[illegible]

Minnesota Wetland Conservation Act

Notice of Application

| | |
|---|--|
| Local Government Unit (LGU) Elm Creek Watershed Management Commission | Address c/o JASS 3235 Fernbrook Lane, Plymouth, MN 55447 |
|---|--|

1. PROJECT INFORMATION

| | | | |
|---------------------------------------|---|---|---|
| Applicant Name Ernie Mayers | Project Name Access road, ditchwork, and pipe installation | Date of Application January 29, 2019 | Application Number 2017-050W |
|---------------------------------------|---|---|---|

Type of Application (check all that apply):

| | | | |
|--|---------------------------------------|------------------------------------|-------------------------------------|
| <input type="checkbox"/> Wetland Boundary or Type | <input type="checkbox"/> No-Loss | <input type="checkbox"/> Exemption | <input type="checkbox"/> Sequencing |
| <input checked="" type="checkbox"/> Replacement Plan | <input type="checkbox"/> Banking Plan | | |

Summary and description of proposed project (attach additional sheets as necessary):

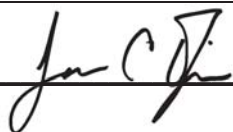
| |
|---|
| This is a replacement plan submitted as a result of a restoration order issued in August of 2018. It is located in the NW 1/4 of Section 27 and the E1/2 of Section 28, T119N, R23W, Corcoran, MN. Hennepin County PID's 2811923410009, 2811923130002, 271192323002 and 2811923120001. The applicant requests approval of; a) 4,995 sq. ft. of wetland impacts for two access roads (areas 1a and 1b of restoration order) and b) replacement of said impacts at a 4:1 ratio in BWSR wetland bank accounts 1643 and 1361, and c) restoration of ditch work to pre-construction conditions in PID 2811923410009 (area 2 of restoration order) and d) replacement of subsurface perforated drain tile with non-perforated drain tile in PID 2711923230002 (area 4 of restoration order) and e) provide future application material for ditch work done in PID's 2711923220002 and 2711923230002 (area 3 of restoration order) and f) for future application to the ECWMC for floodplain impacts in all PID's. |
|---|

2. APPLICATION REVIEW AND DECISION

Signing and mailing of this completed form to the appropriate recipients in accordance with 8420.0255, Subp. 3 provides notice that an application was made to the LGU under the Wetland Conservation Act as specified above. A copy of the application is attached. Comments can be submitted to:

| | |
|---|---|
| Name and Title of LGU Contact Person James C. Kujawa Technical Advisor to the Commission | Comments must be received by (minimum 15 business-day comment period): February 25, 2019; 4:30 PM |
| Address (if different than LGU) | Date, time, and location of decision: March 13, 2019. 11:30 a.m., Maple Grove City Hall, 12800 Arbor Lakes Parkway, Maple Grove, MN 55369 |
| Phone Number and E-mail Address 612-348-7338 James.kujawa@hennepin.us | Decision-maker for this application: <input type="checkbox"/> Staff <input checked="" type="checkbox"/> Governing Board or Council |

Signature: _____



Date: January 31, 2019

3. LIST OF ADDRESSEES

| | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | SWCD TEP member: (email only) Stacey. Lijewski@co.hennepin.mn.us |
| <input checked="" type="checkbox"/> | BWSR TEP member: (email only) Ben Carlson (ben.carlson@state.mn.us). Travis Germundson (travis.germundson@state.mn.us) |
| <input type="checkbox"/> | LGU TEP member (if different than LGU Contact): |
| <input checked="" type="checkbox"/> | DNR TEP member: Jason Spiegel (jason.spiegel@state.mn.us) |
| <input checked="" type="checkbox"/> | DNR Regional Office (email only) Becky.Horton@state.mn.us |
| <input type="checkbox"/> | WD or WMO (if applicable): |
| <input checked="" type="checkbox"/> | Applicant/Agent: (email) Ben Hodapp (Anderson Engineering) bhodapp@ae-mn.com Ernie Mayers, erniemayers@comcast.net . Maury Noonan (Rinke Noonan), mjnoonan@rinkenoonan.com |
| <input checked="" type="checkbox"/> | City of Corcoran: Kevin Mattson and Brad Marten (bmartens@ci.corcoran.mn.us , kmattson@ci.corcoran.mn.us) |
| <input checked="" type="checkbox"/> | Members of the public who requested notice (notice only) |
| <input checked="" type="checkbox"/> | Corps of Engineers Project Manager (notice only) mvp-reg-inquiry@usace.army.mil |
| <input type="checkbox"/> | BWSR Wetland Bank Coordinator (wetland bank plan applications only) |

4. MAILING INFORMATION

- For a list of BWSR TEP representatives: www.bwsr.state.mn.us/contact/WCA_areas.pdf
- For a list of DNR TEP representatives: www.bwsr.state.mn.us/wetlands/wca/DNR_TEP_contacts.pdf
- Department of Natural Resources Regional Offices:

| NW Region: | NE Region: | Central Region: | Southern Region: |
|---|--|--|---|
| Reg. Env. Assess. Ecol. Div. Ecol. Resources 2115 Birchmont Beach Rd. NE Bemidji, MN 56601 | Reg. Env. Assess. Ecol. Div. Ecol. Resources 1201 E. Hwy. 2 Grand Rapids, MN 55744 | Reg. Env. Assess. Ecol. Div. Ecol. Resources 1200 Warner Road St. Paul, MN 55106 | Reg. Env. Assess. Ecol. Div. Ecol. Resources 261 Hwy. 15 South New Ulm, MN 56073 |

For a map of DNR Administrative Regions, see: http://files.dnr.state.mn.us/aboutdnr/dnr_regions.pdf

- For a list of Corps of Project Managers: www.mvp.usace.army.mil/regulatory/default.asp?pageid=687
or send to:
-

US Army Corps of Engineers
St. Paul District, ATTN: OP-R
180 Fifth St. East, Suite 700
St. Paul, MN 55101-1678

- For Wetland Bank Plan applications, also send a copy of the application to:
Minnesota Board of Water and Soil Resources
Wetland Bank Coordinator
520 Lafayette Road North
St. Paul, MN 55155

5. ATTACHMENTS

In addition to the application, list any other attachments:

☒ MN Joint Application for Activities Affecting Water Resources in MN prepared for Ernie Mayers by Anderson Engineering dated January 2019

☐

Minnesota Joint Application

For Activities Affecting Water Resources in Minnesota

Prepared For:
Ernie Mayers
21600 Larkin Road,
Corcoran, MN
55340



Anderson Engineering
Project No. 14451
January 2019



A Service-Disabled Veteran-Owned Small Business

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Minnesota Wetland Conservation Act

Replacement Plan: Complete Application Checklist

| | | | |
|---|---|---|--------------------|
| Local Government Unit (LGU) Elm Creek Watershed Management Commission | | Address 21600 Larkin Road Corcoran, MN, 55340 | |
| Applicant Name Ernie Mayers | Project Name Access road, ditch work, and pipe installation | Date of Application 2019 | Application Number |

Check yes or no or leave blank if not applicable:

GENERAL APPLICATION REQUIREMENTS

| Item # | Yes | No | |
|--------|-------------------------------------|--------------------------|---|
| 1) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Minnesota Local/State/Federal Application Form for Water/Wetland Projects. |
| 2) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | The full name, post office address, and telephone number of applicant. |
| 3) | N/A <input type="checkbox"/> | <input type="checkbox"/> | For corporations, the principal officers of the corporation, any parent companies, owners, partners, and joint venturers, and a designated contact person. |
| 4) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Managing agents, subsidiaries, or consultants that are or may be involved with the activity. |
| 5) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | The location of project by township, range, section, and quarter section. |
| 6) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Evidence of ownership of the project area or the requisite property rights to perform the activity. |
| 7) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | An accurate map, survey, or recent aerial photograph showing the boundaries of the project area and boundaries, size, and type of each wetland relevant to the activity. |
| 8) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | A written description of the proposed project and project area, including its areal extent, with sufficient detail to allow assessment of the amount and types of wetland to be affected. |

FOR THE IMPACTED WETLAND

| Item # | Yes | No | |
|--------|-------------------------------------|--------------------------|---|
| 9) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Square feet or acres of wetland proposed to be impacted by type (Circular 39 and Eggers & Reed). |
| 10) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | The minor watershed, major watershed, county, and bank service area. |
| 11) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | A soil survey map of the site showing soil type and identifying hydric soils (where available). |
| 12) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | A map showing locations of any surface inlets or outlets, natural or otherwise, draining into or out of the wetland and, if the wetland is within the shoreland wetland protection zone or floodplain, the distance and direction to the nearest watercourse. |
| 13) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Information concerning the special considerations criteria in MN Rule 8420.0515 (if known or readily available). |
| 14) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | A list of all other known local, state, and federal permits and approvals required for the activity. |

Sequencing Analysis:

| | | | |
|-----|-------------------------------------|--------------------------|--|
| 15) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Project purpose and relevant requirements identified, and detailed project description included. |
| 16) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Detailed description of project alternatives considered, including: |
| 17) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | At least 2 project alternatives that avoid wetland impacts described and/or shown (only 1 required for projects that repair or rehabilitate existing infrastructure) |
| 18) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Wetland impact minimization efforts identified |
| 19) | N/A <input type="checkbox"/> | <input type="checkbox"/> | Description of proposed rectification activities for any temporary wetland impacts (if applicable) |
| 20) | N/A <input type="checkbox"/> | <input type="checkbox"/> | Description of BMPs planned to protect wetland functions after project completion (if applicable) |
| 21) | N/A <input type="checkbox"/> | <input type="checkbox"/> | Information on the applicability of sequencing flexibility (if applicable as determined by the LGU) |

FOR THE REPLACEMENT WETLAND WHEN REPLACEMENT IS PROJECT-SPECIFIC

| | Yes | No | |
|-----|--------------------------|--------------------------|--|
| 22) | <input type="checkbox"/> | <input type="checkbox"/> | The proposed action(s) eligible for credit from MN Rule 8420.0526 is identified. |
| 23) | <input type="checkbox"/> | <input type="checkbox"/> | The minor watershed, major watershed, county, and bank service area of the proposed wetland replacement area(s). |
| 24) | <input type="checkbox"/> | <input type="checkbox"/> | Evidence of ownership or property rights to the replacement area(s). |

N/A

N/A

- 25) ☐ ☐ Information concerning the special considerations criteria in MN Rule 8420.0515 (if known or readily available).
- 26) ☐ ☐ A description of how the proposed replacement meets the ecological suitability and sustainability criteria under MN Rule 8420.0522, subpart 5.
- 27) ☐ ☐ A map showing locations of any surface inlets or outlets, natural or otherwise, draining into or out of the replacement wetland(s) and, if the replacement wetland is within the shoreland wetland protection zone or floodplain, the distance and direction to the nearest watercourse.
- 28) ☐ ☐ Scale drawings showing plan and profile views of the replacement wetland area(s).
- 29) ☐ ☐ A description of how the replacement area will be constructed; the type, size and specifications of any outlet structures; elevations, relative to mean sea level, of key features; and best management practices that will be implemented to prevent erosion or site degradation.
- 30) ☐ ☐ A soil survey map of the site showing soil type and identifying hydric soils (where available) and site-specific soils information sufficient to determine the capability of the site to produce and sustain wetland characteristics and achieve replacement goals.
- 31) ☐ ☐ A timetable that clearly states how and when implementation of the replacement plan will proceed and when construction of the replacement area will be completed.
- 32) ☐ ☐ Signed statements by the applicant in accordance with MN Rule 8420.0330, Subpart 3, Item B(11).
- 33) ☐ ☐ Evidence that a person proposing to create or restore a wetland within the easement of a pipeline has first notified the easement holder and the director of the Office of Pipeline Safety in writing.
- 34) ☐ ☐ A list of all other known local, state, and federal permits and approvals required for the replacement activity.
- 35) ☐ ☐ Evidence that any drainage or property rights potentially detrimental to the replacement area have been acquired, subordinated, or otherwise eliminated.
- 36) ☐ ☐ A vegetation establishment and management plan according to MN Rule 8420.0528, Subp. 2, Item D.
- 37) ☐ ☐ The size, type, and credits expected to result from the proposed replacement actions.

FOR REPLACEMENT BY WETLAND BANKING

- | | Yes | No | |
|-----|-------------------------------------|--------------------------|---|
| 38) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | The account number(s) of the wetland bank where credits are proposed to be withdrawn. |
| 39) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | The minor watershed, major watershed, county, and bank service area of the bank site. |
| 40) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | The amount of replacement credits to be withdrawn in square feet. |
| 41) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | A completed application for withdrawal of replacement credits from the wetland bank(s) or a purchase agreement signed by the applicant and bank account holder. |

For all replacement plans:

- 42) ☒ ☐ A summary description of the required replacement as determined according to the proposed impacts and replacement actions and the replacement standards in MN Rule 8420.0522.

Note: If any of the above items are checked "No," the application is incomplete. For incomplete applications, the LGU must notify the applicant within 15 business days of receipt of the application and list in writing what items or information is missing. If notification is not provided within 15 business days, the LGU must make a decision on the application or work with the applicant to voluntarily withdraw or revise it.

The application is: ☒ Complete ☐ Incomplete

For incomplete applications, describe the information needed to make the application complete:

Signature: _____ Date: _____

Project Name and/or Number: #14451 – Ernie Mayers

PART ONE: Applicant Information

If applicant is an entity (company, government entity, partnership, etc.), an authorized contact person must be identified. If the applicant is using an agent (consultant, lawyer, or other third party) and has authorized them to act on their behalf, the agent's contact information must also be provided.

Applicant/Landowner Name: Ernie Mayers
Mailing Address: 21600 Larkin Rd, Corcoran, MN 55340
Phone: (612) 490-0115
E-mail Address: erniemayers@comcast.net

Legal Representation: Maury J. Noonan
Mailing Address: Rinke Noonan, Suite 300, US Bank Plaza, P.O. Box 1497, St. Cloud, MN 56302
Phone: (320) 656-3516
E-mail Address: mjnoonan@rinkenoonan.com

Agent Name: Ben Hodapp, Anderson Engineering of Minnesota, LLC
Mailing Address: 13605 1st Ave N, Plymouth, MN 55441
Phone: (763) 412-4005
E-mail Address: bhodapp@ae-mn.com

PART TWO: Site Location Information

County: Hennepin County **City/Township:** Corcoran
Parcel ID and/or Address: 2811923410009, 2811923130002, 2711923220002, 2711923230002, and 2811923120001
Legal Description (Section, Township, Range): NW ¼ of Section 27 and E ½ of Section 28, Township 119 North, Range 23 West
Lat/Long (decimal degrees): 45.090653, -93.589506
Attach a map showing the location of the site in relation to local streets, roads, highways.
Approximate size of site (acres) or if a linear project, length (ft.): Entire Site: 195 acres

If you know that your proposal will require an individual Permit from the U.S. Army Corps of Engineers, you must provide the names and addresses of all property owners adjacent to the project site. This information may be provided by attaching a list to your application or by using block 25 of the Application for Department of the Army permit which can be obtained at:

http://www.mvp.usace.army.mil/Portals/57/docs/regulatory/RegulatoryDocs/engform_4345_2012oct.pdf

PART THREE: General Project/Site Information

If this application is related to a delineation approval, exemption determination, jurisdictional determination, or other correspondence submitted *prior to* this application then describe that here and provide the Corps of Engineers project number.

N/A

Describe the project that is being proposed, the project purpose and need, and schedule for implementation and completion. The project description must fully describe the nature and scope of the proposed activity including a description of all project elements that effect aquatic resources (wetland, lake, tributary, etc.) and must also include plans and cross section or profile drawings showing the location, character, and dimensions of all proposed activities and aquatic resource impacts.

Background

The project site is a group of agricultural parcels owned by Ernie Mayers (the applicant) located in Corcoran, Hennepin County, Minnesota (Appendix A). Construction and maintenance activities on Mayers's property in 2017 led to a Restoration Order (RO) to be served by MnDNR in August of 2018 (Appendix B). The RO stated that the activities in 2017 affected wetlands on the property. The RO identified four general areas of wetland impact, described in the following section.

Resource Impacts

Figure 1 shows an overview of impact areas as designated by the restoration order. Refer to Appendix B for detailed figures of individual impact areas.

Figure 1. Restoration Order Areas



Area 1 is related to maintenance and construction on two separate stubs of an access road on the western side of the property. The main access road extends from Larkin Road approximately 1,400 ft. to the north and east. The southerly road stub (Area 1a) is approximately 450 ft. long. The northerly stub (Area 1b) is approximately 200 ft. long. The following wetland impacts were identified:

Area 1a

The southerly stub road impacts 1,283 sf of wetland. The southerly stub road impacts wetland that is mapped by the National Wetlands Inventory (NWI) as a Type 2 Wet Meadow and is part of a larger wetland complex associated with the South Fork of Rush Creek.

Area 1b

The northerly stub access road impacts 3,712 sf of wetland, a Type 2/4, Fresh Wet Meadow/Deep Marsh that is also part of the larger wetland complex.

Area 2

An existing ditch conveying runoff north from the general Area 2 was cleaned in combination with placement of gravel for an access road. While the gravel was previously shown not to result in direct wetland impacts, the RO identified the ditch

maintenance as resulting in a ditch exceeding historic depth/profile and stated that the ditch partially or fully drained an existing wetland basin approximately 12,500 sf in size located within the adjacent cropland to the east.

Area 3

In Area 3, the applicant cleaned out the ditch along the western edge of parcel 2711923220002, from Hennepin County Ditch #3 south approximately 1,700 ft. The RO claimed that this ditch work partially drained MN DNR Wetland 420W and adjacent MN WCA jurisdictional wetlands.

Area 4

In Area 4, subsurface drain tile was installed consisting of perforated pipe and open surface intakes between Kalk Road and the southern end of the ditch work in Area 3b. The RO claimed that the drain tile work partially or fully drained approximately 11 acres (479,160 ft²) of MN WCA wetlands located within the agricultural land.

The applicant is aware that there are other resources impacted by the construction and maintenance that occurred. Specifically, parts of the project took place within a 100-year floodplain, boundaries of which were given by the Elm Creek Watershed Management Commission. The applicant plans to address this issue with the watershed, however, since it does not pertain to the Wetland Conservation Act or the restoration order, it will not be further addressed in this application packet.

Project Description – Proposed Action

Area 1

The applicant seeks to retain portions of the access road that reach otherwise inaccessible upland island areas on the western side of the property for agricultural production purposes; primarily hay. The applicant proposes to mitigate the wetland impacts in Areas 1a and 1b by purchasing wetland bank credits at the after-the-fact mitigation ratio of 4:1.

Area 2

As suggested in the RO, the applicant proposes to restore the ditch in Area 2 to pre-construction conditions. If pre-construction conditions cannot be determined, ditch construction will begin at edge of wetland boundary with a depth to old sod elevation, or up to 1.0 feet below old sod elevation in the existing ditch at the tree line area.

Area 3

The RO suggests that the ditch be restored to preconstruction conditions, recognizing that there was a historic shallow ditch in the area. It suggests, however, that the shallow ditch only existed south of a swale that cuts northeast through the field rather than continuing north the extra approximately 280ft to County Ditch #3, which runs along the northern edge of parcels 2711923220002 and 2711923230002.

This application is providing additional information regarding the ditch:

The applicant believes that a ditch did historically run directly north and into County Ditch #3. Historic aerials dating back to 1947 and 1953 (Appendix D), have the signatures of a ditch that agree with the applicant's claim. There is no discernable difference in the signatures north or south of the swale. A certified wetland determination report by the NRCS also suggests that the ditch historically continued to run north of the swale and into County Ditch #3 (Appendix E – 1971 aerial photo notations).

The Minnesota DNR Protected Waters and Wetlands Inventory (PWI) for Hennepin County, Minnesota Sheet 3 of 4, depicts Judicial Ditch #3 as a Public Ditch with a dashed line type. The PWI does not indicate a DNR PWI mapped flow path to the north-east diagonally across the Mayer's property (Appendix G).

Hennepin County is currently in the process of surveying County Ditch #3 and the survey is due early February 2019. The results of the survey are expected to provide more evidence for the path and condition of the ditch.

We believe that until all information is readily available and given the current frozen field conditions, detailed conclusions for Area 3 would be best left as a future detailed application package.

Area 4

The applicant proposes to replace a portion of the subsurface perforated tile in Area 4 with non-perforated, solid pipe. The solid pipe would include an appropriate inlet near Kalk Road to capture the excess surface water and convey it west toward the ditch in RO Area 3. The length of solid pipe would replace the perforated pipe from the eastern edge of the field, near Kalk Road, to a surface inlet toward the western end of the field. The surface inlet and the tile placed between it and the ditch to the west was approved by the NRCS in 1998. Appendix H is a letter regarding the request for drainage maintenance from the NRCS in 1998. Exhibit 1 in the letter refers to the relevant area of tile.

The ***purpose*** of this project is to access agricultural lands and maintain existing drainage systems.

The project is ***needed*** for agricultural purposes to maintain access to otherwise inaccessible upland island areas and to manage the drainage of excess water at the site.

PART FOUR: Aquatic Resource Impact¹ Summary

If your proposed project involves a direct or indirect impact to an aquatic resource (wetland, lake, tributary, etc.) identify each impact in the table below. Include all anticipated impacts, including those expected to be temporary. Attach an overhead view map, aerial photo, and/or drawing showing all of the aquatic resources in the project area and the location(s) of the proposed impacts. Label each aquatic resource on the map with a reference number or letter and identify the impacts in the following table.

| Aquatic Resource ID (as noted on overhead view) | Aquatic Resource Type (wetland, lake, tributary etc.) | Type of Impact (fill, excavate, drain, or remove vegetation) | Duration of Impact Permanent (P) or Temporary (T) ¹ | Size of Impact ² | Overall Size of Aquatic Resource ³ | Existing Plant Community Type(s) in Impact Area ⁴ | County, Major Watershed #, and Bank Service Area # of Impact Area ⁵ |
|---|---|--|--|-----------------------------|---|--|--|
| --Wetlands-- | | | | | | | |
| Area 1a | Wetland | fill | P | 0.03 acres (1,283 sf) | N/A | Type 2: Wet Meadow | Hennepin County, Watershed #18, Bank Service Area #7 |
| Area 1b | Wetland | fill | P | 0.09 acres (3,712 sf) | N/A | Type 2/4: Fresh Wet Meadow/Deep Marsh | Hennepin County, Watershed #18, Bank Service Area #7 |

¹If impacts are temporary; enter the duration of the impacts in days next to the "T". For example, a project with a temporary access fill that would be removed after 220 days would be entered "T (220)".

²Impacts less than 0.01 acre should be reported in sf. Impacts 0.01 acre or greater should be reported as acres and rounded to the nearest 0.01 acre. Tributary impacts must be reported in linear ft. of impact and an area of impact by indicating first the linear ft. of impact along the flowline of the stream followed by the area impact in parentheses). For example, a project that impacts 50 ft. of a stream that is 6 ft. wide would be reported as 50 ft. (300 sf).

³This is generally only applicable if you are applying for a de minimis exemption under MN Rules 8420.0420 Subp. 8, otherwise enter "N/A".

⁴Use *Wetland Plants and Plant Community Types of Minnesota and Wisconsin* 3rd Ed. as modified in MN Rules 8420.0405 Subp. 2.

⁵Refer to Major Watershed and Bank Service Area maps in MN Rules 8420.0522 Subp. 7.

If any of the above identified impacts have already occurred, identify which impacts they are and the circumstances associated with each:

Both impacts in the table above have already occurred. The construction of access road stubs in Area 1 took place in 2017.

PART FIVE: Applicant Signature

☐ Check here if you are requesting a pre-application consultation with the Corps and LGU based on the information you have provided. Regulatory entities will not initiate a formal application review if this box is checked.

By signature below, I attest that the information in this application is complete and accurate. I further attest that I possess the authority to undertake the work described herein.

Signature: Ernie Mayers Date: 1-29-19

I hereby authorize _____ to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this application.

¹ The term "impact" as used in this joint application form is a generic term used for disclosure purposes to identify activities that may require approval from one or more regulatory agencies. For purposes of this form it is not meant to indicate whether or not those activities may require mitigation/replacement.

Attachment C

Avoidance and Minimization

RO Areas 3 and 4 are not applicable to Attachment C at this time and will not be further addressed in the application form.

Project Purpose, Need, and Requirements. Clearly state the purpose of your project and need for your project. Also include a description of any specific requirements of the project as they relate to project location, project footprint, water management, and any other applicable requirements. Attach an overhead plan sheet showing all relevant features of the project (buildings, roads, etc.), aquatic resource features (impact areas noted) and construction details (grading plans, storm water management plans, etc.), referencing these as necessary:

The **purpose** of this project is to maintain access road stubs, to restore ditches to agreed parameters, and replace perforated pipe with solid pipe. The project is **needed** for agricultural purposes to maintain access to otherwise inaccessible upland island areas, to reduce impact to wetlands onsite, and to manage the flow of excess water across the site.

Area 1 and 2

The RO (Appendix B) depicts location of the access road and footprints of wetland impacts.

Avoidance. Both the CWA and the WCA require that impacts to aquatic resources be avoided if practicable alternatives exist. Clearly describe all on-site measures considered to avoid impacts to aquatic resources and discuss at least two project alternatives that avoid all impacts to aquatic resources on the site. These alternatives may include alternative site plans, alternate sites, and/or not doing the project. Alternatives should be feasible and prudent (see MN Rules 8420.0520 Subp. 2 C). Applicants are encouraged to attach drawings and plans to support their analysis:

Area 1

It is not practicable to entirely avoid wetland impacts. Complete avoidance of the wetlands would not meet the project's purpose and need. Since the upland areas are effectively islands surrounded by wetlands, some amount of wetland filling is the only way that the project need can be met. To minimize impacted wetland area, the roads were built at lowest length and widths necessary for proper intended use and constructed to reach island upland areas at the narrowest wetland crossing points. Furthermore, the southerly stub road was constructed in a location that was historically used as an access road, which is apparent in historic aerial imagery. Wetland impacts for the southerly stub road occurred only where necessary to restore the access road to a functional condition compatible with modern farming equipment size. There are few feasible alternatives. Since the access roads are already in place, the only alternative to retaining the roads is removing them and any fill used in their construction. The removal of the access roads would fail to meet the need of the project as the upland areas would be inaccessible for agricultural purposes.

Area 2

N/A – the ditch will be restored to preconstruction conditions

Minimization. Both the CWA and the WCA require that all unavoidable impacts to aquatic resources be minimized to the greatest extent practicable. Discuss all features of the proposed project that have been modified to minimize the impacts to water resources (see MN Rules 8420.0520 Subp. 4):

Area 1

To minimize the impacts to aquatic resources, the access roads to connect upland areas were constructed at the narrowest wetland region points. Furthermore, the southerly stub road was constructed in a location that was historically used as an access road, which is apparent in historic aerial imagery. Wetland impacts for the southerly stub road occurred only where necessary to restore the access road to a functional condition compatible with modern farming equipment.

Area 2

N/A – the ditch will be restored to preconstruction conditions.

Off-Site Alternatives. An off-site alternatives analysis is not required for all permit applications. If you know that your proposal will require an individual permit (standard permit or letter of permission) from the U.S. Army Corps of Engineers, you may be required to provide an off-site alternatives analysis. The alternatives analysis is not required for a complete application but must be provided during the review process in order for the Corps to complete the evaluation of your application and reach a final decision. Applicants with questions about when an off-site alternatives analysis is required should contact their Corps Project Manager.

N/A

Project Name and/or Number: #14451 – Ernie Mayers

Attachment D

Replacement/Compensatory Mitigation

Complete this part **if** your application involves wetland replacement/compensatory mitigation not associated with the local road wetland replacement program. Applicants should consult Corps mitigation guidelines and WCA rules for requirements.

Replacement/Compensatory Mitigation via Wetland Banking. Complete this section if you are proposing to use credits from an existing wetland bank (with an account number in the State wetland banking system) for all or part of your replacement/compensatory mitigation requirements.

| Wetland Bank Account # | County | Major Watershed # | Bank Service Area # | Credit Type (if applicable) | Number of Credits |
|------------------------|----------|-------------------|---------------------|-----------------------------|-------------------|
| 1361 | Hennepin | 18 | 7 | 3 | 0.1147 |
| 1361 | Hennepin | 18 | 7 | U | 0.1147 |
| 1643 | Hennepin | 20 | 7 | 3 | 0.2293 |

Applicants should attach documentation indicating that they have contacted the wetland bank account owner and reached at least a tentative agreement to utilize the identified credits for the project. This documentation could be a signed purchase agreement, signed application for withdrawal of credits or some other correspondence indicating an agreement between the applicant and the bank owner. *However, applicants are advised not to enter into a binding agreement to purchase credits until the mitigation plan is approved by the Corps and LGU.*

A search was completed and no wetland mitigation bank credits are available for purchase within Elm Creek Watershed at this time. The applicant plans to purchase 2:1 of WCA-only credits from the Tom & Karen Grygelko Wetland Bank, which is located in the next watershed over, Pioneer-Sarah Creek (Appendix I). The remaining 2:1 wetland mitigation credits will be USACE certified credits located in the county and bank service area and purchased from the Wetland Credit Agency, LLC.

Appendix A

General Project/Site Location



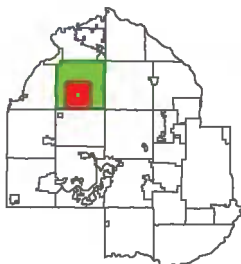
item 10s

PROJECT LOCATION

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering



Hennepin County
State of Minnesota



City of Corcoran
Hennepin County, MN

1 in = 0.25 miles



0 0.125 0.25 0.5



Miles

21600 Larkin Road
Corcoran, Hennepin County, MN
PID: Multiple



ENGINEERING • ARCHITECTURE • LAND SURVEYING
ENVIRONMENTAL SERVICES • LANDSCAPE ARCHITECTURE

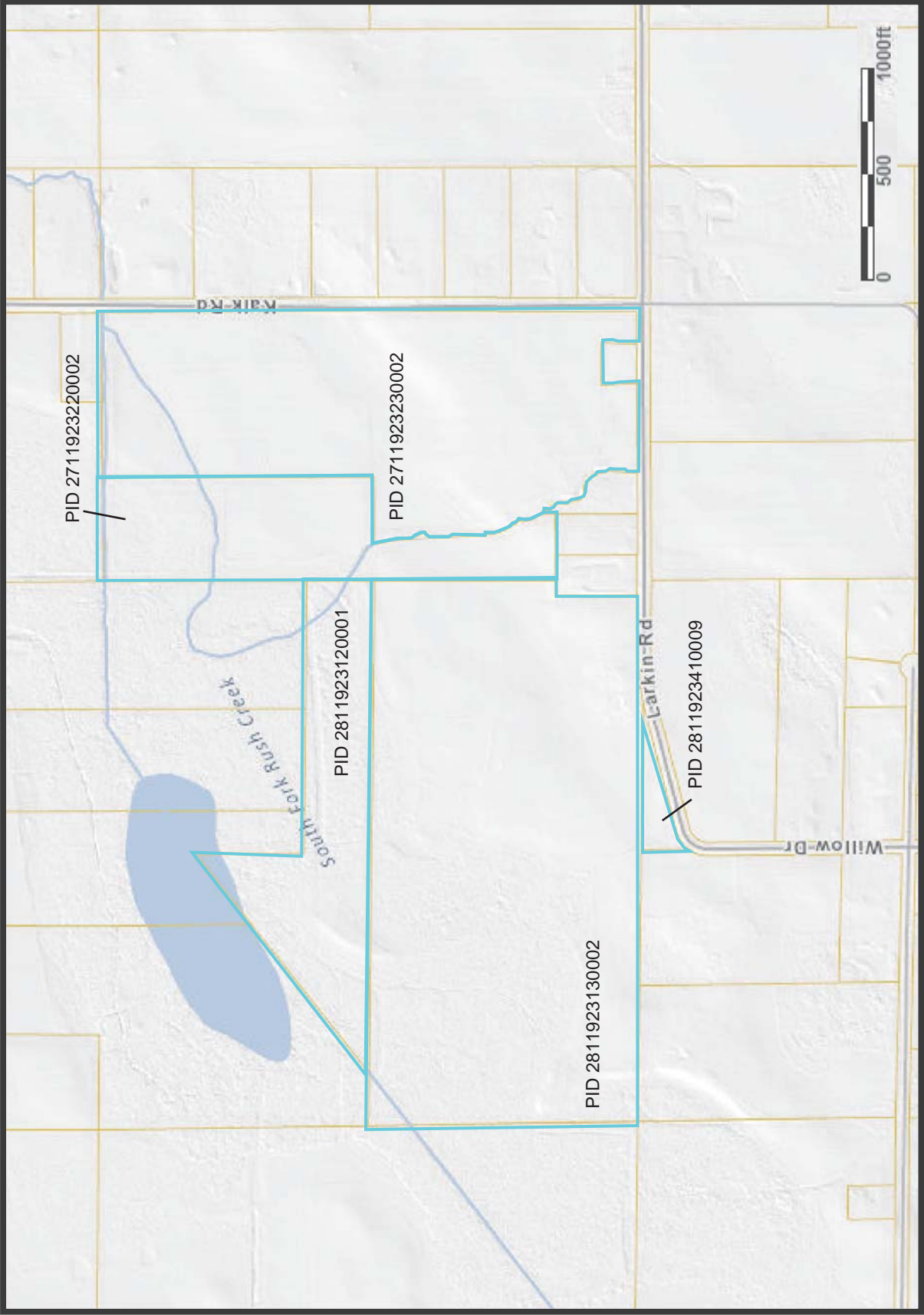
Anderson Engineering of Minnesota, LLC
13605 1st Avenue North
Suite 100
Plymouth, MN 55441
763-412-4000 (o) 763-412-4090 (f)
www.ae-mn.com

LOCATION - FIGURE 1 MAYERS WETLAND DELINEATION

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AE Comm.# 14451 Date: 8/16/2016 By: JLA

Parcel ID Map



Relevant PIDs

Appendix B

Restoration Order



Minnesota Wetland Conservation Act Restoration Order



REF #

CDO# F890599734501

RPN#

The Commissioner of Natural Resources hereby orders Ernie Mayers and his/hers/its heirs, successors, and assigns to complete restoration of the wetland located at **(legal description)** East 1/2 Section 28, T119N, R23W and the NW1/4 of Section 27, T119N, R23 West corresponding to Hennepin County PID's 2811923410009, 2811923130002, 2711923220002, 2711923230002, and 2811923220002; Hennepin County State of Minnesota.

| | |
|----------|---------------------------------------|
| Name: | Ernie Mayers |
| Address: | 21600 Larkin Lane, Corcoran, MN 55340 |

Findings of Fact: Site visits were conducted on December 11, 2017 and again on May 22, 2018 at the above mentioned properties by the Technical Evaluation Panel of Elm Creek Watershed Management Commission (Local Government Unit) which includes a representative from the Elm Creek Watershed Management Commission, the MN Board of Water and Soil Resources Area Wetland Specialist, the Local Soil and Water Conservation District representative, the MN DNR Area Hydrologist and the MN DNR Conservation Officer. During these inspections, a new access road from Larkin Lane into these parcels was observed along with two recent constructed drainage ditches. Additionally a drainage system (drain tile line with three surface inlets) was observed that appeared drain a historic wetland area. The ditch work areas were a) along the access road near Larkin Lane and b) along the west edge of PID 2711923220002 extending from Hennepin County Ditch #3 south approximately 1700 feet. Subsequent work by the Technical Evaluation Panel, determined the following activities occurred without a permit from the Elm Creek Watershed Management Commission in violation of the MN Wetland Conservation Act as amended;

- 1) Area 1; Access road construction impacted 4,995 square feet of MN WCA jurisdictional wetland in two separate areas, and
- 2) Area 2; A ditch constructed as part of the access road partially or fully drained an existing wetland basin approximately 0.3 acres in size along the north boundary of PID's 2811923410009 and the south boundary of PID

3) Ditch work along the westerly property lines of PIDs 2711923220002 and 2711923230002, running from Hennepin County Ditch #3 south approximately 1,700 feet. This work partially drained MN DNR Wetland 420W and adjacent MN WCA jurisdictional wetlands, and

4) Drain tile work done between Kalk Road to near the southerly terminus of the ditch work in #3 above, partially or fully drained approximately 11 acres of MN WCA wetlands.

This order is issued pursuant to Minn. Stat. § 103G.2372 and MN Rule part 8420.0900.

**VIOLATION OF THIS ORDER IS A MISDEMEANOR
AND A DEED RESTRICTION COULD BE PLACED ON THE PROPERTY.**

You must either:

- A.** Provide for restoration of the wetland in the manner required by this order. Complete restoration must be accomplished on or before September 15, 2018; **or**
- B.** Submit a complete wetland replacement plan, exemption, or no-loss application to the Elm Creek Watershed Management Commission within 30 days of receipt of this order.

Restoration shall be accomplished by doing the following:

1) For areas 1a and 1b, remove 4,995 sq. feet of fill in the two areas of wetland impacted as a result of the road access work.

2) Restore ditch area 2 near entry way to pre-construction conditions. If pre-construction conditions cannot be determined, begin ditch construction at edge of wetland as determined and grade to old sod elevations, or up to 1.0 feet below the old sod elevation, in the existing ditch at the tree line area,

3) Restore ditch areas 3a and 3b to pre-construction conditions.

-In area 3a, refill the ditch to the adjacent elevations of the existing ground on both sides of the constructed ditch. In area 3a, a small surface ditch can be established based on 1974 topographic survey. This ditch must match the existing DNRv 420W overflow swale elevation at its north end and run 370' south, matching the historic ground elevations at that point.

- In area 3b, refill the ditch to its historic elevations. If historic elevations cannot be determined, the ditch elevations at the south end must match the existing drain tile that is at the beginning of the ditch and it must terminate at the existing historic elevation at the power pole where it enters DNR Wetland 420W. An even ditch grade can be established between these two end points.

4) The Drain tile and surface inlets between Kalk Road and ditch area 3b must be removed or disabled by methods approved by the TEP. A non-perforated drain tile can be established between Kalk Road and the ditch if approved by the Elm Creek Watershed Management Commission.

Attachments are a part of this document (check one) ☒ Yes ☐ No

6 attachments. Overview Map, -RO Area 1a, -RO Area 1b, -RO Area 2, -RO Areas 3a and 3b, RO Area 4

The enforcement authority shall rescind this order if the landowner obtains approval for an after-the-fact ^{item 10s} replacement plan, exemption determination, or no-loss determination from the Elm Creek Watershed Management Commission. The contact person is James Kujawa at (612)348-7338. If an after-the-fact approval is not received, the landowner/responsible party must restore the wetland as specified in this order. Upon completion of the restoration required by this order, the landowner must contact Stacey Lijewski at the Hennepin County Soil and Water Conservation District (612)348-9938 and request that a Certificate of Satisfactory Completion be issued.

If you choose to appeal the terms or conditions of this order, a written request must be submitted to the Minnesota Board of Water and Soil Resources (BWSR) Executive Director within 30 days of receiving this order, along with a minimum filing fee of \$500. If a written request and filing fee is not submitted to BWSR within 30 days, this restoration order shall become final.

**Order
Prepared by**

Stacey Lijewski

Signature

Stacey Lijewski

Printed Name

8/2/2018

Date

**Order
Served by**

Leah Weyandt

Conservation Officer Signature

592

Badge #

Leah Weyandt

Printed Name

8/9/2018

Date

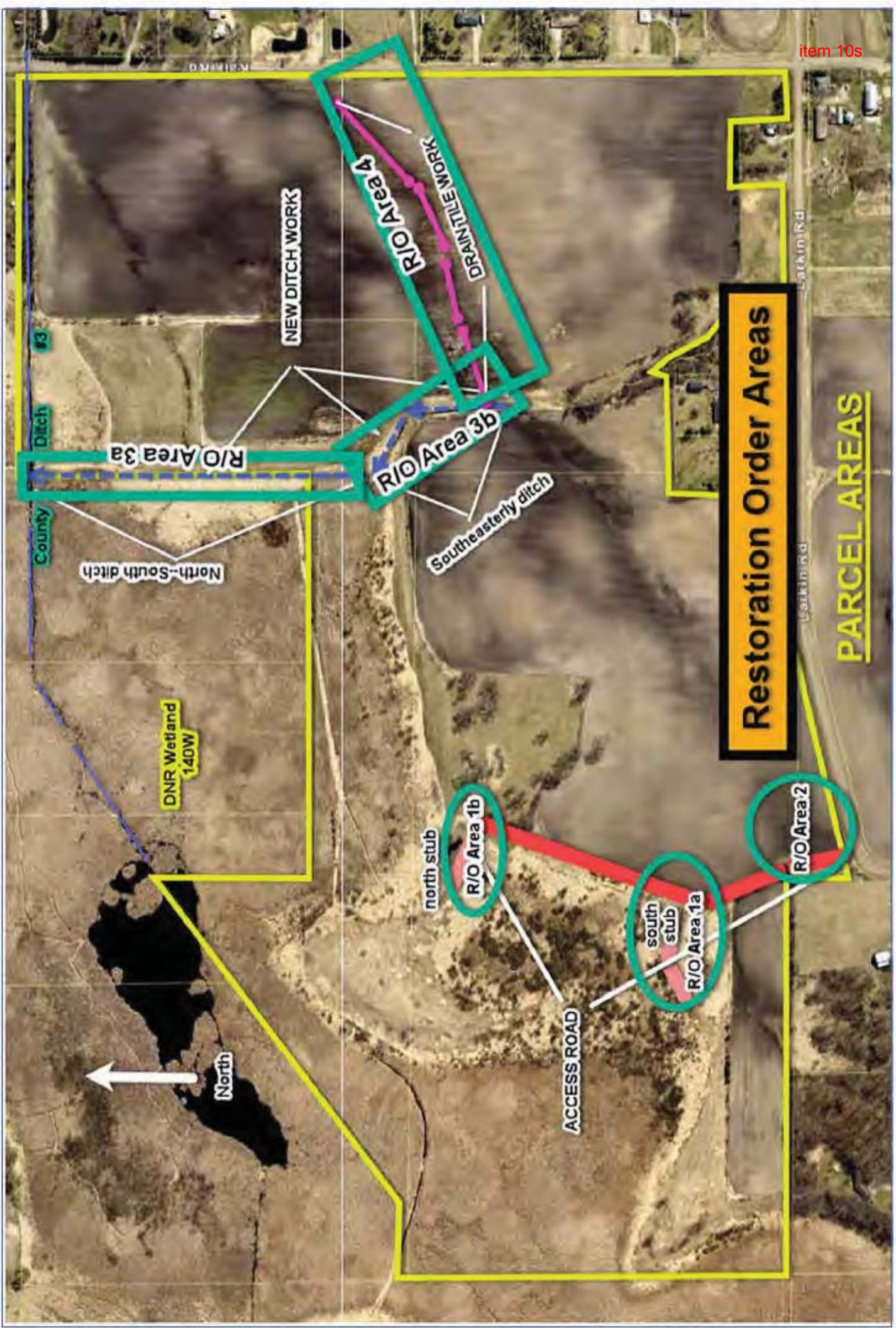
Officer Issuance Record: ☒ in person; or ☐ by certified mail on 08 / 09 / 18 at 0800 hours
[Date]

Distribute Copies To:

DNR Conservation Officer
DNR Water Resources Enforcement Officer
BWSR Wetland Specialist
Local Government Unit (LGU)
Soil and Water Conservation District (SWCD)
Landowner

Appeal and fee can be mailed to:

Minnesota BWSR
Executive Director
520 Lafayette Road North
St. Paul, MN 55155



-  Road Fill Area
-  Approximate Parcel Boundary

EXHIBIT C- Access Road

Parcel ID 2811923130002

North
↑

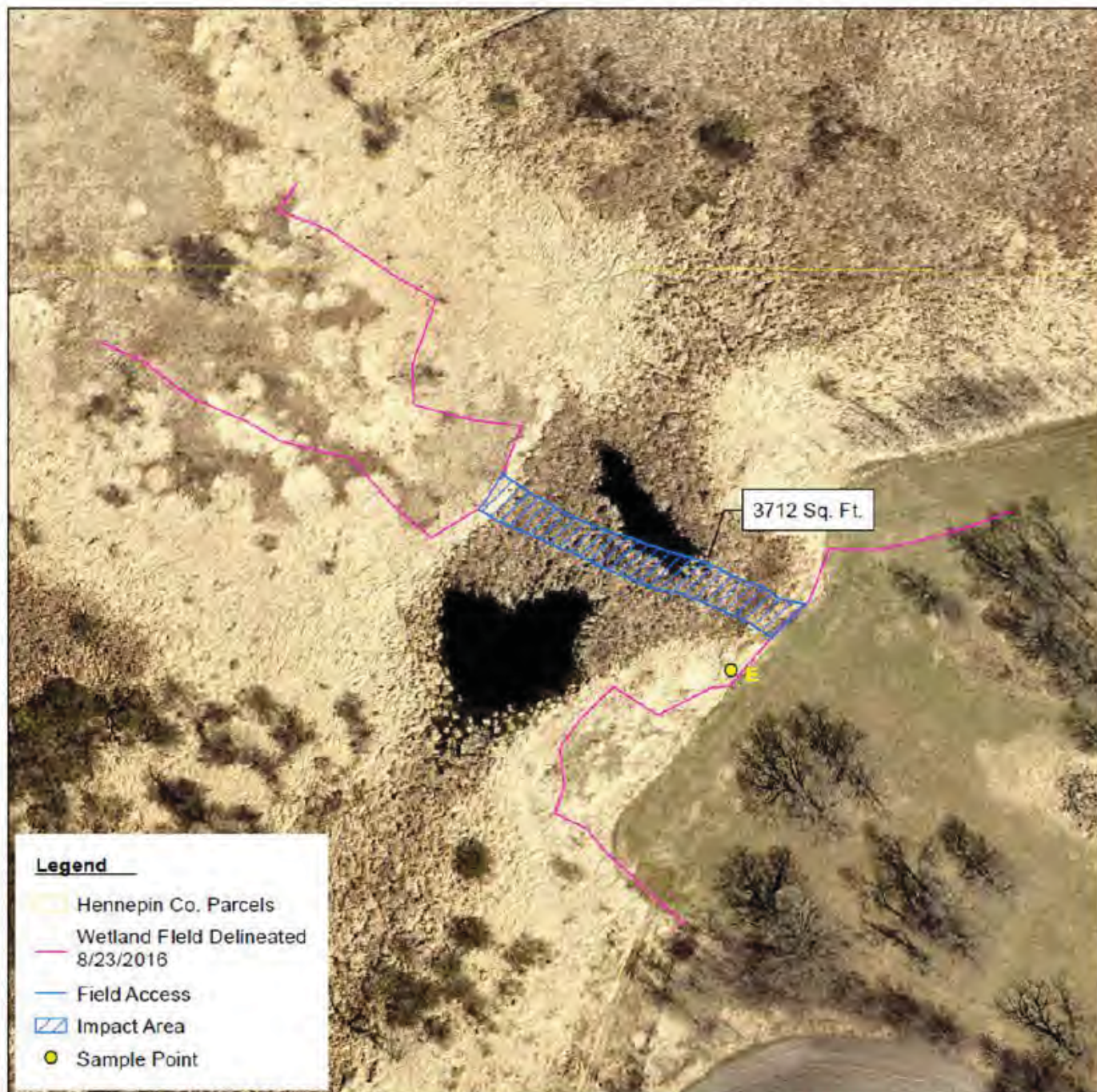
1283



Southerly Road Access Fill Area

Restoration Order Area 1a





Legend

- Hennepin Co. Parcels
- Wetland Field Delineated 8/23/2016
- Field Access
- Impact Area
- Sample Point

PROJECT LOCATION

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering



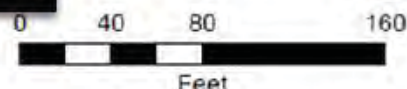
Hennepin County
State of Minnesota



City of Corcoran
Hennepin County, MN

Restoration Order Area 1b

1 in = 80 feet



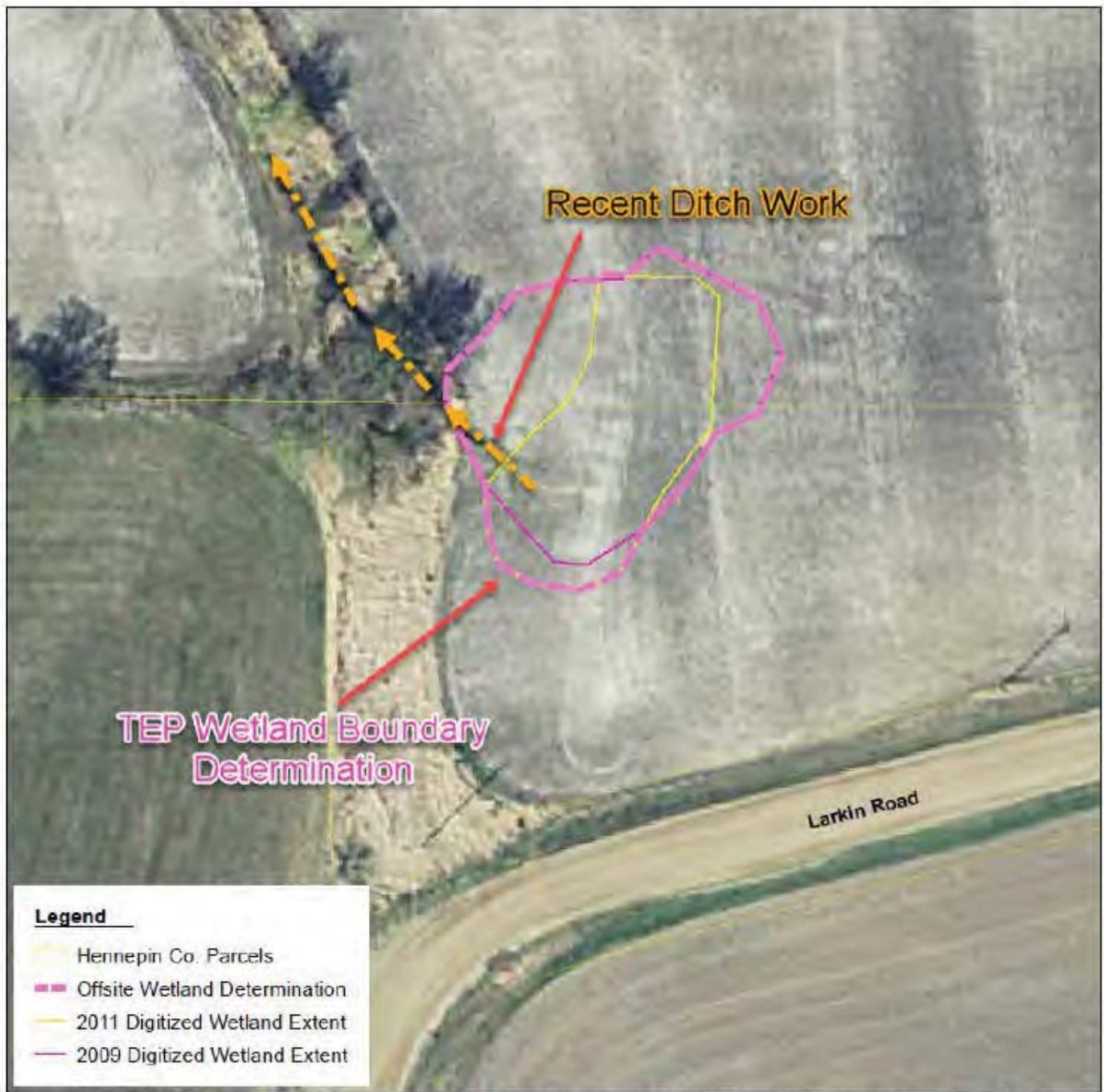
21600 Larkin Road
Corcoran, Hennepin County, MN
PID: Multiple



Anderson Engineering of Minnesota, LLC
13605 1st Avenue North
Suite 100
Plymouth, MN 55441
763-412-4000 (o) 763-412-4090 (f)
www.ae-mn.com

**WETLAND IMPACT
MAYERS PROPERTY
AREA1b**

AE Comm.# 14451 Date: 8/16/2016 By: JLA



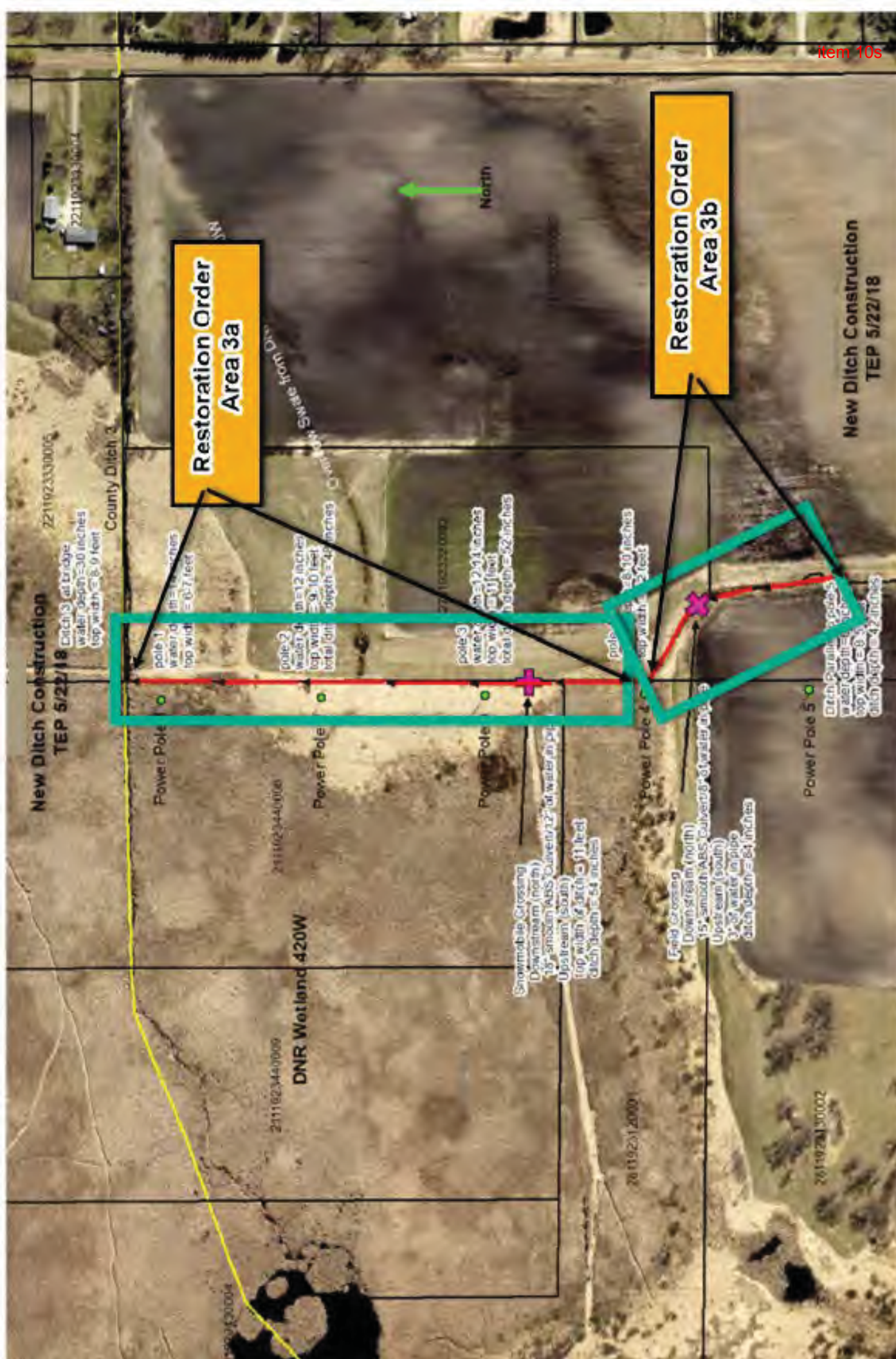
ANDERSON ENGINEERING

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ENVIRONMENTAL SERVICES • LANDSCAPE ARCHITECTURE

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**OFFSITE WETLAND DETERMINATION
MAYERS PROPERTY
AREA 2**

AE Comm. # 14451 Date: 8/16/2016 By: JLA





Appendix C

Historic Ditch Analysis Report

MEMORANDUM

To: Ernie Mayers
From: Benjamin Hodapp, PWS, Environmental Group Lead
Date: January 29, 2018
Subject: Historic Ditch Analysis – 21000 Larkin Road, Corcoran, Minnesota

BACKGROUND:

Anderson Engineering (Anderson) was retained to perform research and analysis of historic conditions within the defined investigation area at the agricultural parcel located at 21000 Larkin Road, Corcoran, Hennepin County, Minnesota. Specifically, Anderson was requested to research the existence of an open ditch generally flowing from south to north and intersecting the ditch along the north parcel boundary which flows east towards Kalk Road.

The abstract of title history for the property dated January 1991 (see excerpts included) indicates that numerous land areas were assessed for benefits in establishment of Hennepin County Ditch Number 3 as filed October 15, 1907.

REVIEW:

Anderson reviewed readily available resources including the United States Fish and Wildlife Service National Wetlands Inventory, Minnesota Department of Natural Resources Public Water Inventory, Minnesota Department of Natural Resources LiDAR data, readily available online resources including Hennepin County Parcel data and associated layers, Bing Maps, Google Earth and the University of Minnesota Historic Aerial Photographs Online.

The investigation area is generally centered on the east boundary line of the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 28 as depicted on Figure 1. The area within and immediately adjacent to the east and south are predominantly row-crop agricultural land and the area west a large emergent wetland complex associated with the South Fork of Rush Creek. The north parcel line, generally the north line of W $\frac{1}{2}$ of Section 27 is defined by a channelized drainage ditch flowing from west to east towards Kalk Road.

The NWI (Figure 2) identifies a large wetland complex within and adjacent to the west of investigation area. The NWI also depicts a Type 1, PEM1Af wetland basin at approximately the center of the investigation area and extending slightly east and north, but not all the way to Kalk Road. The NWI appears to generally map the extent of pasture land use. The PWI identifies Rush Creek – South Fork as broadly crossing the wetland complex diagonally from southwest to northeast into the investigation area and then continuing diagonally to the northeast corner of the Mayers property at Kalk Road. This PWI alignment is suspect in that historic aerials do not support continuous flow path in this location and the topography suggests a depressional wetland condition more similar to the mapped NWI polygon, then a continuous flow path extending to Kalk Road.

LiDAR topographic data displayed as “hillshade” (Figure 3) shows a clear ditch signature entering the investigation area from the south and a clear ditch signature along the north parcel line extending east to Kalk Road. There is

also a signature of “lower” elevations extending from the adjacent wetland complex into the investigation area and then turning and continuing north within the center of the investigation area. The width and position of this topographic “low” signature matching directly to a bridge over the ditch at the north parcel line suggests that the topographic variation is resultant from winter snowmobile trail (Northwest Trail-224) alignment disturbing and flattening the emergent vegetation.

The City of Corcoran Street Map (Figure 4) depicts a watercourse beginning at Larkin Road and extending into the center of the investigation area and then flowing east and north to the northeast property corner at Kalk Road, similar to the PWI mapped alignment. Unlike the PWI, the City of Corcoran Street Map depicts the South Fork of Rush Creek as broadly crossing the wetland complex diagonally from southwest to northeast and then following easterly along the north property line ditch alignment to Kalk Road.

Readily available historic aerial photos (included) were reviewed for evidence of an open ditch generally flowing from south to north and intersecting the ditch along the north parcel boundary which flows east towards Kalk Road. The results are summarized below:

1937 (dry year): The 1937 aerial photo clearly shows the west half of the investigation area as emergent wetland and the east half as cropped. The area is clearly divided and the cropped area does not appear to have any wet spots. There is no channel evident extending east at the middle of the investigation area where the PWI alignment is mapped to the northeast corner of the property at Kalk Road.

1945 (normal year): The 1945 aerial photo clearly shows the west half of the investigation area as emergent wetland and the east half as being cropped. In spite of the section corner marker (white cross) present on the aerial image, significant trees are obvious along the center dividing line, presumed ditch alignment, as evidenced by the dark shadows cast to the northwest. There is substantially more cropped area along the southern edge of the large wetland complex and extending into the investigation area, suggesting increased drainage. The northeast portion of the investigation area is pasture land. Again, there is no channel evident extending east at the middle of the investigation area where the PWI alignment is mapped to the northeast corner of the property at Kalk Road.

1967 (dry year): The 1967 aerial photo generally shows the west half of the investigation area as emergent wetland and the east half as cropped. The clear dividing line and the significant trees are removed (presumed ditch cleanout) and a clear linear ditch feature extending from south to north is present. There is a moist soil signature extending east at the middle of the investigation area and continuing to the northeast corner of the property at Kalk Road.

1991 (wet year): The 1991 aerial photo clearly shows a number of linear ditch features conveying surface flow generally from south to north through the investigation area. There is a clear linear channel signature extending east at the middle of the investigation area and continuing to the northeast corner of the property at Kalk Road.

2008 (dry year): The 2008 aerial photo shows the west and north portions of the investigation area as pasture for cattle grazing. There is slight signature of a south to north oriented linear feature. There is no channel evident extending east at the middle of the investigation area where the PWI alignment is mapped to the northeast corner of the property at Kalk Road; this area is being cropped through.

CONCLUSIONS:

The specified investigation area at 2100 Larkin Road, Corcoran, Hennepin County, Minnesota appears to have historically contained a linear, south-north oriented ditch feature as best evidenced on the 1967 and 1991 aerial images.



Legend

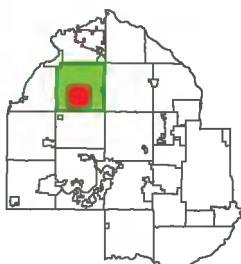
- Mayers Property
- Investigation Area
- Hennepin Co. Parcels
- PLSS

PROJECT LOCATION

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering



Hennepin County
State of Minnesota



City of Corcoran
Hennepin County, MN

1 in = 1,000 feet



0 500 1,000 2,000
Feet

21600 Larkin Road
Corcoran, Hennepin County, MN
PID: Multiple



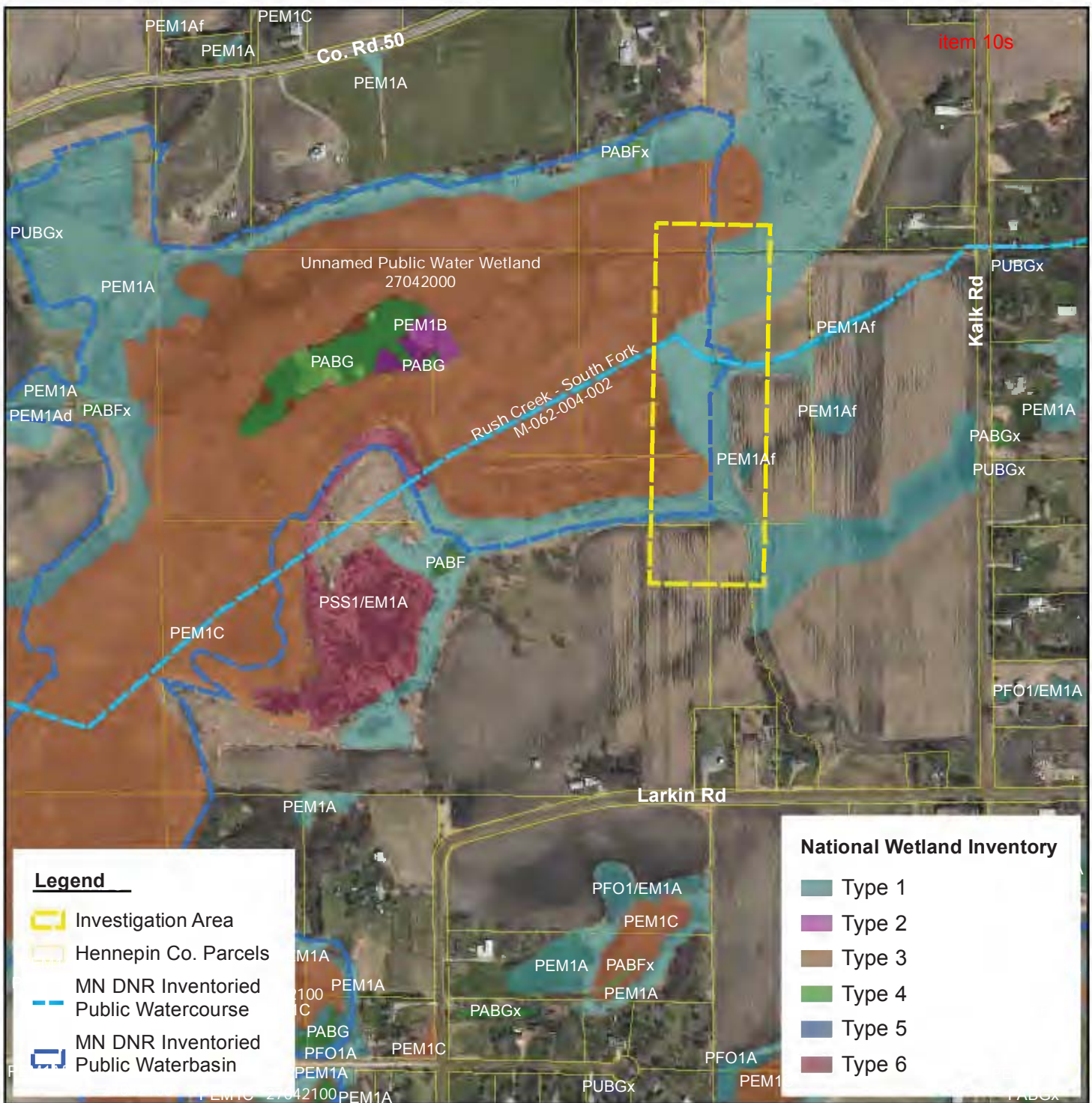
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LOCATION - FIGURE 1
MAYERS DITCH
INVESTIGATION

Page 28 of 124

AE Comm.# 14451 Date: 1/26/2018 By: JLA

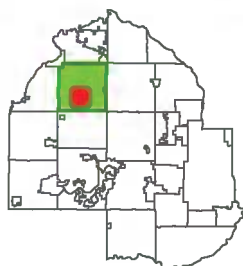


PROJECT LOCATION

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering



Hennepin County
State of Minnesota



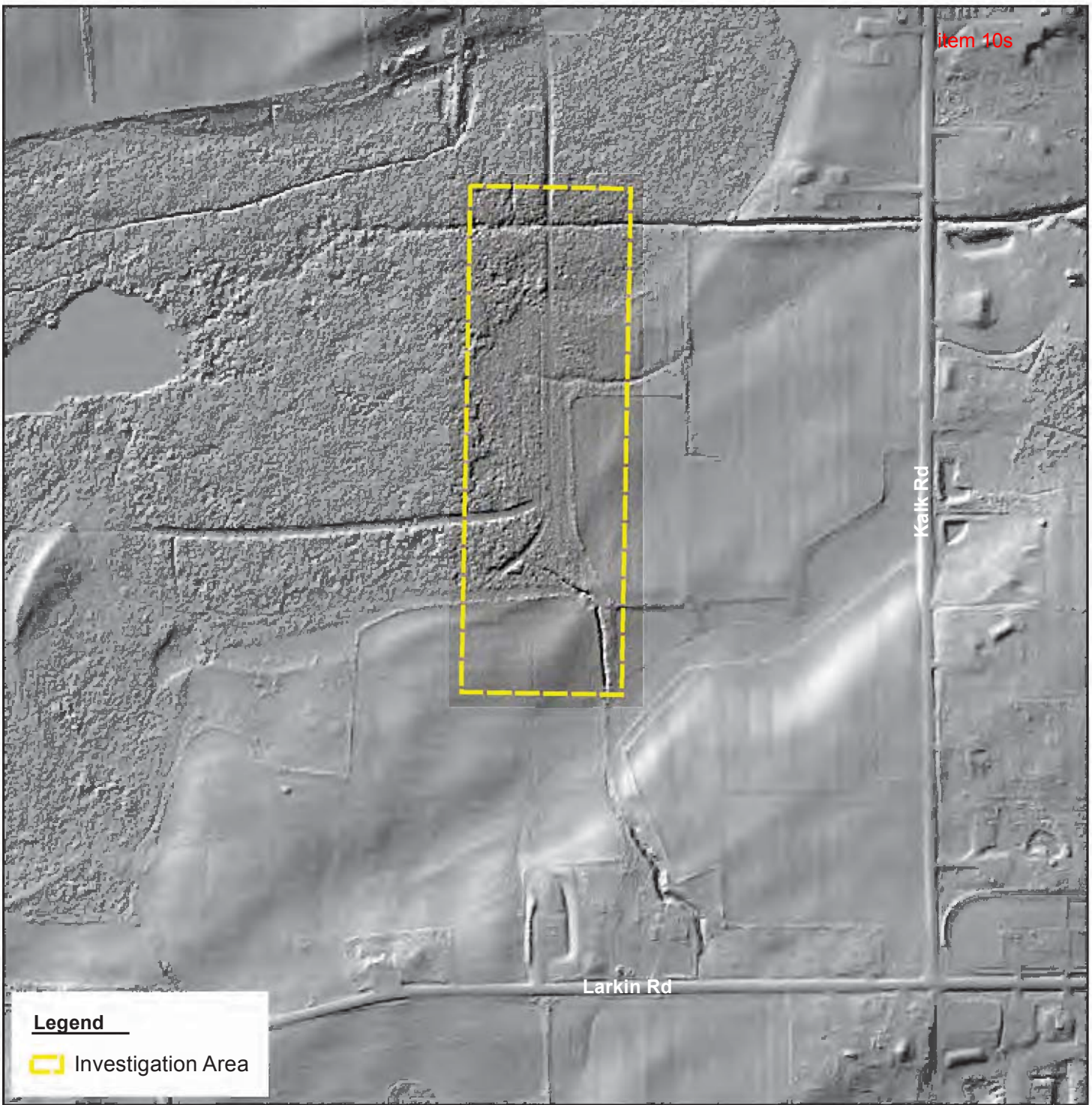
City of Corcoran
Hennepin County, MN

1 in = 700 feet

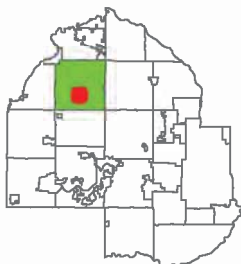


0 350 700 1,400
Feet

21600 Larkin Road
Corcoran, Hennepin County, MN
PID: Multiple



Hennepin County
State of Minnesota

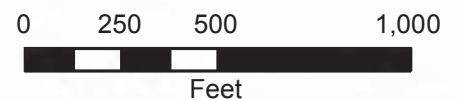


City of Corcoran
Hennepin County, MN

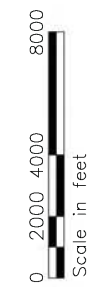
PROJECT LOCATION

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering

1 in = 500 feet



21600 Larkin Road
Corcoran, Hennepin County, MN
PID: Multiple





Hennepin County
State of Minnesota

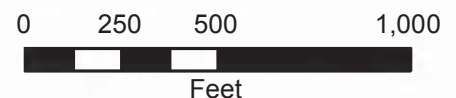


City of Corcoran
Hennepin County, MN

PROJECT LOCATION

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering

1 in = 500 feet



21600 Larkin Road
Corcoran, Hennepin County, MN
PID: Multiple

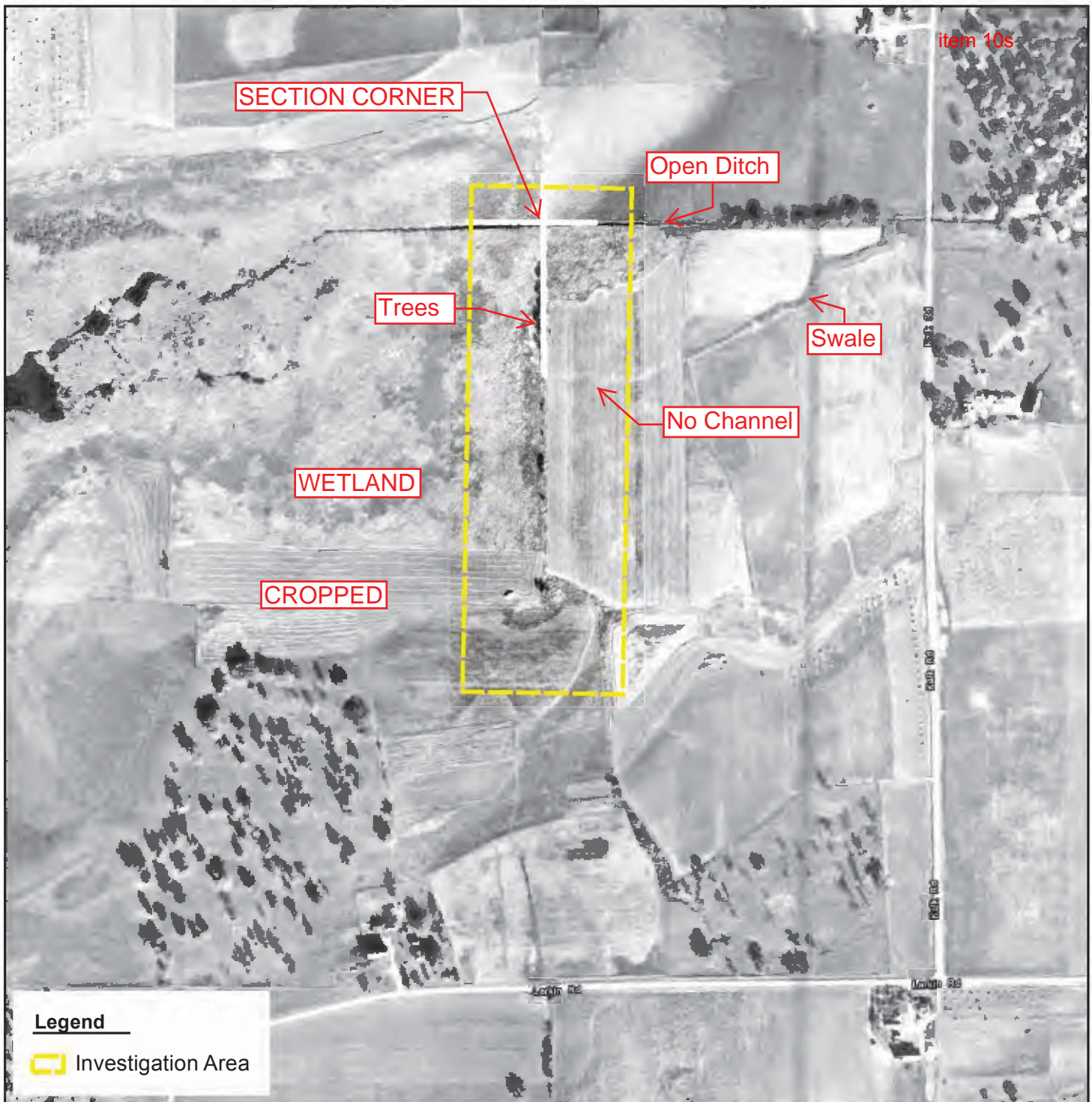


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1937 U of M AERIAL MAYERS DITCH INVESTIGATION

Page 32 of 124

AE Comm.# 14451 Date: 8/16/2016 By: JLA



item 10s

SECTION CORNER

Open Ditch

Trees

Swale

No Channel

WETLAND

CROPPED

Legend

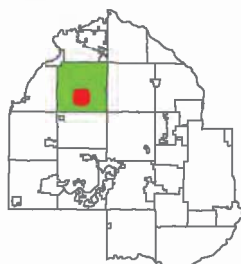
Investigation Area

PROJECT LOCATION

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering



Hennepin County
State of Minnesota



City of Corcoran
Hennepin County, MN

1 in = 500 feet



0 250 500 1,000
Feet

21600 Larkin Road
Corcoran, Hennepin County, MN
PID: Multiple

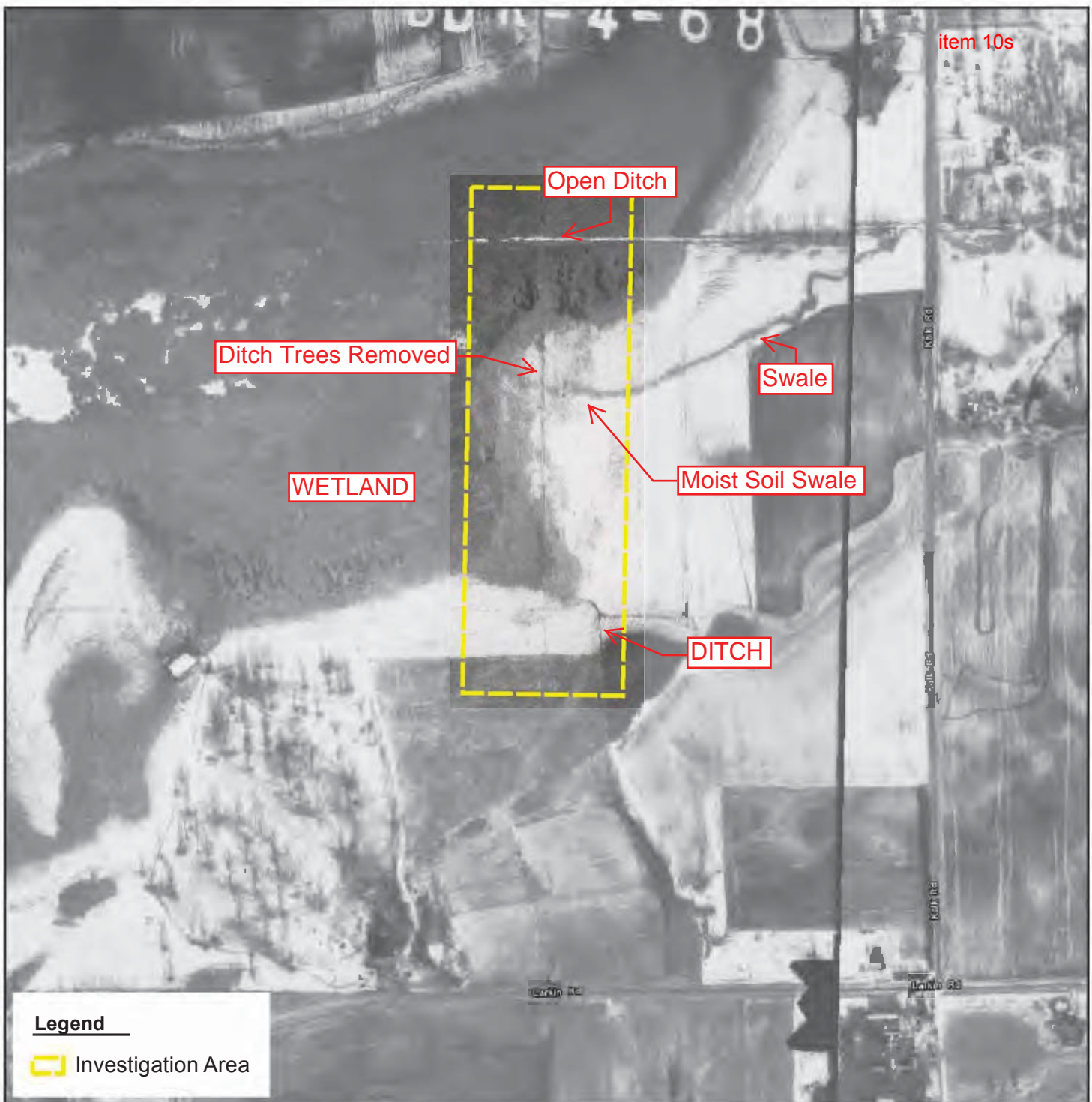


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**1945 U of M AERIAL
MAYERS DITCH
INVESTIGATION**

Page 33 of 124

AE Comm.# 14451 Date: 8/16/2016 By: JLA



Legend

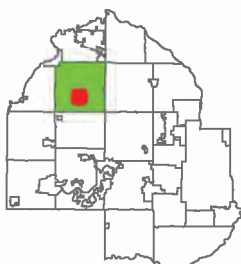
 Investigation Area

PROJECT LOCATION

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering

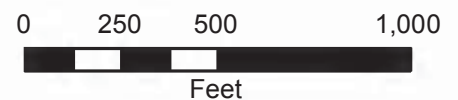


Hennepin County
State of Minnesota

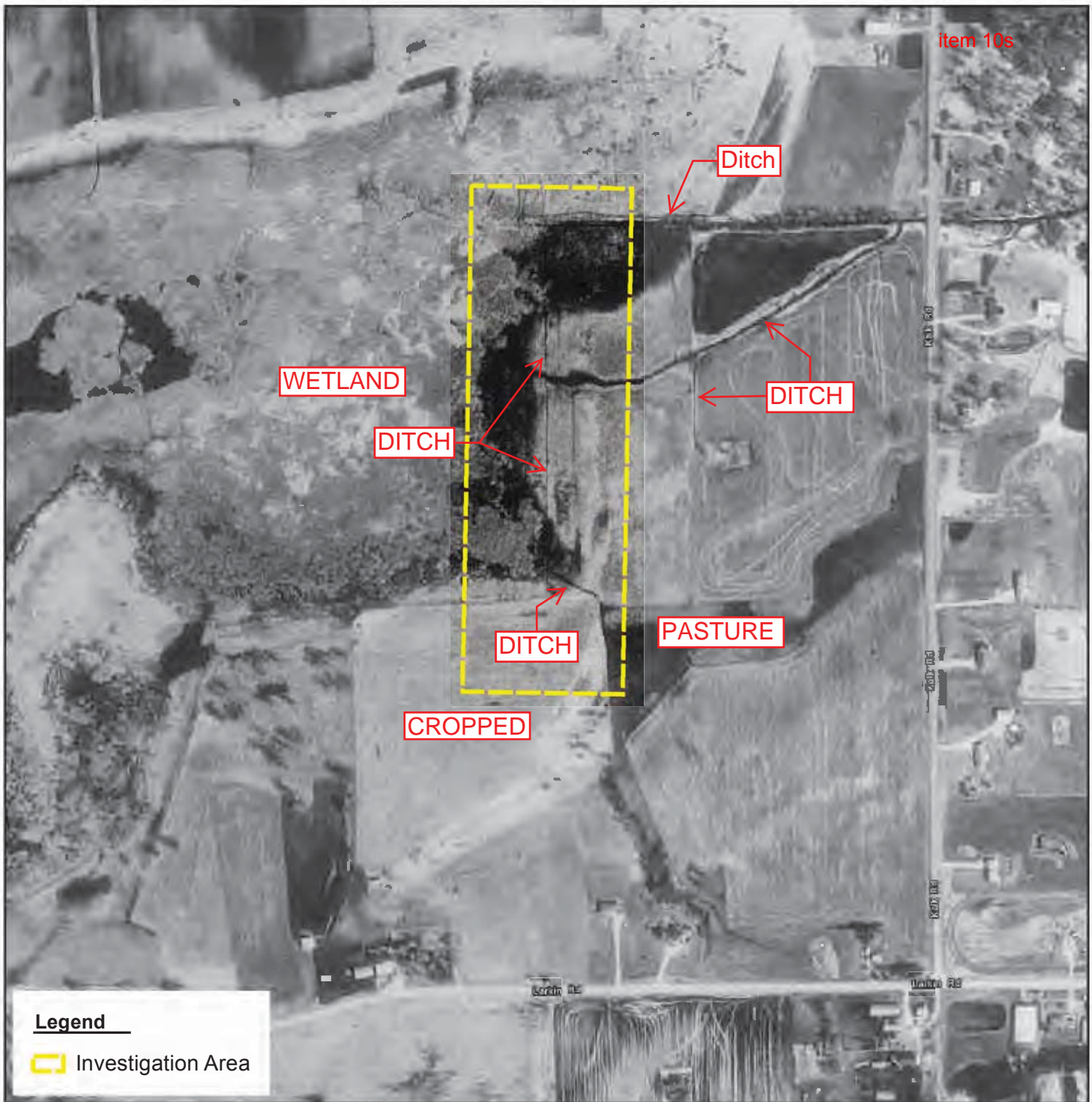


City of Corcoran
Hennepin County, MN

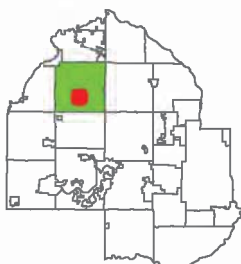
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21600 Larkin Road
Corcoran, Hennepin County, MN
PID: Multiple



Hennepin County
State of Minnesota

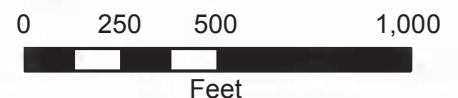


City of Corcoran
Hennepin County, MN

PROJECT LOCATION

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering

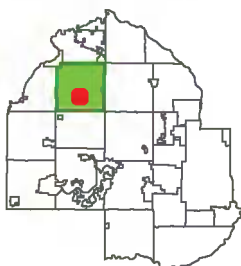
1 in = 500 feet



21600 Larkin Road
Corcoran, Hennepin County, MN
PID: Multiple



Hennepin County
State of Minnesota



City of Corcoran
Hennepin County, MN

PROJECT LOCATION

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering

1 in = 500 feet



0 250 500 1,000
Feet

21600 Larkin Road
Corcoran, Hennepin County, MN
PID: Multiple



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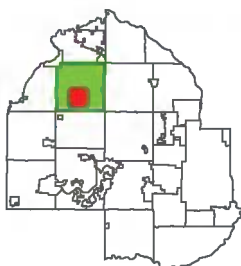
2008 FSA AERIAL MAYERS DITCH INVESTIGATION

Page 36 of 124

AE Comm.# 14451 Date: 8/16/2016 By: JLA



Hennepin County
State of Minnesota

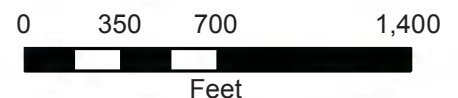


City of Corcoran
Hennepin County, MN

PROJECT LOCATION

SOURCE: MN DNR, USDA, ESRI, TIGER, Bing, Hennepin Co., Anderson Engineering

1 in = 700 feet



21600 Larkin Road
Corcoran, Hennepin County, MN
PID: Multiple

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SPECIAL ASSESSMENTS SEARCHES
RECORDING SERVICE
REGISTERED PROPERTY ABSTRACTS



Member of:



TITLE INSURANCE COMPANY OF MINNESOTA

Minneapolis, Minnesota 55401

Order No. 862400

Abstract of Title to

Part of Section 27, Township 119,

Range 23

"This abstract of title is a history of the record title of the property described therein and does not represent that the title is good and marketable."

This certifies the within statement from Nos. 141 to 149 inclusive, to be a correct Abstract of Title to land described in No. 135 therein as appears of record in the Real Estate Division of the office of the County Recorder in Hennepin County, Minnesota, since February 21, 1973. Including Taxes according to the general tax records of said County.

Dated July 16, 1980, 7 a.m. Newlands-Key Key 12, and part of 9

TITLE INSURANCE COMPANY OF MINNESOTA

By *[Signature]* Assistant Secretary

Re Brook Park Realty

Deliver to John Rice
630 Shelard Tower
Minneapolis, Minnesota 55426

TITLE INSURANCE COMPANY OF MINNESOTA
TITLE INSURANCE BUILDING
MINNEAPOLIS, MINNESOTA 55401
Telephone 371-1111
Area Code 612

- 30 ^A David Gagnier and
 Emelie, wife,
 To
 Mrs. Mary Audus
Due 2 yrs from date, Cullman
 Mortgage,
 Dated Nov. 10, 1903.
 Filed Nov. 11, 1903, 2½ p.m.
 Book 560 of Mtgs., page 97
 To secure \$1200.00
 Same land as in No. 1.
-
- 31 ^A Mary Audus widow
 To
 David Gagne and
 Emelie, wife.
 Satisfaction of Mtg. No. 30.
 Dated May 29, 1906
 Filed May 29, 1906, 2½ p.m.
 Book 599 of Mtgs., page 531
-
- 32 ^A Emelie Gagne and
 David, husband
 To
 Mattie Robichon.
 Mortgage,
 Dated July 12, 1904.
 Filed July 12, 1904, 11½ a.m.
 Book 568 of Mtgs., page 242.
 To secure \$1000.00
 E½ of NW¼ and all of SW¼ of NW¼ except that part situated West
 of Creek; also 25 acres off East side of NW¼ of NW¼ all in
 Section 27-119-23.
Due 2 2 months from date
-
- 33 ^A Mattie Robichon and
 Louis, husband,
 To
 Emelie Gagne and
 David, husband.
 Satisfaction of Mtg. No. 32.
 Dated May 17, 1906.
 Filed May 29, 1906, 2½ p.m.
 Book 599 of Mtgs., page 531
-
- 34 ^A Emelie Gagne and
 David, husband,
 To
 Louis Robichon.
 Mortgage,
 Dated May 29, 1906.
 Filed May 29, 1906, 2½ p.m.
 Book 604 of Mtgs., page 29.
 To secure \$1500.00
 E½ of NW¼ and all of SW¼ of NW¼, except that part situated
 West of the creek; also 25 acres off East side of NW¼ of
 NW¼ all in Section 27-119-23.
Due July 1-1909
-
- 35 ^A Auditor of Hennepin County
 To
 The Public.
 Ditch Statement No. 3.
 Dated Oct. 15, 1907
 Filed Oct. 15, 1907, 12 m.
 Book 115 of Misc., page 154.
 Emeline Gagne owner of E½ of NW¼ of SW¼ of Sec. 27-119-23
 liable for \$38.40 *See #72*
SW¼ NW¼ E. of Creek, E ½ of NW¼ NW¼
SW¼ NW¼ W. of Creek
-
- 36 ^A Emelie Gagne and
 David, husband
 To
 Louis Robichon.
 Mortgage,
 Dated May 29, 1909
 Ack'd May 29, 1909
 Filed May 28, 1909, 3:25 p.m.
 Book 622 of Mtgs., page 627
 To secure \$1500.00
 E½ of NW¼ and all of SW¼ of NW¼ except that part situated West
 of Creek; also 25 acres off East side of NW¼ of NW¼, all in
 Section 27-119-23.
-
- 37 ^V Emelie Gagne
 David, her husband
 To
 Peter Gagne.
 Warranty Deed,
 Dated Nov. 8, 1910
 Filed Dec. 3, 1910, 10:20 a.m.
 Book 680 of Deeds, page 332.
 Consideration \$1.00 &c
 Same premises as No. 1.
 Subject to Mtg. of \$1500.00
-
- 38 Taxes 1903 to 1912 inclusive paid. Taxes 1913 not paid.
- 39 For Judgment and Bankruptcy Search See Certificate Attached.

X9

Appraisal Report of

WAWRA AND MAYERS FARM

SECTION 27

TOWNSHIP OF CORCORAN

HENNEPIN COUNTY

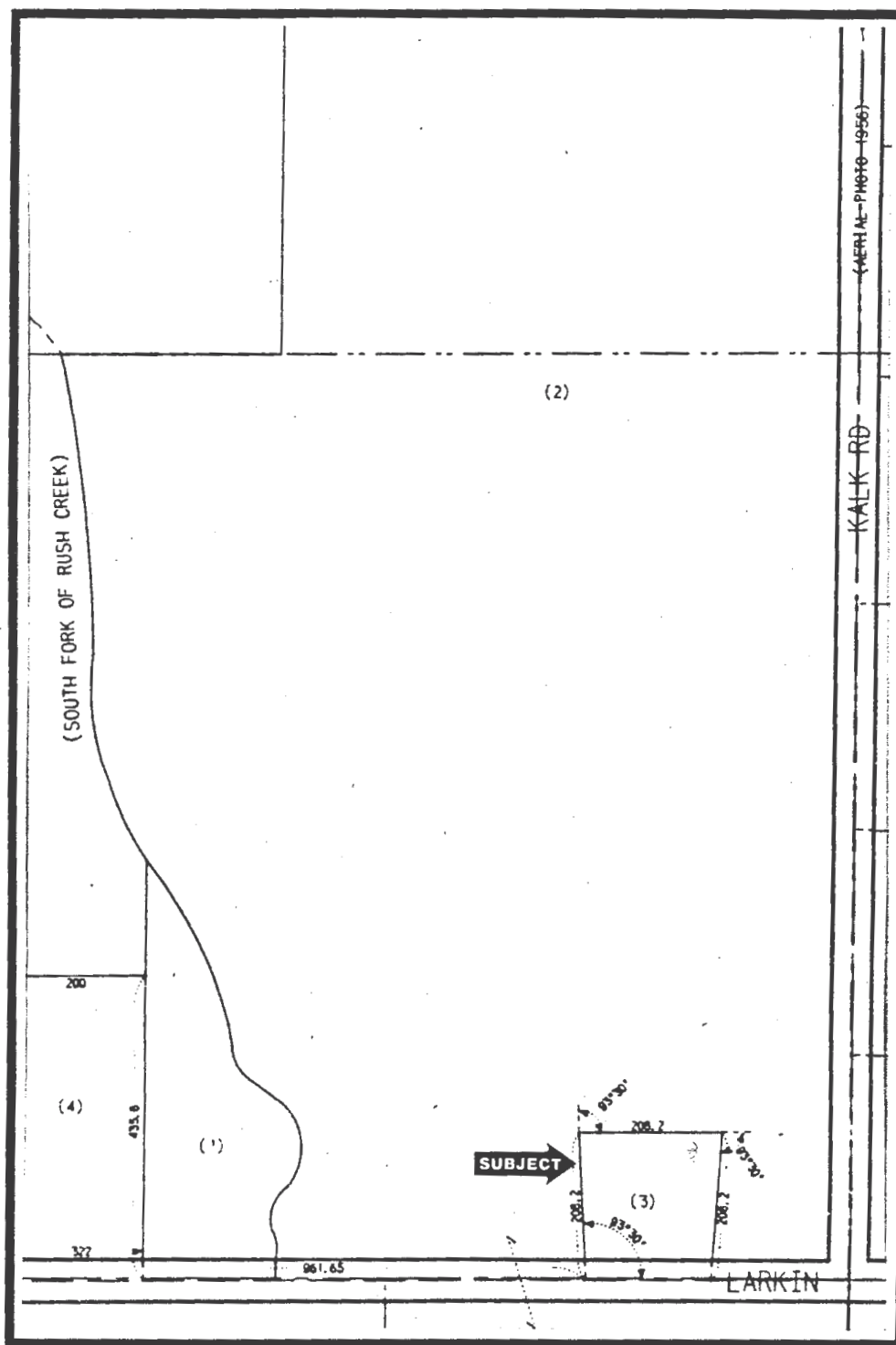
MINNESOTA

JANUARY 17, 1991



FARM CREDIT APPRAISAL SERVICE

PLAT MAP



Real Estate Graphics, Inc. © COPYRIGHT 1987

Abstract of Title

To

19. Southwest 1/4 of Northeast 1/4 and Southeast 1/4 of Northeast 1/4 of Section 28, and West 1/2 of Northwest 1/4 of Southwest 1/4 and that part of Southwest 1/4 of Northwest 1/4 West of Creek, and West 15 acres of Northwest 1/4 of Northwest 1/4, Section 27-119-23.
-
20. Secretary of State
State of Minnesota
To
The Public
1684400
- C. C. Government Plat
Dated January 11, 1856
Filed April 30, 1932, 8:30 A.M.
Book of Plats of Government Field Notes, page 17
Copy of Government Plat of Survey of Township 119, Range 23.
-
21. The United States
of America
To
Joseph Lasaupe
- Original Entry No. 1471
Dated April 21, 1856
Filed Land Office Records, page 142
Southeast 1/4 of Northeast 1/4
Section 28-119-23, 40 acres.
-
22. The United States of America
To
Joseph Lasombe
1789547
- C. C. Patent
Dated October 30, 1857
Filed January 28, 1935, 2:15 P.M.
Book 1346 of Deeds, page 256
The Southeast 1/4 of the Northeast 1/4 of Section 28-119-23, containing 40 acres.
-
23. The United States of America
To
Joseph Lasombe
1500617
- C. C. Patent
Dated October 30, 1857
Filed September 18, 1928, 2:20 P.M.
Book 1145 of Deeds, page 262
West 1/2 of the Northwest 1/4 and the Northwest 1/4 of the Southwest 1/4 of Section 27-119-23, containing 120 acres.

49. County Auditor, Hennepin County, Minnesota
To
The Public
476366
- County Ditch No. 3
Dated October 15, 1907
Filed October 15, 1907, 12 M.
Book 115 of Misc., page 154
(Statement of Hugh R. Scott,
Auditor of Hennepin County, Minnesota)
- showing the Assessments made on Land for Benefits in the Establishment of Ditch No. 3 in Hennepin County.
Peter Gagne, Owner, Southwest 1/4 Northeast 1/4 Section 28-119-23, 40 acres, Amount \$268.80.
Peter Gagne, Owner, Southeast 1/4 Northeast 1/4 Section 28-119-23, 39 acres, Amount \$67.20.
Peter Gagne, Owner, West 3/8 Northwest 1/4 Northwest 1/4 Section 27-119-23, 24 acres, Amount \$28.80.
Peter Gagne, Owner, Southwest 1/4 Northwest 1/4 West of Creek, Section 27-119-23, 5 acres, Amount \$19.20.
etc. etc.
-
50. County Auditor, Hennepin County, Minnesota
To
The Public
1929193
- Release of Ditch Lien No. 3, at No.4
Dated May 11, 1938
Filed May 12, 1938, 9 A.M.
Town of Corcoran and Medina.
Book 366 of Misc., page 383
-
51. Peter Gagne, (also known as Gagner,) and
Laura Gagne, his wife
To
The Prudential Insurance Company of America
1153750
- Mortgage
Dated June 22, 1923
Filed June 25, 1923, 4:30 P.M.
Book 1232 of Mtgs., page 48
To secure \$2000.00
The East 1/2 of the Northwest 1/4 of the Southwest 1/4 the whole of the Southwest 1/4 of the Northwest 1/4, and the East 1/4 of the Northwest 1/4 of the Northwest 1/4 all in Section 27-119-23, and containing in all 80 acres.
-
52. The Prudential Insurance Company of America
To
Peter Gagne (also known as Gagner,) and wife
1222584
- Satisfaction of Mortgage No. 51
Dated July 7, 1924
Filed July 14, 1924, 4:30 P.M.
Book 1301 of Mtgs., page 594
-
53. Peter Gagne,
Laura Gagne, husband and wife
To
Mary A. Quirk
1244949
- Warranty Deed
Dated No 2st, 1924
Filed November 10, 1924, 2:10 P.M.
Book 1011 of Deeds, page 389
Consideration \$1.00 etc.
South 1/2 of Northeast 1/4 of Section 28; West 3/5 of Northwest 1/4 of Northwest 1/4 and that part of Southwest 1/4 or Northwest 1/4 lying West of the Creek, and the West 1/2 or Northwest 1/4 or Southwest 1/4 of Section 27, all in Township 119, Range 23.

Appendix D

1947 and 1953 Historic Aerial Photos

1947 Aerial Photo

County Ditch #3

Location of Ditch
in RO Area 3

item 10s

1953 Aerial Photo

County Ditch #3

Location of Ditch
in RO Area 3

item 10s

Appendix E

NRCS Certified Wetland Determination Report



United States Department of Agriculture

CERTIFIED MAILING: RETURN RECEIPT REQUESTED

August 8, 2018

Ernest Mayers and Jean Lucille Schlosser
2100 Larkin Rd
Hamel, MN 55340

RE: Certified Wetland Determination in response to FSA-569

Dear Ernest Mayers Jean Lucille Schlosser :

Natural Resources
Conservation Service

Minnesota
Waseca Field Office
Office

105 22nd Ave NE
Waseca, MN 56093

Ph: 507-835-4800
www.mn.nrcs.usda.gov

The Natural Resources Conservation Service (NRCS) received a Farm Service Agency FSA-569, NRCS REPORT OF HELC AND WC COMPLIANCE on June 6, 2018. You were notified by written correspondence dated June 6, 2018, that NRCS would investigate and consider a report of possible wetland compliance violation. This notification provides the certified wetland determination resulting from the investigation. The Preliminary Technical Determination (PTD) was completed in accordance with the regulations for the Wetland Conservation (WC) Compliance Provisions, found at Title 7 Code of Federal Regulation (CFR.) Part 12, and was conducted in the field by the designated conservationist on July 10, 2018. The tract in question is designated as Farm 4333, Tract 136 of Sections 27 and 28, Corcoran Township, Hennepin County, Minnesota.

The enclosed CPA-026 and map depict the wetland label for the area where the wetland determination took place. This wetland label has been determined for the following reasons:

- NRCS receipted the FSA-569 on June 6, 2018. A notification (dated June 6, 2018) of the pending investigation was mailed to you.
- On July 10, 2018, agency representative Christina Ripplinger, Wetland Conservationist, completed the on-site review with Ernest Mayers. At that time agency observed a ditch improvement in Field 6. NRCS observed a shallow ditch at this site in 1971. However, this ditching done in 2018 was considered an improvement. It does not qualify as maintenance.
- Additionally, on August 8, 2018, NRCS reviewed off-site imagery associated with 1985 - 2017 and noted the wetland delineation was not typically cropped.
- NRCS determined that the actions taken do not qualify for any exemptions to the wetland conservation provisions.

The ditch improvement of Field 6 does constitute a conversion. Any manipulation to wetlands that results in a conversion (any activity that is for the purpose, or makes possible production of an agricultural commodity) is not compliant with the WC Provisions. Production of an agricultural commodity was made possible by the action and the site is determined to be converted wetland, with the conversion occurring in 2018. With this notification, NRCS provides a PTD of CW2018 of 7.2 acres for the area that is the subject of this review. (See Title 180 National Food Security Act Manual (NFSAM) Part 514.40(A))

This preliminary determination meets the regulatory definition for an adverse decision. You may appeal this determination by acting on one of the two following options:

- You may request that the designated conservationist reconsider this determination by filing a written request no later than 30 calendar days after you receive this notice in accordance with the NRCS's appeal procedures found at 7 C.F.R. § 614. If you request reconsideration, you have the right to a field visit, office visit, or other designated location meeting site for an informal review with the decision maker. During the review you, and/or your representative may provide additional information and discuss the facts relating to the preliminary technical determination. If you choose to seek reconsideration, you may later appeal the determination to the FSA County Committee or the National Appeals Division (NAD). To request reconsideration, write to the designated conservationist at the following address and explain why you believe this determination is erroneous.

Christina Ripplinger
105 22nd Ave NE
Waseca, MN 56093

- Mediation is available as part of NRCS's informal appeal process. Mediation may enable NRCS to narrow the issues and resolve the matter by mutual agreement. You may have to pay all or part of the cost of mediation. If you request mediation, the running of the timeframe in which you may file an appeal stops. When mediation closes you will have the balance of the days remaining in that period to file an appeal. To request mediation, you must submit your written request no later than 30 calendar days after you receive this notice. To request mediation, write to the Minnesota State mediation program at the following address and provide a copy of your request for mediation to NRCS.

Mary Nell Preisler
Farm Credit Mediation Program
1526 170th Avenue
Bejou, MN 56516
Phone: 218-935-5785

In order to immediately address application needs or resource issues on the ground (i.e. wetland restoration), a participant, who has received a preliminary technical determination, may waive his or her preliminary appeal rights in order to obtain expedited finality of the technical determination. The participant must request the waiver in writing to the State Conservationist (STC). Upon waiver request review, the STC will issue a final technical determination, as appropriate. To seek a waiver, write the STC at:

Troy Daniell
State Conservationist
375 Jackson Street, Suite 600
St. Paul, MN 55101

If you do not select any of your preliminary appeal rights, this PTD will become a Final Technical Determination (FTD) in accordance with the wetland compliance provisions and the appeal regulations. The PTD will become an FTD 30 days after your receipt of the PTD, if not appealed.

You may appeal the final certified technical determination by acting on one of the two following options:

You may appeal this determination to the FSA County Committee (COC) by filing a written request no later than 30 calendar days after you receive this notice in accordance with the FSA appeal procedures found at 7 C.F.R. § 780. If you appeal to the COC, you have the right to an informal hearing which you or your representative may attend either personally or by telephone. To appeal, write to the County Committee at the following address and explain why you believe this determination is erroneous.

Hennepin County Committee
1485 Industrial Dr NW, Room 102
Elk River, MN 55330

Alternatively, you may appeal this determination to the National Appeals Division (NAD) by filing a written request no later than 30 calendar days after you receive this notice in accordance with the NAD appeal procedures found at 7 C.F.R. § 11. If you appeal to NAD, you have the right to a hearing that you or your representative may attend. Once a hearing with NAD begins, you waive any rights to reconsideration, an appeal to FSA, and mediation. To appeal, you must write to NAD at the following address, explain why you believe this determination is erroneous, and provide a copy to FSA. You must personally sign your written appeal to NAD and include a copy of this letter.

NAD Eastern Regional Office
P.O. Box 68806
Indianapolis, Indiana 46268

If you are the owner of this tract and have a tenant, I urge you to discuss this letter and accompanying NRCS-CPA-026 with your tenant. Likewise, if you are the tenant of this tract, I urge you to discuss this letter with your landlord.

This certified wetland determination/delineation has been conducted for the purpose of implementing the wetland conservation provisions of the Food Security Act of 1985. This determination/delineation may not be valid for identifying the extent of the Corps of Engineers' (COE's) Clean Water Act jurisdiction for this site. If you intend to conduct any activity that constitutes a discharge of dredged or fill material into wetlands or other waters, you should request a jurisdictional determination from the local office of the COE prior to starting the work. Other federal, state or local permits or restrictions may apply to activities impacting wetlands. Contact the US Fish and Wildlife Service for information concerning conservation easements. Contact the Local Governmental Unit (LGU) for State Wetland Conservation Act permits and Minnesota Department of Natural Resources for protected water permits prior to initiating wetland activities by completing the "Minnesota Joint Project Notification Form" available from the LGU.

The 2014 Farm Bill connected producer eligibility for Federal crop insurance premium subsidy to compliance with the wetland conservation provisions. Eligibility for most USDA programs is lost for any wetland conversions that have occurred after December 23, 1985. However, only wetland conversions that occur after February 7, 2014, result in ineligibility for Federal crop insurance premium subsidy.

If you have questions concerning this notification, please contact Christina Ripplinger at 507-835-4800 ext 113.

Sincerely,

A handwritten signature in black ink, appearing to read 'Christina Ripplinger', written over a horizontal line.

Christina Ripplinger, Wetland Conservationist
USDA-NRCS

Enclosures

cc: Kevin Hidde, Hennepin FSA County Executive Director, Elk River, MN
Julie Reberg, Hennepin County District Conservationist, Elk River, MN



United States Department
of Agriculture

Natural Resources
Conservation Service

NRCS-CPA-026E
9/2012

HIGHLY ERODIBLE LAND AND WETLAND CONSERVATION DETERMINATION

| | | | | | |
|--|--|---------------|----------|--------------|----------|
| Name | Ernest Mayers and Jean Lucille Schlosser | Request Date: | 5/2/2018 | County: | Hennepin |
| Address | 21000 Larkin Rd Hamel MN 55340 | | | | |
| Agency or Person Requesting Determination: | Landowner | Tract No: | 136 | FSA Farm No: | 4333 |

Section I - Highly Erodible Land

| | |
|---|--|
| Is a soil survey now available for making a highly erodible land determination? | |
| Are there highly erodible soil map units on this farm? | |

Fields in this section have undergone a determination of whether they are highly erodible land (HEL) or not; fields for which an HEL Determination has not been completed are not listed. In order to be eligible for USDA benefits, a person must be using an approved conservation system on all HEL.

| Field(s) | HEL(Y/N) | Sodbust (Y/N) | Acres | Determination Date |
|--|----------|---------------|-------|--------------------|
| Refer to the Previous HEL determination available on file from your FSA office | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

The Highly Erodible Land determination was completed in the

Section II - Wetlands

Fields in this section have had wetland determinations completed. See the Definition of Wetland Label Codes for additional information regarding allowable activities under the wetland conservation provisions of the Food Security Act and/or when wetland determinations are necessary to determine USDA program eligibility.

| Field(s) | Wetland Label | Occurrence Year | Acres | Determination Date | Certification Date |
|----------|---------------|-----------------|-------|--------------------|--------------------|
| 6 | CW | 2018 | 7.2 | 8/8/2018 | |

The wetland determination was completed in the: Office It was delivered by: Mail On: 8/8/2018

| | |
|----------|---------------------|
| Remarks: | Issued due to a 569 |
|----------|---------------------|

I certify that the above determinations are correct and were conducted in accordance with policies and procedures contained in the National Food Security Act Manual.

| | |
|--------------------------------------|----------|
| Signature Designated Conservationist | Date |
| Christina Ripplinger | 8/8/2018 |

The U.S. Department of Agriculture (USDA) prohibits discrimination in all of its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, political beliefs, genetic information, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Assistant Secretary for Civil Rights, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, S.W., Stop 9410, Washington, DC 20250-9410, or call tollfree at (866) 632-9992 (English) or (800) 877-8339 (TDD) or (866) 377-8642 (English Federal-relay) or (800) 845-6136 (Spanish Federal-relay). USDA is an equal opportunity provider and employer.



Certified Wetland Determination

Customer: Ernest Mayers, Jean Lucille Schlosser Imagery Year: 2017

Tract: 136

8/8/2018

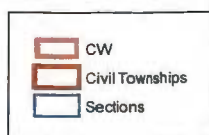
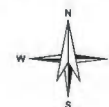


Hennepin County
Township and Section: Corcoran 27 & 28
Legal: T119, R23, S27 & 28

1:5,280

1 inch = 440 feet

0 245 490 980 1,470 1,960 Feet



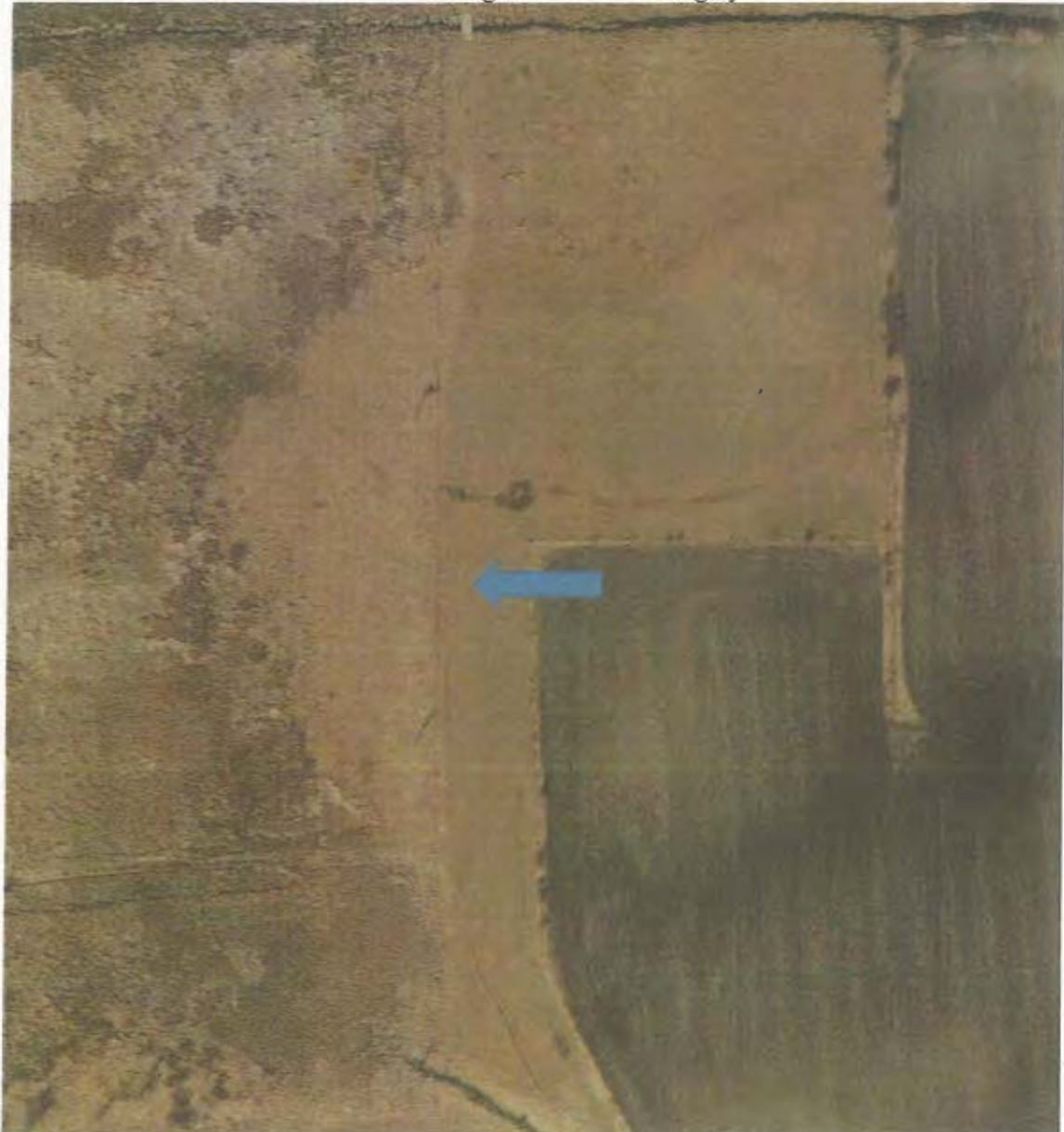
This certified wetland determination/delineation has been conducted for the purpose of implementing the wetland conservation provisions of the Food Security Act of 1985. This determination/delineation may not be valid for identifying the extent of the Corps of Engineers' (COE's) Clean Water Act jurisdiction for this site. Other federal, state or local permits or restrictions may apply to activities impacting wetlands. Contact the US Fish and Wildlife Service for information concerning conservation easements. Contact the Local Governmental Unit (LGU) for State Wetland Conservation Act permits and Minnesota Department of Natural Resources for protected water permits prior to initiating wetland activities by completing the "Minnesota Joint Project Notification Form" available from the LGU.



DEFINITIONS OF WETLAND LABEL CODES

| | |
|-----------|--|
| AW | Artificial Wetland. An area that is artificial or irrigation induced wetland. |
| CME | An area that received a Categorical Minimal Effect determination. |
| CPD | Corps Permit Decision. Corps of Engineers permit decisions regarding section 404 of the Clean Water Act will be relied upon to satisfy the wetland conservation provisions of the Food Security Act of 1985, as amended. |
| CW | Converted Wetlands. An area converted between December 23, 1985 and November 28, 1990. In any year that an agricultural commodity is planted on these converted wetlands, you will be ineligible for USDA benefits. |
| CW + year | An area converted after November 28, 1990. You will be ineligible for USDA program benefits until this wetland is restored. |
| CWTE | Converted Wetland Technical Error. An area converted based on an incorrect NRCS determination or misinformation from a NRCS or FSA employee. |
| FW | Farmed Wetland. An area that was manipulated and planted before December 23, 1985, but still meets wetland criteria. These may be farmed and maintained in the same manner as long as they are not abandoned. |
| FWP | Farmed Wetlands Pasture. An area that is pasture or hayland, manipulated before December 23, 1985, but still meets wetland criteria. These may be farmed and maintained in the same manner as long as they are not abandoned. |
| MIW | A Converted Wetland for which the lost wetland acreage, value, and function has been adequately mitigated. |
| MW | Minimal effect Wetland. An area determined to be minimal effect. These wetlands are to be farmed according to the minimal-effect agreement signed at the time the minimal-effect determination was made. |
| MWM | An area used as mitigation for replacement of lost wetland acreage, value, and function. |
| NW | Non-Wetland. An area that does not meet the wetland definition. |
| NW/NAD | An area determined to be a non-wetland resulting from a decision from the National Appeals Division. |
| PC | Prior Converted cropland which was drained, filled, or manipulated before December 23, 1985 that was cropped prior to December 23, 1985, was not abandoned, and does not meet FW criteria. |
| PC/NW | May meet either PC and/or NW definitions. |
| TP | Third Party Exemption. |
| W | Wetlands. An area meeting wetland criteria, including wetlands farmed under natural conditions. |
| WX | A wetland area that has been manipulated after December 23, 1985, but not for the purpose of making production possible and production was not made possible. These include wetlands manipulated by drainage maintenance agreements. |

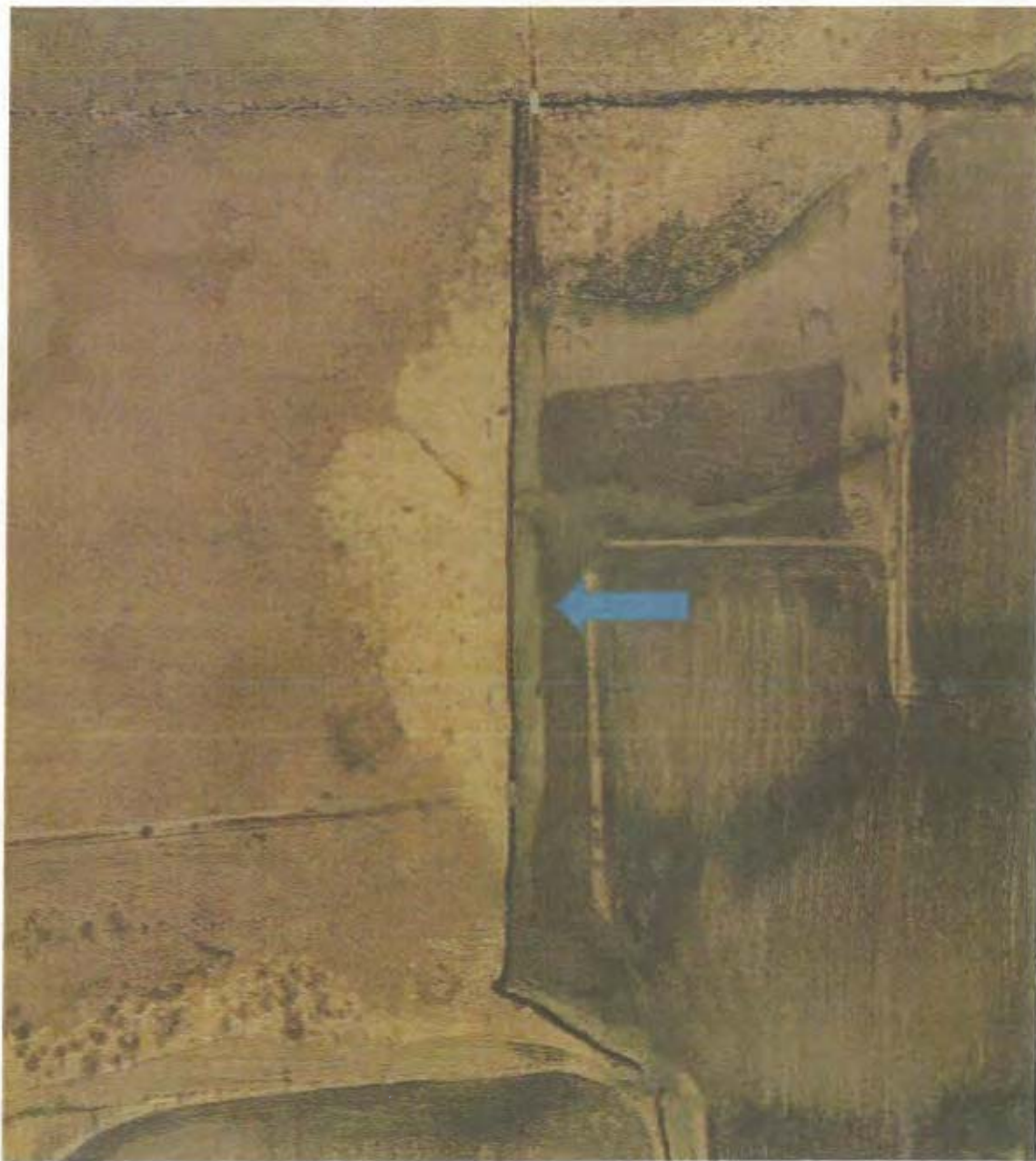
This ditch is also observed in the 2017 Google Earth aerial imagery:



2017 close up of ditch



Google Earth 2018, ditch has been improved, not considered maintenance:



| |
|--|
| Conservation Assistance Notes/Note to File |
|--|

| Owner Name | Other Owner | Location |
|---|--|---|
| Ernest Mayers 21000 Larkin Rd Hamel, MN 55340 612-490-0115 | Jean Lucille Schlosser 2100 Larking Rd Hamel, MN 55340 | T136 Corcoran 27 and 28 Hennepin County |

June 6, 2018

Received a 569 for a non-participating producer. Sent out the 569 notification letter.

June 11, 2018

Ernest Mayers called and told me he is not a participating producer. That he cleaned out the ditch which is by upper rush creek. He cleaned it out too much now he is disputing with the Elm Creek Watershed. He stated cleaning it in 1996 and the "FSA Technican Ed" came out and determined it was not converted.

I explained to Ernest I would still have to investigate. If he was not in compliance, he would have to restore the area before he could participate in the farm program again. Ernest wanted me to call him when I plan on performing the field visit.

July 9, 2018

Ernest called and wanted to set up a field visit for the 569. Set it up for tomorrow, July 10, 2018 at 10am.

July 10, 2018

Met Ernest onsite. He drove me to the ditch area and stated the ditch was always installed in this area. He stated he was in touch with the county and they had info of a ditch being installed in this location prior to 1985. I gave Ernest my business card and informed him to send me a copy of the county ditch information. I will look at old historic photos and see if I can identify a ditch.

August 8, 2018

Have not received any information from Ernest Mayers. Performed an aerial slide review. A shallow ditch was observed in the 1971 aerial photo.

This ditch is also observed in the 2017 Google Earth aerial imagery:



2017 close up of ditch



Google Earth 2018, ditch has been improved, not considered maintenance:



There is a CWD from 12/23/2003 that signifies a Wetland in Field 5 of 3.2 acres but no CWD map was included. Emailed Hennepin DC for this info.

Performed a slide review using the SOSM. Identified 2 possible wetlands. Sites 1 and 2 showed wetness signatures in 100% of the normal precipitation years evaluated from 1979-2014. Site 1 is on the hydric soil Muskego and Houghton (L50A) and site 2 is located on the hydric soil Glencoe (L24A). The OSD states the vegetation associated with Glencoe soil includes:

USE AND VEGETATION:

Where drained, these areas are cultivated. The principal crops are corn and soybeans. Reed canarygrass commonly dominates partially drained pasture. The native vegetation is herbaceous marsh species tolerant of excessive wetness such as. cattails, bulrushes, giant burreed, giant reed grass and hydrophytic sedges.

and Houghton:

USE AND VEGETATION: A considerable area of these soils is used for cropland or pasture. Common crops are onions, lettuce, potatoes, celery, radishes, carrots, mint, and some corn. Native vegetation is primarily marsh grasses, sedges, reeds, buttonbrush, and cattails, with some water-tolerant trees near the margins of these areas.

Sites 1 and 2 meet all three factors to be labeled a Wetland. The drainage ditch was improved in 2018. Issued out a Converted Wetland 2018 (CW2018). The producer is not a program participant. Mailed a copy to the FO.

Christina Ripplinger, Wetland Conservationist, Waseca FO



1937

Customer: Ernest Mayers
Tract: 136

8/8/2018



Hennepin County 1:5,280 1 inch = 440 feet
Township and Section: Corcoran 27 & 28
Legal: T119, R23, S27 & 28

660 330 0 660 Feet



This certified wetland determination/delineation has been conducted for the purpose of implementing the wetland conservation provisions of the Food Security Act of 1985. This determination/delineation may not be valid for identifying the extent of the Corps of Engineers' (COE's) Clean Water Act jurisdiction for this site. Other federal, state or local permits or restrictions may apply to activities impacting wetlands. Contact the US Fish and Wildlife Service for information concerning conservation easements. Contact the Local Governmental Unit (LGU) for State Wetland Conservation Act permits and Minnesota Department of Natural Resources for protected water permits prior to initiating wetland activities by completing the "Minnesota Joint Project Notification Form" available from the LGU.





1945

Customer: Ernest Mayers
Tract: 136

8/8/2018



Hennepin County 1:5,280 1 inch = 440 feet
Township and Section: Corcoran 27 & 28
Legal: T119, R23, S27 & 28

660 330 0 660 Feet



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1968

Customer: Ernest Mayers
Tract: 136

8/8/2018



Hennepin County
Township and Section: Corcoran 27 & 28
Legal: T119, R23, S27 & 28

1:5,280

1 inch = 440 feet

660 330 0 660 Feet



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1971

Customer: Ernest Mayers
Tract: 136

8/8/2018



Hennepin County 1:3,417 1 inch = 285 feet
Township and Section: Corcoran 27 & 28
Legal: T119, R23, S27 & 28



660 330 0 660 Feet

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2017

Customer: Ernest Mayers
Tract: 136

8/8/2018



Hennepin County 1:4,206 1 inch = 350 feet
Township and Section: Corcoran 27 & 28
Legal: T119, R23, S27 & 28

660 330 0 660 Feet



This certified wetland determination/delineation has been conducted for the purpose of implementing the wetland conservation provisions of the Food Security Act of 1985. This determination/delineation may not be valid for identifying the extent of the Corps of Engineers' (COE's) Clean Water Act jurisdiction for this site. Other federal, state or local permits or restrictions may apply to activities impacting wetlands. Contact the US Fish and Wildlife Service for information concerning conservation easements. Contact the Local Governmental Unit (LGU) for State Wetland Conservation Act permits and Minnesota Department of Natural Resources for protected water permits prior to initiating wetland activities by completing the "Minnesota Joint Project Notification Form" available from the LGU.





2018

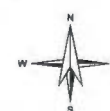
Customer: Ernest Mayers
Tract: 136

8/8/2018



Hennepin County 1:3,779 1 inch = 315 feet
Township and Section: Corcoran 27 & 28
Legal: T119, R23, S27 & 28

660 330 0 660 Feet



This certified wetland determination/delineation has been conducted for the purpose of implementing the wetland conservation provisions of the Food Security Act of 1985. This determination/delineation may not be valid for identifying the extent of the Corps of Engineers' (COE's) Clean Water Act jurisdiction for this site. Other federal, state or local permits or restrictions may apply to activities impacting wetlands. Contact the US Fish and Wildlife Service for information concerning conservation easements. Contact the Local Governmental Unit (LGU) for State Wetland Conservation Act permits and Minnesota Department of Natural Resources for protected water permits prior to initiating wetland activities by completing the "Minnesota Joint Project Notification Form" available from the LGU.





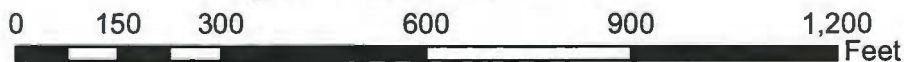
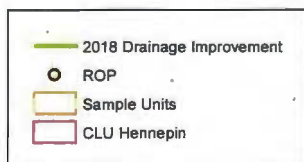
Base Map

Customer: Ernest Mayers
Tract: 136

Project Area: 7.2 acres
Imagery Year: 2008
8/8/2018



Hennepin County 1:3,237 1 inch = 270 feet
Township and Section: Corcoran 27 & 28
Legal: T119, R23, S27 & 28



This certified wetland determination/delineation has been conducted for the purpose of implementing the wetland conservation provisions of the Food Security Act of 1985. This determination/delineation may not be valid for identifying the extent of the Corps of Engineers' (COE's) Clean Water Act jurisdiction for this site. Other federal, state or local permits or restrictions may apply to activities impacting wetlands. Contact the US Fish and Wildlife Service for information concerning conservation easements. Contact the Local Governmental Unit (LGU) for State Wetland Conservation Act permits and Minnesota Department of Natural Resources for protected water permits prior to initiating wetland activities by completing the "Minnesota Joint Project Notification Form" available from the LGU.



Wetland Determination Data Sheet - Part 2

USDA Participant Name: Ernest Mayers

Tract Number:

136

Legal Description: Corcoran 27

Fields (Optional):

Weather Station: Rockford

Imagery Year Reviewed (Select Years and answers from the drop down list or annotate years and answers)

(For pre-1985 manipulated SU the best drained conditions years must be used - do not complete the "current year back to 1980" slide review.

Sampling Unit (SU) Number

Best Drained Conditions Year(s) - enter in box below if appropriate for the SU number

[illegible]

Comments:

Legend

| | |
|-------|---|
| Blank | A blank cell means either the year was not used by the AE or the data field was not needed |
| - | Dash, no wetness signature and/or no drainage manipulation seen |
| INU | Inundation Wetness Signature - Surface Water |
| WS | Saturation Wetness Signature |
| Other | Other wetness signature as determined by agency expert; not specifically identified by a different abbreviation; record in comments section |
| M | Manipulation as defined in the NFSAM |



Field Visit July 10, 2018

Customer: Ernest Mayers
Tract: 136

Aerial Imagery Year: 2017

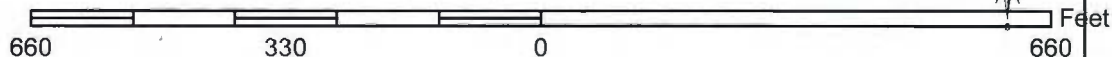
8/8/2018



Hennepin County
Township and Section: Corcoran 27 & 28
Legal: T119, R23, S27 & 28

1:2,855

1 inch = 238 feet



CLU Hennepin

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Tract 136 Ernest Mayers Hennepin County 569 Field Visit July 10, 2018



ROP1 looking west



ROP1 looking south
west



ROP 3 looking west.
Reed Canary Grass,
Cattails, Duckweed



ROP 3 looking west.
Reed Canary Grass,
Cattails, Duckweed





Topography

Customer: Ernest Mayers
Tract: 136

Aerial Imagery Year: 2017

8/8/2018

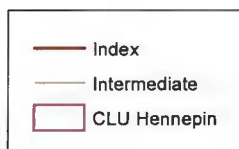


Hennepin County
Township and Section: Corcoran 27
Legal: T119, R23, S27

1:3,000

1 inch = 250 feet

0 140 280 560 840 1,120 Feet



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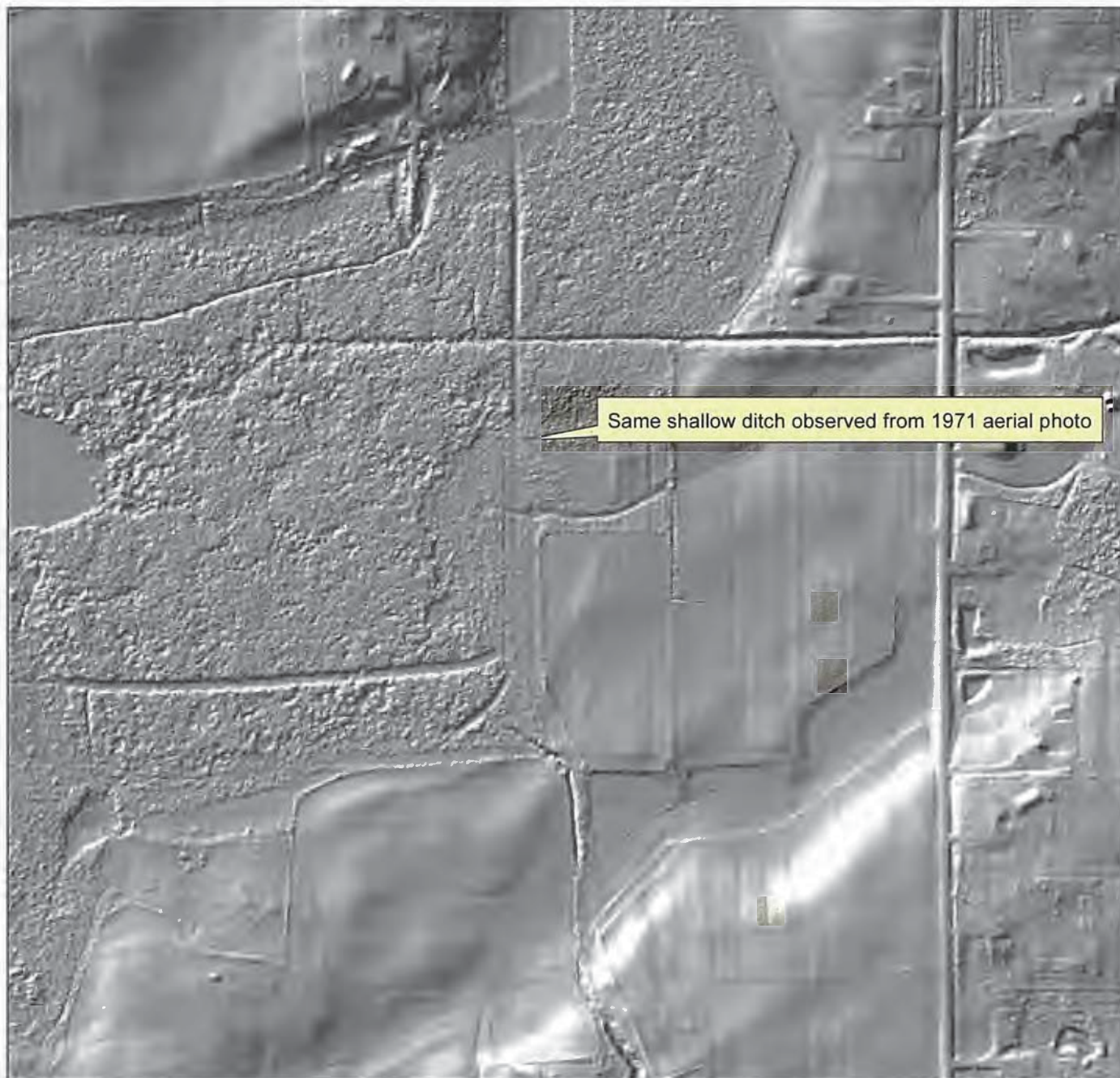


Hillshade

Customer: Ernest Mayers

Tract: 136

8/8/2018



Hennepin County 1:5,444 1 inch = 454 feet
Township and Section: Corcoran 27 & 28
Legal: T119, R23, S27 & 28



Hillshade

Value

High : 249



Low : 38

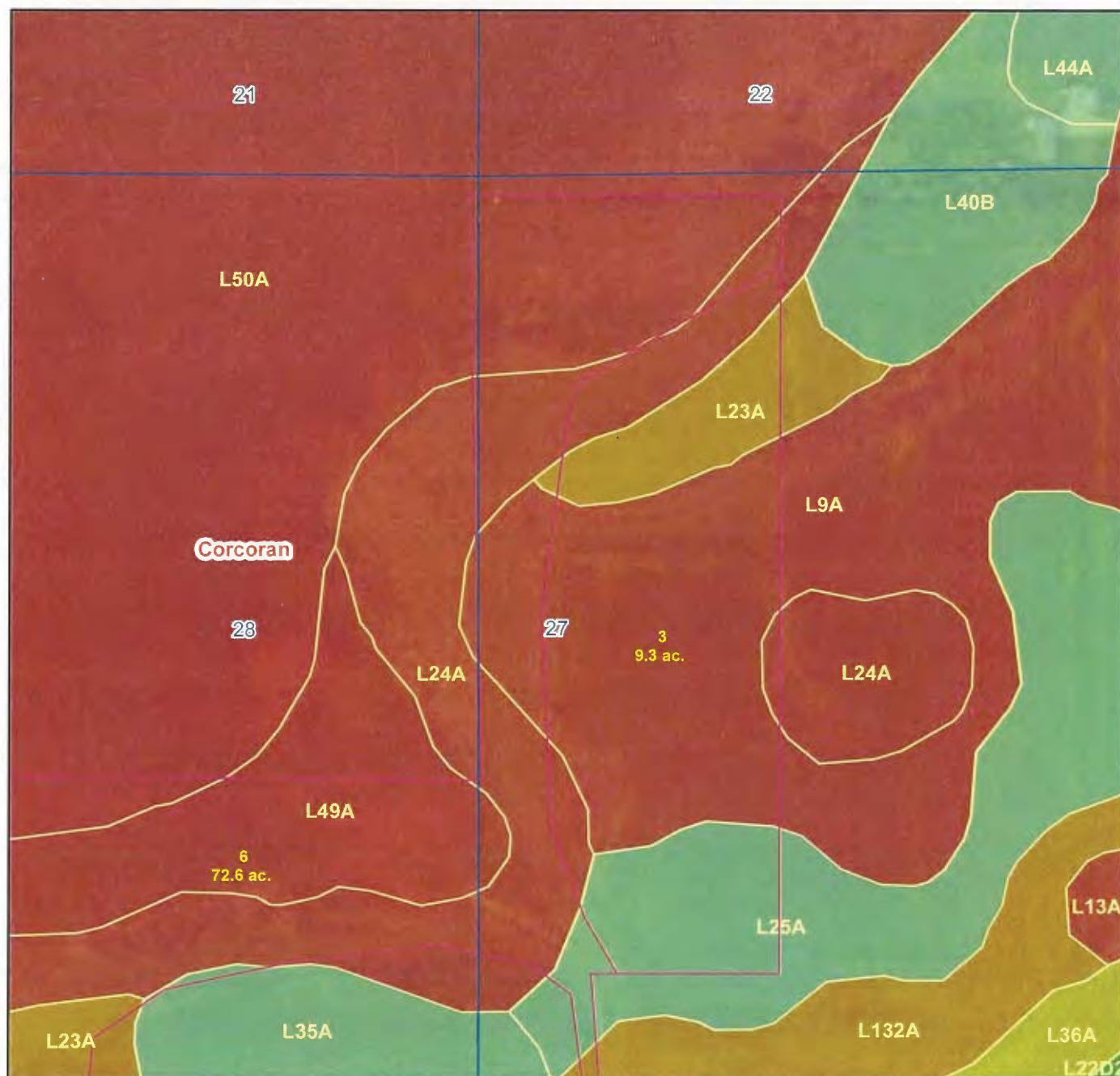
660 330 0 660 Feet

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Customer: Ernest Mayers
Tract: 136

8/8/2018



Nonhydric (0%)

Hennepin County 1:3,00
Township and Section: Corcoran 27
Legal: T119, R23, S27

1:3,000

1 inch = 250 feet

A horizontal number line with tick marks at 0, 140, 280, 560, 840, and 1,120. The word "Feet" is written at the right end of the line.



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Hydric Soil List - All Components—Hennepin County, Minnesota

| Hydric Soil List - All Components—MN053-Hennepin County, Minnesota | | | | | |
|--|-----------------------|------------|---|---------------|----------------------------|
| Map symbol and map unit name | Component/Local Phase | Comp. pct. | Landform | Hydric status | Hydric criteria met (code) |
| | Lester | 3-5 | Ground moraines,hillslopes | No | — |
| | Terril | 2-5 | Ground moraines | No | — |
| L22F: Lester loam, morainic, 25 to 35 percent slopes | Lester-Morainic | 70-90 | Escarpments on moraines | No | — |
| | Terril | 5-20 | Escarpments on moraines | No | — |
| | Ridgeton | 0-20 | Escarpments on moraines | No | — |
| | Hamel | 0-10 | Toes on moraines | Yes | 2 |
| L23A: Cordova loam, 0 to 2 percent slopes | Cordova | 80-95 | Drainageways on moraines | Yes | 2 |
| | Glencoe-Depressional | 5-15 | Depressions on moraines | Yes | 2,3 |
| | Nessel | 0-10 | Moraines | No | — |
| L24A: Glencoe clay loam, 0 to 1 percent slopes | Glencoe | 65-95 | Depressions | Yes | 2 |
| | Okoboji | 5-15 | Depressions | Yes | 2 |
| | Canisteo | 0-10 | Ground moraines,rims on depressions | Yes | 2 |
| | Webster | 0-10 | Ground moraines | Yes | 2 |
| L25A: Le Sueur loam, 1 to 3 percent slopes | Le Sueur | 65-90 | Ground moraines,hillslopes | No | — |
| | Cordova | 5-15 | Ground moraines | Yes | 2 |
| | Webster | 2-10 | Ground moraines | Yes | 2 |
| | Lester | 3-10 | Ground moraines | No | — |
| L26A: Shorewood silty clay loam, 1 to 3 percent slopes | Shorewood | 70-100 | Ground moraines,lake plains | No | — |
| | Minnetonka | 0-20 | Depressions,lake plains | Yes | 2 |
| | Good Thunder | 0-10 | Lake plains on ground moraines | No | — |
| L26B: Shorewood silty clay loam, 3 to 6 percent slopes | Shorewood | 85-95 | Hills on lake plains,hills on moraines | No | — |
| | Good Thunder | 0-10 | Lake plains,moraines | No | — |
| | Minnetonka | 0-10 | Drainageways on moraines,drainage ways on lake plains | Yes | 2 |
| L26C2: Shorewood silty clay loam, 6 to 12 percent slopes, eroded | Shorewood-Eroded | 80-100 | Hills on lake plains,hills on moraines | No | — |
| | Minnetonka | 0-10 | Drainageways on moraines,drainage ways on lake plains | Yes | 2 |



Hydric Soil List - All Components--Hennepin County, Minnesota

| Hydric Soil List - All Components--MN053-Hennepin County, Minnesota | | | | | |
|---|--------------------------|------------|---|---------------|----------------------------|
| Map symbol and map unit name | Component/Local Phase | Comp. pct. | Landform | Hydric status | Hydric criteria met (code) |
| | Rasset | 5-15 | Outwash plains, stream terraces | No | — |
| L47C: Eden Prairie sandy loam, 6 to 12 percent slopes | Eden Prairie | 60-85 | Hills on outwash plains, hills on stream terraces | No | — |
| | Malardi | 0-20 | Hills on stream terraces, hills on outwash plains | No | — |
| | Hawick | 0-20 | Hills on outwash plains, hills on stream terraces | No | — |
| | Rasset | 5-15 | Outwash plains, stream terraces | No | — |
| L49A: Klossner soils, depressional, 0 to 1 percent slopes | Klossner-Surface drained | 50-100 | Depressions on moraines | Yes | 1,3 |
| | Klossner-Drained | 0-40 | Depressions on moraines | Yes | 1 |
| | Mineral soil-Drained | 5-25 | Depressions on moraines | Yes | 2 |
| L50A: Muskego and Houghton soils, 0 to 1 percent slopes | Muskego-Surface drained | 20-60 | Depressions | Yes | 1,3 |
| | Houghton-Ponded | 20-60 | Marshes | Yes | 1,3 |
| | Klossner-Drained | 0-20 | Depressions | Yes | 1 |
| | Glencoe | 0-15 | Depressions | Yes | 2 |
| L52C: Urban land-Lester complex, 2 to 18 percent slopes | Urban land | 35-80 | Moraines | — | — |
| | Lester | 0-20 | Hills on moraines | No | — |
| | Kingsley | 0-5 | Hills on moraines | No | — |
| L52E: Urban land-Lester complex, 18 to 35 percent slopes | Urban land | 35-80 | Moraines | — | — |
| | Lester | 0-20 | Hills on moraines | No | — |
| | Kingsley | 0-5 | Hills on moraines | No | — |
| L53B: Urban land-Moon complex, 2 to 8 percent slopes | Urban land | 35-80 | Moraines | — | — |
| | Moon | 15-25 | Hills on moraines | No | — |
| | Lester | 0-15 | Hills on moraines | No | — |
| L54A: Urban land-Dundas complex, 0 to 3 percent slopes | Urban land | 35-80 | Moraines | — | — |
| | Dundas | 0-20 | Moraines | No | — |
| | Nessel | 0-15 | Moraines | No | — |

LOCATION GLENCOE

MN

Established Series
Rev. KDS-TCJ-TWN
02/2014

GLENCOE SERIES

The Glencoe series consists of very deep, very poorly drained soils that formed in loamy sediments from till. These soils are in closed depressions on moraines. Slope ranges from 0 to 1 percent. Mean annual air temperature is about 8 degrees C. Mean annual precipitation is about 735 millimeters.

TAXONOMIC CLASS: Fine-loamy, mixed, superactive, mesic Cumulic Endoaquolls

TYPICAL PEDON: Glencoe clay loam, on a concave slope of less than 1 percent, in a depression on a ground moraine, in cultivated field. (Colors are for moist soil unless otherwise noted.)

Ap--0 to 23 centimeters: black (N 2/0) clay loam, black (N 2/0) dry; moderate fine subangular blocky structure; friable; about 1 percent gravel; neutral; abrupt smooth boundary.

A--23 to 99 centimeters: black (10YR2/1) clay loam, very dark gray (10YR 3/1) dry; weak fine subangular blocky structure; friable; about 1 percent gravel; neutral; gradual irregular boundary.

Bg--99 to 127 centimeters: grayish brown (2.5Y 5/2) clay loam; weak fine medium subangular blocky structure; friable; common medium distinct light olive brown (2.5Y 5/6) iron concentrations; about 3 percent gravel; neutral; gradual irregular boundary.

Cg1--127 to 173 centimeters; grayish brown (2.5Y 5/2) loam; massive; friable; common medium distinct light olive brown (2.5Y 5/6) iron concentrations; about 4 percent gravel; slightly effervescent; slightly alkaline; gradual wavy boundary.

Cg2--173 to 203 centimeters; olive gray (5Y 5/2) loam; massive; friable; few masses of carbonates on faces of peds; common medium prominent strong brown (7.5YR 5/8) iron concentrations; about 4 percent gravel; strongly effervescent; slightly alkaline.

TYPE LOCATION: Major Land Resource Area (MLRA) 103-Central Iowa and Minnesota Till Prairies, Jackson County, Minnesota subset; about 6 miles west and 3 miles south of Jackson; located about 250 feet east and 150 feet south of the northwest corner of section 10, T. 101 N., R. 36 W.; USGS Lakefield SW topographic quadrangle; lat. 43 degrees 34 minutes 22.6 seconds N. and long. 95 degrees 09 minutes 14.3 seconds W., NAD 83.

RANGE IN CHARACTERISTICS:

Thickness of mollic epipedon--60 to 200 centimeters

Depth to carbonates--75 to more than 150 centimeters

Clay content of the particle-size control section (weighted average)--25 to 35 percent

Sand content of the particle-size control section (weighted average)--15 to 30 percent fine sand and coarser

Ap and A horizon:

Hue--10YR, 2.5Y, 5Y, or is neutral

Value--2 or 3

Chroma--0 to 1

Texture--clay loam, silty clay loam, loam, mucky clay loam, mucky silty clay loam, or mucky loam

Clay content--25 to 35 percent

Sand content--15 to 40 percent

Rock fragment content--0 to 5 percent

Reaction--pH 6.1 to 7.8

Thickness--40 to 80 centimeters

Some pedons have an O horizon up to 15 centimeters thick

AB horizon (when present):

Hue--2.5Y, 5Y, or is neutral

Value--2 or 3

Chroma--0 to 2

Texture--clay loam, silty clay loam, or loam

Clay content--25 to 35 percent

Sand content--15 to 40 percent

Rock fragment content--0 to 5 percent

Reaction--pH 6.1 to 7.8

Thickness--0 to 65 centimeters

Bg horizon:

Hue--2.5Y, 5Y, or is neutral

Value--2 to 5

Chroma--1 or 2

Texture--clay loam, silty clay loam, or loam

Clay content--25 to 35 percent

Sand content--15 to 40 percent

Rock fragment content--0 to 5 percent

Reaction--pH 6.1 to 7.8

Thickness--0 to 75 centimeters

Some pedons have B horizons that have a slight clay increase relative to the A horizons

Bkg horizon (when present):

Hue--2.5Y or 5Y

Value--4 to 6

Chroma--1 to 4

Texture--clay loam, silty clay loam, or loam

Clay content--25 to 35 percent

Sand content--15 to 40 percent

Rock fragment content--2 to 10 percent

Calcium carbonate equivalent--10 to 20 percent

Reaction--pH 7.4 to 8.4

Thickness--0 to 50 centimeters

Cg horizon:

Hue--2.5Y or 5Y

Value--4 to 6

Chroma--1 to 4

Texture--clay loam, silty clay loam, or loam

Clay content--25 to 35 percent

Sand content--15 to 40 percent

Rock fragment content--2 to 10 percent

Calcium carbonate equivalent--10 to 20 percent

Reaction--pH 7.4 to 8.4

Moist bulk density--1.35 to 1.55 g/cc

COMPETING SERIES: These are the Arctander, Coit, Coland, Comfrey, Delft, Excello, Gielow, Gus, James Canyon, Keddie, Kimmerling, Konner, Lundlake, McClave, Peoh, Romnell, Roundval, Shandep, and Wenas series.

Arctander--have a clay content of 10 to 18 percent and a sand content of 30 to 75 percent in the lower third of the series control section

Coit--have carbonates within a depth of 75 centimeters

Coland---do not have rock fragments in the series control section

Comfrey--do not have rock fragments in the series control sections

Delft--are on foot slopes and toe slopes and are not frequently saturated at the surface of the soil for more than 2 months during the wettest periods of years when precipitation is within one standard deviation of the 30 year mean of annual precipitation

Excello--have a pH range of 6.1 to 7.3 throughout the series control section

Gielow--have a pH range of 5.6 to 7.3 throughout the series control section

Gus--do not have rock fragments in the series control section

James Canyon--have rock fragment content of 15 to 35 percent in the particle-size control section

Keddie--have a pH range of 6.1 to 7.3 throughout the series control section and have a rock fragment content of up to 30 percent in the particle-size control section

Kimmerling--are stratified with a clay content of 5 to 60 percent in the lower third of the series control section

Konner--have clay films on faces of peds and in pores of the series control section

Lundlake--have a clay content of less than 18 percent and a sand content of more than 30 percent sand in the lower third of the series control section

McClave--have a moist bulk density that ranges from 1.2 to 1.4 g/cc in the lower third of the series control section

Peoh--have a pH range of 6.1 to 7.3 throughout the series control section

Romnell--have a moist bulk density range of 1.65 to 1.75 g/cc in the lower third of the series control section

Roundval--have a pH range of 6.1 to 7.3 throughout the series control section

Shandep--have a sand content of more than 70 percent in the lower third of the series control section

Wenas--have a sand content of more than 70 percent in the lower third of the series control section

GEOGRAPHIC SETTING:

Parent material--loamy sediments from till

Landform--closed depressions on moraines

Slope--0 to 1 percent

Elevation--300 to 400 meters above sea level

Mean annual temperature--6 to 10 degrees C

Mean annual precipitation--585 to 890 millimeters

Frost-free period--155 to 200 days

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Canisteo, Clarion, Harps, Nicollet, and Webster soils.

Canisteo--are on slightly higher landscape positions on rims of depressions, and have a mollic epipedon 25 to 60 centimeters thick

Clarion--are on higher landscape positions on convex slopes and have a frequently saturated zone between depths of 1.2 to 1.8 meters during the wettest periods of years when precipitation is within one standard deviation of the 30 year mean of annual precipitation

Harps--are on slightly higher landscape positions on rims of depressions, have a mollic epipedon 25 to 60 centimeters thick, and have a calcic horizon

Nicollet--are on higher landscape positions on flats and rises and have a frequently saturated zone at 0.4 meters during the wettest periods of years when precipitation is within one standard deviation of the 30 year mean of annual precipitation

Webster--are on slightly higher landscape positions on flats and swales and have a mollic epipedon 35 to 60 centimeters thick

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY:

Drainage class--very poorly drained--a frequently saturated zone occurs at the surface during the wettest periods of years when precipitation is within one standard deviation of the 30 year mean of annual precipitation

Saturated hydraulic conductivity--1.00 to 10.00 micrometers per second

Flooding--not flooded to rarely flooded for brief duration

Ponding--not ponded to frequently ponded (undrained) for very brief to long duration

USE AND VEGETATION:

Where drained, these areas are cultivated. The principal crops are corn and soybeans. Reed canarygrass commonly dominates partially drained pasture. The native vegetation is herbaceous marsh species tolerant of excessive wetness such as, cattails, bulrushes, giant burreed, giant reed grass and hydrophytic sedges.

DISTRIBUTION AND EXTENT:

Physiographic Division--Interior Plains

Physiographic Province--Central Lowland

Physiographic section--Western lake section

MLRA--Central Iowa and Minnesota Till Prairies (103)

LRR M; south-central Minnesota

Extent--large

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: St. Paul, Minnesota

SERIES ESTABLISHED: Dakota County, Minnesota, 1945.

REMARKS:

MLRA SSO 10-5 (Albert Lea, Minnesota).

Particle-size control section--the zone from a depth of 25 to 100 centimeters;
series control section--the zone from the surface to a depth of 150 centimeters

Diagnostic horizons and features recognized in this pedon are:
mollic epipedon--the zone from the surface to a depth of 99 centimeters (Ap and A horizons);
cambic horizon--the zone from a depth of 99 to 127 centimeters (Bg horizon);
cumulic subgroup--mollic epipedon is more than 60 centimeters thick;
aquic moisture regime--low chroma immediately below the A horizons.

Formerly a stratified substratum phase with silt loam, sand, sandy loam, and loamy sand textures below 102 centimeters was included with this series. However, with changes in the latest Soil Taxonomy extending the series control section to 150 centimeters, another series (Shandep) with similar properties would best fit this concept.

The type location was moved from Steele County, Minnesota to Jackson County, Minnesota in 5/09 to clearly describe the series concept within the MLRA.

Based on current investigations, elevation range in MLRA 103 is about 270 to 480 meters above sea level. However, the elevation data in the 2006 issue of USDA Handbook 296 has not been changed to agree with this elevation data.

Cation-exchange class is inferred from lab data from similar soils in the surrounding area.

Taxonomy version--Keys to Soil Taxonomy, tenth edition, 2006.

National Cooperative Soil Survey
U.S.A.

LOCATION HOUGHTON

MI+IA IL IN MN WI

Established Series

Rev. LWB-WEF-MCB

11/2016

HOUGHTON SERIES

The Houghton series consists of very deep, very poorly drained soils formed in herbaceous organic materials more than 130 cm (51 inches) thick in depressions and drainageways on lake plains, outwash plains, ground moraines, end moraines, till plains, and floodplains. Slope ranges from 0 to 2 percent. Mean annual precipitation is about 889 mm (35 inches), and mean annual temperature is about 10.0 degrees C (50 degrees F).

TAXONOMIC CLASS: Euic, mesic Typic Haplosaprists

TYPICAL PEDON: Houghton muck, on a level area in a cultivated field. (Colors are for moist soils unless otherwise stated.)

Oa1--0 to 23 cm (9 inches); black (N 2.5/) broken face and rubbed muck (sapric material); about 5 percent fiber, a trace rubbed; weak coarse subangular blocky structure; neutral [pH 7.0 in KCl]; abrupt smooth boundary.

Oa2--23 to 33 cm (9 to 13 inches); black (N 2.5/) broken face, very dark brown (7.5YR 2.5/2) rubbed muck (sapric material); about 5 percent fiber, a trace rubbed; weak medium granular structure; neutral [pH 7.0 in KCl]; abrupt smooth boundary.

Oa3--33 to 61 cm (13 to 24 inches); dark reddish brown (5YR 3/2) broken face, dark reddish brown (5YR 2.5/2) rubbed muck (sapric material); about 15 percent fiber, less than 5 percent rubbed; massive, breaking to thick platy fragments; neutral [pH 7.0 KCl]; abrupt smooth boundary.

Oa4--61 to 81 cm (24 to 32 inches); black (5YR 2.5/1) broken face and rubbed muck (sapric material); about 10 percent fiber, a trace rubbed; massive; about 1 percent woody fragments; neutral [pH 7.0 in KCl]; clear wavy boundary.

Oa5--81 to 122 cm (32 to 48 inches); dark reddish brown (5YR 2.5/2) broken face, black (5YR 2.5/1) rubbed muck (Sapric material); about 20 percent fiber, less than 10 percent rubbed; massive, breaking to thick platy fragments; neutral [pH 7.0 in KCl]; abrupt smooth boundary.

Oa6--122 to 203 cm (48 to 80 inches); dark reddish brown (5YR 2.5/2) broken face and rubbed muck (sapric material); about 10 percent fiber, less than 10 percent rubbed; massive; slightly sticky; about 15 percent mineral soil; neutral [pH 7.0 in KCl].

TYPE LOCATION: Clinton County, Michigan; about 3 miles northeast of the village of Bath; 200 feet north and 400 feet east of the southwest corner of sec. 12, T. 5 N., R. 1 W.; USGS Bath

topographic quadrangle; lat. 42 degrees 49 minutes 43.4 seconds N. and long. 84 degrees 22 minutes 56.9 seconds W.; NAD 27.

RANGE IN CHARACTERISTICS:

Thickness of the organic material: more than 130 cm (51 inches)

Organic fibers: derived primarily from herbaceous plants, but some layers contain as much as 30 percent woody material

Woody fragment content: averages less than 15 percent by volume in the control section

Reaction: very strongly acid to slightly alkaline throughout

Oa horizon:

Hue: 5YR to 10YR, or is neutral

Value: 2, 2.5 or 3

Chroma: 0 to 3

Organic material: dominantly muck (sapric material), or to lesser extent mucky peat (hemic material) that has a combined thickness of less than 25 cm (10 inches) or peat (fibric material) that is less than 13 cm (5 inches) thick

Some pedons have coprogenous material or marly material below 130 cm (51 inches).

COMPETING SERIES: These are the [Carlisle](#), [Catden](#), [Lena](#), [Peteetneet](#), [Saltese](#), and [Semiahmoo](#) series. Carlisle soils derived dominantly from woody materials and contain an average of 15 to 30 percent woody fragments in the control section. Catden soils are derived from woody and herbaceous materials and receive more than 1067 mm of mean annual precipitation. Lena soils contain carbonates throughout the control section. Peteetneet soils are not massive in the bottom tier. Saltese soils have lenses of diatomaceous earth and volcanic ash within a depth of 130 cm (51 inches). Semiahmoo soils are in areas with warm dry summers and mild moist winters, and typically are more acidic throughout the control section.

GEOGRAPHIC SETTING: Houghton soils are in closed depressions and drainageways on lake plains, outwash plains, ground moraines, end moraines, till plains, and flood plains. Slope gradients are less than 2 percent. Houghton soils formed in herbaceous organic materials more than 130 cm (51 inches) thick. Mean annual precipitation ranges from 762 to 1067 mm (30 to 42 inches). Mean annual temperature ranges from 8 to 11.7 degrees C (47 to 53 degrees F).

GEOGRAPHICALLY ASSOCIATED SOILS: These are the [Adrian](#), [Edselton](#), [Edwards](#), [Moston](#), [Muskego](#), [Palms](#), and [Willette](#) soils on similar positions. Adrian soils are underlain by sandy material at depths of 41 to 130 cm (16 to 51 inches). Edselton and Edwards soils are underlain by marly material at depths of 41 to 130 cm (16 to 51 inches). Moston, and Muskego soils are underlain by coprogenous material at depths of 41 to 130 cm (16 to 51 inches). Palms soils are underlain by loamy material at depths of 41 to 130 cm (16 to 51 inches). Willette soils are underlain by clayey material at depths of 41 to 130 cm (16 to 51 inches). Poorly or very poorly drained mineral soils are commonly associated along the margins of these areas.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Very poorly drained. Depth to the seasonal high water table ranges from 61 cm (2 feet) above the surface in ponded phases to 30 cm (1 foot) below the surface between September and June in normal years. Potential for surface runoff is very low or negligible. Saturated hydraulic conductivity is moderately high or high. Permeability is moderately slow to moderately rapid.

USE AND VEGETATION: A considerable area of these soils is used for cropland or pasture. Common crops are onions, lettuce, potatoes, celery, radishes, carrots, mint, and some corn. Native vegetation is primarily marsh grasses, sedges, reeds, buttonbrush, and cattails, with some water-tolerant trees near the margins of these areas.

DISTRIBUTION AND EXTENT: Mostly in MLRAs 95B, 98, 111B, and 111C, and to lesser extent in MLRAs 89, 95A, 96, 97, 99, 103, 104, 105, 108A, 108B, 108C, 110, 111A, 111C, 111D, and 115C in Michigan, Wisconsin, Indiana, Iowa, Minnesota, and Illinois. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Indianapolis, Indiana.

SERIES ESTABLISHED: Roscommon County, Michigan, 1924.

REMARKS: Diagnostic horizons and features recognized in this pedon are:
Muck (sapric material): from the surface to a depth of 203 cm (80 inches) (Oa1, Oa2, Oa3, Oa4, Oa5, Oa6 horizons).

ADDITIONAL DATA: Soil Interpretation Record - (MI0024, MI0291 (PONDED), MI0532 (SLOPING), MI0390 (MAAT>50), MI0383 (FREQUENTLY FLOODED)).

National Cooperative Soil Survey
U.S.A.



National Wetland Inventory

Customer: Ernest Mayers
Tract: 136

Aerial Imagery Year: 2017

8/8/2018

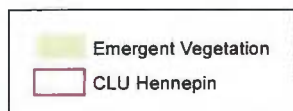


Hennepin County
Township and Section: Corcoran 27
Legal: T119, R23, S27

1:3,000

1 inch = 250 feet

0 140 280 560 840 1,120 Feet



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United States Department of Agriculture

June 6, 2018

Ernest Mayers & Jean Lucille Schlosser
21000 Larkin Rd
Hamel, MN 55340

Dear Ernest Mayers & Jean Lucille Schlosser:

The purpose of this letter is to provide you written notification of NRCS receipt of a FSA-569 NRCS Report of HELC and WC Compliance. A potential violation was identified in FSA Tract 136, located in Sections 27 and 28 of Corcoran Township in Hennepin County. The report is being investigated by the NRCS in accordance with Food Security Act provisions.

The owners and operators have both been notified in writing of this investigation. Please note that many of these reports result in findings of no violation, but all must be investigated on-site. This site visit will occur within the next 30 days. If you would like to be present during this review, or if you have questions concerning this notification, please contact me at 507-835-4800 Ext 113.

To remain in compliance with the Wetland Conservation Compliance Provisions of the Food Security Act, land manipulations that may affect wetland hydrology are not allowed. These manipulations include but are not limited to (1) creating new drainage or improving drainage systems in place prior to December 23, 1985, (2) "sodbusting" or bringing new land into production if the activity removes trees from a wetland area or changes the hydrology of a wetland area, or (3) land leveling, dredging or filling in or near designated wetland areas.

Violation of the Wetland Conservation Compliance Provisions may result in the loss of USDA benefits, including program payments. If you are concerned about maintaining your USDA program eligibility, contact us prior to performing the following activities: land clearing, tile or open ditch drainage, drainage maintenance, or filling, leveling, or dredging. You may request assistance by filing form AD-1026 at your local Farm Services Agency office.

This investigation applies to the 1985 Food Security Act provisions as amended only. The wetlands on your farm may also be protected by DNR Waters and US Army Corps of Engineers Regulatory Branch. If you have any questions you can contact the NRCS field office or me at the above number.

Sincerely,

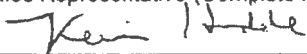
A handwritten signature in dark ink, appearing to read "Christina Ripplinger", is written over a horizontal line.

Christina Ripplinger
NRCS Wetland Conservationist

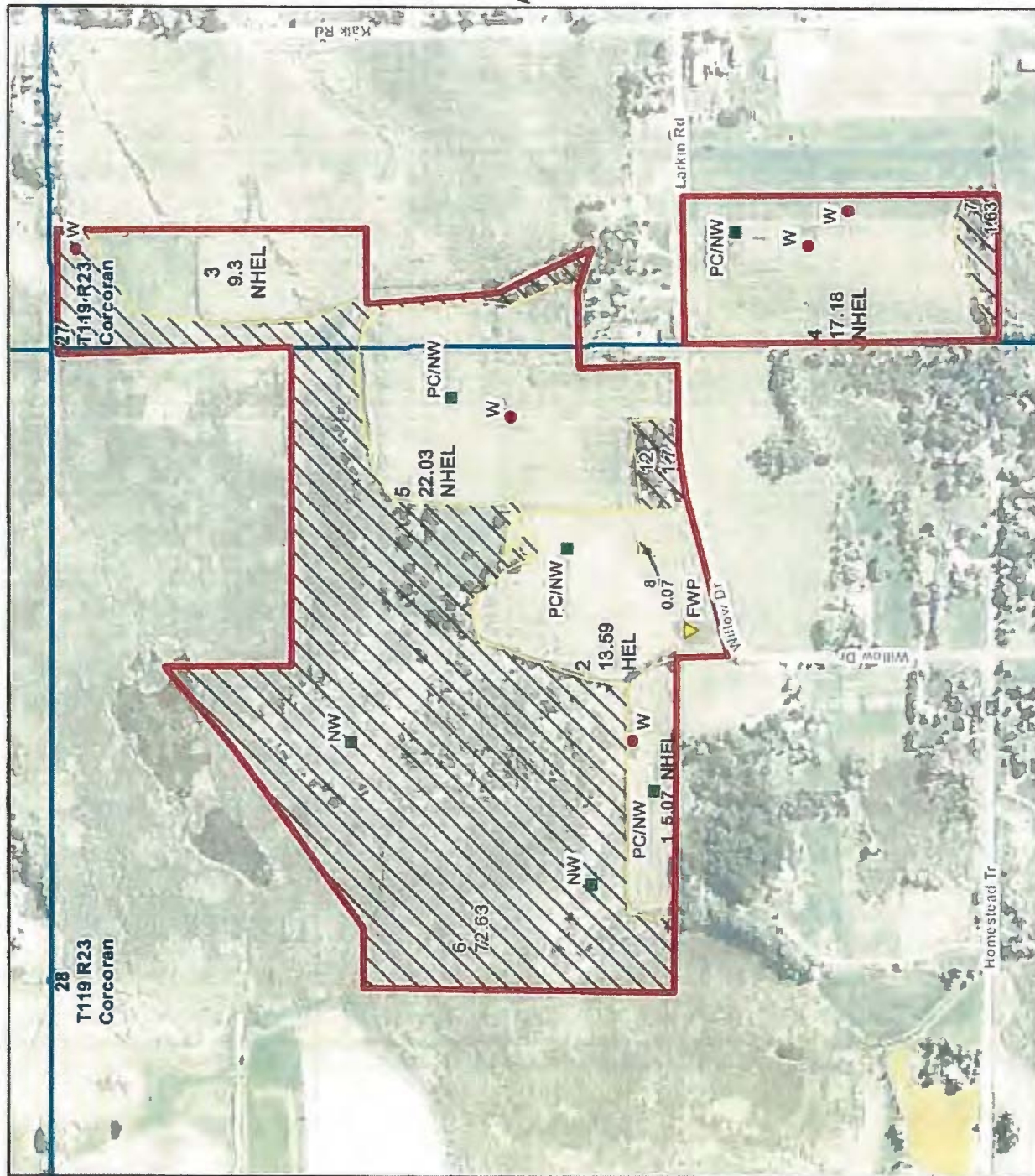
Cc: Kevin Hidde, Hennepin FSA County Executive Director, Elk River, MN
Julie Reberg, Hennepin County District Conservationist, Elk River, MN

ON PARTICIPATING PRODUCER

This form is available electronically.

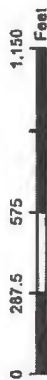
| | | | | | |
|--|--|---|---|---|--|
| FSA-569 (02-06-12) | | U.S. DEPARTMENT OF AGRICULTURE Farm Service Agency | | 1. Control Number 27-053-001 | |
| NRCS REPORT OF HELC AND WC COMPLIANCE | | | | 2. Was This Determination Requested by NRCS? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> | |
| PART A - TO BE COMPLETED BY FSA | | | | | |
| TO: NRCS | | 4. FSA Administrative County: | | | |
| FROM 3. (County FSA Office Name and Address) Sherburne-Anoka-Hennepin FSA Office 14855 Highway 10 Elk River, MN 55330 | | A. State Name and Code Minnesota | | B. County Name and Code Hennepin | |
| | | 5. NRCS FIPS State and County Code 27-053 | | | |
| | | 6. Farm Number 4333 | | 7. Crop Year 2018 | |
| | | 8. Tract Number 136 | | | |
| 9. Producer Information | | | | | 10. To be completed by NRCS |
| Producer | A. NAME AND ADDRESS | | B. TAX ID NUMBER (Last 4 Digits) | | Enter Date NRCS Technical Determination Is Final (MM-DD-YYYY) |
| Operator of Farm entered in Item 6. | Ernest J Mayers 21000 Larkin Rd Hamel, MN 55340 | | 9425 | | |
| Owner(s) of tract entered in Item 8. | Ernest J Mayers 21000 Larkin Rd Hamel, MN 55340 | | 9425 | | |
| | Jean Lucille Schlosser 21000 Larkin Rd Hamel, MN 55340 | | N/A | | |
| Tenant(s) or Sharecropper(s) on farm entered in Item 6 Note: Enter "NONE" if applicable. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| INSTRUCTIONS FOR NRCS: The above farm has been identified as having a potential noncompliance of the highly erodible land and wetland conservation provisions of the Food Security Act of 1985, as amended, for the crop year indicated above. Applicable field(s) or area(s) are marked with a red "X" on the attached photocopies. | | | | | |
| a) Please make applicable review(s) for the determination checked in Part B. | | | | | |
| b) Complete Item 10 above when the NRCS technical determination becomes final and Part C below and return it to the FSA County Office immediately so that the producer's eligibility for program benefits can be determined. | | | | | |
| 11. FSA County Office Representative (Complete Part B)  | | | | | 12. Date Referred to NRCS (MM-DD-YYYY) 05/02/2018 |
| PART B - TYPE OF DETERMINATION | | | PART C - TO BE COMPLETED BY NRCS (Check this block if NRCS was refused access to the land to verify compliance). | | |
| FSA Enter a "check" for the type of determination requested | | | 1. Check If Reviewed | | |
| | | | 2. Field Nos | | 3. Acres |
| 1. | <input type="checkbox"/> | HELC Compliance Determination | <input type="checkbox"/> | The field does "NOT" meet requirements of the HELC provisions | |
| | | | <input type="checkbox"/> | The field meets the requirements of the HELC provisions. | |
| 2. | <input type="checkbox"/> | Verify wetland classification on land that was planted to an agricultural commodity | <input type="checkbox"/> | The area identified is a CW. | |
| | | | <input type="checkbox"/> | The area identified is "NOT" CW. | |
| 3. | <input checked="" type="checkbox"/> | Determine whether an area is a wetland that was converted after 11/28/90. | <input type="checkbox"/> | The area identified is a wetland that was converted after 11/28/90. | |
| | | | <input type="checkbox"/> | The area identified is "NOT" a wetland that was converted after 11/28/90. | |
| | | | NRCS Certification: NRCS reviewed the field(s) or area(s) requested for the subject farm that are entered in Part C, Items 2 and 3. | | |
| | | | 4A. Signature, NRCS Representative | | 4B. Date (MM-DD-YYYY) |

The U.S. Department of Agriculture (USDA) prohibits discrimination in all of its programs and activities on the basis of race, color, national origin, age, disability and where applicable sex, marital status, familial status, parental status, religion, sexual orientation, political beliefs, genetic information, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA Assistant Secretary for Civil Rights, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, S.W., Stop 9410, Washington, DC 20250-9410, or call toll-free at (866) 632-9992 (English) or (800) 877-8339 (TDD) or (866) 377-8642 (English Federal-relay) or (800) 845-6136 (Spanish Federal-relay). USDA is an equal opportunity provider and employer.



2017 Program Year

Map Created August 09, 2017



Unless otherwise noted:

Shares are 100% operator
Crops are non-irrigated

Corn = yellow for grain

Soybeans = common soybeans for grain

Wheat = HRS, HRW = Grain

Sunflower = Oil, Non-Oil = Grain

Oats and Barley = Spring for grain

Rye = for grain

Peas = process

Alfalfa, Mixed Forage AGM, GMA, IGS = for forage

Beans = Dry Edible

NAG = for GZ

Canola = Spring for seed

Common Land Unit

Non-Cropland

Cropland

Tract Boundary

PLSS

Wetland Determination Identifiers

Restricted Use

Limited Restrictions

Exempt from Conservation

Compliance Provisions

Tract Cropland Total: 67.17 acres

USDA FSA maps are for FSA Program administration only. This map does not represent a legal survey or reflect actual ownership; rather it depicts the information provided directly from the producer and/or the 2015 NADP imagery. The producer accepts the data "as is" and assumes all risk associated with its use. The USDA Farm Service Agency assumes no responsibility for actual or consequential damage incurred as a result of any user's reliance on this data outside FSA Programs. Wetland identifiers do not represent the size, shape, or specific determination of the area. Refer to your original determination (CPA-026 and attached maps) for exact boundaries and determinations or contact NRCS.

Producer Farm Data Report**Crop Year: 2018****Date: 5/8/18 7:26 AM****Page: 1**

DISCLAIMER: This is data extracted from the web farm database. Because of potential messaging failures in MIDAS, this data is not guaranteed to be an accurate and complete representation of data contained in the MIDAS system, which is the system of record for Farm Records.

Producer Name and Address

ERNEST J MAYERS
21000 LARKIN RD
HAMEL MN 55340-9379

Telephone: (612) 490-0115

Recording County Office Name

Hennepin, Minnesota

Number of Farms
1

Number of Tracts
5

Farmland
402.11Cropland
283.7DCP
Cropland
283.7CRP
Cropland
0.0Eff DCP
Cropland
283.7**Relationship to Farm Tract**

| State & County | Farm | Tract | Relationship to Farm Tract | Producer | Farmland | Cropland | DCP | CRP | Eff DCP | HEL | Wetland |
|----------------|------|-------|----------------------------|------------------------|----------|----------|-------|-----|---------|-----|---------|
| Hennepin, MN | 4333 | 128 | Owner/Operator | ERNEST J MAYERS | 82.39 | 62.19 | 62.19 | 0.0 | 62.19 | N | WL |
| | | | Owner | JEAN LUCILLE SCHLOSSER | | | | | | | |
| | | 134 | Owner/Operator | ERNEST J MAYERS | 74.52 | 64.1 | 64.1 | 0.0 | 64.1 | N | WL |
| | | | Owner | JAMES G WAWRA | | | | | | | |
| | | | Owner | LILLIAN WAWRA | | | | | | | |
| | | 136 | Owner/Operator | ERNEST J MAYERS | 143.2 | 67.17 | 67.17 | 0.0 | 67.17 | SA | WL |
| | | | Owner | JEAN LUCILLE SCHLOSSER | | | | | | | |
| | | 1380 | Owner/Operator | ERNEST J MAYERS | 71.56 | 60.84 | 60.84 | 0.0 | 60.84 | N | WL |
| | | | Owner | JAMES G WAWRA | | | | | | | |
| | | | Owner | LILLIAN WAWRA | | | | | | | |
| | | 1878 | Owner/Operator | ERNEST J MAYERS | 30.44 | 29.4 | 29.4 | 0.0 | 29.4 | N | WL |
| | | | Owner | JEAN LUCILLE SCHLOSSER | | | | | | | |

| HEL Codes | SA = HEL: Sys Applied SNA = HEL: Sys Not Applied | SNR - HEL: Sys Not Required 2YR = HEL: 2-yr Implement | DNC = Determination Not Complete N = Not HEL | Wetland Codes | WL = Wetland N = No Wetland | DNC = Determination Not Complete |
|-----------|---|--|---|---------------|--------------------------------|----------------------------------|
|-----------|---|--|---|---------------|--------------------------------|----------------------------------|

Appendix F
Hennepin County Ditch Survey
Notification Letter

HENNEPIN COUNTY

MINNESOTA

October 29th, 2018

Ernie Mayers and Jean L Schlosser
21000 Larkin Rd
Corcoran, MN 55340

Dear Resident,

You are receiving this letter because you own property along County Ditch #3. In the next six weeks, that ditch will be surveyed by a crew from Alliant Engineering. Depending on the needs of the survey team, you may be contacted again to request access, otherwise the crew will be working along your property but you will not need to do anything.

If you would like to know exactly when the crew will be out on your property or would like a heads up when they are going out, you may contact me and I will request their itinerary.

This survey is being conducted to update our survey records and check on the condition of the ditch, as well as to locate areas where there are drainage issues or good locations to place water quality best management practices. If there are any areas that are problematic for drainage or maintenance, please let me know and I'll ensure the survey team notes those locations and potential repairs.

The survey and subsequent repairs or improvements are not a petitioned project and will not be assessed on your taxes. They are part of a county wide effort to assess the condition of our assets and make improvements to water quality where feasible. After the survey and condition assessment are completed, residents will be contacted with additional information about the findings and any next steps.

If you have any questions or would like to let me know about any issues you are having with the ditch that you'd like us to take a look at, please feel free to contact me any time.

Thank you,

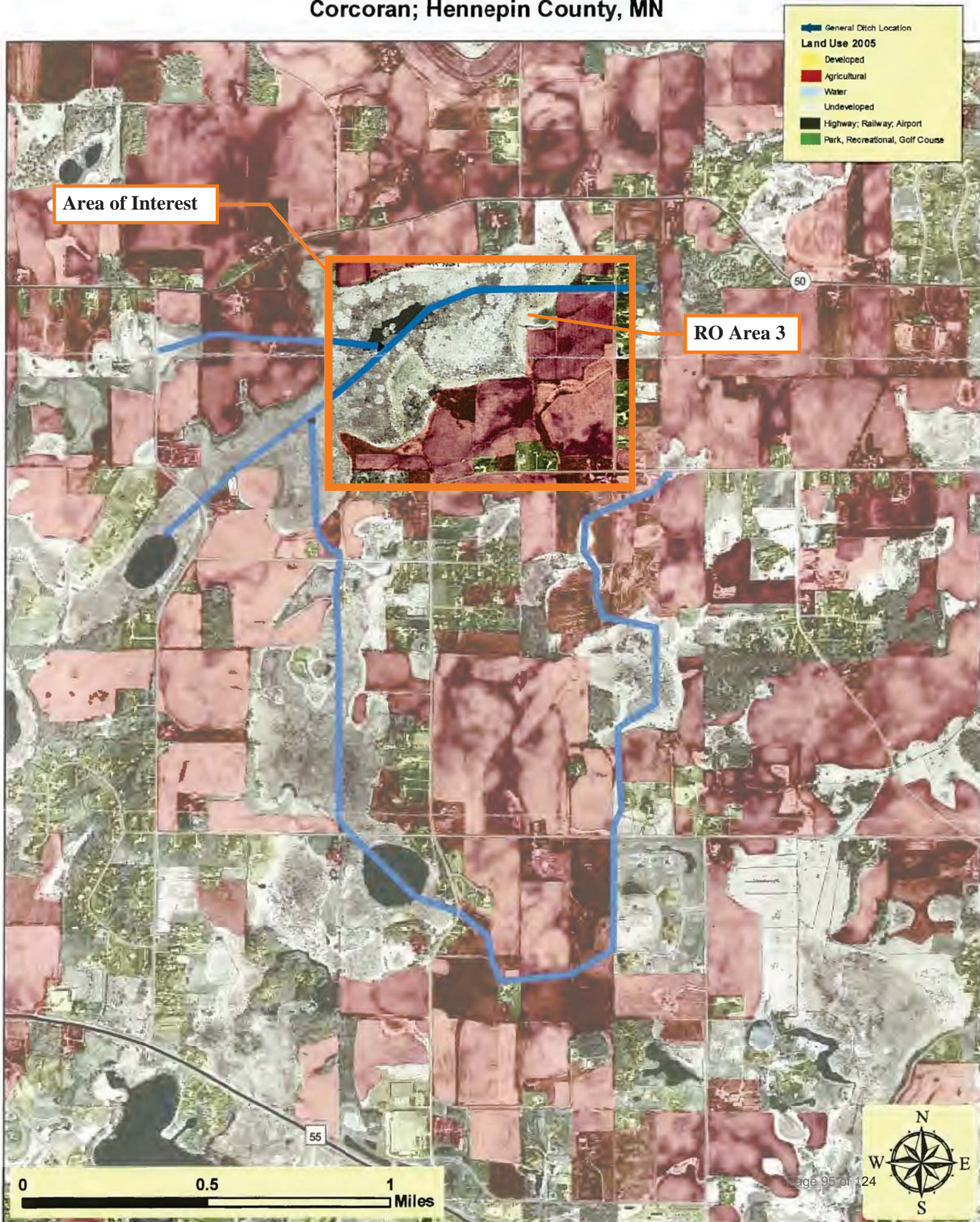


Kirsten Barta
Rural Conservationist
Office: 612-543-3373
Kirsten.barta@hennepin.us

Orange boxes added over original letter to highlight area of interest

item 10s

COUNTY DITCH 3 - ELM CREEK WATERSHED Corcoran; Hennepin County, MN



Appendix G

DNR Scanned PWI Map

PROTECTED WATERS AND WETLANDS

HENNEPIN COUNTY MINNESOTA

SHEET 3 of 4



LEGEND

Protected Waters:

- Basins are identified with a number and the letter "W".
- Watercourses are identified with a heavy, dark line.
- Public ditches are identified with a dashed line.

Protected Wetlands:

- Identified with a number and the letter "W".

This map is intended for use with a separate descriptive list. The boundaries of the protected water bodies shown on this map are plotted as accurately as possible based on the best available information and are approximate. A protected water body boundary coincides with the ordinary high water mark of the water body as defined in Minnesota Statutes. Section boundaries and easements are determined through DNR field inspection or survey.

Protected waters and wetlands are subject to Minnesota Statutes, Sections 105.42, which require a permit for any activity that would alter the natural course, current or cross section of these waters. Contact the DNR office in your area for further information.

Trespass

The designation and mapping of protected waters or wetlands does not entitle anyone to cross private land in order to gain access to the water. Please respect the property of others.

Water Bank

Wetland owners may be eligible for compensation for preservation of protected wetlands. Contact the DNR office in your area for further information.

SCALE: 1" = 1 MILE



Item 10s

Appendix H

1998 NRCS Drainage Maintenance Request



CERTIFIED MAIL

September 3, 1998

Mr. Ernie Mayers
21300 Larkin Road
Corcoran, MN 55340

RE: Final Wetland Determination and Request for Drainage Maintenance, T-134 and 136,
Corcoran Sections 27 and 28, Hennepin County, MN

Dear Mr. Mayers:

This letter is in response to your request for a field review of the preliminary wetland determination for the above mentioned tract(s). Specifically, you had questions about areas inventoried as wetland in your pastures. The enclosed NRCS-CPA-026E form outlines changes made to the determination as a result of the review.

CHANGE IN WETLAND DESIGNATION

The wetland designations in the pastured areas have been changed to farmed wetland pasture (FWP). The boundaries of these wetlands have also been revised to better reflect upland areas within your pastures. Existing drainage systems on FWP areas can be maintained, but not improved, in order to remain eligible for USDA benefits.

If you do not agree with this final technical wetland determination you may elect to appeal to the Farm Service Agency County Committee at the address listed below. An appeal to the County Committee must be received within 30 days of the date of this letter. If you elect to appeal to the County Committee, NRCS will forward a copy of our administrative record for their use in deciding the appeal.

Sherburne-Anoka-Hennepin Farm Service Agency
14855 Highway 10
Elk River, MN 55330-1170

Exhibit 1

MAINTENANCE REQUEST

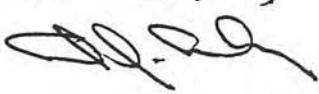
The ditch on the west side of the farmed wetland pasture between fields 2 and 3 (T-134) can be replaced with tile. The tile shall be placed in the ditch bottom and the ditch shall be filled in with spoil side cast into the wetland from previous clean out operations. Tile cannot be placed going east towards Kalk road.

The shallow swale found north of the south property line in the farmed wetland pasture south of the barn can be cleaned out. Soil borings found approximately 0.5 ft. of spoil in the bottom of the swale. Spoil shall be side cast away from the swale, but shall not be spread into the FWP. If you wish to place a tile line to replace the swale, it can be placed adjacent to the existing swale and at the same elevation.

Several depressions were seen within the FWP. Tile cannot be placed through these depressions, but a surface inlet is allowed in the depressions if placed at the same elevation as the swale. item 10s

Before undertaking any drainage maintenance, contact the Sherburne-Anoka-Hennepin FSA office to request approval of the activity. If you have any questions, please feel free to contact me.

Sincerely,



Edward J. Musielewicz
District Conservationist

Enc.

cc:

Sherburne-Anoka-Hennepin FSA
file

U.S. DEPARTMENT OF AGRICULTURE
 NATURAL RESOURCES CONSERVATION SERVICE

NRCS-CPA-026E
 8-95

HIGHLY ERODIBLE LAND AND WETLAND
 CONSERVATION DETERMINATION

Name: Mayers, Ernie
 County: Hennepin

Tract: 134
 Request Date: 07/25/97 Farm: HERNMAY
 FSA Farm No.:

Section I - Highly Erodible Land

Fields in this section have undergone a determination of whether they were highly erodible land (HEL) or not; fields for which an HEL Determination has not been completed are not listed. In order to be eligible for USDA benefits, person must be using an approved conservation system on all HEL.

| Field | HEL (Y/N) | Sodbusted (Y/N) | Acres | Determination Date |
|-------|-----------|-----------------|-------|--------------------|
| 1 | N | N | 3.0 | 11/22/88 |
| 2 | N | N | 15.3 | 11/22/88 |
| 3 | N | N | 20.4 | 11/22/88 |
| 4 | N | N | 4.5 | 11/22/88 |
| 5 | N | N | 3.3 | 11/22/88 |

Section II - Wetlands

Fields in this section have had wetland determinations completed. See the Wetlands Explanation section for additional information regarding allowable activities under the wetland conservation provisions of the Farm Bill and Section 404 of the Clean Water Act.

| Field | Wetland Label | Acres | Determination Date | Certification Date |
|-------|---------------|-------|--------------------|--------------------|
| 1 | W | 0.1 | 12/08/97 | 12/08/97 |
| 1 | PC/NW | 2.9 | 12/08/97 | 12/08/97 |
| 2 | FW | 1.5 | 12/08/97 | 12/08/97 |
| 2 | PC/NW | 13.8 | 12/08/97 | 12/08/97 |
| 3 | PC/NW | 20.4 | 12/08/97 | 12/08/97 |
| 4 | PC/NW | 4.5 | 12/08/97 | 12/08/97 |
| 5 | PC/NW | 3.3 | 12/08/97 | 12/08/97 |
| PAST | NI | 12.5 | 09/03/98 | 09/03/98 |
| PAST | FWP | 11.0 | 09/03/98 | 09/03/98 |
| UN | W | 0.5 | 09/03/98 | 09/03/98 |
| UN | NI | 7.2 | 09/03/98 | 09/03/98 |

U.S. DEPARTMENT OF AGRICULTURE
 NATURAL RESOURCES CONSERVATION SERVICE

NRCS-CPA-026E
 8-95

HIGHLY ERODIBLE LAND AND WETLAND
 CONSERVATION DETERMINATION

Name: Mayers, Ernie
 County: Hennepin

Tract: 134
 Request Date: 07/25/97 FSA Farm No.:

Farm: HERNMAY

Wetlands Explanation

Wetland
 Label Explanatory Comments

Wetland;
 Description: An area that meets the wetland criteria including
 wetland farmed under natural conditions. Includes abandoned wetland
 resulting from abandonment of other wetland labels; Authorized
 Cropping: May be farmed under natural conditions without removal of
 woody vegetation; Authorized Maintenance: At level needed to
 maintain original system on related farmed wetland, farmed wetland
 pasture, and prior converted cropland. Must not convert additional
 wetlands or exceed "original scope and effect"; If you plan to
 clear, drain, fill, level or manipulate these areas contact NRCS* and
 COE**.

Natural Resources Conservation Service
 * Corps of Engineers

Remarks
 ETLAND DETERMINATIONS HAVE BEEN REVISED AFTER FIELD VISIT BY FIELD OFFICE
 TAFF.

I certify that the above determinations are correct and were conducted in
 accordance with policies and procedures contained in the National Food
 Security Act Manual.

Signature Designated Conservationist

Date

Edward Musielewicz

Sep 03, 1998

All USDA programs and services are available without regard to race, color,
 national origin, religion, sex, age, marital status, or handicap.

NHEL = NON-HIGHLY ERODIBLE MNC, MM, MNR = SPECIAL COND. (SEE NRCS)
PC = PRIOR CONVERTED WETLAND NC = NON-CROPLAND
ECW = EX-PT CONVERTED WETLAND NI = NON-INVENTORIED

NOT TO REPRODUCED
SCALE MAY 1998

PHOTO
NO **ES**

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HIGHLY ERODIBLE LAND AND WETLAND
CONSERVATION DETERMINATION

Name: Mayers, Ernie
County: Hennepin

Tract: 134 Farm: HERNMAY
Request Date: 07/25/97 FSA Farm No.:

Section I - Highly Erodible Land

Fields in this section have undergone a determination of whether they were highly erodible land (HEL) or not; fields for which an HEL Determination has not been completed are not listed. In order to be eligible for USDA benefits, a person must be using an approved conservation system on all HEL.

| Field | HEL (Y/N) | Sodbusted (Y/N) | Acres | Determination Date |
|-------|-----------|-----------------|-------|--------------------|
| 1 | N | N | 3.0 | 11/22/88 |
| 2 | N | N | 15.3 | 11/22/88 |
| 3 | N | N | 20.4 | 11/22/88 |
| 4 | N | N | 4.5 | 11/22/88 |
| 5 | N | N | 3.3 | 11/22/88 |

Section II - Wetlands

Fields in this section have had wetland determinations completed. See the Wetlands Explanation section for additional information regarding allowable activities under the wetland conservation provisions of the Farm Bill and Section 404 of the Clean Water Act.

| Field | Wetland Label | Acres | Determination Date | Certification Date |
|-------|---------------|-------|--------------------|--------------------|
| 1 | W | 0.1 | 12/08/97 | 12/08/97 |
| 1 | PC/NW | 2.9 | 12/08/97 | 12/08/97 |
| 2 | FW | 1.5 | 12/08/97 | 12/08/97 |
| 2 | PC/NW | 13.8 | 12/08/97 | 12/08/97 |
| 3 | PC/NW | 20.4 | 12/08/97 | 12/08/97 |
| 4 | PC/NW | 4.5 | 12/08/97 | 12/08/97 |
| 5 | PC/NW | 3.3 | 12/08/97 | 12/08/97 |
| PAST | NI | 12.5 | 09/03/98 | 09/03/98 |
| PAST | FWP | 11.0 | 09/03/98 | 09/03/98 |
| UN | W | 0.5 | 09/03/98 | 09/03/98 |
| UN | NI | 7.2 | 09/03/98 | 09/03/98 |

HIGHLY ERODIBLE LAND AND WETLAND
CONSERVATION DETERMINATION

Name: Mayers, Ernie Tract: 134 Farm: HERNMAY
County: Hennepin Request Date: 07/25/97 FSA Farm No.:

Wetlands Explanation

Wetland

Label Explanatory Comments

- FW Farmed Wetland;
Description: An area that is farmed, was manipulated prior to 12/23/85, but still meets wetland criteria; Authorized Cropping: May be farmed as it was before 12/23/85; Authorized Maintenance: May be maintained to the extent that existed before 12/23/85 if "as built" records exist or may be maintained to 12/23/85 condition if no "as built" records exist; If you plan to clear, drain, fill, level or manipulate these areas contact NRCS* and COE**.
- FWP Farmed Wetland Pasture;
Description: An area that is pasture or hayland, manipulated before 12/23/85, still meets wetland criteria and is not abandoned; Authorized Cropping: May be used as it was before 12/23/85 for either forage or agricultural commodity production; Authorized Maintenance: May be maintained to the extent that existed before 12/23/85 if "as built" records exist or may be maintained to 12/23/85 condition if no "as built" records exist; If you plan to clear, drain, fill, level or manipulate these areas contact NRCS* and COE**.
- NI Not Inventoried;
Description: An area where no wetland determination has been completed; Authorized Cropping: May be farmed as long as no woody vegetation is removed and no hydrologic manipulation is undertaken; Authorized Maintenance: Request determination from NRCS* prior to initiating any manipulation; If you plan to clear, drain, fill, level or manipulate these areas contact NRCS* and COE**.
- PC/NW Prior Converted Cropland/Non-Wetland;
Description: An area that contains both prior converted cropland and non-wetland; Authorized Cropping: No restrictions; Authorized Maintenance: No restrictions unless the manipulation would convert adjacent wetland labels.

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICENRCS-CPA-026E
8-95HIGHLY ERODIBLE LAND AND WETLAND
CONSERVATION DETERMINATIONName: Mayers, Ernie
County: HennepinTract: 134
Request Date: 07/25/97Farm: HERNMAY
FSA Farm No.:

Wetlands Explanation

Wetland

Label Explanatory Comments

W Wetland;
Description: An area that meets the wetland criteria including wetland farmed under natural conditions. Includes abandoned wetland resulting from abandonment of other wetland labels; Authorized Cropping: May be farmed under natural conditions without removal of woody vegetation; Authorized Maintenance: At level needed to maintain original system on related farmed wetland, farmed wetland pasture, and prior converted cropland. Must not convert additional wetlands or exceed "original scope and effect"; If you plan to clear, drain, fill, level or manipulate these areas contact NRCS* and COE**.

* Natural Resources Conservation Service

** Corps of Engineers

Remarks

WETLAND DETERMINATIONS HAVE BEEN REVISED AFTER FIELD VISIT BY FIELD OFFICE STAFF.

I certify that the above determinations are correct and were conducted in accordance with policies and procedures contained in the National Food Security Act Manual.

Signature Designated Conservationist

Date


Edward Musielewicz

Sep 03, 1998

All USDA programs and services are available without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Appendix I
Purchase Agreement for Wetland Banking Credits
Wetland Bank 1361

PURCHASE AGREEMENT FOR WETLAND BANKING CREDITS

Tom & Karen Grygelko Wetland Bank - Account #1361

Greenfield, Hennepin County, Minnesota

Sellers: Tom & Karen Grygelko
8940 Greenfield Road
Greenfield, MN 55357
(763) 498-7696
tgrygelko@gmail.com

Agent: Ben Hodapp
Anderson Engineering
13605 1st Ave N, Ste 100
Plymouth, MN 55441
(763) 412-4000
bhodapp@ae-mn.com

This AGREEMENT, made this January 16, 2019 between Tom Grygelko (SELLER) and Ernie J Mayers (BUYER).

1. SELLER agrees to sell to BUYER, and BUYER agrees to buy from SELLER, the wetland banking credits (CREDITS) listed in CREDITS TO BE SOLD (below).
2. SELLER represents and warrants as follows:
 - a. The CREDITS are deposited into account 1361 in the Minnesota Wetland Bank administered by the Minnesota Board of Water and Soil Resources (BWSR) pursuant to Minnesota Rules.
 - b. SELLER is an account holder in good standing
 - c. SELLER owns the CREDITS and has the right to sell the CREDITS to the BUYER
3. BUYER will pay a total for the CREDITS as follows:
 - a. **\$250.00** to be paid to the SELLER as Earnest Money when this agreement is signed; and,
 - b. **\$16,987.16** to be paid to the SELLER on the Closing Date
4. BUYER agrees to pay a withdrawal fee of **\$456.96** based on current State rate for Bank Service Area 7 of \$1,992 per credit and an Easement Stewardship Fee of **\$69.28**. At the closing date BUYER will execute a single check made out for the total sum of the Withdrawal Fee plus the Easement Stewardship Fee, **\$526.24**, payable to the Minnesota Board of Water and Soil Resources.

| CREDITS TO BE SOLD | | | | | |
|---------------------------------------|----------|---------------|--------------|---------------------|---------------------|
| Credit Sub-Group | SWC (ac) | Cost per Acre | Wetland Type | Topographic Setting | Cost |
| A | 0.1147 | \$76,230.00 | 3 | Shallow Marsh | \$ 8,743.58 |
| B | 0 | | | | |
| C | 0.1147 | \$76,230.00 | U | Upland | \$8,743.58 |
| Subtotal (payable to Seller): | | | | | \$ 17,487.16 |
| BWSR Withdrawal Fee \$1,992/credit | 0.2294 | 1,992.00 | | | \$ 456.96 |
| BWSR Esmt Fee \$302/credit | 0.2294 | 302.00 | | | \$ 69.28 |
| Subtotal (payable to BWSR): | | | | | \$ 526.24 |
| TOTAL: | | | | | \$ 18,013.40 |

5. The closing shall occur on or before March 15, 2019. Upon payment of the balance of the purchase price, SELLER will sign a fully executed Application for Withdrawal of the Credits in the form specified by BWSR, provide a copy of the Application for Withdrawal to the BUYER and forward the same to BWSR along with the check for the withdrawal fee.
6. BUYER has applied, or will apply, to the Local Government Unit (LGU) where the proposed wetland impact occurs. This document serves as proof to the LGU that the BUYER has secured wetland credit.
7. If the LGU has not approved the BUYER'S project that includes use of these CREDITS by the Closing Date, the BUYER must cancel or postpone this AGREEMENT by written notice to the SELLER or AGENT. In this case, the SELLER will either return the BUYER'S earnest money or establish a later closing date.
8. If the LGU approves the replacement plan and/or the BUYER fails to close the sale, the SELLER may retain the earnest money as liquidated damages.

BUYER'S INFORMATION:Printed Name Ernie J Mayers

Company _____

Address 21600 Larkin RoadCorcoran, MN 55340Phone 612-490-0115Signature Ernie MayersDate 1-28-19**SELLER'S INFORMATION:**

Tom Grygelko

8940 Greenfield Road

Greenfield, MN 55357

763-498-7696

Tom Grygelko1-16-19

Appendix J
Purchase Agreement for Wetland Banking Credits
Wetland Bank 1643



AGREEMENT FOR PURCHASE OF WETLAND BANKING CREDITS

This Agreement for Purchase of Wetland Banking Credits ("Agreement") is made this 29th day of January, 2019 between Wetland Credit Agency, LLC ("Broker") and Ernie Mayers ("Buyer"). (Broker and Buyer are collectively referred to as "Parties").

| WETLAND CREDIT ACCOUNT(S) | | | | |
|---------------------------|----------|--------------------------|-----|------------------------|
| Acct. No. | County | Major Watershed | BSA | Account Owner |
| 1643 | Hennepin | 20 – Mississippi (metro) | 7 | R. Engstrom ("Seller") |

1. Buyer agrees to buy the wetland banking credits ("Credits") listed below:

| CREDITS TO BE SOLD | | | | | | |
|-------------------------------|---------------|------------------------------------|-----------------------------------|---------------|----------------|--------------------|
| Credit Sub-Group ¹ | Acres | Wetland Circ. 39 Type ² | Plant Community Type ³ | Cost per Acre | Account Number | Total |
| A. | 0.2293 | 3 | shallow marsh | \$121,968.00 | 1643 | \$27,967.26 |
| B. | -- | -- | -- | -- | -- | -- |
| C. | -- | -- | -- | -- | -- | -- |
| D. | --- | -- | -- | -- | -- | -- |
| E. | -- | -- | -- | -- | -- | -- |
| Totals | 0.2293 | | | | | \$27,967.26 |

☐ Check here if additional credit sub-groups are part of this account and are listed on an attachment to this document.


¹A separate credit sub-group shall be established for each wetland or wetland area that has different wetland characteristics.

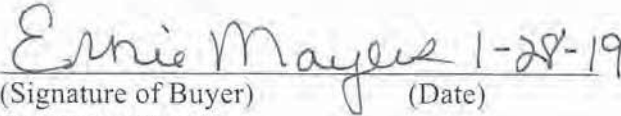
²Circular 39 types: 1, 1L, 2, 3, 4, 5, 6, 7, 8, B, U.

³**Wetland plant community type:** shallow open water, deep marsh, shallow marsh, sedge meadow, fresh meadow, wet to wet-mesic prairie, calcareous fen, open bog or coniferous bog, shrub-carr/alder thicket, hardwood swamp or coniferous swamp, floodplain forest, seasonally flooded basin. **See *Wetland Plants and Plant Communities of Minnesota and Wisconsin (Eggers and Reed, 1997)* as modified by the Board of Water and Soil Resources, United States Army Corps of Engineers.**

2. Statement Regarding Credits:
- The Credits are deposited in an account in the Minnesota Wetland Bank administered by the Minnesota Board of Water and Soil Resources ("BWSR") pursuant to Minn. Rules Chapter 8420.0700-.0760.
 - Seller owns the Credits and has the right to sell the Credits to Buyer.
3. Buyer will pay a total of \$27,967.26 for the Credits, as follows:
- \$27,967.26 to be paid on the Closing Date defined and listed below.

4. In addition to the fees for the Credits in paragraph 3, Buyer agrees to pay the Withdrawal Fee and Easement Stewardship Fee totaling \$526.01 to Broker as required by BWSR. At closing, Broker will execute a check made out for this amount payable to BWSR.
5. The closing of the purchase and sale shall occur on or before April 29, 2019 ("Closing Date"). The Closing Date may only be extended or changed by written consent of both Parties. Upon payment of the purchase price, Broker attests that Seller has agreed to sign a fully executed Application for Withdrawal of Credits in the form specified by BWSR.
6. Buyer shall apply to the appropriate Local Government Unit ("LGU") and any other required regulatory or governmental agency for approval of a replacement plan utilizing the Credits as the means of replacing impacted wetlands. If the LGU or other regulatory or government agency has not approved the Buyer's application for a replacement plan utilizing the Credits by the Closing Date, and no extension of the Closing Date has been agreed to by the Parties in writing, then either Buyer or Broker may cancel this Agreement by giving written notice to the other at the address identified below. In the event of cancellation by either Party, neither Buyer nor Broker shall have any further obligations to each other and waive any and all claims that they may have against the other under this Agreement and Agreement will be null and void.
7. Buyer agrees that Broker is acting in good faith on behalf of a third party Seller, and that if Seller fails to perform under this Agreement, Broker shall have no liability to Buyer and shall not be held responsible for any claims or damages. Buyer waives any and all claims that Buyer has or may have against Broker resulting from this Agreement. Broker shall however refund any monies paid to it by Buyer.
8. Buyer further agrees and understands that Broker has made no representations or warranties to Buyer other than as contained herein and agrees and understands that it is Buyer's sole obligation to determine if the proposed replacement plan will be approved, and to seek approval of the proposed replacement plan by all required appropriate governmental regulatory agencies and Buyer waives any and all claims it may have against Broker if the proposed replacement plan is not approved by the required governmental entities or agencies.
9. Buyer further agrees that Agreement is not valid until a signed copy is provided to Broker. If Buyer has not forwarded a signed copy to Broker within 7 days after date signed by Broker, Agreement is null and void and neither Buyer nor Broker shall have any further obligations under this Agreement.


 (Signature of Broker) 01/29/2019
 (Date)
 By: Eric Trelstad, Wetland Credit Agency, LLC
 Its: Owner
 Address: 12940 Overlook Road
 Dayton, MN 55327
 612-360-4700


 (Signature of Buyer) 1-28-19
 (Date)
 By: Ernie Mayers
 Its: Owner
 Address: 21600 Larkin Road
 Corcoran, MN 55340

Appendix K

Hydric Soils Report



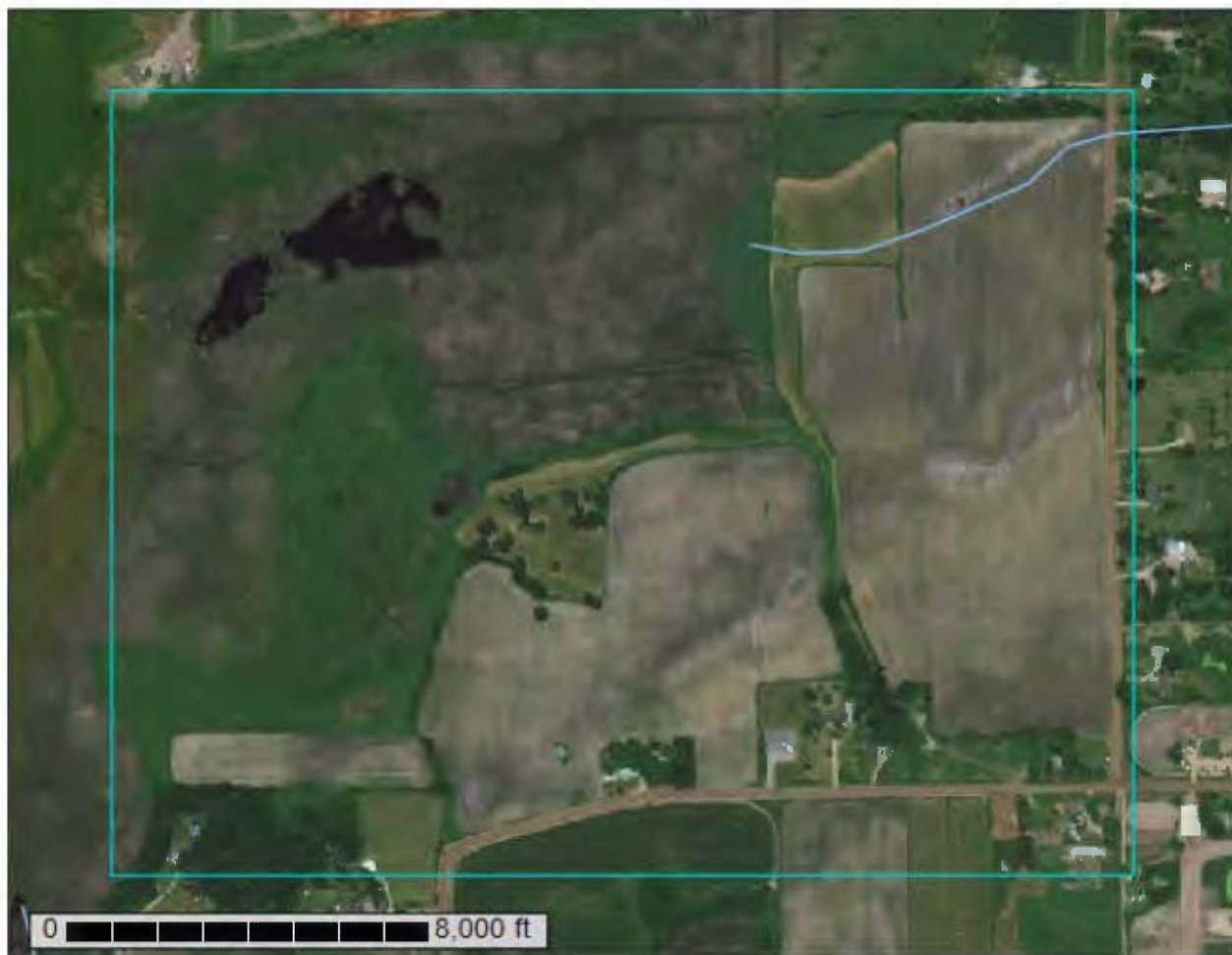
United States
Department of
Agriculture

NRCS

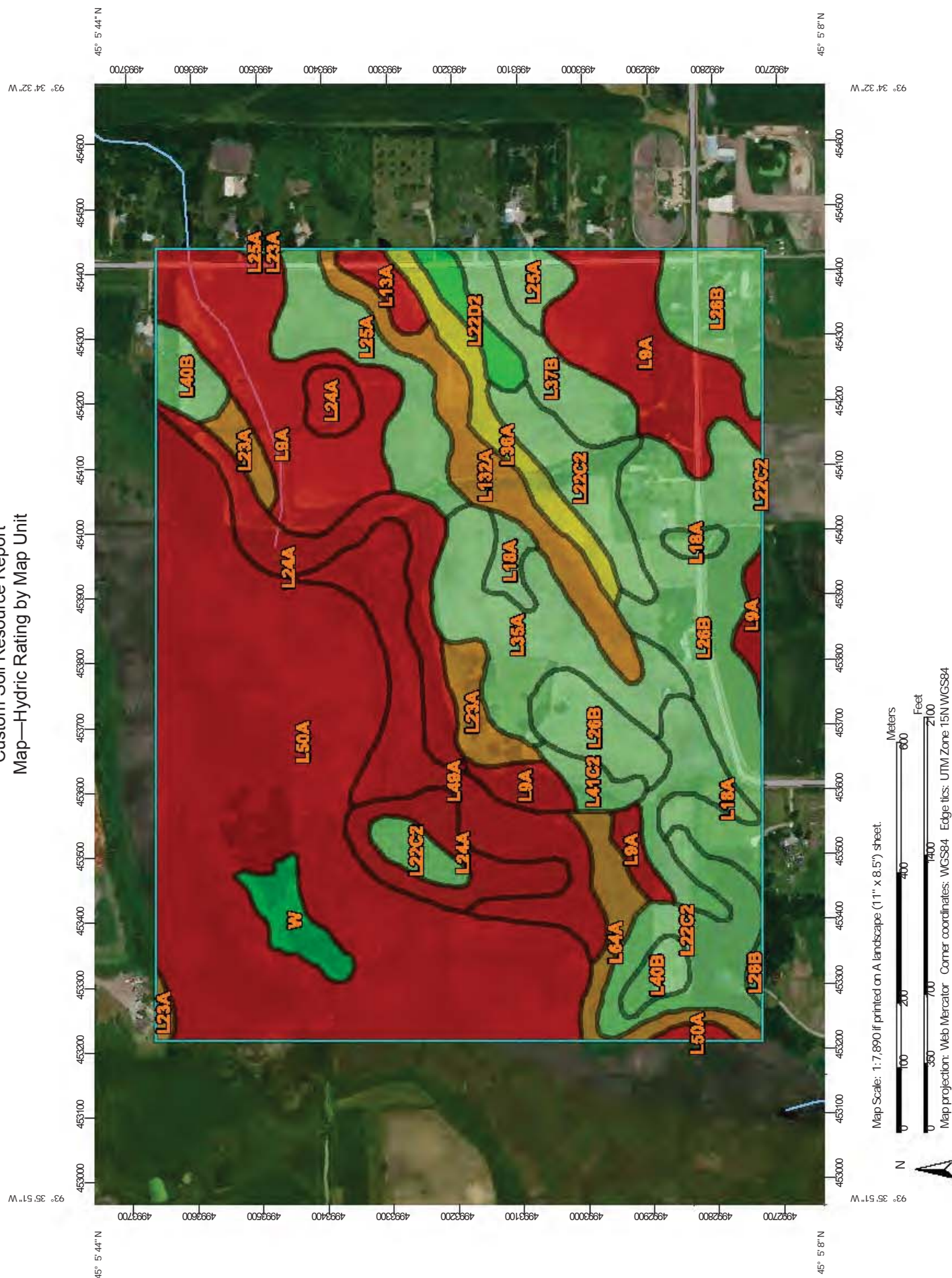
Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

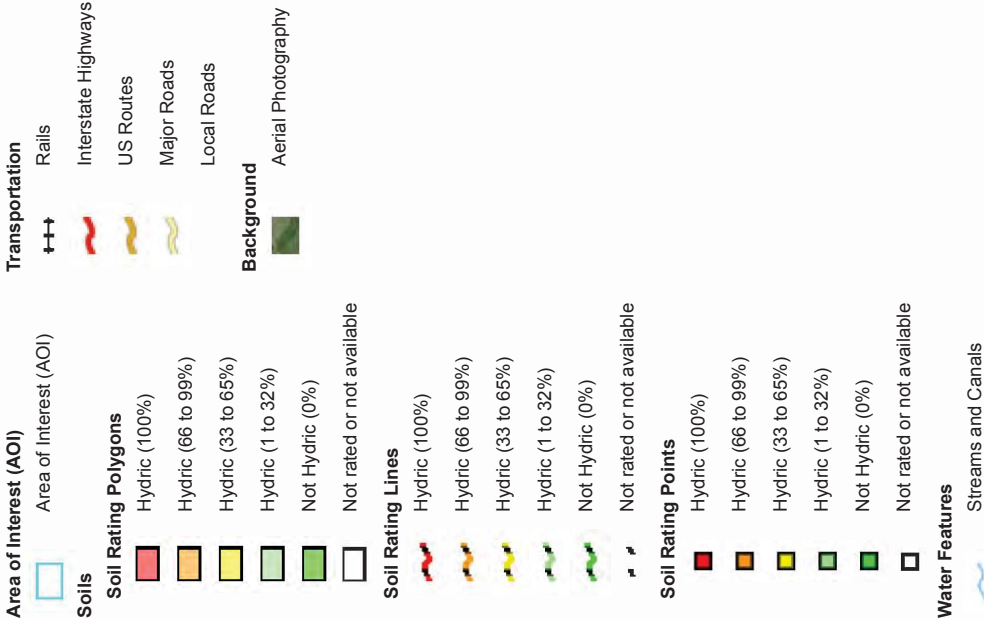
Custom Soil Resource Report for **Hennepin County, Minnesota**



Custom Soil Resource Report Map—Hydric Rating by Map Unit



MAP LEGEND



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hennepin County, Minnesota
Survey Area Data: Version 14, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 12, 2010—Aug 2, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydric Rating by Map Unit

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|------------------------------------|--|--------|--------------|----------------|
| L9A | Minnetonka silty clay loam, 0 to 2 percent slopes | 100 | 37.1 | 13.2% |
| L13A | Klossner muck, 0 to 1 percent slopes | 100 | 2.1 | 0.7% |
| L18A | Shields silty clay loam, 0 to 3 percent slopes | 5 | 8.4 | 3.0% |
| L22C2 | Lester loam, 6 to 10 percent slopes, moderately eroded | 2 | 18.1 | 6.4% |
| L22D2 | Lester loam, 10 to 16 percent slopes, moderately eroded | 0 | 2.6 | 0.9% |
| L23A | Cordova loam, 0 to 2 percent slopes | 95 | 5.7 | 2.0% |
| L24A | Glencoe clay loam, 0 to 1 percent slopes | 100 | 18.5 | 6.5% |
| L25A | Le Sueur loam, 1 to 3 percent slopes | 15 | 11.9 | 4.2% |
| L26B | Shorewood silty clay loam, 3 to 6 percent slopes | 5 | 33.8 | 12.0% |
| L35A | Lerdal loam, 1 to 3 percent slopes | 15 | 13.9 | 4.9% |
| L36A | Hamel, overwash-Hamel complex, 0 to 3 percent slopes | 45 | 5.6 | 2.0% |
| L37B | Angus loam, 2 to 6 percent slopes | 5 | 6.2 | 2.2% |
| L40B | Angus-Kilkenny complex, 2 to 6 percent slopes | 5 | 4.7 | 1.7% |
| L41C2 | Lester-Kilkenny complex, 6 to 10 percent slopes, moderately eroded | 5 | 2.1 | 0.7% |
| L49A | Klossner soils, depressional, 0 to 1 percent slopes | 100 | 15.9 | 5.6% |
| L50A | Muskego and Houghton soils, 0 to 1 percent slopes | 100 | 77.2 | 27.3% |
| L64A | Tadkee-Tadkee, depressional, complex, 0 to 2 percent slopes | 92 | 5.1 | 1.8% |
| L132A | Hamel-Glencoe complex, 0 to 2 percent slopes | 90 | 9.8 | 3.5% |
| W | Water | 0 | 3.4 | 1.2% |
| Totals for Area of Interest | | | 282.2 | 100.0% |

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Soil List - All Components

This table lists the map unit components and their hydric status in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties

Custom Soil Resource Report

that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
 - A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
 - B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
 - A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
 - B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
 - A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
 - B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. Doc. 2012-4733 Filed 2-28-12. February, 28, 2012. Hydric soils of the United States.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.
- Vasilas, L.M., G.W. Hurt, and C.V. Noble, editors. Version 7.0, 2010. Field indicators of hydric soils in the United States.

Report—Hydric Soil List - All Components

| Hydric Soil List - All Components—MN053-Hennepin County, Minnesota | | | | | |
|--|---------------------------|------------|-------------------------------------|---------------|----------------------------|
| Map symbol and map unit name | Component/Local Phase | Comp. pct. | Landform | Hydric status | Hydric criteria met (code) |
| L9A: Minnetonka silty clay loam, 0 to 2 percent slopes | Minnetonka | 80-100 | Flats on lake plains,moraines | Yes | 2 |
| | Depressional soil | 0-20 | Depressions on lake plains,moraines | Yes | 2,3 |
| L13A: Klossner muck, 0 to 1 percent slopes | Klossner-Drained | 85-95 | Depressions | Yes | 1 |
| | Canisteo | 0-10 | Ground moraines,rims on depressions | Yes | 2 |
| | Okoboji | 0-10 | Depressions | Yes | 2 |
| L18A: Shields silty clay loam, 0 to 3 percent slopes | Shields | 80-100 | Moraines | No | — |
| | Lerdal | 0-20 | Moraines | No | — |
| | Mazaska | 0-10 | Swales on moraines | Yes | 2 |
| L22C2: Lester loam, 6 to 10 percent slopes, moderately eroded | Lester-Moderately eroded | 75-90 | Ground moraines,hillslopes | No | — |
| | Storden-Moderately eroded | 5-15 | Ground moraines | No | — |
| | Le Sueur | 3-5 | Hillslopes,ground moraines | No | — |
| | Hamel | 2-5 | Ground moraines | Yes | 2 |
| L22D2: Lester loam, 10 to 16 percent slopes, moderately eroded | Lester-Moderately eroded | 75-90 | Ground moraines,hillslopes | No | — |
| | Storden-Moderately eroded | 5-15 | Ground moraines | No | — |
| | Lester-Moderately eroded | 3-5 | Hillslopes,ground moraines | No | — |
| | Le Sueur | 2-5 | Hillslopes,ground moraines | No | — |
| L23A: Cordova loam, 0 to 2 percent slopes | Cordova | 80-95 | Drainageways on moraines | Yes | 2 |
| | Glencoe-Depressional | 5-15 | Depressions on moraines | Yes | 2,3 |
| | Nessel | 0-10 | Moraines | No | — |
| L24A: Glencoe clay loam, 0 to 1 percent slopes | Glencoe | 65-95 | Depressions | Yes | 2 |
| | Okoboji | 5-15 | Depressions | Yes | 2 |
| | Webster | 0-10 | Ground moraines | Yes | 2 |
| | Canisteo | 0-10 | Ground moraines,rims on depressions | Yes | 2 |

Custom Soil Resource Report

| Hydric Soil List - All Components--MN053-Hennepin County, Minnesota | | | | | |
|---|----------------------------|------------|--|---------------|----------------------------|
| Map symbol and map unit name | Component/Local Phase | Comp. pct. | Landform | Hydric status | Hydric criteria met (code) |
| L25A: Le Sueur loam, 1 to 3 percent slopes | Le Sueur | 65-90 | Hillslopes,ground moraines | No | — |
| | Cordova | 5-15 | Ground moraines | Yes | 2 |
| | Lester | 3-10 | Ground moraines | No | — |
| | Webster | 2-10 | Ground moraines | Yes | 2 |
| L26B: Shorewood silty clay loam, 3 to 6 percent slopes | Shorewood | 85-95 | Hills on moraines,hills on lake plains | No | — |
| | Good Thunder | 0-10 | Moraines,lake plains | No | — |
| | Minnetonka | 0-10 | Drainageways on moraines,drainageways on lake plains | Yes | 2 |
| L35A: Lerdal loam, 1 to 3 percent slopes | Lerdal | 75-85 | Moraines | No | — |
| | Mazaska | 5-15 | Swales on moraines | Yes | 2 |
| | Cordova | 0-10 | Swales on moraines,flats on moraines | Yes | 2 |
| | Le Sueur | 0-10 | Moraines | No | — |
| L36A: Hamel, overwash-Hamel complex, 0 to 3 percent slopes | Hamel-Overwash | 40-60 | Ground moraines | No | — |
| | Hamel | 35-50 | Ground moraines | Yes | 2 |
| | Terril | 0-10 | Ground moraines | No | — |
| | Glencoe | 0-5 | Depressions | Yes | 2 |
| L37B: Angus loam, 2 to 6 percent slopes | Angus | 50-90 | Hillslopes,ground moraines | No | — |
| | Angus-Moderately eroded | 5-30 | Hillslopes,ground moraines | No | — |
| | Le Sueur | 0-10 | Hillslopes,ground moraines | No | — |
| | Cordova | 0-10 | Ground moraines | Yes | 2 |
| L40B: Angus-Kilkenny complex, 2 to 6 percent slopes | Angus | 35-55 | Hills on moraines | No | — |
| | Kilkenny | 30-50 | Hills on moraines | No | — |
| | Lerdal | 5-15 | Moraines | No | — |
| | Mazaska | 0-10 | Swales on moraines | Yes | 2 |
| L41C2: Lester-Kilkenny complex, 6 to 10 percent slopes, moderately eroded | Lester-Moderately eroded | 40-65 | Hillslopes,ground moraines | No | — |
| | Kilkenny-Moderately eroded | 30-45 | Lake plains,ground moraines | No | — |
| | Terril | 5-10 | Ground moraines | No | — |
| | Hamel | 0-5 | Ground moraines | Yes | 2 |

Custom Soil Resource Report

| Hydric Soil List - All Components--MN053-Hennepin County, Minnesota | | | | | |
|---|--------------------------|------------|-------------------------------|---------------|----------------------------|
| Map symbol and map unit name | Component/Local Phase | Comp. pct. | Landform | Hydric status | Hydric criteria met (code) |
| L49A: Klossner soils, depressional, 0 to 1 percent slopes | Klossner-Surface drained | 50-100 | Depressions on moraines | Yes | 1,3 |
| | Klossner-Drained | 0-40 | Depressions on moraines | Yes | 1 |
| | Mineral soil-Drained | 5-25 | Depressions on moraines | Yes | 2 |
| L50A: Muskego and Houghton soils, 0 to 1 percent slopes | Muskego-Surface drained | 20-60 | Depressions | Yes | 1,3 |
| | Houghton-Ponded | 20-60 | Marshes | Yes | 1,3 |
| | Klossner-Drained | 0-20 | Depressions | Yes | 1 |
| | Glencoe | 0-15 | Depressions | Yes | 2 |
| L64A: Tadkee-Tadkee, depressional, complex, 0 to 2 percent slopes | Tadkee | 20-70 | Beaches on moraines | Yes | 2 |
| | Tadkee-Depressional | 20-70 | Shores on beaches on moraines | Yes | 2,3 |
| | Better drained soil | 0-20 | Beaches on moraines | No | — |
| | Granby | 0-6 | Shores on beaches on moraines | Yes | 2,3 |
| | Less sandy soil | 0-5 | Beaches on moraines | Yes | 2 |
| L132A: Hamel-Glencoe complex, 0 to 2 percent slopes | Hamel | 50-60 | Ground moraines | Yes | 2 |
| | Glencoe | 30-40 | Depressions | Yes | 2 |
| | Terril | 0-20 | Ground moraines | No | — |
| W: Water | Water | 100 | — | — | — |

[illegible]