



AUGUST						
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RCWD BOARD OF MANAGERS WORKSHOP

Monday, August 11 , 2014, 2:00 p.m.

Rice Creek Watershed District Conference Room
4325 Pheasant Ridge Drive NE, Suite 611, Blaine, Minnesota

Agenda

ITEMS FOR DISCUSSION

- 2:00 Discussion regarding 06-005 Mainstreet Villages permit application.
- 2:15 Follow-up discussion on Anoka County Ditch 55 repair /memo and landowner easement.
- 2:45 Discussions/Updates on Anoka County Ditch 53-62 Branch 1 repair permitting status and related work.
- 3:10 Follow-up discussion on Anoka County Ditch 10-22-32 ditch maintenance.
- 3:30 Discussion on possible future board workshop items.
- 3:50 Discuss Houston Engineering, Inc. performance evaluation.
- 4:05 Update on Technician/Inspector/Water Resource Specialist position and related actions.

2:15 Follow-up discussion on
Anoka County Ditch 55 repair
/memo and landowner
easement.

Memorandum



To: Board of Managers

Date: August 6th, 2014

From: Phil Belfiori, RCWD Administrator and Tom Schmidt, Public Drainage Inspector

Subject: Anoka County Ditch 55 Re-Route Easement and Repair

Background

As discussed at previous workshops, RCWD is in negotiations with Gerald Rehbein of R&R Leasing to acquire an easement for the re-route of a portion of ACD 55 in the City of Centerville. Once this easement is obtained and the proper re-route and abandonment proceedings completed, Staff will begin the construction of the re-route and new outlet. This re-route plan is part of an overall repair strategy detailed in the Anoka County Ditch 55 Repair Memorandum dated 6-19-2014.

Next Steps:

1. Prepare and finalize easement agreement with R&R Leasing;
2. Direct staff to schedule and notice a public hearing on the abandonment and re-route of a portion of Anoka County Ditch 55 (possibly the 1st or 2nd meeting in September);
3. After the hearing, consider order for abandonment and re-route. Once the order is issued, staff will then begin construction of the re-route and new outlet. This work is planned to be completed with ad valorem funds in the 2014 ditch maintenance budget this year. The estimated cost for the re-route is approximately \$38,000.00;
4. The board will then have to consider the strategy for implementing the rest of the recommended repairs outlined in the repair memo, including if they will be paid for via ad valorem funds, a water management district, or a combination of the two. The bulk of the remaining work will consist of replacing the existing tile with new pipe.

Attached:

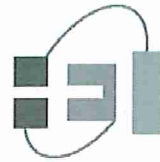
1. Map of proposed re-route easement
2. 6/19/2014 Anoka County Ditch 55 repair memo



MEMO

FINAL

External Correspondence



Houston Engineering Inc.

Date: June 19, 2014

To: Phil Belfiori
District Administrator, RCWD

Cc: Tom Schmidt
John Kolb
File R135555-208

From: Chris Otterness, P.E.
Lisa Odens, P.E.

Through: Mark Deutschman, PhD., P.E.

Subject: Anoka County Ditch 55
Repair Memorandum

The purpose of this memorandum is to provide the Rice Creek Watershed District (RCWD) with an analysis and description of repair alternatives for Anoka County Ditch (ACD) 55. Additionally, this memorandum provides further hydrologic and hydraulic analysis and a preliminary opinion of probable cost for the recommended repair alternative.

Background

Current Condition of Public Drainage System

The ACD 55 public drainage system is located within the Clearwater Creek planning region of the District in Sections 12, 13, and 24 of T 31N, R 22W, within the Cities of Centerville and Lino Lakes, Anoka County (see **Figure 1**). The drainage area that contributes runoff to the public drainage system is approximately 1,030 acres and includes several land uses such as wetlands, agricultural fields, forest, commercial/industrial, and rural and urban residential housing. The public drainage system drains into Anoka/Washington Judicial Ditch (JD) 3 (Clearwater Creek), which in turn drains into Peltier Lake.

The District established the As Constructed and Subsequently Improved Condition for this public drainage system through Resolution 2012-46. In many portions of the public drainage system, the existing alignment, profile, and cross section have experienced modifications from the As-Designed / Established Condition. In general, the alignment of the Main Trunk upstream of Willow Glen and Branch 8 have changed little from their originally constructed alignment. However, the Main Trunk from the current tile outlet downstream to Clearwater Creek has been fully modified for its entire length as a result of residential and industrial development. The Main Trunk tile system in this area has been replaced by open channels, ponds, and storm sewer. Branches 1 through 7, 9, and 10 were legally abandoned by the Rice Creek Watershed District on December 12, 2012 through Resolution/Order 2012 - 46.

MEMO

Further description of As Constructed and Subsequently Improved Condition is available in the August 7th, 2012 memorandum, *Anoka County Ditch (ACD) 55 Historical Review*.

Current Capacity of System

Tile capacity is critical for the management of runoff within the contributing drainage area of ACD 55, particularly at four key locations where flows converge. These locations include: 1) the Main Trunk where it crosses I-35E; 2) Branch 8 where it crosses I-35E; 3) the existing Main Trunk tile outlet; and 4) the Main Trunk culvert under Main Street (see **Figure 2**). The tile capacities at these two locations were determined using two different methods: 1) Manning’s Equation; and 2) the Storm Water Management Model (SWMM). Manning’s equation was initially utilized prior to detailed modeling of the system to provide a simplified approximation of the capacity. The SWMM model however, provides a more accurate determination of the capacity as it takes into account the effects of the depth of water on the inlets and downstream which backup water into the pipe. The SWMM capacities below have been modified from the previous capacity Memo to incorporate updates resultant from the DWMP update. **Table 1** shows the capacity of the tiles at each location.

Table 1: Hydraulic Data for Critical Tile Locations

	Main Trunk @ I-35E	Branch 8 @ I-35E	Main Trunk Tile Outlet	Main Trunk @ Main Street
Tile/Culvert Diameter (inches)	12	10	18	27
Contributing Drainage Area (Acres)	443	219	828	932
Capacity (cfs) – Manning’s Equation	1.1	0.4	3.4	26.0
Capacity (cfs) – SWMM Model	1.1	0.9	2.0 ²	32.6
Time to Reach Full Capacity ¹ (minutes)	240	30	50	60
Length of Time at Full Flow for 2-Year, 24-hour Rainfall (days)	2.7	>7	5.5	0 ³

¹ Lag time from peak rainfall to initial full capacity or peak discharge of the tile

² Functional capacity reduced due to tailwater from stormwater pond

³ Does not reach full capacity

Flows which enter the tile system before full-flow capacity is reached will generally have a reduced impact on the function of the system and surface flooding because they have “cleared” through the system. The calculated relationship between the travel times and time to full capacity suggest that flows from only a small portion of the contributing drainage area reach the tile system before full capacity is reached, and only if no attenuation occurs. Once full capacity

MEMO

is reached, these tiles remain at full flow for several days following even a moderate (2-year recurrence interval) rainfall.

Further description of the current capacity of the system is available in the May 6th, 2013 memorandum, *Hydraulics and Hydrology Evaluation Anoka County Ditch 55*.

Outlet Condition and other Problem Areas

The public drainage system tile is prone to blowouts at various locations throughout the public system. The district has completed repairs of many of these tile rupture locations in recent years (see **Figure 3**). These blowouts are occurring for three primary reasons: 1) the existing tile system (most of which is the original clay installed in 1919) is deteriorating, with sections pulling apart; 2) most of the remaining public system is undersized to convey the incoming flows from private laterals and tile inlets, resulting in a surcharged system; and 3) the outlet of the tile system has been modified, resulting in a tailwater condition on the outlet following even routine rainfall events which further pressurizes the system.

As part of the Willow Glen residential development project, the Main Trunk was routed into a stormwater pond and a wetland mitigation area, separated by a concrete outlet control structure. Because of the size and elevation of the outlet for this structure, the upstream pond has submerged the outlet of the tile system during and after rainfall events, decreasing the outlet capacity of the tile and contributing to the tile ruptures upstream. Subsequent modifications to this outlet structure have reduced the peak water surface elevation following rainfall events. However, the upstream pond continues to occasionally surcharge the tile outlet, particularly when the pond outlet structure becomes clogged with debris. Additionally, the volume of water received to the pond results in the pond not functioning to its design water quality treatment level.

Alternatives for Restoring Outlet Function

There are several alternatives that have been considered for restoring outlet function for the ACD 55 tile system, including: 1) replacement of the tile in its historic location; 2) removal and replacement of the north pond outlet structure; and 3) realignment of the tile along the north and west sides of the current agricultural field (see **Figure 4**). The following are assessments of each repair option.

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1. Replacement of the Tile in its Historic Location

Under this option, the tile could be replaced through the field owned by R&R Leasing along its historic alignment, outletting at the culvert under Main Street. The location and function of the tile would be identical to the As-Constructed and Subsequently Improved Condition. However, the placement of the tile may disrupt agricultural operations on the property depending on the time of year the construction occurred and the tile would likely need to be realigned once the parcel develops in the future. Because this alternative is not practicable for the long-term planned use of the property, this alternative was not considered further.

2. Removal and Replacement of the North Pond Outlet Structure

For this option, the outlet structure for the pond would be replaced with an outlet structure or culvert having a minimum 18" opening at the elevation of the current outlet structure (899.28). This will allow full flows from the public drainage system to pass. An overflow would also be required to allow the passage of extreme storm events. Sediment in the downstream open channels would need to be removed. The initial cost of this alternative would be less than replacement of the historic tile. However, the tail water on the upstream tile system would be higher than the tile replacement options (though substantially lower the current condition), resulting in a function less than the As-Constructed and Subsequently Improved condition. Any reduction in the capacity of the system from the As-Constructed and Subsequently Improved condition can have a substantial effect on local drainage, as the function of the system is already substantially less than traditional tile system design. This alternative would require additional long-term maintenance compared to the other options, due to the potential for clogging in the pond outlet structure.

This option also does not separate the water quality function of the stormwater pond network and the drainage function of the system. Because the stormwater pond and wetland were not sized to treat flows from the public drainage system, the tile outlet has reduced the water quality treatment of the pond. The pond and the wetland also create legal challenges for maintaining the system, particularly with requirements of the Wetland Conservation Act (WCA) and Municipal Separate Storm Sewer Systems (MS4). For these reasons, this alternative was not considered further.

3. Realignment of the Tile along the North and West Sides of the Field

This alternative consists of installation of an HDPE tile beginning at the current tile outlet, along the north and west sides of the agricultural field (south and east of the stormwater pond and wetland mitigation), and outletting into the existing open channel just downstream of the wetland mitigation area. This alignment will restore function of the outlet to the as-constructed and subsequently

MEMO

improved condition, with little or no disruption to the adjacent agricultural field. This alignment will also be more conducive to function under future development than the historic alignment. This alignment will require acquisition of an easement from the landowner and abandonment and realignment of the public drainage system through a legal proceedings. Because this alternative restores the historic function of the public drainage system and is conducive to long term planned land uses, it is the only alternative reviewed in detail within this memorandum.

Hydraulic Analysis of Proposed Alternative

The proposed alternative for restoration of the ACD 55 tile outlet (extension of the existing tile along the north and west sides of the R & R Leasing property) was modeled to determine the increase in upstream capacity provided by the tile extension, and the magnitude of downstream impacts (if any).

Methods

Existing conditions of the ACD 55 public drainage system using InfoSWMM. In 2013 (in conjunction with the ACD 55 hydrology and hydraulics evaluation memorandum), the ACD 55 public drainage system was discretely modeled within the Judicial Ditch 3 / Clearwater Creek SWMM model. (Previously, only a portion of the public drainage system was included in the model). Model geometry of the ACD 55 public drainage system was created using tile elevations and tile inlet locations as surveyed in the field. At a few locations in the model (particularly at the upstream end of each branch) tile inlets were assumed that were not located in the field, to represent lateral inflows to the system. To model proposed conditions, the existing conditions model was modified by adding a conveyance link representing the 18" tile extension bypassing the stormwater pond and wetland. The open channel downstream to Main Street (County Road 14) was also modified in the model with a revised cross-section to reflect a repaired condition.

It should be noted that both existing and proposed models assume a fully functioning public drainage system as constructed, including the tile portions (i.e., no blockages, sediment, etc.). Although it is known that several locations of the tile system are deteriorated and are currently crushed and/or clogged with sediment, it is unknown to what extents the tile capacity is decreased by the deterioration of the system. The assumption that the system is fully functioning (when applied to both existing and proposed conditions) will not impact the conclusions of the analysis.

MEMO

Results

The system experiences surcharges even during a moderate 2-year 24-hr rainfall (2.8 inches). As such, repairs will similarly effect the 10-year and 100-year events; therefore, only the results of the 2-year event were analyzed. **Table 2** shows the peak elevation and inundation resulting from the 2-year, 24-hour rainfall event in the vicinity of the recommended alternative for both existing and proposed conditions (See **Figure 5** for locations of modeled water surface elevations).

Table 2: Peak Water Surface Elevations and Inundation Duration for 2-year, 24-hour Rainfall Event

#	Location Description	Existing Conditions		Proposed Conditions	
		Peak Elev. ¹	Inundation (days)	Peak Elev. ¹	Inundation (days)
	East of I-35E				
1	Main Trunk	907.5	1.5	907.5	1.5
2	Branch 8	906.7	0.9	906.7	0.6
	West of I-35E				
3	Main Trunk upstream of confluence with Branch 8	907.3	0.5	907.3	0.5
4	Main Trunk upstream of confluence with Branch 8	907.45	>7	906.7	0.6
5	Just upstream of pond network on Main Trunk, downstream of confluence with Branch 8	907.5	>7	905.4	0.8
6	Upstream Willow Glen Pond (North)	901.2	>7	901.0	0.6
7	Upstream Willow Glen Pond (South)	900.0	>7	899.9	0.9
8	North of Main Street, just downstream of Willow Glen Ponds on Main Trunk	898.7	>7	898.7	>7
9	South of Main Street, on Main Trunk	898.6	>7	898.3	>7
10	South of Main Street, on Main Trunk, downstream of private road crossing	898.3	>7	898.3	>7

¹ All elevations specified herein are based on NAVD'88 datum.

The modeled results show that the proposed tile extension will provide the following benefits/impacts for the 2-year, 24-hour rainfall event:

1. The peak water surface elevation in the agricultural field upstream (north) of the new tile connection is reduced by 2.1 feet.
2. The inundation period at this location is reduced from greater than 7 days to 0.8 days.

MEMO

3. The inundation period of the north and south Willow Glen ponds is reduced from greater than 7 days to 0.6 and 0.9 respectively. This separation will allow the ponds maintain their water quality function as designed.
4. The peak water surface in the public drainage system downstream of the new tile extension will be increased by less than 0.1 feet, and therefore will not result in any impacts to the floodplain.

Other Recommended Repairs

Along with the extension of the Main Trunk tile, we recommend the following additional repairs to the ACD 55 public drainage system:

1. Repair the Main Trunk open channel upstream of Main Street.
2. Replace the Main Trunk tile with dual wall HDPE from approximately station 67+00 to 90+00, including all tees from private laterals (assume approximately 10 tees).
3. Replace the Branch 8 tile with dual wall HDPE from approximately station 17+00 to 22+00, including all tees from private laterals (assume approximately 2 tees).
4. Televising the Main Trunk and Branch 8 crossings of I-35E to determine the condition of these crossings.
5. If necessary based on the televising results, replace the Main Trunk and Branch 8 crossings of I-35E via directional boring.

The location of the above recommended repairs are shown in **Figure 6**.

Note that we are not recommending the replacement of tile west of Interstate 35E at this time. The land parcels where this tile is located is in the preliminary design phase for a residential and commercial development. It is anticipated that the developer will realign the public drainage system to accommodate the layout of the development when it is constructed. It is unknown when the construction of the development and the public drainage system realignment will occur.

Impacts to Wetlands

Impacts to Type 3, 4, & 5 wetlands are not anticipated to result from the recommended repairs described above. The project may result in the drainage of portions of some Type 1 and 2 wetlands along the public drainage system due to the replacement of portions of the tile system. These impacts meet the standards of the No Loss exemption under the state Wetland Conservation Act [(WCA) (8420.0415)] and require no mitigation.

MEMO

Preliminary Opinion of Probable Construction Cost

A Preliminary Opinion of Probable Construction Cost (POPCC) was developed for the recommended repairs. The cost of easement acquisition is not included in the POPCC. However, since the landowner will directly benefit from the placement of the tile along the field edge, we anticipate that the cost of acquiring easements will be negligible. The total estimated price for alternative 2 and all the additional proposed repairs is approximately \$193,000. **Table 3** displays a summary of costs.

Table 3: Preliminary Opinion of Probable Construction Cost for the Recommended Repairs

Item	Cost
Project Construction (see Appendix A)	\$143,200
Easement Costs	\$0 (assumes donated by landowner)
Wetland Replacement Costs	\$0
Engineering / Legal / Admin	\$21,500
Contingency (20%)	\$28,700
TOTAL	\$193,400

Recommendation

To restore the function of the ACD 55 public drainage system to the condition as it was originally construction, we recommend the District complete the repairs described within this memorandum and shown in **Figure 6**, including the extension of the Main Trunk tile along the north and west sides of the R & R Leasing property (detail shown in **Figure 7**). These repairs may feasibly be completed as a single project, or as a series of multiple projects over a span of several years. Dividing the work into multiple projects will increase the cost of the overall project due to the economy of scale and additional mobilizations of equipment required. Delaying portions of the work, particularly the extension of the tile outlet, will likely result in additional blow-outs and consequentially additional maintenance costs. The recommended repairs will require a partial abandonment and realignment proceedings be completed by the Board of Managers

This repair memorandum is a planning tool which the Board of Managers can utilize to implement public drainage system repairs. To assist the Board of Managers, conceptual design and cost information is included. Detailed construction plans, bid documents, specifications, will need to be prepared subsequent to the Board establishing and ordering a project. In addition, the project will require the acquisition of easement assumed to be donated by the landowner for the tile outlet extension.



Anoka

Washington

Hennepin

Ramsey

Project Location
Location Map

Lino
Lakes

Anoka

54
COUNTY

Clearwater
Creek

Centerville

14
COUNTY

21
COUNTY

35E
INTERSTATE

Main Trunk

Branch 8

Main Trunk

84
COUNTY

Hardwood
Creek

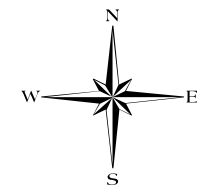
Hugo

Washington

COUNTY
8
ROAD

Rice Creek Watershed District Hydrologic Boundary Anoka County Ditch 55

- ACD 55 Open Channel
- ACD 55 Tile/Storm Sewer
- ACD55 Hydrologic Boundary
- Lakes
- Interstate
- County Roads
- Residential Streets
- Ramps
- RCWD Drainage Systems
- Rivers
- Counties



0 750 1,500 3,000
Feet

Sources: RCWD, TLG, MN DOT

Figure 1: Hydrologic Boundary - Anoka County Ditch 55

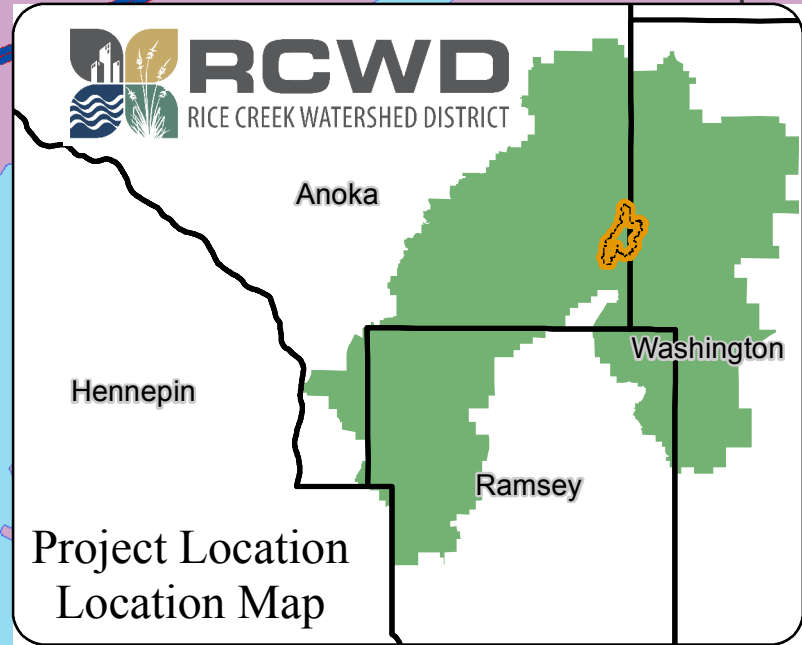
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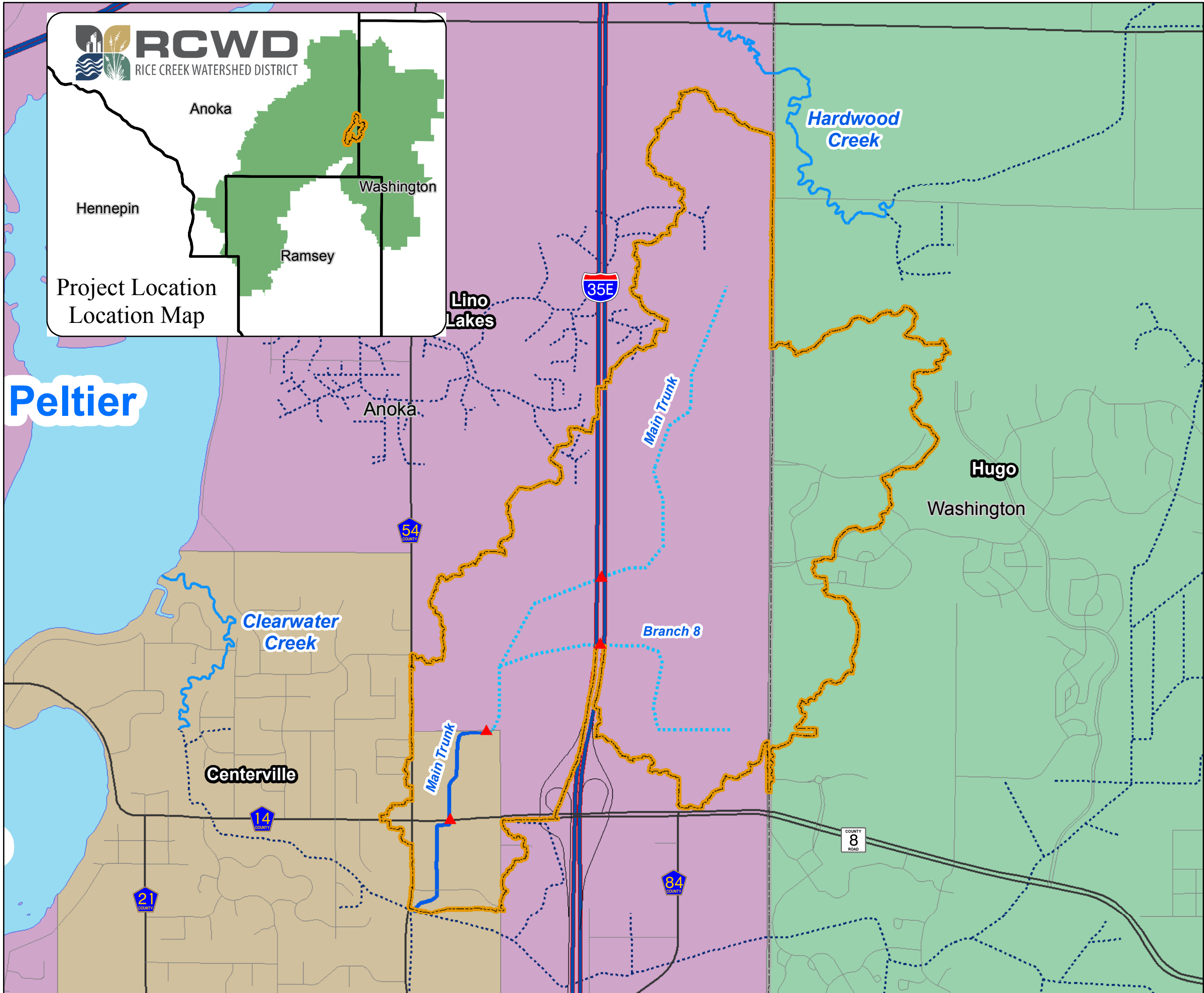
Maple Grove
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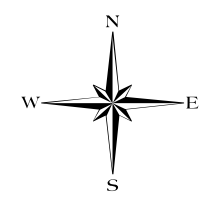
Rice Creek Watershed District Capacity Allocation Locations Anoka County Ditch 55



Peltier



- ▲ Allocation Point Locations
- ACD 55 Open Channel
- ⋯ ACD 55 Tile/Storm Sewer
- ACD55 Hydrologic Boundary
- Lakes
- Interstate
- County Roads
- Residential Streets
- Ramps
- ⋯ RCWD Drainage Systems
- Rivers
- Counties



Sources: RCWD, TLG, MN DOT

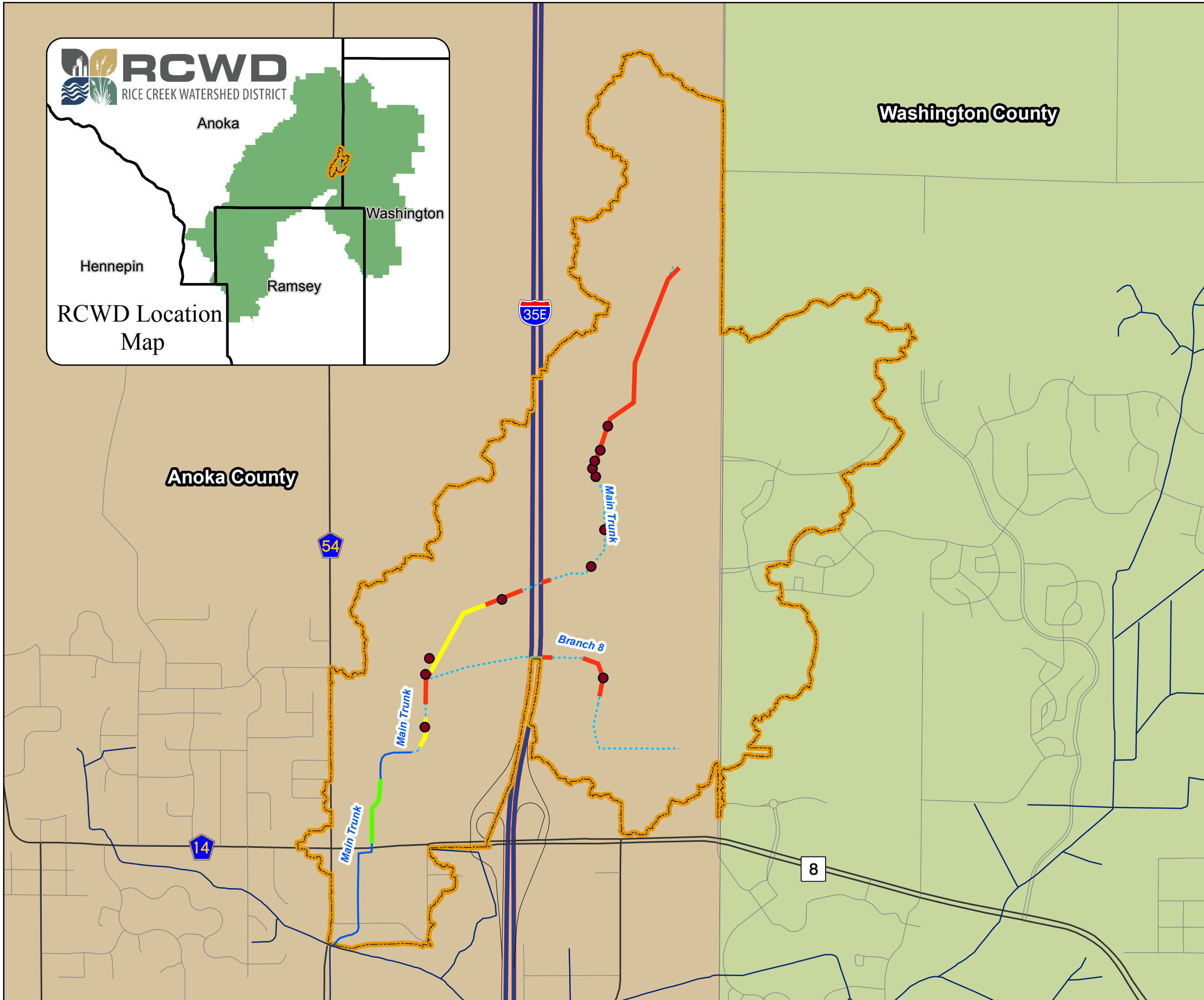
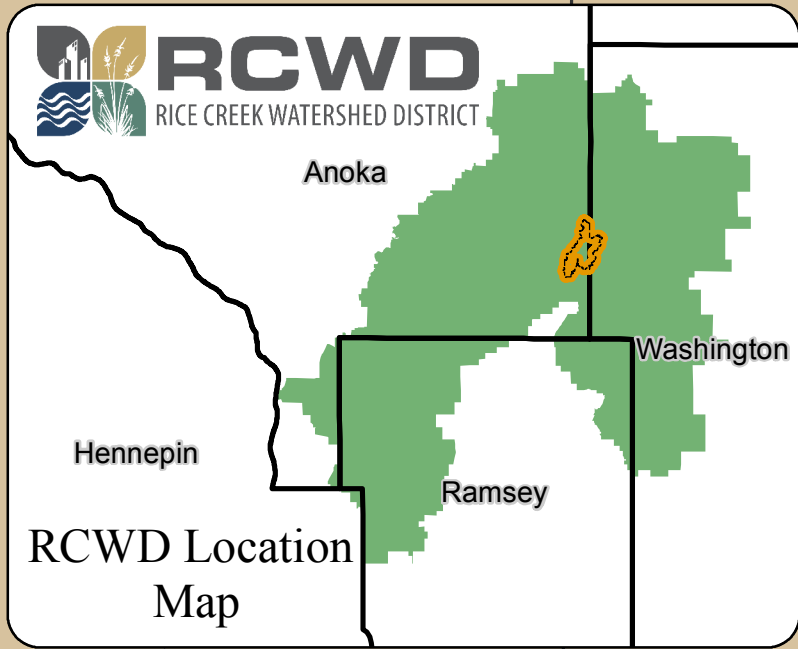
Figure 2: Capacity Allocation Locations

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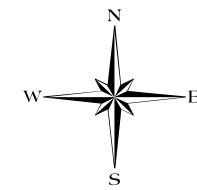
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Rice Creek Watershed District Repairs and Tile Ruptures Anoka County Ditch 55



- ACD 55 Open Channel
- ⋯ ACD 55 Tile/Storm Sewer
- Tile Rupture Locations
- JD3 Current Alignment
- Open Channel Maintenance
- Tiles Replaced
- Tiles Spot Repaired
- Hydrologic Boundary
- Interstate
- Highway Connector
- US Highway
- State Highway
- County Roads
- Residential Streets
- Ramps



0 750 1,500 3,000 Feet

Sources: TLG, RCWD, MN DOT

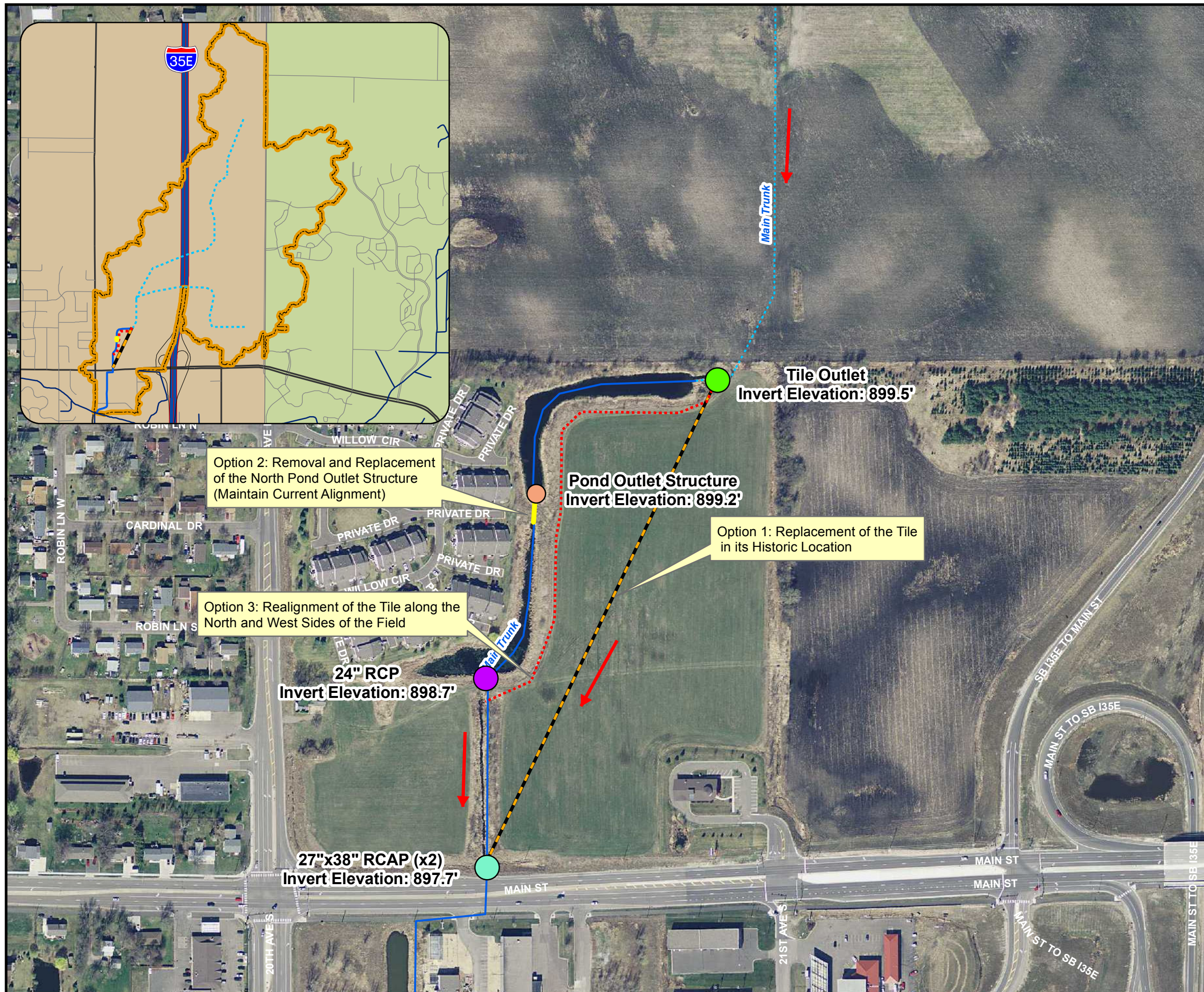
Figure 3: Repairs and Tile Ruptures

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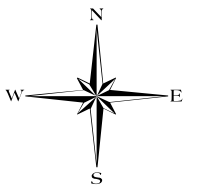


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Rice Creek Watershed District Alternatives for Restoring Outlet Function Anoka County Ditch 55



- Option 1: Replacement of the Tile in its Historic Location
- Option 2: Removal and Replacement of the North Pond Outlet Structure
- Option 3: Realignment of the Tile along the North and West Sides of the Field
- ACD 55 Open Channel
- ACD 55 Tile/Storm Sewer
- JD3 Current Alignment
- Hydrologic Boundary
- Interstate
- Highway Connector
- US Highway
- State Highway
- County Roads
- Residential Streets
- Ramps
- Flow Direction

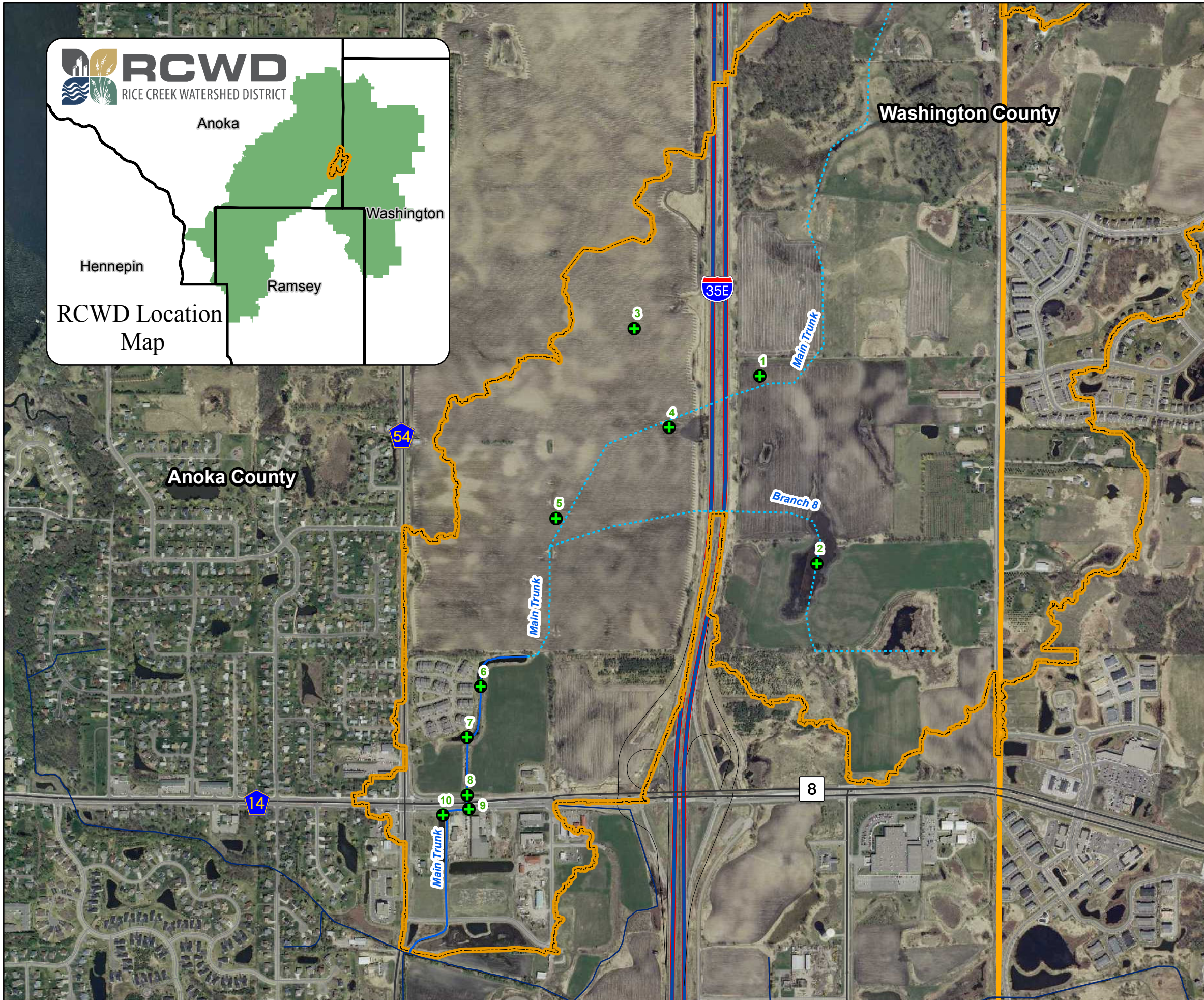
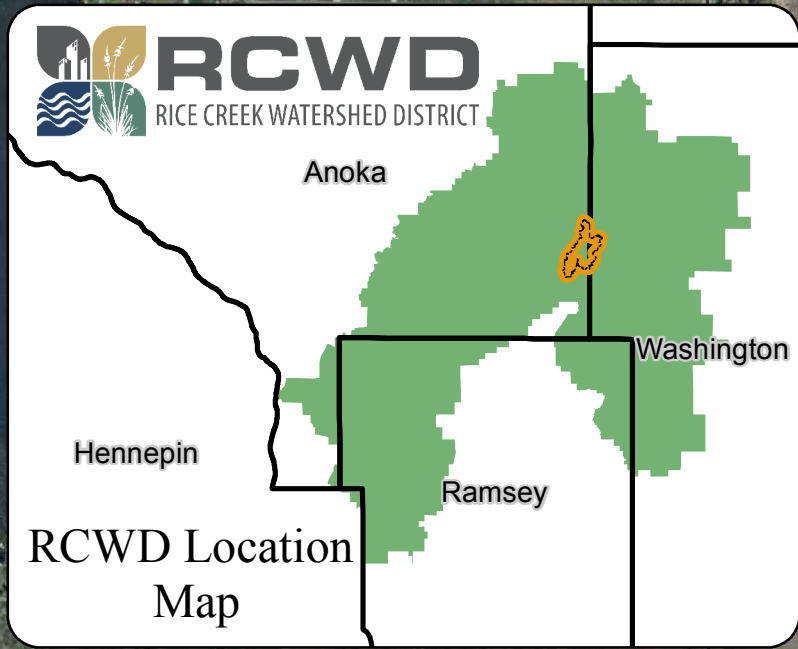


Sources: TLG, RCWD, MN DOT
Aerial: 2010 Twin Cities Imagery

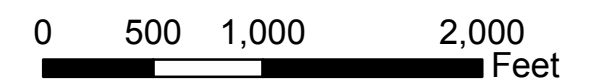
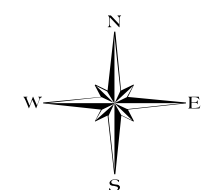
Figure 4: Alternatives for Restoring Outlet Function

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			Maple Grove		
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Rice Creek Watershed District Peak Water Surface Elevation Comparisons Anoka County Ditch 55



- + Locations of Peak Water Surface Elevation Comparisons
- ACD 55 Open Channel
- - - ACD 55 Tile/Storm Sewer
- JD3 Current Alignment
- Hydrologic Boundary
- Interstate
- Highway Connector
- US Highway
- State Highway
- County Roads
- Residential Streets
- Ramps



Sources: TLG, RCWD, MN DOT

Figure 5: Locations of Peak Water Surface Elevation Comparisons

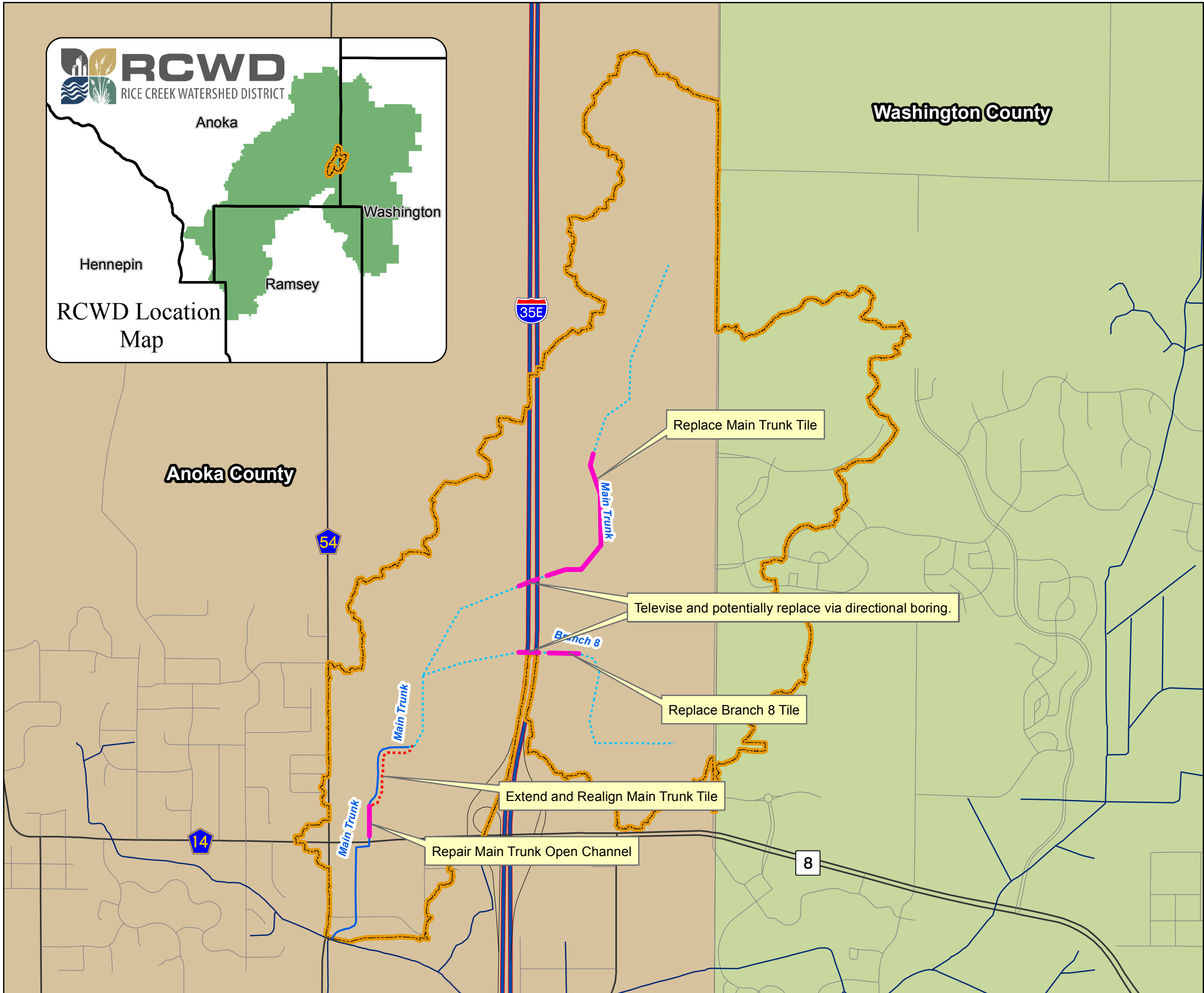
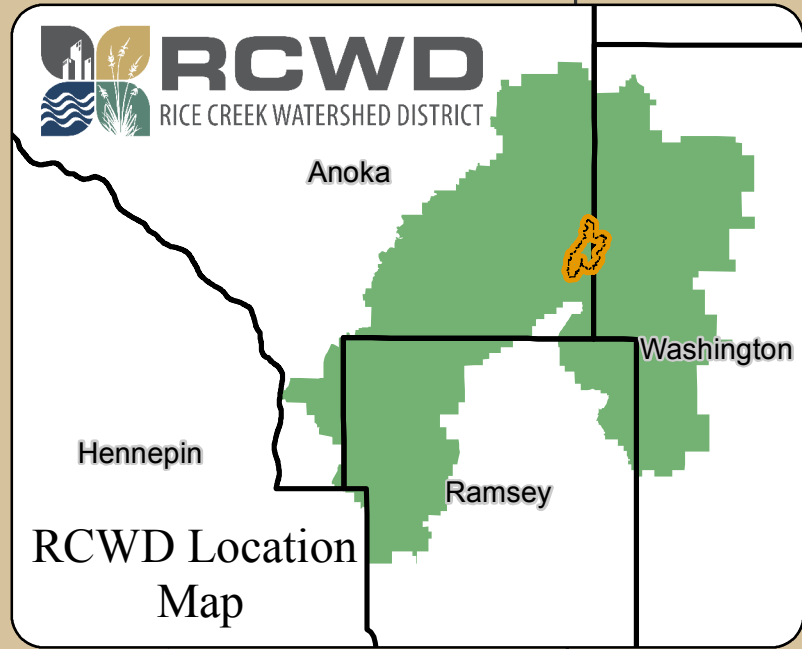
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Houston Engineering Inc.

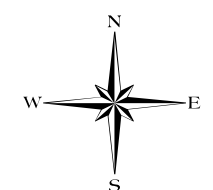
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Rice Creek Watershed District Recommended Repairs Anoka County Ditch 55



- Other Recommended Repairs
- ACD 55 Open Channel
- ACD 55 Tile/Storm Sewer
- JD3 Current Alignment
- Option 3: Realignment of the Tile along the North and West Sides of the Field
- Hydrologic Boundary
- Interstate
- Highway Connector
- US Highway
- State Highway
- County Roads
- Residential Streets
- Ramps



Sources: TLG, RCWD, MN DOT

Figure 6: Recommended Repairs

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Houston Engineering Inc.

Maple Grove

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Appendix A: Preliminary Opinion of Probable Construction Cost

ACD 55

Revised: 5/29/2014

Item Number	Description	Units	Option 2: Realignment near Pond	MT 67+00- 90+00	Br8 17+00- 22+00	MT near I35E	Br8 near I35E	Total Quantity	Unit Cost	Total Estimated Price
1	Mobilization	Lump Sum						1	\$10,000	\$10,000
2	18" Dual Wall HDPE	Linear Foot	1246	0	0	0	0	1246	\$25	\$31,150
3	12" Dual Wall HDPE	Linear Foot	0	2300	0	0	0	2300	\$18	\$41,400
4	10" Dual Wall HDPE	Linear Foot	0	0	500	0	0	500	\$16	\$8,000
5	18" HDPE 45° Elbow	Each	4	0	0	0	0	4	\$525	\$2,100
6	18" HDPE 22.5° Elbow	Each	1	0	0	0	0	1	\$525	\$525
7	12" HDPE Tee	Each	0	10	0	0	0	10	\$325	\$3,250
8	10" HDPE Tee	Each	0	0	2	0	0	2	\$300	\$600
9	Televising Existing Freeway Tiles	Each	0	0	0	1	1	2	\$1,000	\$2,000
10	12" Directional Bore	Linear Foot	0	0	0	270	0	270	\$42	\$11,340
11	10" Directional Bore	Linear Foot	0	0	0	0	270	270	\$35	\$9,450
12	Connect to Existing Tile	Each	1	12	4	2	2	21	\$500	\$10,500
13	Headwall at Outlet	Each	1	0	0	0	0	1	\$3,000	\$3,000
14	Channel Excavation/Cleaning	Linear Foot	127	0	0	0	0	127	\$10	\$1,270
15	Seeding	Acre	2.0	0.0	0.0	0.3	0.3	2	\$3,500	\$8,680
Subtotal =										\$143,265
Easement =										\$0
Wetland Replacement =										\$0
Engineering/Legal/Administrative =										\$21,490
20% Contingency =										\$28,653
TOTAL										\$193,408

2:45 Discussions/Updates on
Anoka County Ditch 53-62
Branch 1 repair permitting
status and related work.



**ANOKA COUNTY DITCH (ACD) 53/62
RARE PLANT AVOIDANCE STRATEGY
Repair of Branch 1 & Lateral 1-Anoka County Ditch 53/62**

DRAFT

August 5, 2014

Prepared By:



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Introduction

The purpose of this report is to describe strategies utilized to avoid impacts to rare plants (species listed in Minnesota Rule 6134, Endangered, Threatened and Special Concern Species) as a result of the Anoka County Ditch (ACD) 53-62 Branch 1 Repair Project (hereafter referred to as “the Project”). ACD 53-62 Branch 1 is located within the City of Blaine generally north of Interstate 35W (I-35W) and east of Lexington Avenue (though some portions of the public drainage system extend west of Lexington Ave. and south of I-35W). The open channel public drainage system is in disrepair and no longer functions as it was originally constructed (As Constructed and Subsequently Improved Condition or ACSIC). Therefore, on September 11, 2013 the Rice Creek Watershed District (RCWD) Board of Managers ordered a repair of one branch of ACD 53-62; i.e., Branch 1. The Board of Managers ordered the repair in accordance with the Engineer’s Recommended Alternative described within the *ACD 53-62 Branch 1 Repair Report* dated March 25, 2013. The ordered repair consists of excavation of the public drainage system open channel to an elevation at or above the ACSIC profile; the replacement of road, driveway, and trail culverts crossing the public drainage system; and clearing of trees and brush within the proposed work limits for access and implementation of the proposed project.

The *Repair Report* included a review of the Rare Natural Features Geographic Information System (GIS) data (based on the Natural Heritage “Biotics” Database) maintained by the Minnesota Department of Natural Resources (DNR) to determine the likelihood of the existence of rare plants within the Project’s proposed work limits and areas where hydrology may be altered. Although the review did identify rare plant species within the contributing watershed, none of the reported occurrences were found in close proximity to the open channel of the public drainage system with planned work. This lack of past rare plant detections can most likely be attributed to the fact that these locations are predominantly private and were not previously surveyed for the presence of rare natural features in surveys conducted by the MN DNR and/or the City of Blaine natural resources inventory.

Coordination with the state and federal agencies about this project began in January 2011 and is continuing. Some of the more “prominent” coordination activities completed through public processes under drainage and relates laws included:

- Determining and soliciting input about and obtaining agreement upon the As-Constructed and Subsequently Improved Condition (i.e., as built) of the public drainage system;
- Evaluating a range of alternatives for the repair of the public drainage system, and selected a preferred repair alternative, the drainage system repair process;
- Evaluating the presence of wetlands, completing wetland delineations, and applying for permit applications related to wetland impacts;
- Describing the repair benefits (from a drainage perspective), the apportionment of benefits, the estimated cost for completing the repair and the means for financing the project.
- Coordination with the DNR relative to the presence of Public Water Wetlands.

The information generated and made available through these and related processes comprise a considerable public decision record, including information about details of the planned repair, the benefits of the repair, the analysis of potential adverse impacts from the repair, the cost for completing the repair, and the mechanism for financing the repair.

Because work planned within Public Waters, the RCWD requested permission from the DNR to complete this work. On May 29, 2014 the DNR issued a letter to the RCWD granting permission for the completion of work within Public Waters contingent on several conditions, including a requirement that the RCWD complete a botanical survey to verify the presence and location (or absence) of State-listed vascular plant species (see **Appendix A**).

The RCWD retained the services of Critical Connections Ecological Services (CCES) to complete the botanical survey. CCES developed a work plan for the rare species survey consisting of a preliminary field survey and two follow-up surveys (as needed) and submitted this work plan to the DNR on April 28, 2014. The boundary of the initial survey (which was approved by DNR staff in the May 29, 2014 letter) included the maximum extents of lateral drainage effects calculated to result from the Project, including the entire work limits (see **Figure 1**). The survey boundary included the existing and repaired lateral effects width, which is generally wider than the area adjacent to the open channel needed to place spoil.

The preliminary survey was completed in May of 2014. The purpose of the survey included: 1) identifying the presence and location of flowering rare plant and rare plant population extents, 2) identifying plant assemblages, natural communities and habitat features with the potential to harbor later flowering rare species, and 3) narrowing and refining search areas for further surveys by identifying suitable habitats and ruling out non-suitable disturbed habitats and cover types. Surveys completed during June, July, and August are intended to locate and identify later flowering rare plant species that are not detectable in May or cannot be positively identified until later in the growing season.

During the preliminary survey, CCES identified several rare species populations within the vegetation survey boundary, including Lance leaved violet (*Viola lanceolata*, Threatened), Swamp blackberry (*Rubus semisetosus*, Threatened), Stipuled bristle-berry (*Rubus stipulatus*, Endangered), Vermont blackberry (*Rubus vermontanus*, Special Concern) and Least moonwort fern (*Botrychium simplex*, Special Concern).

July surveys located and verified the presence of several additional locations of rare *Rubus* species, including *R. stipulatus*, *R. semisetosus*, and *R. vermontanus*. Two populations of Twisted Yellow-eyed Grass (*Xyris torta*, Endangered) were detected outside of the immediate survey area but in habitats adjacent to the project, as well as one population of Cross-leaved Milkwort (*Polygala cruciata*, Endangered) associated with one of these *Xyris torta* locations (Survey Area 1). Furthermore, a additional Lance leaved violet locations were documented during the July surveys where spring high water levels had drawn down. In addition, locations of Autumn fimbriatylis (*Fimbristylis autumnalis*, Special Concern) were detected in association with several *Viola lanceolata* populations. Finally, CCES locations of Three-awn grass (*Aristida* spp.) and potential habitats that can support the state-Endangered Slim-spike three awn grass (*Aristida longespica* var. *geniculata*) were located and surveyed during the July surveys. *Aristida longespica* var. *geniculata* is known from Lochness Park (Husveth, 2001), but this annual species cannot be positively identified until it flowers and sets seed in August and September of each growing season.

CCES recorded the location of each identified rare plant using a Global Positioning System (GPS) and determined the probable maximum extent of the suitable habitat for each detected rare plant species occurrence. These GPS locations were then used to develop mapping of the rare plant populations and surrounding communities as shown in **Figures 2 and 3**. Avoidance areas were delineated and defined based on the results of the May, June, and July 2014 field surveys, and will be further refined based on the August surveys and prior to project implementation.

The purpose of this rare plant avoidance strategy, the plan, is to describe the practices to be utilized when completing the Project to avoid impacts that would result in mortality or dislocation, and as a consequence a takings, of threatened and endangered species per MS 84.0895. It is intended that this avoidance plan:

- a) be incorporated into modifications of the Project plans, specifications, and other contract documents;
- b) be provided to DNR as documentation of fulfillment of the conditions described within the May 29, 2014 permission letter;
- c) become part of District record for the project; and,
- d) establish that due diligence measures and avoidance activities lead to a determination that a takings does not occur under MS 84.0895.

The report is a proactive response to the District's obligations as the drainage authority to repair the public drainage system and comply with the statutory obligations as a public entity. The report is specifically focused on the activities being implemented to avoid the rare plant species during construction and assess the degree of affect that the repair has on the identified species of concern and their supporting habitats. Upon completion of the August 2014 plant surveys, a separate more detailed report will be issued describing the methods and results of all the 2014 rare plant surveys. The avoidance strategies described in this report are expected to remain largely unchanged as a result of the August survey, unless additional sensitive species are found which may be affected by the Project. Finding additional sensitive species is not anticipated during the August survey. The original survey covered the maximum extent of the potential impact area of the repair: i.e., the lateral hydrologic effects of the open channel. The initial survey not only identified specific species locations of populations of rare plant species, but also located assemblages of plants that may be rare but flower at a later time during the season. Therefore, subsequent surveys during July and August are intended to reexamine the species present within these assemblages and potential habitats.

Summary of the Proposed Repair

The Project is based on the Engineer's Recommended Alternative described within the *Repair Report*. (Note: copies of the plans reflecting this avoidance strategy are attached within **Appendix B**). The *Repair Report* examined three repair alternatives for the public drainage system, including 1) managing the system to existing system conveyance (i.e. "do-nothing"); 2) repair to the as-constructed and subsequently improved condition; and 3) least environmentally damaging repair (Resource Management Plan Alternative). Each alternative was evaluated quantitatively or qualitatively against several benefit and cost criteria, including agricultural drainage capacity and function; municipal stormwater conveyance; flood management; wetland habitat preservation; rare plant species preservation, and construction cost. (Note: the Do Nothing Alternative does not achieve the purpose and need for the project. Therefore, the Board of Managers did not consider the Do Nothing Alternative as viable.) Based on the information available and the technical evaluation completed, the least environmentally damaging repair (Resource Management Plan Alternative) was selected as the Engineer's Recommended Alternative.

Since the degree of disrepair¹ varies throughout Branch 1 of the public drainage system (maintenance at select limited problem areas has occurred in some areas during recent years), the planned construction activities vary throughout the Project. The following is a brief description of the type of work planned for each of the potential rare species habitat polygon areas shown in **Figures 2 and 3**:

Areas 1, 3, and 10: No work will occur in these areas as part of the Project.

Area 2: No excavation is planned in this area as part of the project. However, trees and brush will be cleared to facilitate future access of the public drainage system. Removal of tree canopy and / or vertical structure will not negatively affect the rare species identified in Area 2 (*Violata lanceolate* and *Fimbristylis autumnalis*).

Areas 4, 5, 6, 7, 8 and 9: Excavation of the public drainage system open channel is planned for some (but not all) portions these areas, as referenced in the repair report. Excavated sediment and debris will be placed on the existing spoil piles immediately adjacent to the open channel. Trees and brush will be cleared where necessary to enable access for construction. Spoil will not be placed within avoidance areas containing state Endangered and Threatened plant species.

Area 11: Excavation of a new open channel is planned. The realignment of the public drainage system open channel was planned for the purpose of avoiding impact to an adjacent Public Water Wetland (2-586) which is currently bisected by the public drainage system. Excavated soils will be placed in a spoil pile along each top of bank of the open channel.

Additional detail about the proposed construction activities are provided in the Project construction plans (see **Appendix B**). The District awarded the project with construction planned to occur between September 1, 2014 and July 31, 2015. Please note that the described construction activities are limited to the scope of the current repair Project. To maintain the function of the public drainage system, the District will need to complete periodic maintenance, including excavation of sediment from the open channel and clearing of trees, through each of the polygon areas in the future.

Overview of (Plant) Survey Work Completed

Initial field survey

As noted previously, CCES's rare plant survey includes three field assessments completed at different times of the growing season. The initial rare plant species field survey and habitat assessment was completed for the entire survey area (shown in **Figure 1**) in late May through early June of 2014. During this initial survey, CCES noted locations with suitable habitat capable of supporting rare plant species and observed flowering rare plants. The boundaries of these locations were defined using a GPS and are the focus for the follow-up surveys. CCES identified the plants to the species level, took digital photographs, and collected GPS points locating the rare plant population as well as rare habitats. CCES also estimated the number rare plants by species within each located population. All rare plants and rare plant population boundaries were flagged in the field and the boundary defined with a GPS. CCES then provided the RCWD with a GIS shapefile describing the locations of any rare plant detections,

¹ In no case does the work exceed what defined as a repair under MS 103E, or maintenance by the U.S. Army Corps of Engineers.

potential rare plant habitats requiring further surveys, and areas with no potential to support rare species that require no further surveys.

During this spatially comprehensive initial survey, CCES conducted a detailed survey of the entire defined survey area, regardless of habitat quality. This resulted in detections of numerous rare plant populations as well as native habitat remnants within the survey area that had the potential to support later season rare species. In addition, many large areas of the survey corridor were determined to be highly degraded non-native plant associations, and such degraded habitats were determined to have no potential to support rare species and would not require additional field surveys in July and August 2014. Based on these observations, CCES spatially delineated and defined the sub-areas where positive detections for rare species and/or rare species habitats along the 5 mile public drainage system corridor. These areas were numbered one through eleven, and were mapped using GPS hardware and GIS software (see **Figures 2 and 3**). The following are descriptions of the results of the initial May and June botanical surveys, organized by sub-area.

Area 1: This area was surveyed, even though no repair of the public drainage system is planned. There is a rich fen peat land habitat located along the public drainage system but no positive detections of early season species occurred here. This type of habitat can support several *Rubus* species. Although no additional survey is necessary, the area will be resurveyed in July and August to determine the species identification of *Rubus* species and if any of these species are state-listed and/or protected species.

Area 2: This area contains a flooded row crop field and saturated actively grazed pasture land. These degraded habitats support thousands of Lance leaved violet (*Viola lanceolata*, state threatened) plants along the entire extent of the defined Area 2 polygon, on both sides of the public drainage system. There is potential for additional rare species to co-occur with this large Lance leaved violet population in the later season, such as *Polygala cruciata*, *Juncus marginatus*, *Aristida longespica*, *Xyris torta*, *Rotala ramosior*, and several listed *Rubus* species.

Area 3: This area is a saturated edge of an existing active hay field, dominated by *Carex buxbaumii*. This area falls outside of the survey area and is outside of the proposed maximum scope and effect of the proposed drainage system maintenance. However within the Area 3 polygon, there was an obvious occurrence of a large Lance leaved violet population containing several thousand plants. Therefore, this area was delineated as a rare plant detection location and should be avoided when accessing the public drainage system for maintenance purposes. No additional surveys are proposed for Area 3, as it is outside of the project survey area defined by the project managers.

Area 4: This polygon defines a small, isolated, and degraded rich fen peatland that supports a dense assemblage of *Rubus* spp. Several of the plants had characteristics that resemble the state-threatened *Rubus semisetosus*, and these will be followed up on in July and August to verify their identity. Furthermore, all *Rubus* in this survey area will be identified to species to determine if any other rare *Rubus* species occur here. This fen remnant will also be surveyed for the presence of late season rare species of Anoka Sand Plain rich fens, such as *Polygala cruciata*, *Platanthera flava*, *Juncus marginatus*, *Aristida longespica*, *Xyris torta*, *Rotala ramosior* and others.

Area 5: This survey area contains several rich fen and wet meadow remnants along its length, all based upon observations in the field the remnants are moderately to highly degraded. Within this survey area, several isolated populations of *Viola lanceolata* were detected, ranging in size from less than ten plants

in a square meter area, to several hundred plants occurring along disturbed spoil banks and mowed paths through Reed canary grass meadows. There are several locations of *Rubus* species complexes within this survey area that will be checked for species identifications in July and August. In addition this survey area will be assessed for the presence of associated later season rare species of the Anoka Sand Plain, such as *Polygala cruciata*, *Platanthera flava*, *Juncus marginatus*, *Aristida longespica*, *Xyris torta*, *Rotala ramosior* and others.

Area 6: Survey Area 6 contains a mix of native habitat remnants and degraded cover types associated with the public drainage system and Loch Ness Park. Within this survey area, CCES located a small population of *Viola lanceolata* (20 plants) at the north end where the branches of the public drainage system intersect. Elsewhere in Area 6 there are small complexes of *Rubus* species that require positive identification in July and August. There is a historic record of *Aristida longespica* var. *geniculata* (listed as Endangered in 2013) within this survey area, but this is a later season annual grass species and will need to be surveyed for in August. Lastly, Area 6 could support later season rare species associated with the Anoka Sand Plain wetlands, such as *Polygala cruciata*, *Platanthera flava*, *Juncus marginatus*, *Aristida longespica*, *Xyris torta*, *Rotala ramosior* and others. These species will be surveyed for in July and August 2014.

Area 7: Survey Area 7 contains deep peatland habitats and transitional wetland/upland habitats that support rare plant species. At the northeast end of Area 7, CCES located a small population of *Botrychium simplex* (Least moonwort, Special Concern) in a sandy upland edge. In addition, a small population of *Viola lanceolata* was detected at the northeast end of Area 7 within a saturated sandy area free of invasive species. On the west side of the open channel in Area 7, there are deep peat remnant areas supporting native rich fen vegetation. Within these areas are several small populations of *Viola lanceolata*, comprised of 50 to 250 plants in each. In addition, there are several diverse *Rubus* complexes, that have the potential to support rare *Rubus* species such as *Rubus stipulatus* (endangered), *Rubus semisetosus* (threatened), and *Rubus vermontanus* (special concern), among others. *Rubus* species will be identified to species in July and August and rare *Rubus* species will be located and mapped for avoidance. In addition, these peatland remnants have the potential to support other rare vascular plants of the Anoka Sand Plain, such as *Polygala cruciata*, *Platanthera flava*, *Juncus marginatus*, *Aristida longespica*, *Xyris torta*, *Rotala ramosior* and others. These species will be surveyed for in July and August when they are more easily detected.

Area 8: This survey area is predominantly comprised of degraded wet meadow dominated by Reed canary grass over peaty saturated soils. However, survey Area 8 supports one small complex of *Rubus* species that will be positively identified to species during the July and August surveys. In addition, rare species of the Anoka Sand Plain wet meadows and fens, such as *Polygala cruciata*, *Platanthera flava*, *Juncus marginatus*, *Aristida longespica*, *Xyris torta*, *Rotala ramosior* and others, will be surveyed for within microsites associated with mown areas and deer paths of Area 8 in July and August.

Area 9: This survey area is located along a western branch of the public drainage system and contains one confirmed and very small population of *Viola lanceolata*. This population is one square meter in size and contains 25 plants. The associated saturated peatland is somewhat degraded based upon field observations and dominated by Reed canary grass. However, Area 9 has some potential to support rare species of the Anoka Sand Plain wet meadows and fens, such as *Polygala cruciata*, *Platanthera*

flava, *Juncus marginatus*, *Aristida longespica*, *Xyris torta*, *Rotala ramosior* and others. These species will be surveyed for within Area 9 in July and August.

Area 10: This small survey area is an upland area along an oak woodland edge. The public drainage system flows through an underground pipe in this area. Within survey Area 10, CCES located a complex of *Rubus* species that could contain rare species. *Rubus* in this area will be identified to species in July and August to determine if any *Rubus* are listed and/or rare species. However, Area 10 does not have high potential to support any other rare species other than *Rubus* spp., and no maintenance of the public drainage system is proposed for this area as part of the proposed Project.

Area 11: This survey area is a proposed re-route of the existing public drainage system that currently flows through a DNR Public Water Wetland (PWW). In addition, Area 11 includes a length of the existing public drainage system as it exits the PWW to the south and west. Within Area 11, CCES located one verified population of *Viola lanceolata* and 350 plants. Also associated with this threatened Violet population are several hundred plants of *Rubus vermontanus* (Vermont blackberry, Special Concern) and one verified plant of *Sceptridium rugulosum* (St. Lawrence grapefern, Special Concern). A population of *Platanthera lacera* orchids (not listed, not rare) exists here too, and these were checked to verify that they were not a rare *Platanthera* species, such as *Platanthera flava* or *P. clavellata*. Several large *Rubus* species complexes were located along the public drainage system associated with survey Area 11, but no additional rare *Rubus* species have yet to be positively identified here. No other rare species were detected here during the May and June surveys. Survey Area 11 will be thoroughly checked for the presence of mid to late season rare species associated with wetlands and transitional habitats of the Anoka Sand Plain during the July and August surveys. The existing public drainage alignment through the PWW exhibits low ecological quality, as the plant community is characterized by invasive species (e.g., reed canary grass).

First Follow-up Survey July 2014

The first follow-up survey was completed in July 2014.. The scope of this survey was limited to the potential rare plant habitat polygons shown in **Figures 2 and 3**. The survey was originally planned for June 2014. However, based on the late growing season and a delay in the phenology (timing, emergence, flowering, etc.) of the target rare plant species, the follow-up survey was started in July. CCES collected specimens, acquired digital photographs, and collected GPS points refining the location of the populations. CCES again identified the plants to the species level, took digital photographs, and collected revised GPS points locating the rare plant population as well as rare habitats. CCES again estimated the number rare plants by species within each located population. All rare plants and rare plant population boundaries were flagged in the field and the boundary defined with a GPS. CCES then provided the RCWD with an update GIS shapefile describing the locations of any rare plant detections, potential rare plant habitats requiring further surveys, and areas with no potential to support rare species that require no further survey in August because of the absence of plants. Revised polygon areas indicating the maximum extents of rare plant populations are shown in **Figures 4 and 5**. Several of the original polygon areas corresponding to the maximum extents of rare plant populations were refined and subdivided into smaller areas during the July survey. Many of the areas were reduced in size based on the refined field survey results and are denoted with a letter suffix.

Area 1: Although no additional survey of Area 1 was necessary, the area was resurveyed in July to determine the species identification of *Rubus* species and if any of these species are state-listed and/or protected species. One large population of *Xyris torta* was detected within the northern extents of the wetland in Survey Area 1. This population was known from surveys conducted by Husveth in 2001, but had not been revisited since. Also associated with this *Xyris torta* population was a population of *Polygala cruciata*, an Endangered annual species which was just beginning to flower in the last week of July 2014.

Area 2: A July survey of Area 2 resulted in the detection of a large population of the state Special Concern Autumn fimbriatylis (*Fimbristylis autumnalis*) occurring within saturated, exposed, and disturbed areas of the actively grazed pasture. No other rare plant species were detected within Area 2 during the July surveys.

Area 3: No additional surveys are proposed for Area 3, as it is outside of the project survey area and the estimated extent of the lateral effects of the open channel. Area 3 was checked in July 2014, and no additional rare plant species were detected within this small survey area.

Area 4: The late July surveys of Survey Area 4 documented the presence of a dense population of *Rubus semisetosus* (Threatened), along with smaller populations of *Rubus stipulatus* (Endangered), and *Rubus vermontanus* (Special Concern). The extents of these state-listed *Rubus* species populations were GPS located and flagged in the field for future avoidance.

Area 5: July surveys of Area 5 resulted in the positive identification of several rare *Rubus* species populations, including *Rubus semisetosus*, *R. stipulatus*, and *R. vermontanus*. At the south end of Area 5, these *Rubus* populations were quite large and dense containing thousands of plants. Population extents were GPS located and flagged in the field for future avoidance. In one portion of Area 5, state-Endangered and Threatened *Rubus* species extend to both edges of the ditch, and are associated with Lance leaved violet. If this small section of ditch is to be improved and maintained, precise excavation of the ditch bottom during frozen soil (winter) conditions will be necessary to avoid impacts to state-protected species.

Area 6: Survey Area 6 contains a mix of native habitat remnants and degraded cover types associated with the public drainage system and Loch Ness Park. Within this survey area, CCES located a small population of *Viola lanceolata* (20 plants) at the north end where the branches of the public drainage system intersect. Elsewhere in Area 6 there are small complexes of *Rubus* species that require positive identification in July and August. There is a historic record of *Aristida longespica* var. *geniculata* (listed as Endangered in 2013) within this survey area, but this is a later season annual grass species and will need to be surveyed for in August. Lastly, Area 6 could support later season rare species associated with the Anoka Sand Plain wetlands, such as *Polygala cruciata*, *Platanthera flava*, *Juncus marginatus*, *Aristida longespica*, *Xyris torta*, *Rotala ramosior* and others. These species were surveyed for in July, and CCES detected several locations supporting annual grasses in the genus *Aristida*. However, as of late July, these *Aristida* grasses had not yet flowered or produced seed, so positive identification to species was not yet possible. Individual *Aristida* plants and associated habitats were marked for follow-up surveys in August 2014. In addition, small populations of Autumn fimbriatylis (*Fimbristylis autumnalis*) were detected at the north end of Area 6, associated with previously-documented locations of *Viola*

lanceolata. No other associated rare species were detected during the July surveys of Area 6, but these species will be surveyed for again in August.

Area 7: July surveys of Area 7 resulted in the confirmed detections and positive identifications of three state-listed *Rubus* species. These species are: *Rubus stipulatus*, *Rubus semisetosus*, and *Rubus vermontanus*. These populations are dense and complex, and individuals of each species number in the thousands. The populations extents of all state-listed *Rubus* species were located in the field with a GPS, and were flagged for future avoidance. One small population of *Fimbristylis autumnalis* (Special Concern) was documented associated with the *Viola lanceolata* at the northern end of Area 5 on the west side of the ditch. In addition, one population of the state-Endangered Twisted yellow-eyed grass (*Xyris torta*) was documented associated with a saturated peaty bench of an excavated pond to the east of the Area 5 survey limits. Also associated with this *Xyris torta* population was another population of *Viola lanceolata* (Threatened). Although this habitat falls just outside of the project survey area, this detection of *Xyris torta* is very significant in that this species is very rare with less than 10 known extant populations remaining in the state, and only two of these occur outside of Blaine (5 miles east in Lino Lakes, MN).

Area 8: Area 8 requires additional follow up survey to positively identify the individuals within this isolated *Rubus* complex to species in August. Insufficient material existed in July to accomplish positive identification of this relatively small *Rubus* complex to species.

Area 9: Area 9 was surveyed in July for additional rare species. No additional rare species were detected within Survey Area 9 in July. Area 9 requires additional follow up survey to positively identify the individuals within this isolated *Rubus* complex to species in August. Insufficient material existing in July to accomplish positive identification of this relatively small *Rubus* complex to species.

Area 10: The *Rubus* species located within Area 10 were positively identified to species in July by CCES. These species were not state-listed and included *Rubus ferrofluvius*, *R. satis*, and *R. allegheniensis*. No additional surveys of Area 10 are required in August 2014.

Area 11: As previously stated, Survey Area 11 is a proposed re-route of the existing public drainage system that currently flows through a DNR Public Water Wetland (PWW). In addition, Area 11 includes a length of the existing public drainage system as it exits the PWW to the south and west. Within Area 11, CCES located one verified population of *Viola lanceolata* containing 350 plants in May and June 2014. Also associated with this threatened Violet population are several hundred plants of *Rubus vermontanus* (Vermont blackberry, Special Concern) and one verified plant of *Sceptridium rugulosum* (St. Lawrence grapefern, Special Concern). A population of *Platanthera lacera* orchids (not listed, not rare) exists here too, and these were checked to verify that they were not a rare *Platanthera* species, such as *Platanthera flava* or *P. clavellata*. Several large *Rubus* species complexes were located along the public drainage system associated with survey Area 11, but no additional rare *Rubus* species have yet to be positively identified here. No other rare species were detected here during the May and June surveys. Survey Area 11 will be thoroughly checked for the presence of mid to late season rare species associated with wetlands and transitional habitats of the Anoka Sand Plain during the August surveys. The existing public drainage alignment through the PWW exhibits low ecological quality, as the plant community is characterized by invasive species (e.g., reed canary grass). July surveys of Area 11 confirmed the locations and extents of the *Rubus vermontanus* populations documented in May and June. Furthermore, July surveys resulted in the positive identification of previously unidentifiable *Rubus*

species occurring in complex, all of which were not state-listed. Common *Rubus* species occurring within these complexes along the existing and proposed ditch alignments included: *Rubus ferrofluvius*, *R. superioris*, *R. wisconsinensis*, *R. dissensus*, *R. allegheniensis*, *R. satis*, *R. plicatifolius*, and *R. wheeleri*. No additional specimens of *Rubus* were positively identified as state-listed species, and therefore these potential areas in Area 11 were eliminated for return surveys from *Rubus* species in August.

Final Follow-up Survey

CCES will complete one additional survey in August. Provided no species sensitive to hydrologic conditions or impact as a result of repair (see below) are identified, the avoidance activities described are expected to be protective should additional species be identified.

Impact Analysis and Avoidance Strategy

Description of Types of Potential Impact

Based on the phenology of the species identified, four construction related activities have the potential to cause an impact to the rare plant species found along Branch 1. Whether a potential impact occurs depends primarily on the plant species present, its sensitivity to the potential impact, and whether measures can be implemented to reasonably ensure avoidance. The following paragraphs describe the nature of the potential impacts, the time of year when the species is sensitive to impact, and which the means and methods of avoiding impact.

1. Change in the scope and effect of the public drainage system (lateral drainage effects): Lateral drainage effects resulting from the Project will not result in an adverse impact to the identified rare plant populations. The Project is anticipated to result in a lowering of average growing-season water surface elevations in the public drainage open channel through the majority of the ACD 53-62 Branch 1 system, including in most of the polygon areas identified in **Figure 2**. The lowering of the average water elevations in the open channel compared to existing conditions² has the potential to result in increased drainage laterally from land adjacent to the public drainage system, and effect some change in the plant rare plant populations and supporting natural plant communities during dryer periods of the growing season. For instance, in Area 7 the open channel in its existing condition results in a scope and effect of up to 100 feet estimated using the Van Schilfgaarde equation, and following construction the predicted scope and effect at this location increases to 130 feet. Only those plants within the increased lateral effects width would potentially be subject to “altered hydrology.” This relatively small increase in lateral effects width is typical of the remainder of the public drainage system.

Note that throughout the public drainage system, the scope and effect may have historically resulted in reduction in hydrology in some locations, but has not “effectively drained” any wetlands. This is most likely due to the peat environments that these plants have existed in which are not conducive for lateral drainage. As a result, the rare plant populations identified on the site to date appear to have been unaffected by the current drainage function provided by

² The as constructed and subsequently improved condition lateral drainage effects would extend well beyond the current conditions. Details of the analysis of the lateral effects for a range of public drainage repair alternatives can be found in the repair report.

the public drainage system. As evidence, several of the plant populations are located within the existing scope and effect of the open channel, based upon estimates made using the Van Schilfgaarde equation. Also, several of the rare plant populations have been identified on existing spoil banks, well above the drained soil zone. For these reasons, additional lateral drainage effects resulting from the Project will not result in an adverse impact and therefore a known “takings” of any of the identified plant populations

2. Equipment movement across land surface: Equipment will need to be mobilized through the Project site to complete the various construction activities. The mobilization of equipment will occur throughout construction, beginning as early as September 1, 2014 and continuing up to July 1, 2015 (however, it is anticipated that most or all construction equipment mobilization will occur in the Fall or Winter of 2014). The potential impacts to rare plants resulting from equipment mobilization include the crushing of individual plants and some disruption of the ground surface. This impact will not likely result in the mortality of plant populations after the growing season has ended, but may result in some mortality during the growing season (the growing season in the Project location on average ends on October 18 of each year). To ensure that rare plant takings do not result from the Project, avoidance strategies described below include circumvention and complete avoidance of field-located rare plant populations with equipment.
3. Placement of spoil (sediment) on top of rare plant species: Spoil material will be placed on top of existing spoil banks adjacent to the public drainage system open channel. Some rare plant populations have been identified within the existing spoil bank. Placement of spoil material on the rare plant populations, were it to occur, would result in mortality of the rare plant populations. . No excavated spoil material will be placed on top of identified rare and endangered plant species.
4. Physical excavation: Physical excavation of rare plant species is likely to occur only as a result of work proposed for Polygon Area 9. This work will result in mortality or transport of plants identified in the CCES survey. Although this work is believed to be exempt under MN 84.0895 Subd. 2(a)(1) for public drainage systems, the proposed work in this area will be delayed. Because the PWW exhibits poor ecological quality, repair along the existing alignment appears more favorable. However, the proposed work will be delayed until the preferred alignment can be resolved with the DNR and should it be necessary, modifications to the repair alternative be memorialized by the Board in accordance with MS 103E.

Avoidance Strategy by Polygon Area

The following paragraphs describe the avoidance strategy for each polygon area identified in **Figures 3 and 4**. The primary components of the avoidance strategy include:

1. fencing the areas with rare plants;
2. controlling the locations where the excavated spoil is placed;
3. completing construction from the other side of the open channel;
4. completing construction activities during frozen soil conditions to reduce or eliminate potential impacts to plant populations, habitats and / or wetland soils; and
5. refraining from repair of the portion of the public drainage system.

This avoidance strategy presently assumes repair during non-frozen soil (summer) conditions and is focused on the use of items 1, 2, 3, and 5. The activities described are believed sufficient by the CCES and Houston Engineering to knowingly avoid an adverse impact to rare plants and therefore, a takings. Reference to “no work” in the description below means there will be no construction related activities within the specific polygons shown on **Figures 4 and 5**.

Area 1A: No work (excavation, equipment movement, clearing) will occur in this area. No avoidance activities needed. See Sheet 6 in **Appendix B**.

Area 2A and 2B: No excavation from the open channel or the side slopes will occur in this area as part of the Project. However, tree removal was planned within Area 2B to facilitate future access at some of the locations where rare plants were identified. Since this tree removal is not required to complete repair activities for this project, this work has been removed from the construction documents. Therefore, the species of concern will be avoided. See Sheet 6 in **Appendix B**.

Area 3A: No work (excavation, equipment movement, clearing) will occur in this area. No avoidance activities are needed. See Sheet 6 in **Appendix B**.

Area 4A: No work (excavation, equipment movement, clearing) will occur in this area as part of the Project. However, tree removal is planned in proximity of the locations where rare plants were identified. The construction documents have been modified to require the contractor to place snow fence around the plant locations as flagged by CCES prior to tree removal operations. The presence of the snow fence will be verified by the construction inspector. The tree removal will provide beneficial management for the rare plant community identified in this location. See Sheet 5 in **Appendix B**.

Area 5A through 5I: No work (excavation, equipment movement, clearing) will occur in these areas as part of the Project. See Sheet 5 in **Appendix B**.

Area 6A through 6E: Excavation is planned in this area. No excavation of the side slopes is planned. However side slopes are likely to become disturbed as the material is removed. Since plants are present on both sides of the open channel, the construction documents will be modified to require the Contractor to place snow fence around the flagged plants, and place the spoil in the unfenced areas. Because the rare plants are located closer to the work area on the west side of the open channel, the construction plans have been modified to indicate construction access and spoil placement from the east side of the open channel. See Sheet 7 in **Appendix B**.

Area 7A through 7F: No work (excavation, equipment movement, clearing) will occur in these areas as part of the Project. Therefore, the species of concern will be avoided. See Sheet 4 in **Appendix B**.

Area 8A: No work (excavation, equipment movement, clearing) will occur in this area as part of the Project. However, equipment access and spoil placement is planned in proximity of the locations where rare plants were identified. The construction documents have been modified to require the contractor to place snow fence around the plant locations as flagged by CCES prior to tree removal operations. The presence of the snow fence will be verified by the construction

inspector. No excavated material will be placed physically on rare plants. Therefore, the species of concern will be avoided. See Sheet 4 in **Appendix B**.

Area 9A and 9B: No work (excavation, equipment movement, clearing) will occur in these areas as part of the Project. However, equipment access and spoil placement is planned in proximity of the locations where rare plants were identified. The construction documents have been modified to require the contractor to place snow fence around the plant locations as flagged by CCES prior to tree removal operations. The presence of the snow fence will be verified by the construction inspector. No excavated material will be placed physically on rare plants. Therefore, the species of concern will be avoided. See Sheet 2 and 3 in **Appendix B**.

Area 10A: No work will occur in this area, which avoids the species of concern. See Sheet 8 in **Appendix B**.

Area 11A: The rare plants appear to be located within the proposed open channel excavation. The construction plans have been modified to indicate a modified alignment to avoid the rare plants. Also, a culvert approximately 100 feet in length will now be placed adjacent to the rare plant location to decrease the footprint of the land disturbance. The construction documents require the contractor to place snow fence around the plant locations as flagged by CCES prior to tree removal operations. The presence of the snow fence will be verified by the construction inspector. . Therefore, the species of concern will be avoided. See Sheet 9 in **Appendix B**.

Construction Monitoring

CCES will mark the locations of rare plant species and population extents in the field prior to construction beginning. Full time construction observation personnel from the RWCD will be present during construction to ensure compliance with the avoidance activities. Staff from CCES will also be available on an on-call basis for assistance during construction. The avoidance activities described by this plan are intended to knowingly avoid an adverse impact to rare plants and therefore a takings.

Conclusions and Compliance with MS 84.0895

The avoidance strategy described by this plan is a reasonable, feasible, and effective approach to avoid knowingly impacting rare plant species or a loss of habitat for these species for the repair of Branch 1 of ACD 53-62. The RCWD plan fulfills its due diligence obligations to avoid a takings in accordance with MS 84.0895, and shows that a takings permit is not required for the project. The RCWD further believes it has complied with the conditions from the DNR permission letter dated May 29, 2014.

Long -Term Maintenance Considerations

Periodic maintenance of the public drainage system open channel (consisting of excavation of sediment and debris within the open channel and clearing of brush for access) will be required to maintain the function of the public drainage system. To prevent the disruption of the existing rare plant populations, we recommend that future maintenance follows the avoidance strategies outlined above. Additional surveys may be required in future years to verify the presence, persistence, and extent of rare plant populations within future proposed construction and public drainage system maintenance and repair areas.

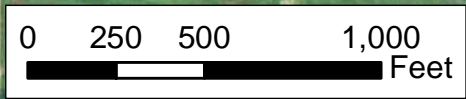
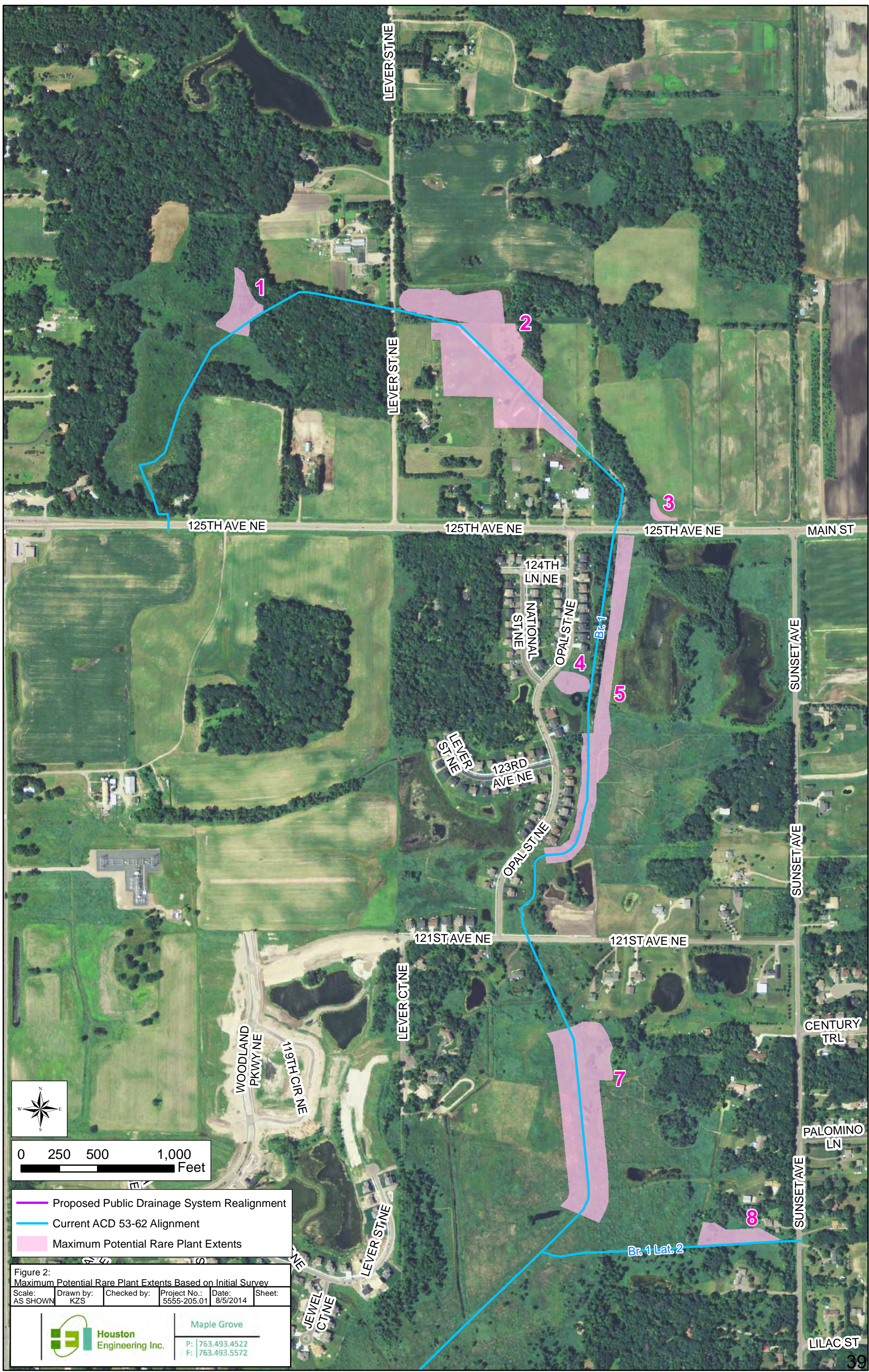
Based on the CCES surveys, it appears that the extents of the rare plant populations in several cases correspond directly with known vegetative disturbances (e.g. mowing, spoil bank soil scarification, exposure of dormant native seed banks, and placement of excavated spoil material) indicating that some of the rare plant populations have thrived following a ground disturbance. We recommend following the completion of the Project the RCWD engage the DNR in further discussions regarding the use of future maintenance of the public drainage system as a management tool for sustaining and enhancing the rare plant populations and their supporting habitats along the system. At least some of these rare plants respond to modest disturbance, and are present along infrastructure serving as a public drainage system.



Aerial Photo Source: 2010 USDA NAIP Color Aerial Photograph



ACD 53-62
Rare Vascular Plant Survey Limits
5.15 Linear Miles / Approx. 125 Acres
RCWD Proposal Attachment A, Figure 1

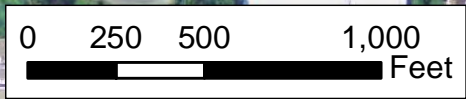
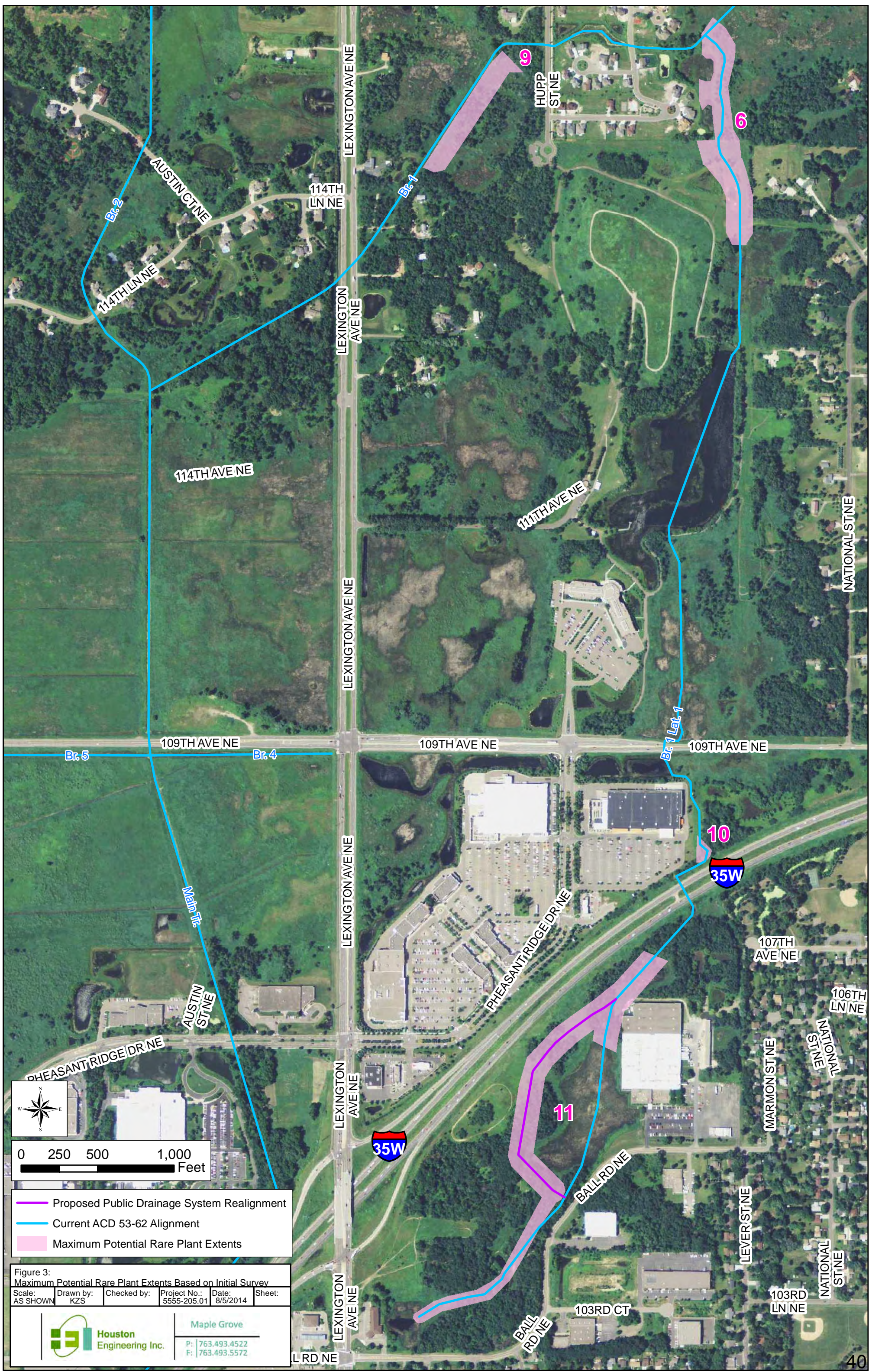


- Proposed Public Drainage System Realignment
- Current ACD 53-62 Alignment
- Maximum Potential Rare Plant Extents

Figure 2:
Maximum Potential Rare Plant Extents Based on Initial Survey

Scale: AS SHOWN	Drawn by: KZS	Checked by:	Project No.: 5555-205.01	Date: 8/5/2014	Sheet:
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	Maple Grove
	P: 763.493.4522 F: 763.493.5572



- Proposed Public Drainage System Realignment
- Current ACD 53-62 Alignment
- Maximum Potential Rare Plant Extents

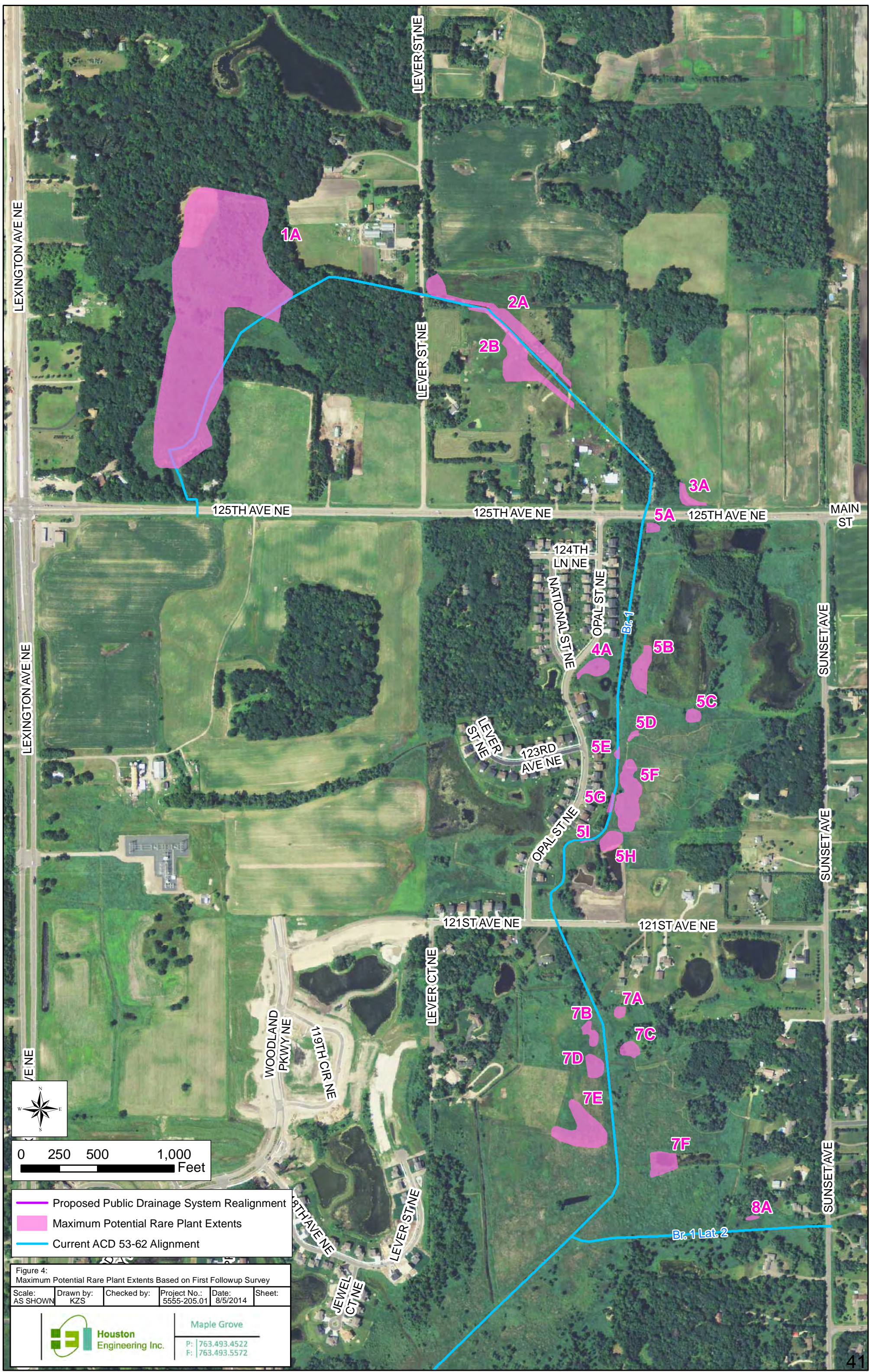
Figure 3:
Maximum Potential Rare Plant Extents Based on Initial Survey

Scale: AS SHOWN	Drawn by: KZS	Checked by:	Project No.: 5555-205.01	Date: 8/5/2014	Sheet:
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Houston Engineering Inc.

Maple Grove

P: 763.493.4522
F: 763.493.5572



LEXINGTON AVE NE

LEVER ST NE

1A

2A

2B

125TH AVE NE

125TH AVE NE

125TH AVE NE

MAIN ST

LEXINGTON AVE NE

NATIONAL ST NE

OPAL ST NE

Br. 1

SUNSET AVE

4A

LEVER ST NE

123RD AVE NE

5B

5C

5E

5D

5F

5G

5I

5H

SUNSET AVE

121ST AVE NE

121ST AVE NE

VE NE

WOODLAND PKWY NE
119TH CIR NE

LEVER CT NE

7B

7A

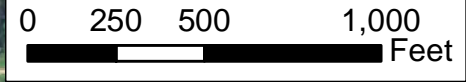
7C

7D

7E

7F

SUNSET AVE



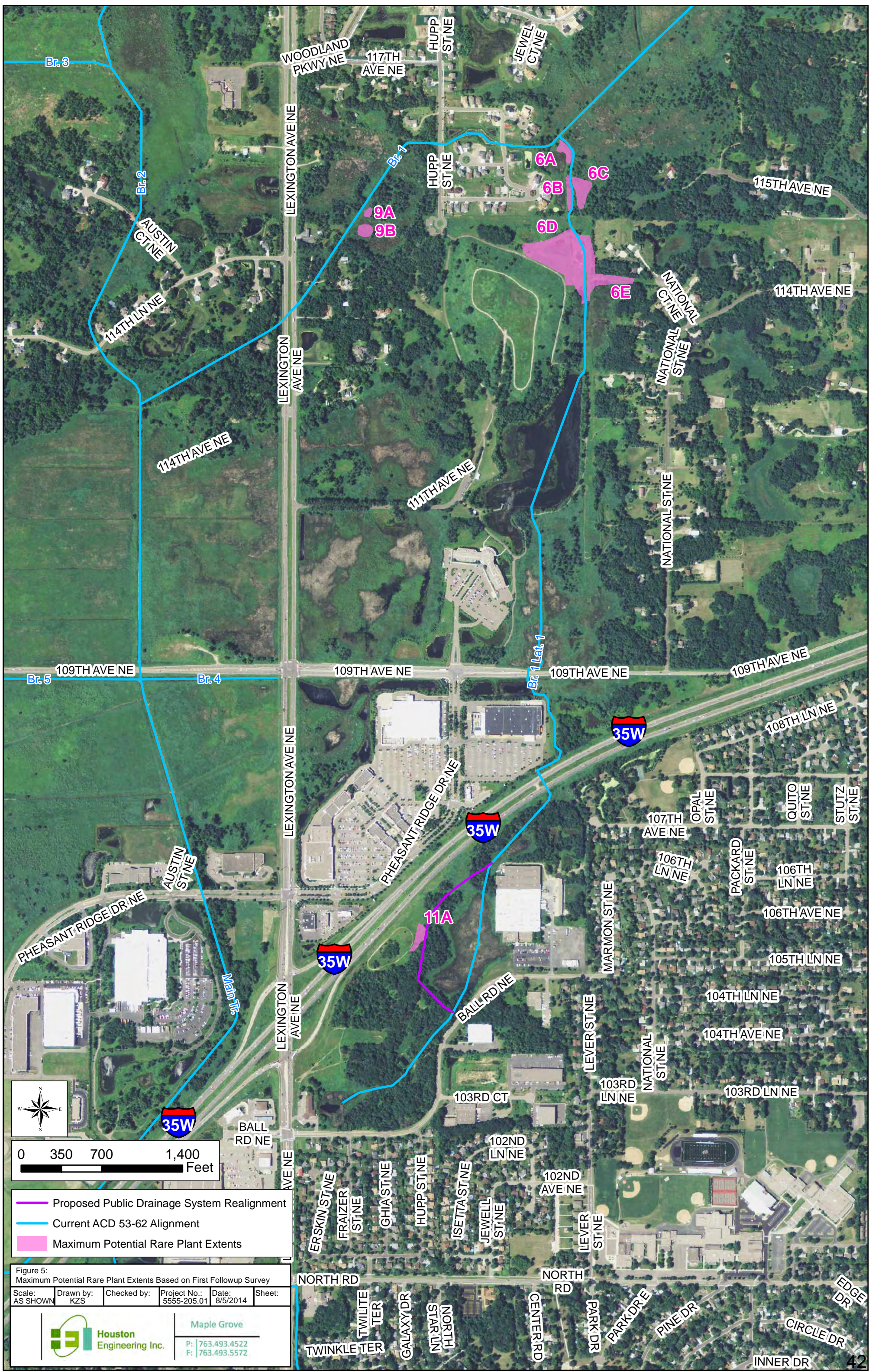
- Proposed Public Drainage System Realignment
- Maximum Potential Rare Plant Extents
- Current ACD 53-62 Alignment

Figure 4:
Maximum Potential Rare Plant Extents Based on First Followup Survey

Scale: AS SHOWN	Drawn by: KZS	Checked by:	Project No.: 5555-205.01	Date: 8/5/2014	Sheet:
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Maple Grove

P: 763.493.4522
F: 763.493.5572



— Proposed Public Drainage System Realignment
— Current ACD 53-62 Alignment
 Maximum Potential Rare Plant Extents

Figure 5: Maximum Potential Rare Plant Extents Based on First Followup Survey

Scale: AS SHOWN	Drawn by: KZS	Checked by:	Project No.: 5555-205.01	Date: 8/5/2014	Sheet:
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	Maple Grove
	P: 763.493.4522 F: 763.493.5572

Appendix A
May 29, 2014 DNR Permission Letter

Minnesota Department of Natural Resources

Division of Ecological and Water Resources

1200 Warner Road

Saint Paul, MN 55106-6793



May 29, 2014

Phil Belfiori, Administrator
Rice Creek Watershed District
4325 Pheasant Ridge Drive NE #611
Blaine, MN 55449

Re: Proposed Repair of Branch 1 and Branch 1 Lateral 1 of Anoka County Ditch 53-62

Dear Mr. Belfiori:

This letter is in response to your request for DNR permission to repair Branch 1 and Branch 1 Lateral 1 of Anoka County Ditch 53-62, which involves four Public Waters located along the public drainage system.

The DNR's decision in this case is controlled by the court of appeals determination in Minnesota Center for Environmental Advocacy v. Big Stone County. One of the central issues in Big Stone County was whether a Drainage Ditch Authority is required to obtain both permission from the DNR Commissioner pursuant to Minnesota Statute Section 103E.011, subd. 3 and a DNR public waters work permit pursuant to Minnesota Statute Section 103G.245 when a proposed drainage repair project affects public waters. In that case the court concluded that if a drainage ditch authority has proposed a project subject to both sections 103E.011, subd. 3 and 103G.245 the drainage ditch authority must "either have permission under chapter 103E or the work permit under chapter 103G to proceed with work that will drain, change, or diminish public waters."

In making its determination in this matter the DNR must (1) determine if the proposed repair is subject to section 103E.011, subd. 3 and/or section 103G.245 and (2) if the proposed repair is subject to both sections, determine whether it will require a public waters permit under chapter 103G or grant permission under chapter 103E. In making this latter determination, the DNR must look to the statutory requirements as well as balance a number of factors including what is most protective to Minnesota's public waters.

1. The proposed repair of Branch 1 and Branch 1 Lateral 1 of Anoka County Ditch 53-62 is subject to section 103E.011 subdivision 3 because it will "remove, construct or alter a dam affecting public waters", "lower the level of public waters" and "drain any portion of a public water." Therefore, permission from the Commissioner is required. The proposed repair is also subject to section 103G.245, but may qualify for an exemption under Subdivision 2 (2) "a drainage project for a drainage system established under Chapter 103E that does not **substantially** affect public waters." (emphasis added)

2. The proposed repair is subject to both sections. However permission may be granted for the repair project with consideration of the protection measures for the public waters in question if it meets an exception under 103G.245. Rice Creek Watershed District (RCWD), in its Repair

mndnr.gov

An Equal Opportunity Employer

DNR Information: 651-296-6157

1-888-646-6367

651-296-5484

1-800-657-3929

Report dated March 25, 2013 and supplemental information provided in its letter of April 28, 2014, has established that the project will not **substantially** affect public waters if certain conditions are met.

Therefore, for purposes of this project only (Repair of Branch 1 and Branch 1 Lateral 1 of Anoka County Ditch 53-62), permission is hereby granted subject to the following conditions:

- 1) No physical or hydrologic alteration may take place within the areas identified on the map labeled Rare Vascular Plant Survey Limits (included with RCWD's letter of April 28, 2014) until such time as the presence or absence of rare plants has been confirmed by completion of the rare plant survey described in RCWD's letter of April, 28, 2014. If rare plants are found, RCWD must demonstrate measures to avoid adverse impacts or obtain an Endangered Species Taking Permit from DNR before commencing work in this area;
- 2) Excavation depths within the ditch shall be in accordance with the Engineer's Recommended Repair Alternative as detailed in the Repair Report dated March 25, 2013;
- 3) All excavation and spoil disposal within the public water basins will be conducted in the manner described in RCWD's letter of April, 28, 2014;
- 4) As-built survey drawings for the areas adjacent to and within the public waters must be submitted to the DNR within 60 days of project completion; and
- 5) A letter of acknowledgement and agreement to this conditional approval must be submitted to DNR prior to moving forward with any excavation work.

Thank you for your patience during the review and decision making process.

Sincerely,



Kate Drewry
North Metro Area Hydrologist

- c: Sherry Enzler, DNR Legal Counsel
Steve Colvin, Assistant Director, Division of Ecological and Water Resources
Terri Yearwood, Regional Manager
Tom Hovey, Permits Hydrologist
Jeanne Daniels, District Manager

Appendix B
ACD 53-62 Branch 1 Repair Project Construction Plans (Revision 1 - DRAFT)

RICE CREEK WATERSHED DISTRICT

CONSTRUCTION PLANS

FOR

ACD 53-62 REPAIR PROJECT

BLAINE, MINNESOTA

MAY 2014

GOVERNING SPECIFICATIONS

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION", INCLUDING CURRENT SUPPLEMENTAL SPECIFICATIONS, SHALL GOVERN.

DRAWING INDEX

- 1 COVER SHEET
- 2-6 PLAN & PROFILE SHEETS (BRANCH 1)
- 7-9 PLAN & PROFILE SHEETS (BRANCH 1 LATERAL 1)
- 10 PLAN & PROFILE SHEETS (BRANCH 1 LATERAL 2)
- 11 SWPPP / EROSION-SEDIMENT CONTROL
- 12 TRAFFIC CONTROL PLAN
- 13-14 DETAILS

NOTES

1. HORIZONTAL CONTROL: ANY COORDINATES LISTED IN THIS PLAN ARE NAD83 MINNESOTA STATE PLANE, SOUTH ZONE, US FOOT.
2. VERTICAL CONTROL: ALL ELEVATIONS ARE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. PROJECT BENCHMARK: MNDOT DISK (STAMPED 0280 G 1969) IN BRIDGE WING WALL (SE CORNER OF CR 53/SUNSET AVE. NE & BRIDGE #9831 OVER INTERSTATE HIGHWAY 35W) = 929.431 (NAVD88)
4. TRAFFIC CONTROL: WORK ASSOCIATED WITH THIS PROJECT WILL BE CONDUCTED ADJACENT TO NUMEROUS ROADWAYS. THE CONTRACTOR SHALL PROVIDE ADEQUATE SIGNAGE FOR TEMPORARY TRAFFIC CONTROL AS IDENTIFIED IN PART 6 OF THE MN MUTCD MANUAL. A TRAFFIC CONTROL PLAN DETAILING VARIOUS TRAFFIC CONTROL SUGGESTIONS HAVE BEEN PROVIDED WITHIN THIS PLAN. AT MINIMUM THE CONTRACTOR SHALL PROVIDE TYPE III BARRICADES WITH SIGNAGE DENOTING "WORK AHEAD" NEAR ALL WORK ON ADJACENT ROADWAYS.

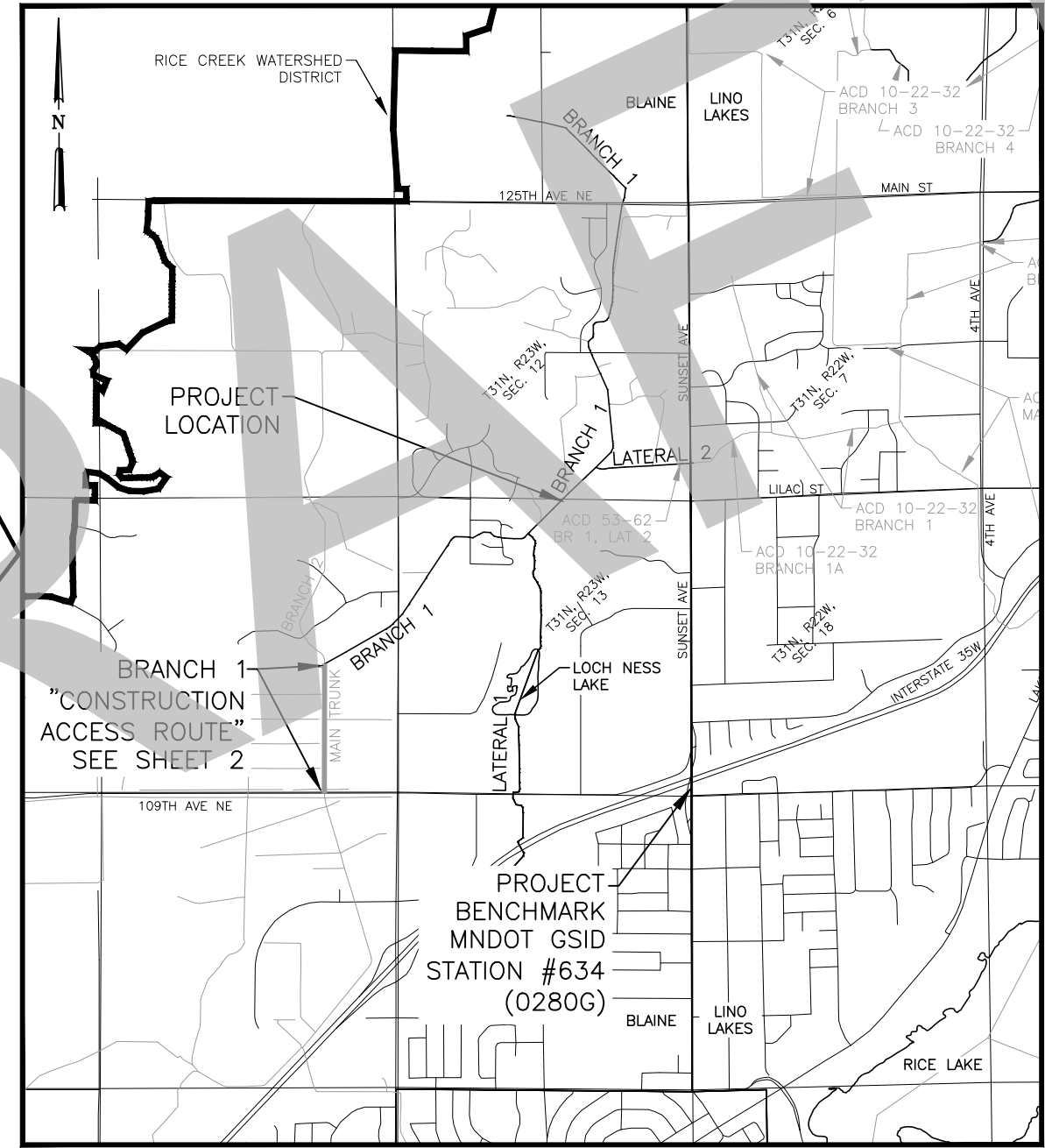
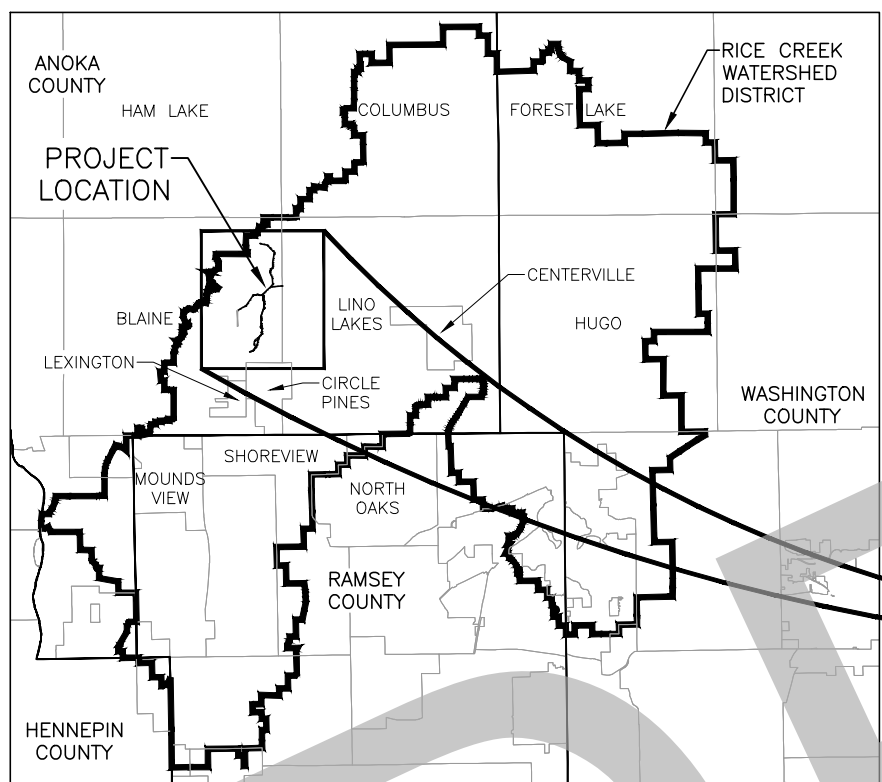
UTILITY NOTES:

1. PRIOR TO ANY EXCAVATION WORK, THE CONTRACTOR IS RESPONSIBLE UNDER MINNESOTA STATE STATUTE 216D AND MINNESOTA RULES CHAPTER 7560 TO CONTACT GOPHER STATE ONE CALL FOR THE LOCATION OF UNDERGROUND UTILITY FACILITIES IN PROXIMITY TO THE EXCAVATION SITE.
2. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

UTILITY TABULATION

DESCRIPTION	OWNER
COMMUNICATION	CENTURY LINK
COMMUNICATION	COMCAST
ELECTRIC	CONNEXUS ENERGY
ELECTRIC	XCEL ENERGY
GAS	MAGELLAN
GAS	CENTERPOINT
SEWER	CITY OF BLAINE
WATER	CITY OF BLAINE

4. CONTACT "GOPHER STATE ONE CALL" FOR LOCATIONS OF BURIED UTILITIES. CALL (651) 454-0002 OR (800) 252-1166.



BRANCH 1
"CONSTRUCTION
ACCESS ROUTE"
SEE SHEET 2

PROJECT
BENCHMARK
MNDOT GSID
STATION #634
(0280G)

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

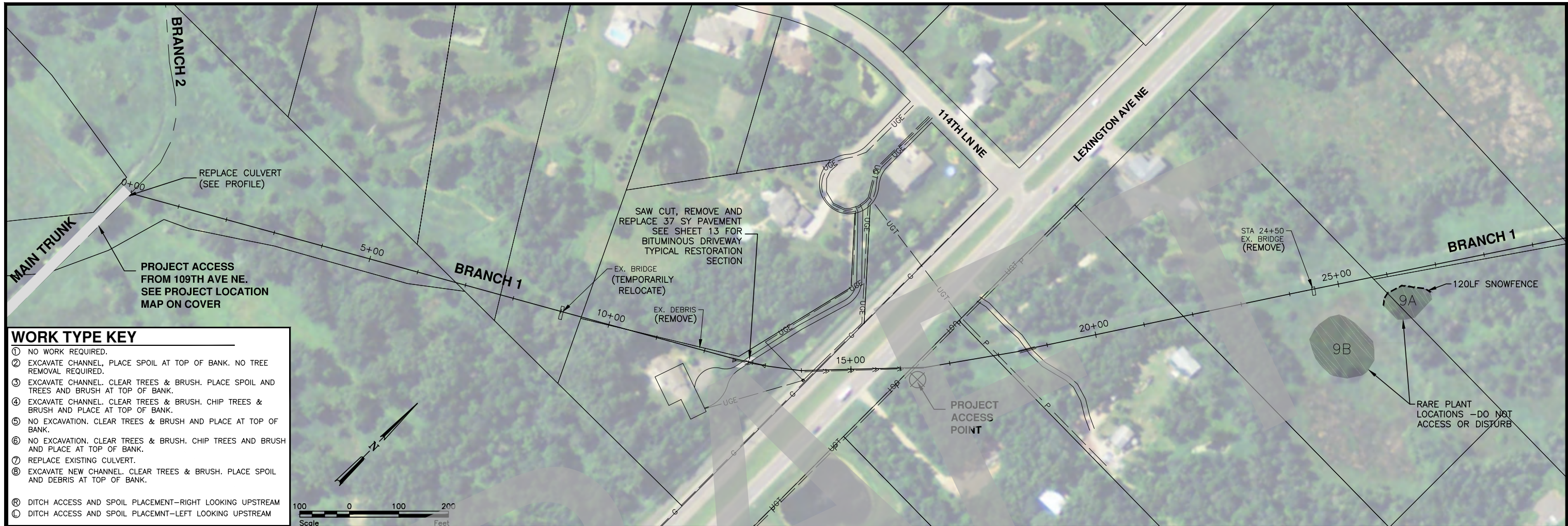
Signature: _____ Date: _____
Printed Name: Nancy Stowe License #: 48259

SOURCE OF SURVEY

CHANNEL: HOUSTON ENGINEERING SURVEY OBSERVED NOVEMBER 8, 2013
CULVERTS: MISC. HOUSTON ENGINEERING SURVEYS OBSERVED 2011 THRU 2013

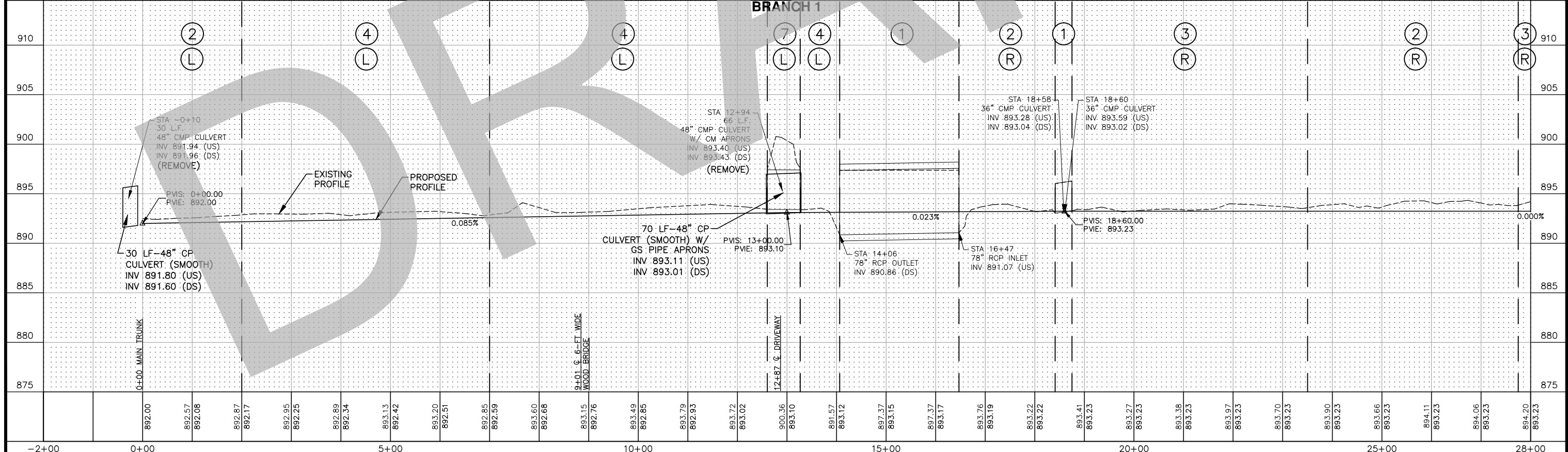


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WORK TYPE KEY

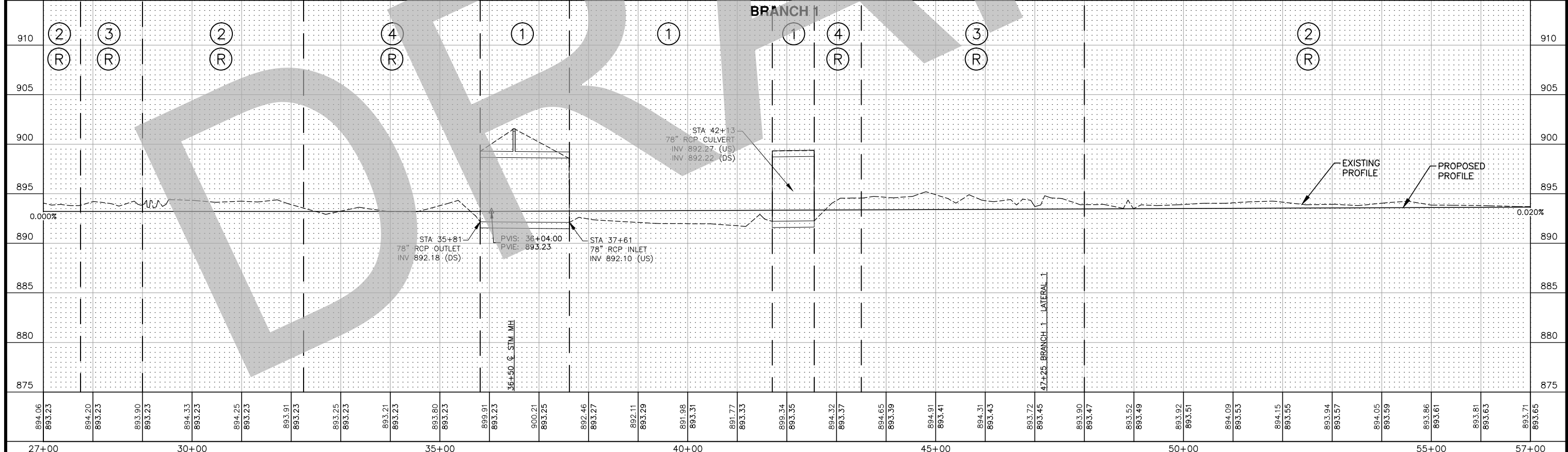
- ① NO WORK REQUIRED.
- ② EXCAVATE CHANNEL, PLACE SPOIL AT TOP OF BANK. NO TREE REMOVAL REQUIRED.
- ③ EXCAVATE CHANNEL. CLEAR TREES & BRUSH. PLACE SPOIL AND TREES AND BRUSH AT TOP OF BANK.
- ④ EXCAVATE CHANNEL. CLEAR TREES & BRUSH. CHIP TREES & BRUSH AND PLACE AT TOP OF BANK.
- ⑤ NO EXCAVATION. CLEAR TREES & BRUSH AND PLACE AT TOP OF BANK.
- ⑥ NO EXCAVATION. CLEAR TREES & BRUSH. CHIP TREES AND BRUSH AND PLACE AT TOP OF BANK.
- ⑦ REPLACE EXISTING CULVERT.
- ⑧ EXCAVATE NEW CHANNEL. CLEAR TREES & BRUSH. PLACE SPOIL AND DEBRIS AT TOP OF BANK.
- Ⓜ DITCH ACCESS AND SPOIL PLACEMENT—RIGHT LOOKING UPSTREAM
- Ⓛ DITCH ACCESS AND SPOIL PLACEMENT—LEFT LOOKING UPSTREAM



1	RARE PLANT AVOIDANCE PER CO#1	8/6/14	DDM	Signature: _____ Date: _____ Printed Name: Nancy Stowe License #: 48259	Maple Grove	Drawn by DJL	Date 5-8-14	ACD 53-62	PLAN AND PROFILE BRANCH 1 STA 0+00 TO STA 28+00 PROJECT NO. 5555-205	SHEET 2 of 48
No.	Revision	Date	By		P: 763.493.4522 F: 763.493.5572	Checked by DM	Scale AS SHOWN	BRANCH 1 REPAIR PROJECT BLAINE, MN RICE CREEK WATERSHED DISTRICT		

S:\5555-205 ACD 53_62 Repair Project Branch 1\CAD\Profile\Construction\555535205-PP_Br1_Final.dwg: Br1_PP_Sheet 2_Save_Date: 8/6/2014 10:21 AM: Plot_Date: 8/6/2014 10:40 AM: (dmcalpine)

- WORK TYPE KEY**
- ① NO WORK REQUIRED.
 - ② EXCAVATE CHANNEL. PLACE SPOIL AT TOP OF BANK. NO TREE REMOVAL REQUIRED.
 - ③ EXCAVATE CHANNEL. CLEAR TREES & BRUSH. PLACE SPOIL AND TREES AND BRUSH AT TOP OF BANK.
 - ④ EXCAVATE CHANNEL. CLEAR TREES & BRUSH. CHIP TREES & BRUSH AND PLACE AT TOP OF BANK.
 - ⑤ NO EXCAVATION. CLEAR TREES & BRUSH AND PLACE AT TOP OF BANK.
 - ⑥ NO EXCAVATION. CLEAR TREES & BRUSH. CHIP TREES AND BRUSH AND PLACE AT TOP OF BANK.
 - ⑦ REPLACE EXISTING CULVERT.
 - ⑧ EXCAVATE NEW CHANNEL. CLEAR TREES & BRUSH. PLACE SPOIL AND DEBRIS AT TOP OF BANK.
 - Ⓜ DITCH ACCESS AND SPOIL PLACEMENT—RIGHT LOOKING UPSTREAM
 - Ⓛ DITCH ACCESS AND SPOIL PLACEMENT—LEFT LOOKING UPSTREAM



894.06 893.23	894.20 893.23	893.90 893.23	894.33 893.23	894.25 893.23	893.91 893.23	893.25 893.23	893.21 893.23	893.80 893.23	899.91 893.23	900.21 893.25	892.46 893.27	892.11 893.29	891.98 893.31	891.77 893.33	899.34 893.35	894.32 893.37	894.65 893.39	894.91 893.41	894.31 893.43	893.72 893.45	893.90 893.47	893.52 893.49	893.92 893.51	894.09 893.53	894.15 893.55	893.94 893.57	894.05 893.59	893.86 893.61	893.81 893.63	893.71 893.65
27+00		30+00			35+00			40+00			45+00			50+00			55+00			57+00										

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signature: Nancy Stowe Date: 8/6/14

Printed Name: Nancy Stowe License #: 48259



Maple Grove
 Drawn by: DJL
 Date: 5-8-14
 Checked by: DM
 Scale: AS SHOWN

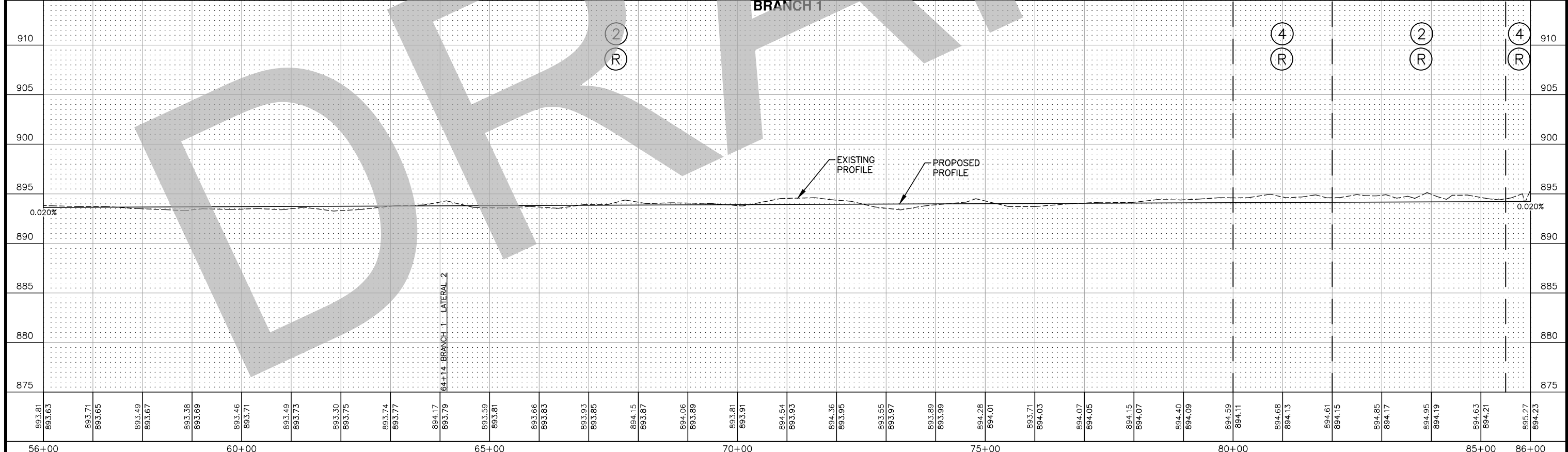
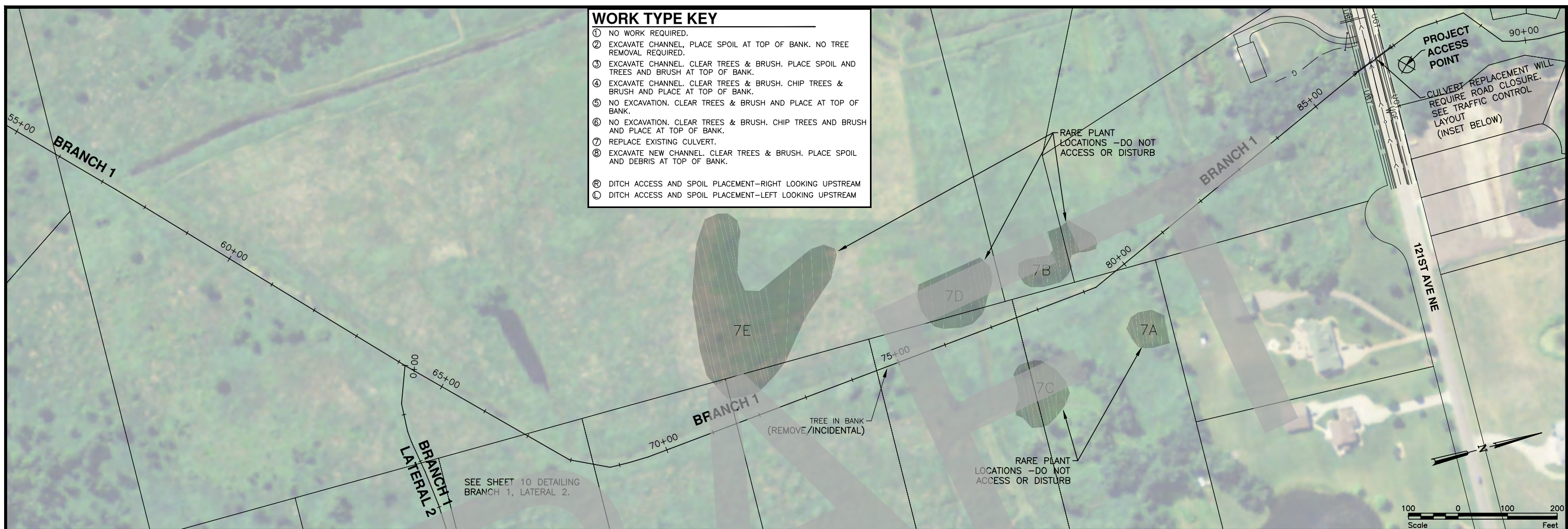
ACD 53-62
 BRANCH 1 REPAIR PROJECT
 BLAINE, MN
 RICE CREEK WATERSHED DISTRICT

PLAN AND PROFILE
 BRANCH 1
 STA 28+00 TO STA 57+00
 PROJECT NO. 5555-205

SHEET
 3 of 49

S:\5555-205 ACD 53_62 Repair Project Branch 1\CAD\final_Construction\5555205-PP_Br1_Final.dwg: Br1_PP_Sheet 3_Save_Date: 8/6/2014 10:21:AM: Plot_Date: 8/6/2014 10:40:AM: (dm:ncpl:me)

- WORK TYPE KEY**
- ① NO WORK REQUIRED.
 - ② EXCAVATE CHANNEL, PLACE SPOIL AT TOP OF BANK. NO TREE REMOVAL REQUIRED.
 - ③ EXCAVATE CHANNEL. CLEAR TREES & BRUSH. PLACE SPOIL AND TREES AND BRUSH AT TOP OF BANK.
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 - ⑥ NO EXCAVATION. CLEAR TREES & BRUSH. CHIP TREES AND BRUSH AND PLACE AT TOP OF BANK.
 - ⑦ REPLACE EXISTING CULVERT.
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 - Ⓡ DITCH ACCESS AND SPOIL PLACEMENT—RIGHT LOOKING UPSTREAM
 - Ⓢ DITCH ACCESS AND SPOIL PLACEMENT—LEFT LOOKING UPSTREAM



893.81	893.63	893.71	893.65	893.49	893.67	893.38	893.69	893.46	893.71	893.49	893.73	893.30	893.75	893.74	893.77	894.17	893.79	893.59	893.81	893.66	893.83	893.93	893.85	894.15	893.87	894.06	893.89	893.81	893.91	894.54	893.93	894.36	893.95	893.55	893.97	893.89	893.99	894.28	894.01	893.71	894.03	894.07	894.05	894.15	894.07	894.40	894.09	894.59	894.11	894.68	894.13	894.61	894.15	894.85	894.17	894.95	894.19	894.63	894.21	895.27	894.23
56+00	60+00				65+00				70+00				75+00				80+00				85+00				86+00																																				

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Signature: _____ Date: _____
 Printed Name: Nancy Stowe License #: 48259



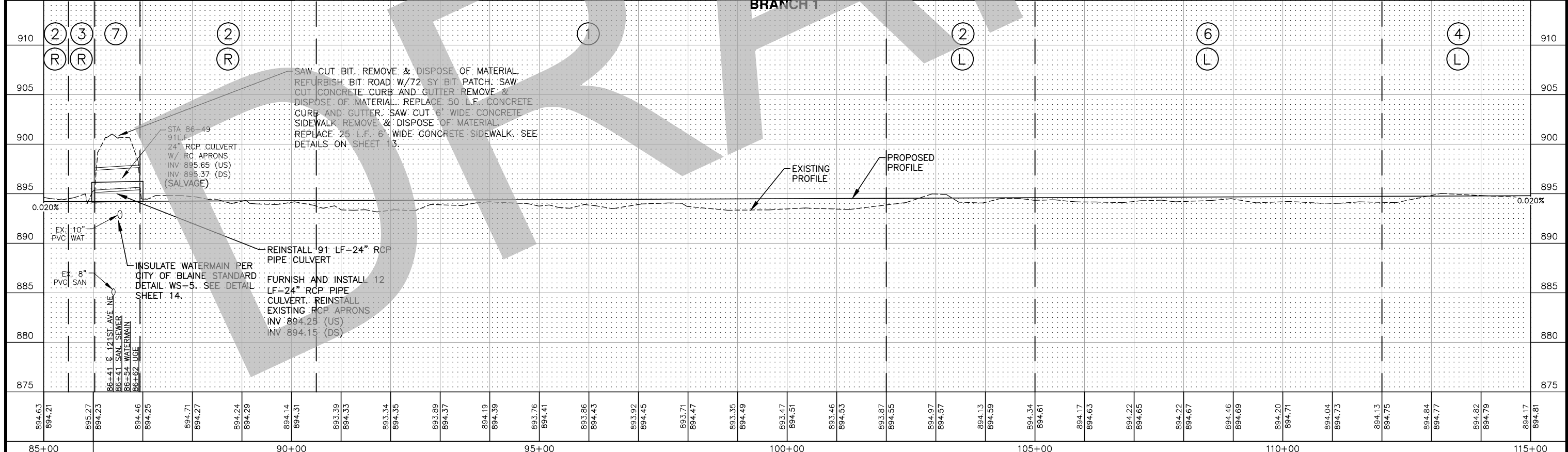
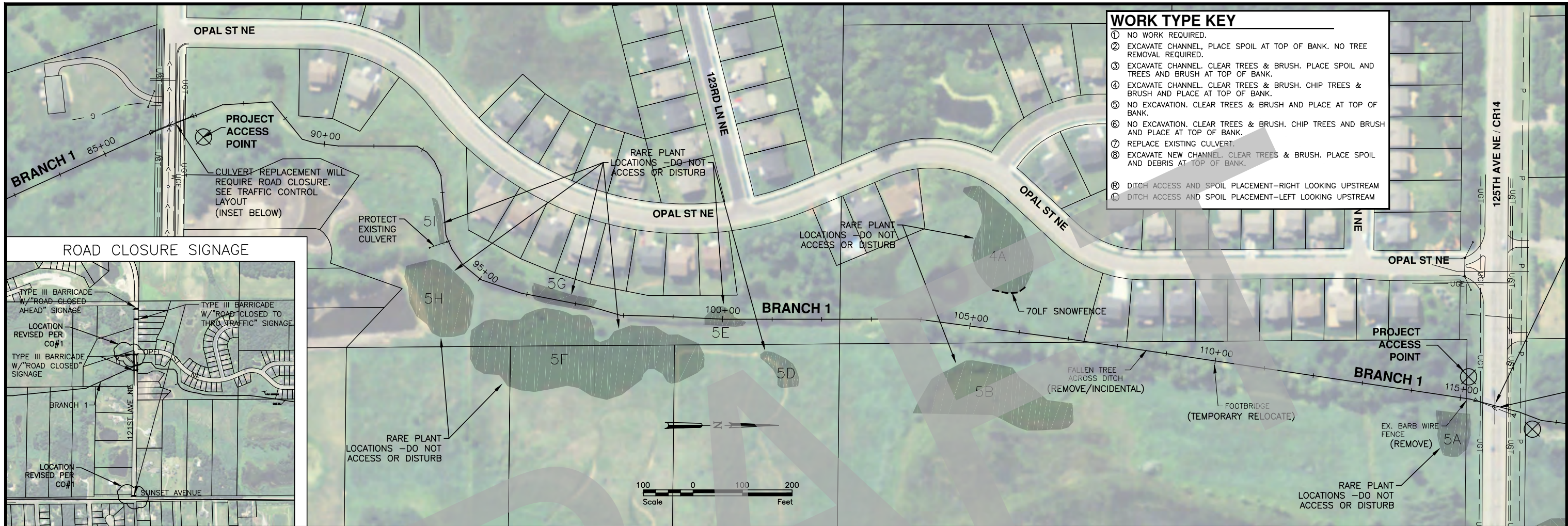
Maple Grove
 Drawn by DJL Date 5-8-14
 Checked by DM Scale AS SHOWN

ACD 53-62
 BRANCH 1 REPAIR PROJECT
 BLAINE, MN
 RICE CREEK WATERSHED DISTRICT

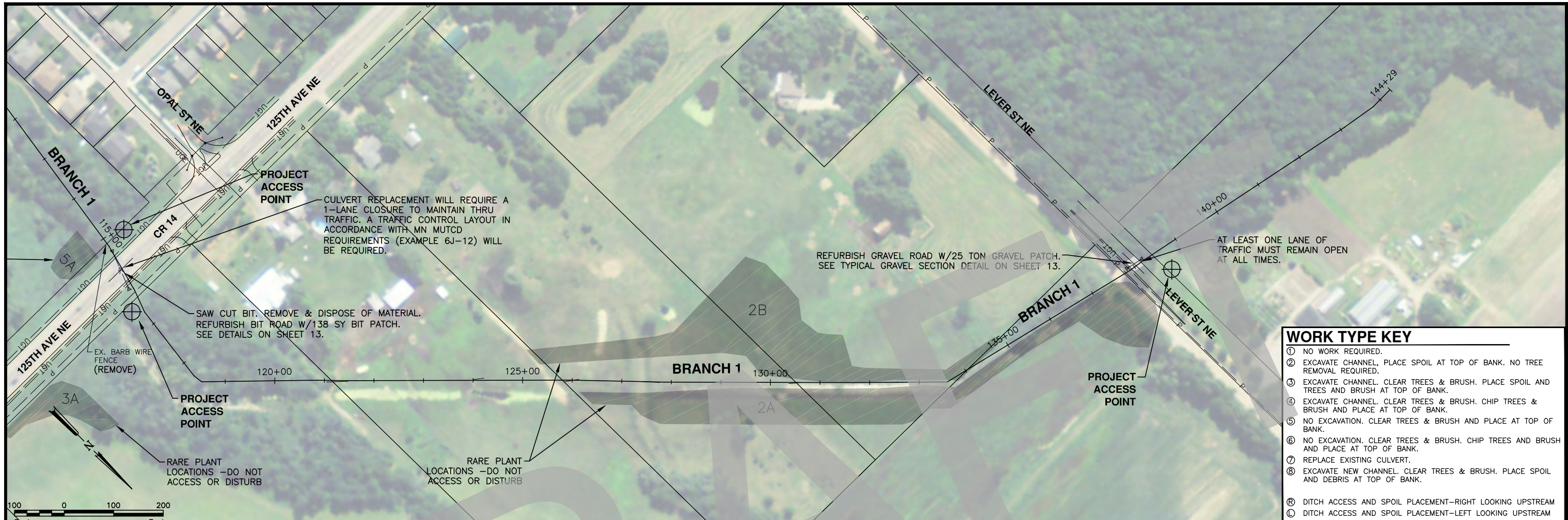
PLAN AND PROFILE
 BRANCH 1
 STA 57+00 TO STA 86+00
 PROJECT NO. 5555-205

SHEET
 4 of 50

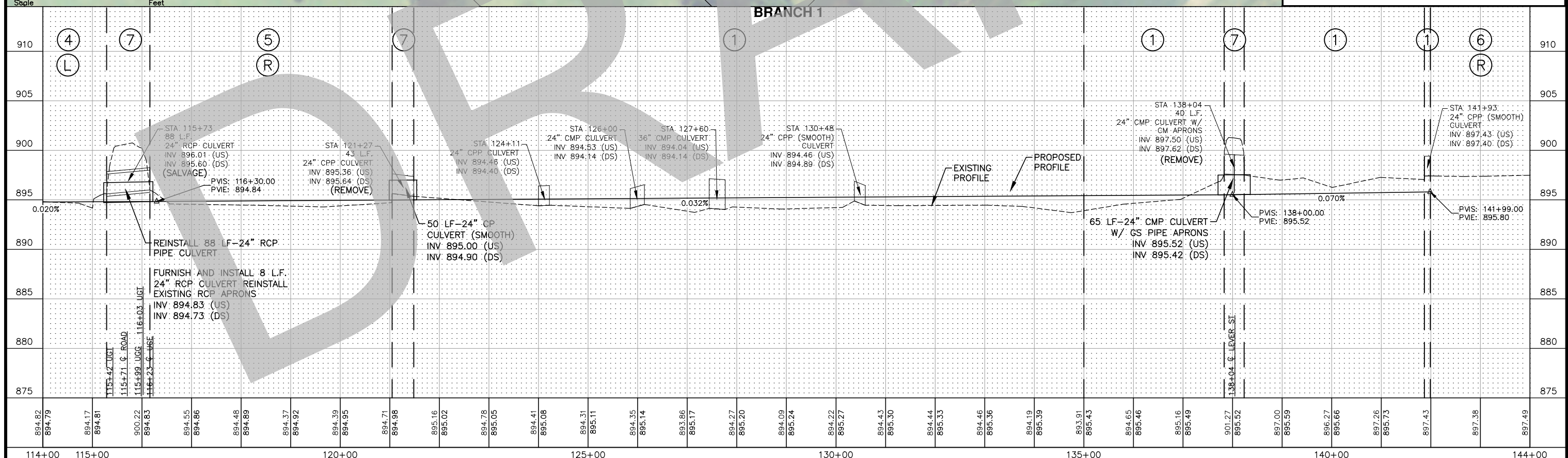
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85+00		90+00										95+00										100+00										105+00										110+00										115+00									



WORK TYPE KEY	
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894.82	894.79	894.17	894.81	900.22	894.83	894.55	894.86	894.48	894.89	894.37	894.92	894.39	894.95	894.71	894.98	895.16	895.02	894.78	895.05	894.41	895.08	894.31	895.11	894.35	895.14	893.86	895.17	894.27	895.20	894.09	895.24	894.22	895.27	894.43	895.30	894.44	895.33	894.46	895.36	894.19	895.39	893.91	895.43	894.65	895.46	895.16	895.49	901.27	895.52	897.00	895.59	896.27	895.66	897.26	895.73	897.43	897.38	897.49
114+00	115+00			120+00				125+00				130+00				135+00				140+00			144+00																																			

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Signature: _____ Date: _____
 Printed Name: Nancy Stowe License #: 48259



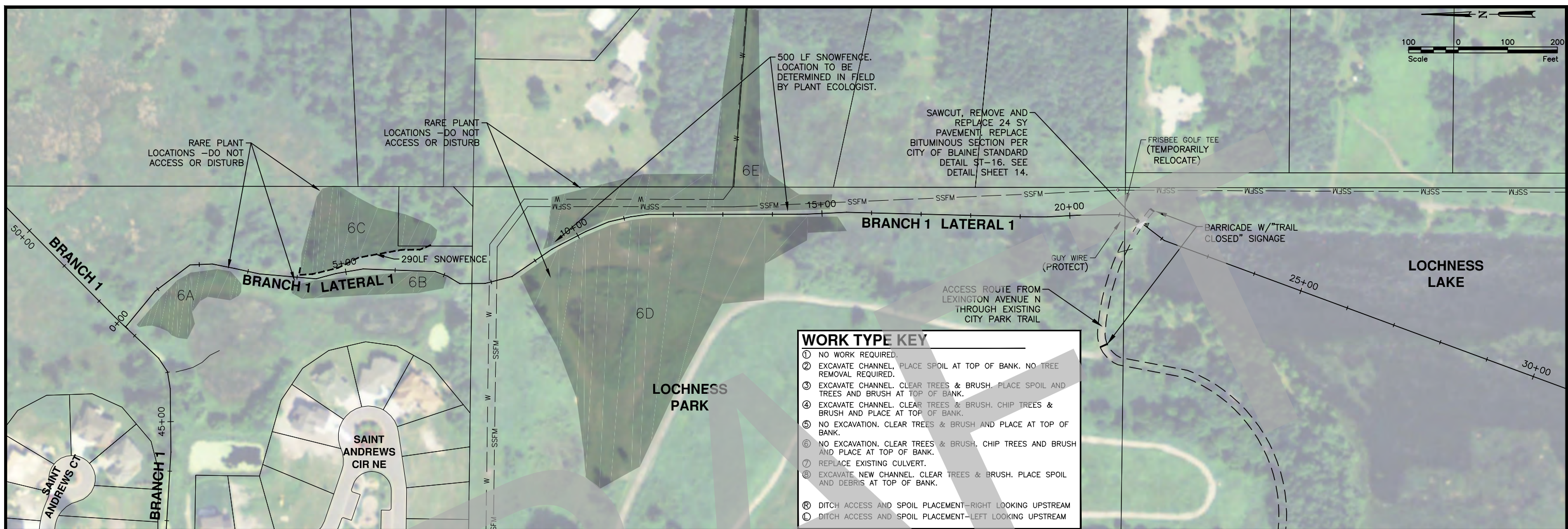
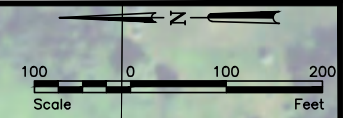
Maple Grove
 Drawn by DJL Date 5-8-14
 Checked by DM Scale AS SHOWN

ACD 53-62
 BRANCH 1 REPAIR PROJECT
 BLAINE, MN
 RICE CREEK WATERSHED DISTRICT

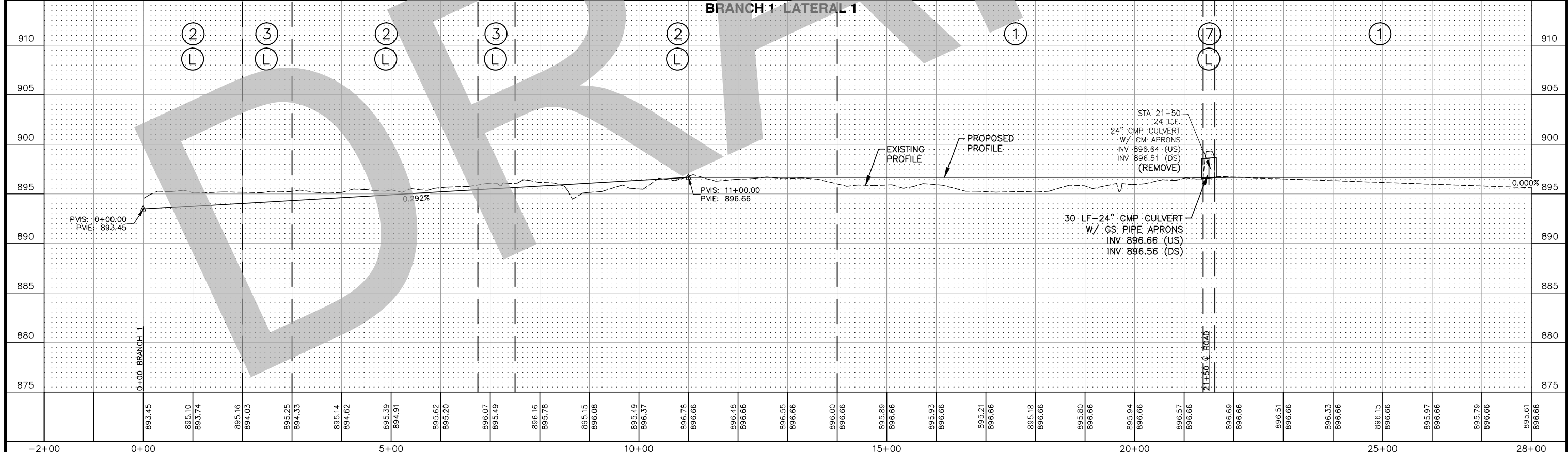
PLAN AND PROFILE
 BRANCH 1
 STA 86+00 TO STA 115+00
 PROJECT NO. 5555-205

SHEET
 6 of 52

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- WORK TYPE KEY**
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No.	Revision	Date	By	Signature:	Date:	Printed Name:	License #:
1	TRAFFIC CONTROL MODS & RARE PLANT AVOIDANCE PER CO#1	8/6/14	DDM	Nancy Stowe		Nancy Stowe	48259



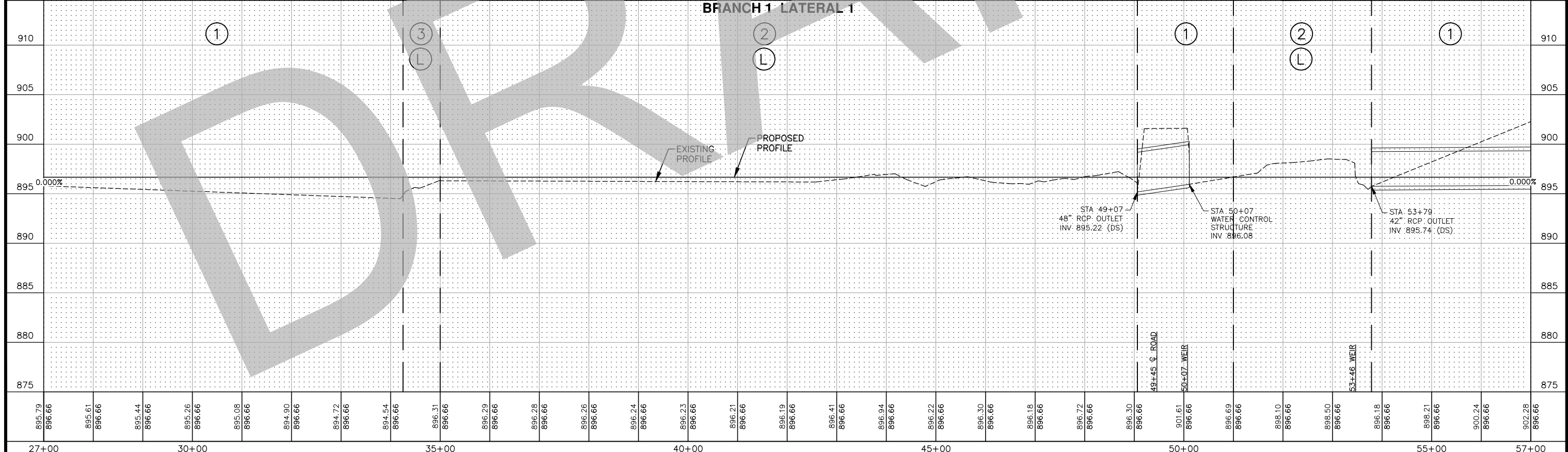
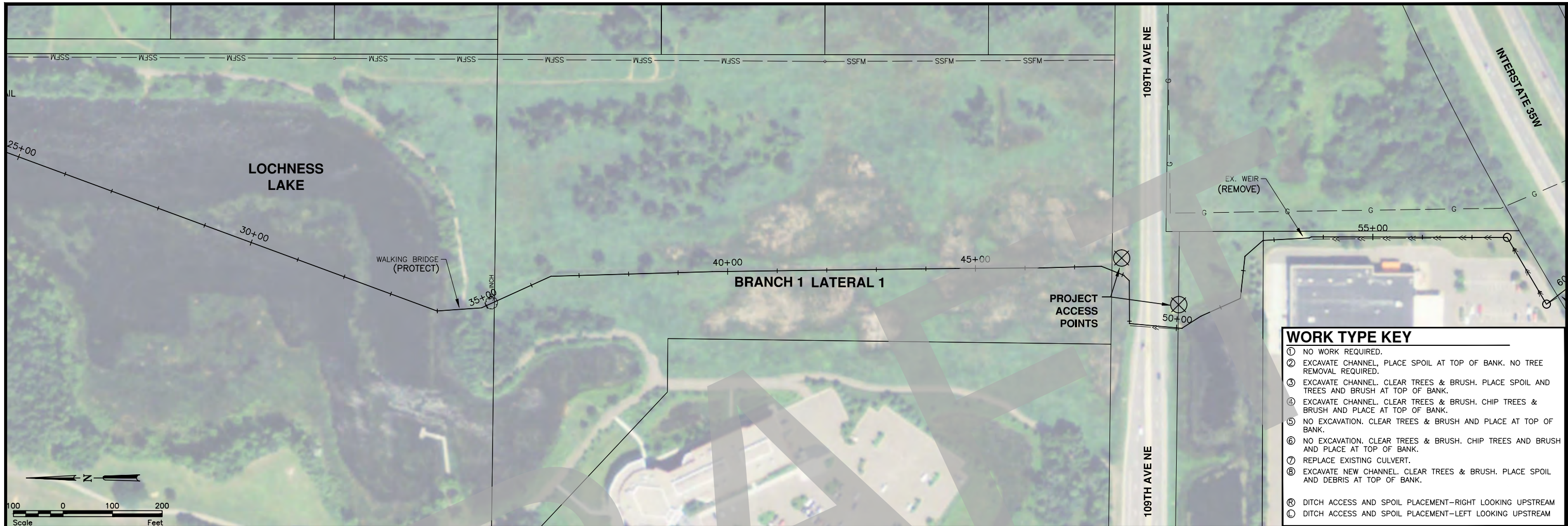
Maple Grove
 Drawn by DJL
 Date 5-8-14
 Checked by DM
 Scale AS SHOWN

ACD 53-62
 BRANCH 1 REPAIR PROJECT
 BLAINE, MN
 RICE CREEK WATERSHED DISTRICT

PLAN AND PROFILE
 BRANCH 1 LATERAL 1
 STA 0+00 TO STA 28+00
 PROJECT NO. 5555-205

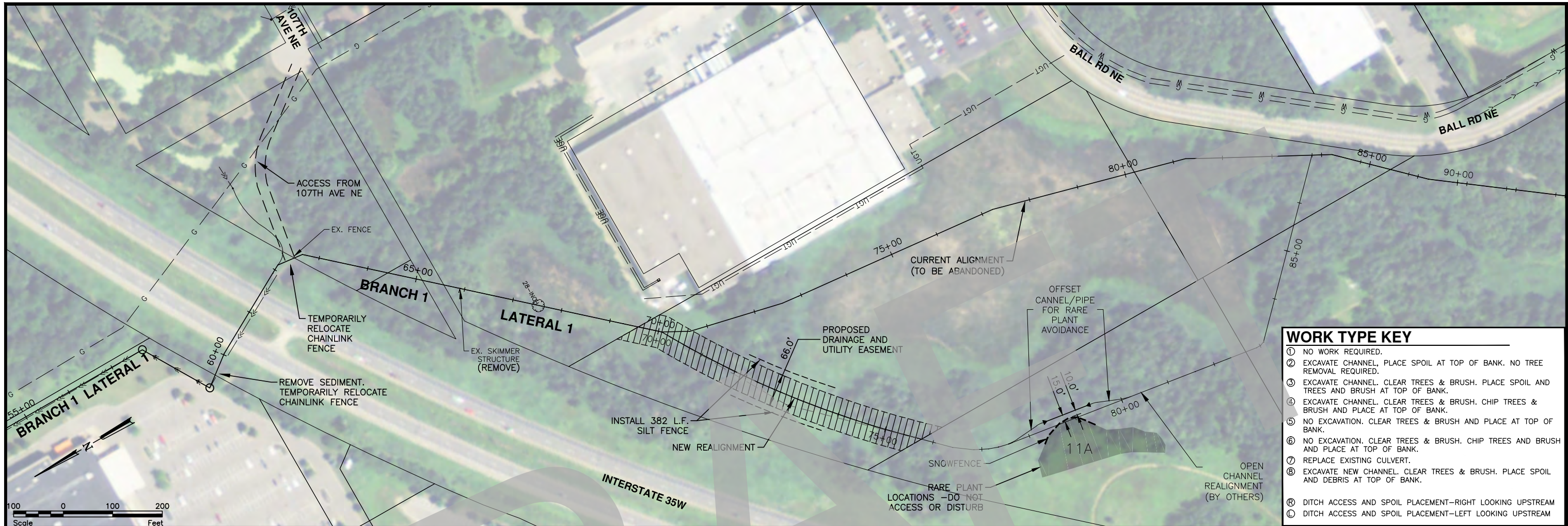
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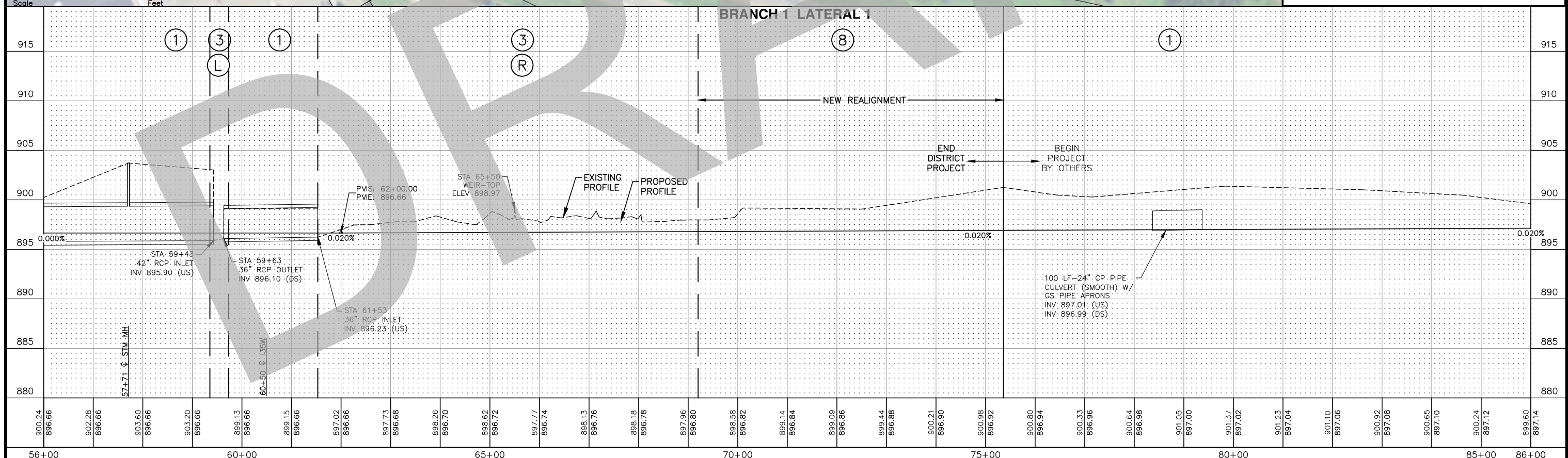


I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. Signature: _____ Date: _____ Printed Name: Nancy Stowe License #: 48259						Maple Grove P: 763.493.4522 F: 763.493.5572	
Drawn by: DJL Date: 5-8-14		Checked by: DM Scale: AS SHOWN		ACD 53-62 BRANCH 1 REPAIR PROJECT BLAINE, MN RICE CREEK WATERSHED DISTRICT		PLAN AND PROFILE BRANCH 1 LATERAL 1 STA 28+00 TO STA 57+00 PROJECT NO. 5555-205	
						SHEET 8 of 54	

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Ⓛ	DITCH ACCESS AND SPOIL PLACEMENT—LEFT LOOKING UPSTREAM



900.24 896.66	902.28 896.66	903.60 896.66	903.20 896.66	899.13 896.66	899.15 896.66	897.02 896.66	897.73 896.68	898.26 896.70	898.62 896.72	897.77 896.74	898.13 896.76	898.18 896.78	897.96 896.80	898.58 896.82	899.14 896.84	899.09 896.86	899.44 896.88	900.21 896.90	900.98 896.92	900.80 896.94	900.33 896.96	900.64 896.98	901.05 897.00	901.37 897.02	901.23 897.04	901.10 897.06	900.92 897.08	900.65 897.10	900.24 897.12	899.60 897.14
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Maple Grove
 Drawn by DJL Date 5-8-14
 Checked by DM Scale AS SHOWN

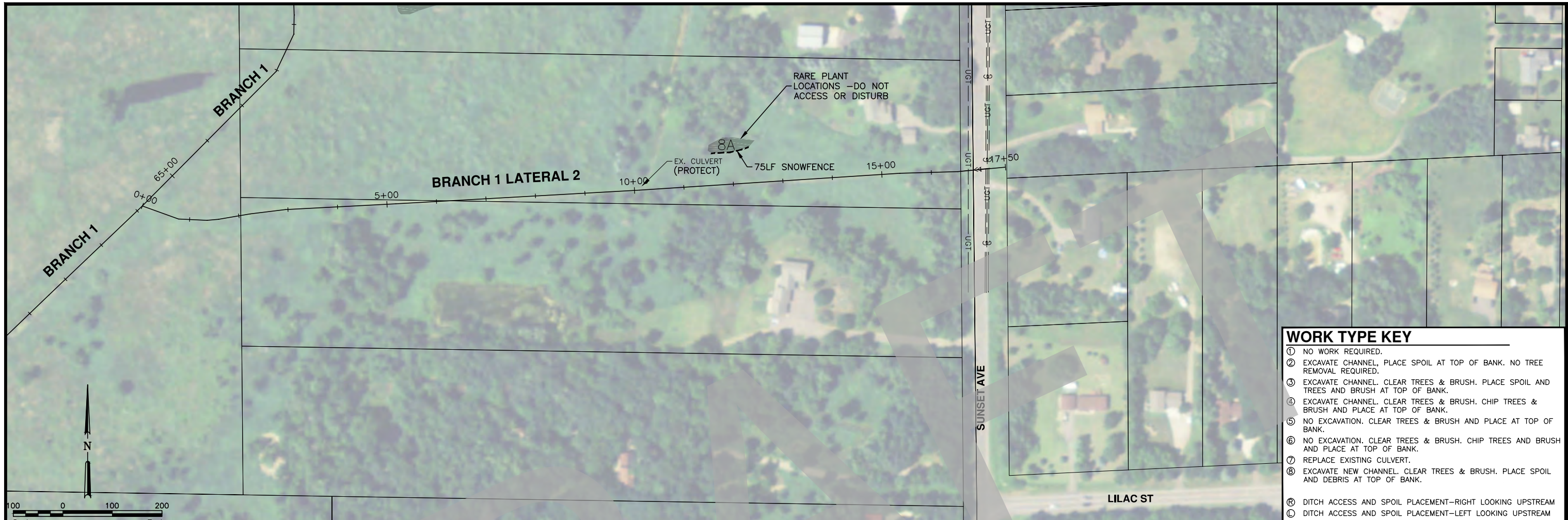
ACD 53-62
 BRANCH 1 REPAIR PROJECT
 BLAINE, MN
 RICE CREEK WATERSHED DISTRICT

PLAN AND PROFILE
 BRANCH 1 LATERAL 1
 STA 57+00 TO STA 86+00
 PROJECT NO. 5555-205

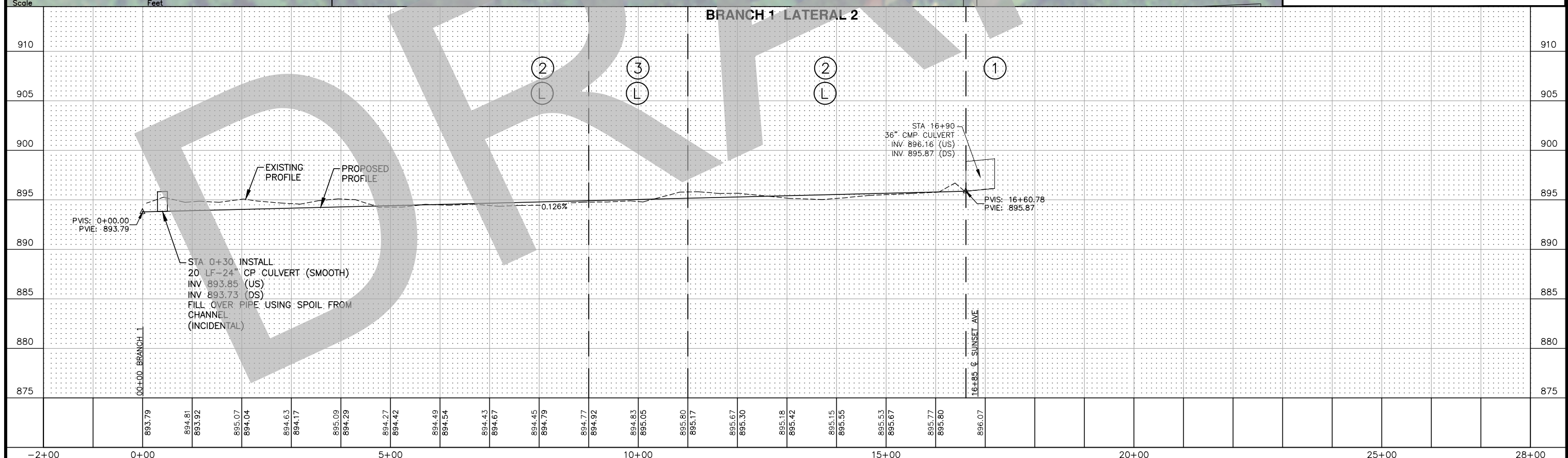
SHEET
 9 of 55

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WORK TYPE KEY	
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-2+00		0+00		5+00		10+00		15+00		20+00		25+00		28+00	
		893.79		894.81 893.92		895.07 894.04		894.63 894.17		895.09 894.29		894.27 894.42		894.49 894.54	
		894.43 894.67		894.45 894.79		894.77 894.92		894.83 895.05		895.80 895.17		895.67 895.30		895.18 895.42	
		895.15 895.55		895.53 895.67		895.77 895.80		896.07							

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signature: _____ Date: _____
 Printed Name: Nancy Stowe License #: 48259

Houston Engineering Inc.

Maple Grove
 Drawn by DJL Date 5-8-14
 Checked by DM Scale AS SHOWN

ACD 53-62
 BRANCH 1 REPAIR PROJECT
 BLAINE, MN
 RICE CREEK WATERSHED DISTRICT

PLAN AND PROFILE
 BRANCH 1 LATERAL 2
 STA 0+00 TO STA 28+00
 PROJECT NO. 5555-205

SHEET
 10 of 56

STORM WATER POLLUTION PREVENTION PLAN

THE MINNESOTA GENERAL PERMIT AUTHORIZATION TO DISCHARGE STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY ISSUED ON AUGUST 1, 2013 SHALL APPLY FOR THIS PROJECT.

NARRATIVE

PROJECT LIMITS:

THE ANOKA COUNTY DITCH 53-62 DITCH MAINTENANCE PROJECT IN THE CITY OF BLAINE WILL ENTAIL WORK ON THE FOLLOWING SEGMENTS OF THE PUBLIC DRAINAGE SYSTEM, INCLUDING: 1) BRANCH 1; 2) BRANCH 1, LATERAL 1; 3) BRANCH 1 LATERAL 2. THE WORK WILL BE CONFINED TO A CORRIDOR AS SHOWN IN THE CONSTRUCTION PLANS FOR THE PROJECT.

SITE DESCRIPTION

PROJECT DESCRIPTION:

THE ANOKA COUNTY DITCH 53-62 DITCH MAINTENANCE PROJECT IN THE CITY OF BLAINE WILL GENERALLY CONSIST OF REMOVING (EXCAVATING) ACCUMULATED SEDIMENT IN THE CHANNEL BOTTOM, RE-SETTING CULVERTS THAT ARE EITHER DAMAGED OR ABOVE PROFILE AND REMOVING EXCESSIVE VEGETATION TO ALLOW FOR FUTURE MAINTENANCE OPERATIONS.

SITE MAP(S): SEE COVER SHEET MAPS AND THE PLAN & PROFILE SHEETS.

MAJOR SOIL DISTURBING ACTIVITIES:

- CLEARING AND GRUBBING
- CUTTING AND FILLING

TOTAL AREA TO BE DISTURBED (ACRES): 14.0

EXISTING IMPERVIOUS AREA (ACRES): 0

PROPOSED IMPERVIOUS AREA (ACRES): 0

NAME OF RECEIVING WATER BODY/BODIES: ANOKA COUNTY DITCH 53-62 MAIN TRUNK

DISCHARGES TO SPECIAL OR IMPAIRED WATERS: THE PROJECT DOES NOT HAVE A DISCHARGE POINT WITHIN 1 MILE OF IMPAIRED WATER.

DISCHARGES TO CALCAREOUS FEN: THE PROJECT DOES NOT HAVE A DISCHARGE TO A CALCAREOUS FEN.

ENDANGERED OR THREATENED SPECIES:

HISTORIC PLACES OR ARCHEOLOGICAL SITES:

QUANTITIES TABULATION FOR ALL BMPS: SEE THIS SHEET FOR QUANTITY SCHEDULE AND THE PLAN & PROFILE SHEETS.

DESIGN OF CONSTRUCTION SWPPP

DESIGN OF CONSTRUCTION SWPPP COMPLETED BY:

DOUGLAS J. LITTERER
2012-2013 EROSION AND STORMWATER MANAGEMENT CERTIFICATION
CERTIFICATION DATE: OCTOBER 30, 2012

ORDER OF CONSTRUCTION ACTIVITIES

INSTALL EROSION AND SEDIMENT CONTROL MEASURES.

PROCEED WITH CLEARING TREES AND BRUSH.

PROCEED WITH DITCH EXCAVATING AND SPOILING SOIL ON TOP OF BANK.

STABILIZE AREAS DISTURBED BY DITCH MAINTENANCE WITH TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES.

COMPLETE DITCH MAINTENANCE WITH PERMANENT EROSION AND SEDIMENT CONTROL MEASURES.

LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN

SEE THIS SHEET, DETAILS SHEET AND PLAN & PROFILE SHEETS IN THE PLANS.

EROSION AND SEDIMENT CONTROLS

STABILIZATION PRACTICES:

- TEMPORARY OR PERMANENT SEEDING
- MULCHING (STRAW OR CELLULOSE FIBER)
- EROSION CONTROL BLANKETS OR MATS

STRUCTURAL TEMPORARY EROSION AND SEDIMENT CONTROLS:

- SILT FENCE
- FLOTATION SILT CURTAIN

WETLAND AVOIDANCE

WILL CONSTRUCTION AND/OR EROSION AND SEDIMENT CONTROLS IMPINGE ON REGULATED WETLANDS? NO

STORM WATER MANAGEMENT

STORM WATER MANAGEMENT WILL BE HANDLED BY TEMPORARY CONTROLS OUTLINED IN "EROSION AND SEDIMENT CONTROLS" ABOVE.

POLLUTION PREVENTION MANAGEMENT MEASURES

- SOLID WASTE**
COLLECTED SEDIMENT, ASPHALT AND CONCRETE MILLINGS, FLOATING DEBRIS, PAPER, PLASTIC, FABRIC, CONSTRUCTION AND DEMOLITION DEBRIS AND OTHER WASTES MUST BE DISPOSED OF PROPERLY AND MUST COMPLY WITH MPCA DISPOSAL REQUIREMENTS.
- HAZARDOUS MATERIALS AND VEHICLE FUELING**
OIL, GASOLINE, PAINT AND ANY HAZARDOUS SUBSTANCES MUST BE PROPERLY STORED, INCLUDING SECONDARY CONTAINMENT, TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE. RESTRICTED ACCESS TO STORAGE AREAS MUST BE PROVIDED TO PREVENT VANDALISM. VEHICLE FUELING MUST BE CONDUCTED IN CONTAINED AREA UNLESS INFEASIBLE. CLEAN UP, STORAGE AND DISPOSAL OF HAZARDOUS WASTE MUST BE IN COMPLIANCE WITH MPCA REGULATIONS.
- VEHICLE WASHING**
EXTERNAL WASHING OF TRUCKS AND OTHER CONSTRUCTION VEHICLES MUST BE LIMITED TO A DEFINED AREA OF THE SITE. RUNOFF MUST BE CONTAINED AND WASTE PROPERLY DISPOSED OF. NO ENGINE DEGREASING IS ALLOWED ON SITE.
- CONCRETE AND OTHER WASHOUT ONSITE**
ALL LIQUID AND SOLID WASTES GENERATED BY CONCRETE AND OTHER WASHOUT OPERATIONS MUST BE CONTAINED IN A LEAK-PROOF CONTAINMENT FACILITY OR IMPERMEABLE LINER. THE LIQUID AND SOLID WASTES MUST NOT CONTACT THE GROUND, AND THERE MUST NOT BE RUNOFF FROM THE CONCRETE WASHOUT OPERATIONS OR AREAS. LIQUID AND SOLID WASTES MUST BE DISPOSED OF PROPERLY AND IN COMPLIANCE WITH MPCA REGULATIONS. A SIGN MUST BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY TO INFORM CONCRETE EQUIPMENT OPERATORS TO UTILIZE THE PROPER FACILITIES.

MAINTENANCE AND INSPECTION

MAINTENANCE AND INSPECTION PRACTICES

- INSPECTIONS WILL BE CONDUCTED AT LEAST ONE TIME PER WEEK AND WITHIN 24 HOURS AFTER A STORM EVENT GREATER THAN 0.50 INCHES IN 24 HOURS.
- ALL CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER. NECESSARY REPAIRS WILL BE INITIATED WITHIN 24 HOURS OF THE SITE INSPECTION REPORT OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.
- WHERE WORK HAS BEEN SUSPENDED DUE TO FROZEN GROUND CONDITIONS, THE REQUIRED INSPECTIONS AND MAINTENANCE MUST TAKE PLACE WITHIN 24 HOURS AFTER RUNOFF OCCURS AT THE SITE OR PRIOR TO RESUMING CONSTRUCTION, WHICHEVER COMES FIRST.
- WHERE PARTS OF THE CONSTRUCTION SITE HAVE UNDERGONE FINAL STABILIZATION, BUT WORK REMAINS ON OTHER PARTS OF THE SITE, INSPECTIONS OF THE STABILIZED AREAS MAY BE REDUCED TO ONCE PER MONTH.
- SILT FENCE WILL BE INSPECTED FOR DEPTH OF SEDIMENT AND FOR TEARS IN ORDER TO ENSURE THE FABRIC IS SECURELY ATTACHED TO THE POSTS AND THAT THE POSTS ARE WELL ANCHORED. SEDIMENT BUILDUP WILL BE REMOVED FROM THE SILT FENCE WHEN IT REACHES ONE-HALF (1/2) OF THE HEIGHT OF THE SILT FENCE. ALL SILT FENCES MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES ONE-HALF (1/2) OF THE HEIGHT OF THE FENCE.
- SEDIMENT BASINS AND TRAPS WILL BE CHECKED. SEDIMENT WILL BE REMOVED WHEN DEPTH REACHES APPROXIMATELY 50 PERCENT OF THE STRUCTURE'S CAPACITY.
- CHECK DAMS WILL BE INSPECTED FOR STABILITY. SEDIMENT WILL BE REMOVED WHEN DEPTH REACHES ONE-HALF (1/2) THE HEIGHT OF THE DAM.
- ALL SEEDED AREAS WILL BE CHECKED FOR BARE SPOTS, WASHOUTS, AND VIGOROUS GROWTH FREE OF SIGNIFICANT WEED INFESTATIONS.
- SURFACE WATERS, INCLUDING DRAINAGE DITCHES AND CONVEYANCE SYSTEMS, MUST BE INSPECTED FOR EVIDENCE OF SEDIMENT BEING DEPOSITED BY EROSION.
- CONSTRUCTION SITE VEHICLE EXIT LOCATIONS MUST BE INSPECTED FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING ONTO PAVED SURFACES. TRACKED SEDIMENT MUST BE REMOVED FROM ALL OFF-SITE PAVED SURFACES WITHIN 24 HOURS OF DISCOVERY.
- DISTURBED AREAS WILL BE CHECKED FOR STABILIZATION. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE, BUT IN NO CASE LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
- THE NORMAL WETTED PERIMETER OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH OR SWALE THAT DRAINS WATER FROM ANY PORTION OF THE CONSTRUCTION SITE, OR DIVERTS WATER AROUND THE SITE, MUST BE STABILIZED WITHIN 200 LINEAL FEET FROM THE PROPERTY EDGE, OR FROM THE POINT OF DISCHARGE INTO ANY SURFACE WATER. STABILIZATION OF THE LAST 200 LINEAL FEET MUST BE COMPLETED WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE.
- STABILIZATION OF THE REMAINING PORTIONS OF ANY TEMPORARY OR PERMANENT DITCHES OR SWALES MUST BE COMPLETE WITHIN 14 DAYS AFTER CONNECTING TO A SURFACE WATER AND CONSTRUCTION IN THAT PORTION OF THE DITCH HAS TEMPORARILY OR PERMANENTLY CEASED.
- TEMPORARY OR PERMANENT DITCHES OR SWALES THAT ARE BEING USED AS A SEDIMENT CONTAINMENT SYSTEM (WITH PROPERLY DESIGNED ROCK DITCH CHECKS, BIO ROLLS, SILT DIKES, ETC.) DO NOT NEED TO BE STABILIZED. THESE AREAS MUST BE STABILIZED WITHIN 24 HOURS AFTER NO LONGER BEING USED AS A SEDIMENT CONTAINMENT SYSTEM.
- PIPE OUTLETS MUST BE PROVIDED WITH TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS AFTER CONNECTION TO A SURFACE WATER.
- DISCHARGE PROCEDURES FOR WATER CONTROL AND DEWATERING OPERATIONS WILL BE INSPECTED. IF THE WATER CANNOT BE DISCHARGED TO A SEDIMENTATION BASIN PRIOR TO ENTERING THE SURFACE WATER, IT MUST BE TREATED WITH THE APPROPRIATE BMPS, SUCH THAT THE DISCHARGE DOES NOT ADVERSELY AFFECT THE RECEIVING WATER OR DOWNSTREAM LANDOWNERS.
- INSPECTION AND MAINTENANCE REPORTS WILL BE COMPLETED AS REQUIRED BY THE PERMIT FOR EACH SITE INSPECTION, THIS FORM WILL ALSO BE USED TO DOCUMENT CHANGES TO THE SWPPP. THE REPORTS SHALL INCLUDE DATE AND AMOUNT OF RAINFALL EVENTS GREATER THAN 0.5 INCH IN 24 HOURS. A COPY OF THE COMPLETED INSPECTION FORM WILL BE FILED WITH THE SWPPP DOCUMENTS.
- THE CONTRACTOR'S SITE SUPERINTENDENT IS RESPONSIBLE FOR INSPECTIONS. MAINTENANCE AND REPAIR ACTIVITIES ARE THE RESPONSIBILITY OF THE CONTRACTOR.

SPILL NOTIFICATION

IN THE EVENT OF A SPILL, THE CONTRACTOR'S SITE SUPERINTENDENT WILL MAKE THE APPROPRIATE NOTIFICATION(S), CONSISTENT WITH THE FOLLOWING PROCEDURES:

A REPORTABLE SPILL IS A QUANTITY OF MORE THAN 5 GALLONS OF PETROLEUM WHICH MUST BE REPORTED IMMEDIATELY TO THE MPCA.

ANY SPILL OF OIL OR HAZARDOUS SUBSTANCE TO WATERS OF THE STATE MUST BE REPORTED IMMEDIATELY BY TELEPHONE TO THE MPCA.

MPCA CONTACT FOR ENVIRONMENTAL EMERGENCIES: 24 HOUR (651) 649-5451 OR (800) 422-0798

CONSTRUCTION CHANGES

WHEN CHANGES ARE MADE TO THE CONSTRUCTION PROJECT THAT WILL REQUIRE ALTERATIONS IN THE TEMPORARY EROSION CONTROLS OF THE SITE, THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) WILL BE AMENDED TO PROVIDE APPROPRIATE PROTECTION TO DISTURBED AREAS, ALL STORM WATER STRUCTURES, AND ADJACENT WATERS. THE SWPPP WILL BE RETAINED IN A DESIGNATED PLACE FOR REVIEW OVER THE COURSE OF THE PROJECT.

PROJECT CONTACTS

THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION OF THE SWPPP AND INSTALLATION, INSPECTION AND MAINTENANCE OF THE EROSION PREVENTION AND SEDIMENT CONTROL BMP'S BEFORE AND DURING CONSTRUCTION. STEVENS COUNTY IS RESPONSIBLE FOR LONG TERM OPERATION AND MAINTENANCE OF THE PERMANENT STORM WATER MANAGEMENT SYSTEM.

CONTRACTOR AND RICE CREEK WATERSHED DISTRICT CONTACT INFORMATION IS PROVIDED IN THE CONTRACT DOCUMENTS AND PROJECT SPECIFICATIONS.

EROSION AND SEDIMENT CONTROL BMP SCHEDULE		
DESCRIPTION	UNITS	QUANTITY
SEEDING & HYDRO-MULCH (P)	ACRE	13.63
SEEDING & MULCH	ACRE	0.25
SILT FENCE	LIN FT	382
EROSION CONTROL BLANKET	SQ YD	100
FLOTATION SILT CURTAIN	LIN FT	50

SEEDING NOTES:

- DISTURBED AREAS, UNLESS IDENTIFIED OTHERWISE IN THE PLANS, SHALL BE PERMANENTLY RESTORED, VIA BROAD CAST SEEDING, BY THE CONTRACTOR WITH MNDOT SEED MIX 240 PER THE FOLLOWING SCHEDULE:
 - SEED MIX 240: 75.0 LB/AC
- MULCH MATERIAL
 - STRAW - MNDOT TYPE 1, PLACED AT A RATE OF 2.0 TONS PER ACRE.
 - HYDRAULIC - MNDOT TYPE 8 (BONDED FIBER MATRIX), PLACED AT A RATE OF 4,200 POUNDS PER ACRE.

CULVERT END TREATMENT NOTE:

- CONTRACTOR SHALL PLACE EROSION CONTROL BLANKET AT CULVERT ENDS TO STABILIZE APRON TRANSITION AREAS.

S:\5555-205 ACD 53_62 Repair Project Branch 1\CD\04\Final_Construction\5555205-SWPPP-FINAL.dwg:SWPPP_Sheet 11-Drawn: Date: 5/8/2014 9:31 AM-Plot: Date: 5/8/2014 10:41 AM (dmccalpine)

No.	Revision	Date	By

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signature: _____ Date: _____
Printed Name: Nancy Stowe License #: 48259



Maple Grove
P: 763.493.4522
F: 763.493.5572

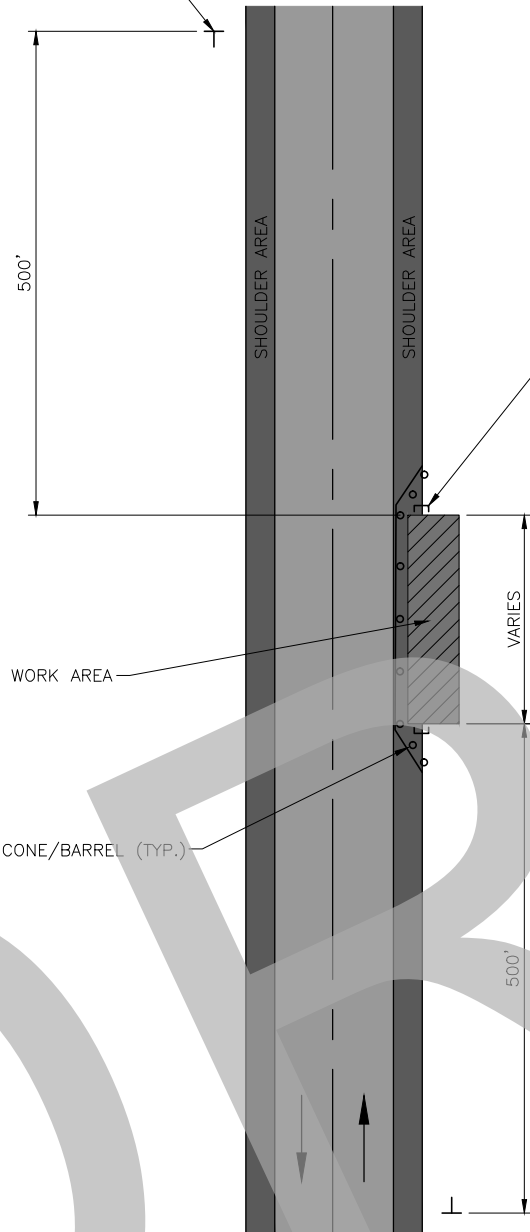
Drawn by DJL Date 5-8-14
Checked by DM Scale AS SHOWN

ACD 53-62
BRANCH 1 REPAIR PROJECT
BLAINE, MN
RICE CREEK WATERSHED DISTRICT

STORMWATER POLLUTION PREVENTION PLAN
EROSION-SEDIMENT CONTROL
PROJECT NO. 5555-205

SHEET
11 of 57

ROAD WORK AHEAD SIGN (TYP.)

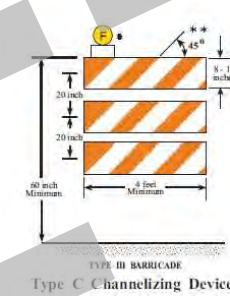


TYPE C CHANNELIZING DEVICE (TYP.)

WORK AREA

CHANNELIZING DEVICE CONE/BARREL (TYP.)

REQUIRED SIGNAGE ADJACENT ROAD SHOULDER (TYP.)



NOTES:

- * Warning lights are optional.
 - ** Rail stripe widths shall be 4 inches on barricade rail boards less than 36 inches. Rail stripe widths shall be 6 inches on barricade rail boards wider than 36 inches.
- Where traffic may approach the channelizing device from either side, the channelizing device should be reflectorized on both sides or two channelizing devices back-to-back to provide visibility.

6F.18 ROAD (STREET) WORK AHEAD Sign (W20-1)*



GUIDANCE:

The ROAD (STREET) WORK AHEAD (W20-1) sign, which serves as a general warning of obstructions or restrictions, should be located in advance of the work space or any detour, on the road where the work is taking place, and on all intersecting roadways.

Where traffic can enter a TTC zone from a crossroad or a major (high-volume) driveway, an advance warning sign should be used on the crossroad or major driveway.

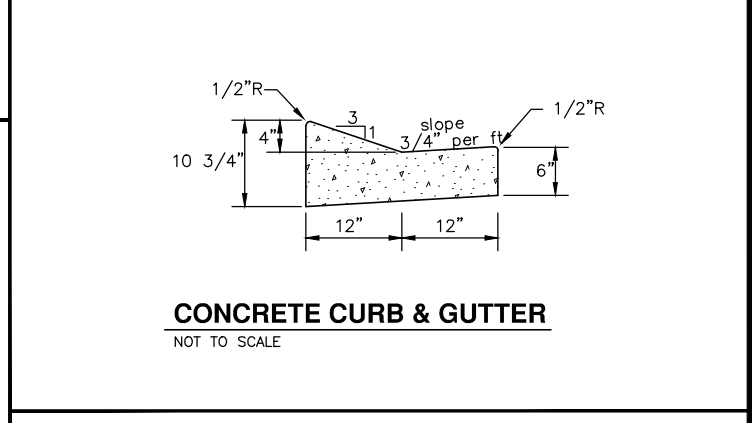
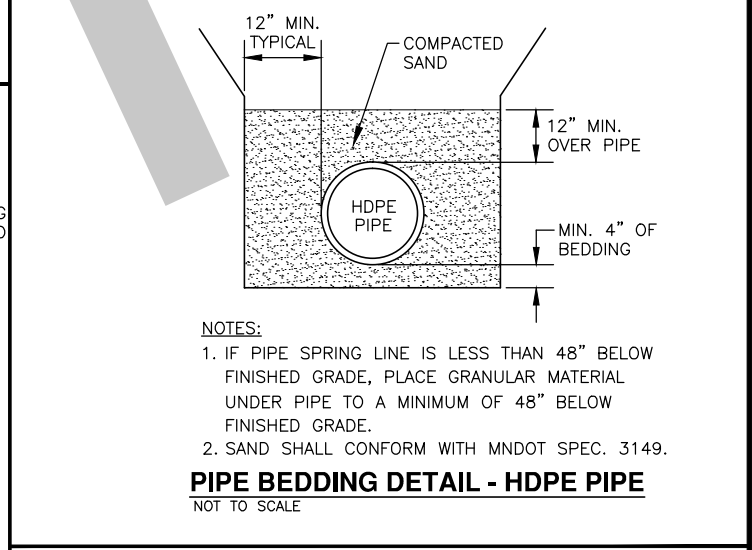
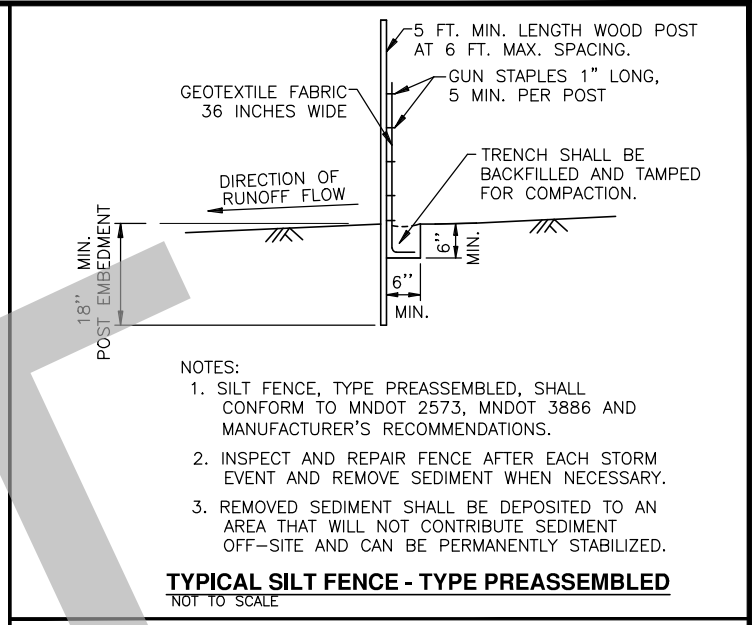
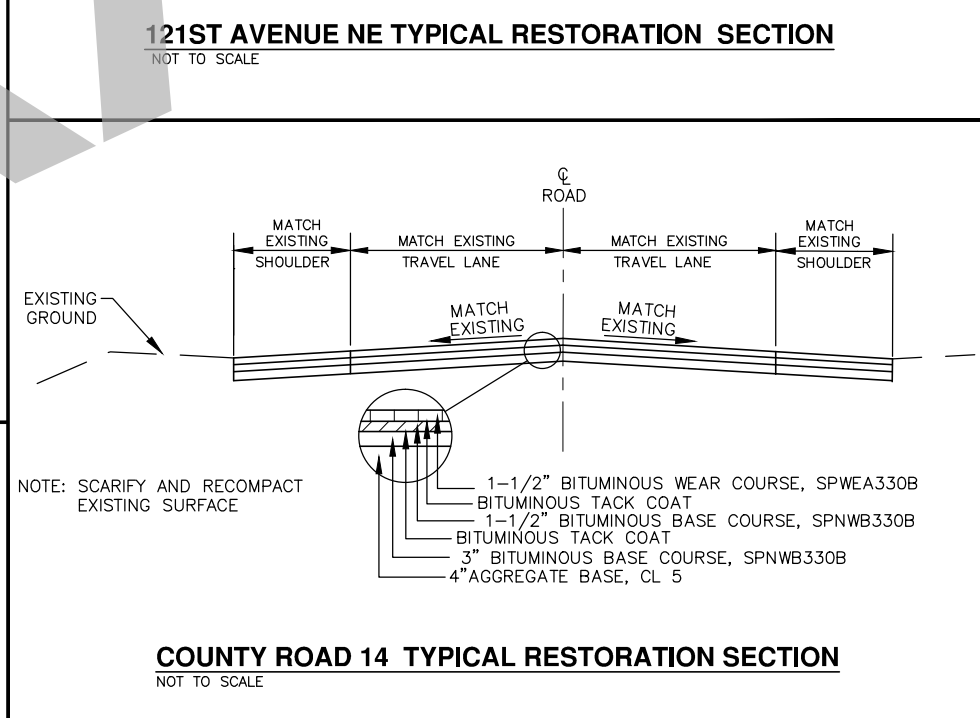
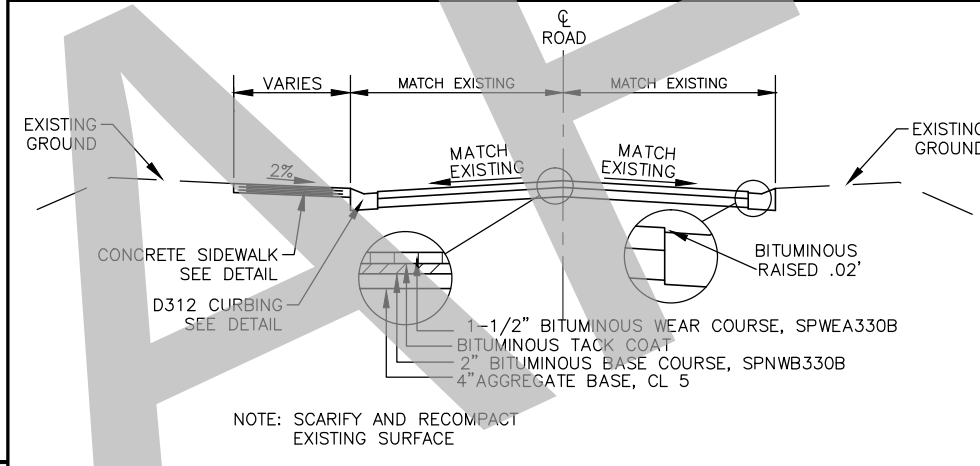
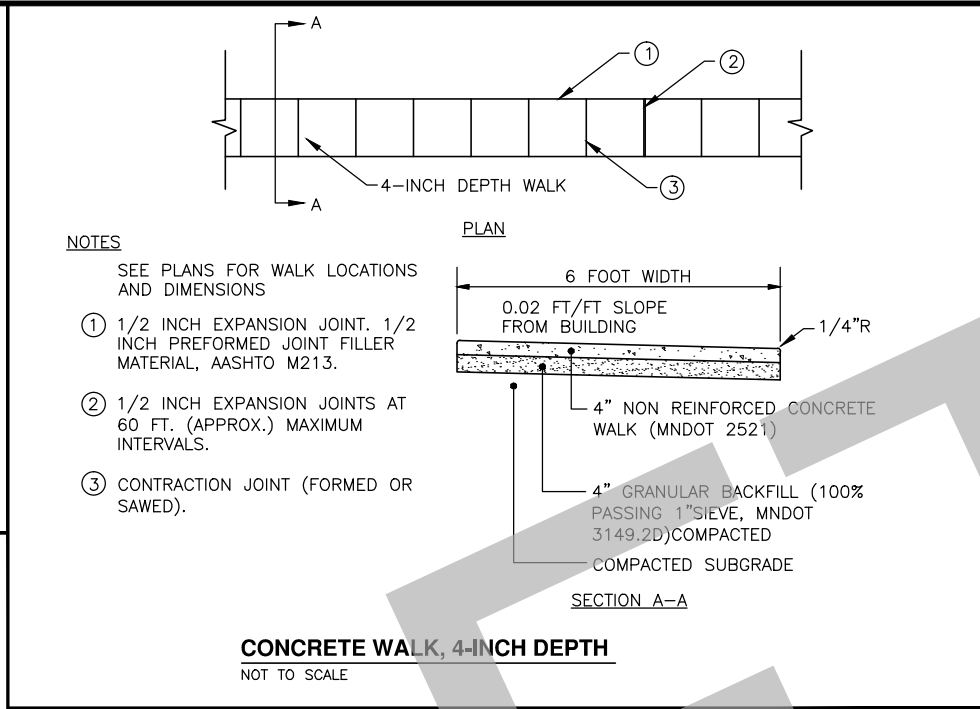
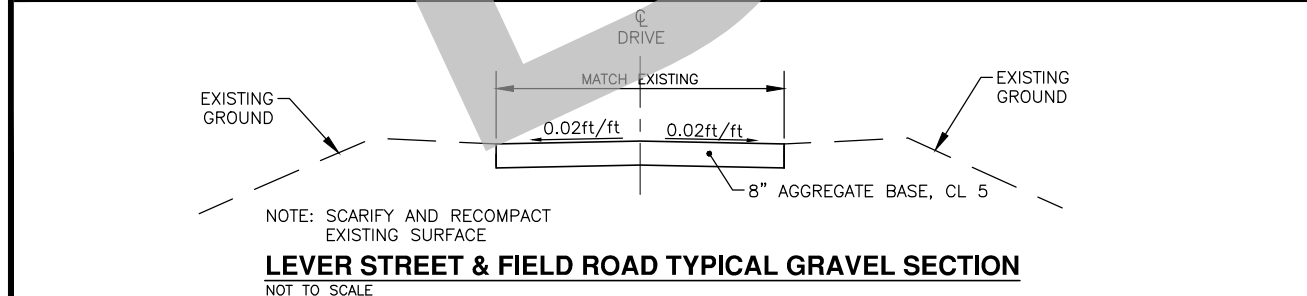
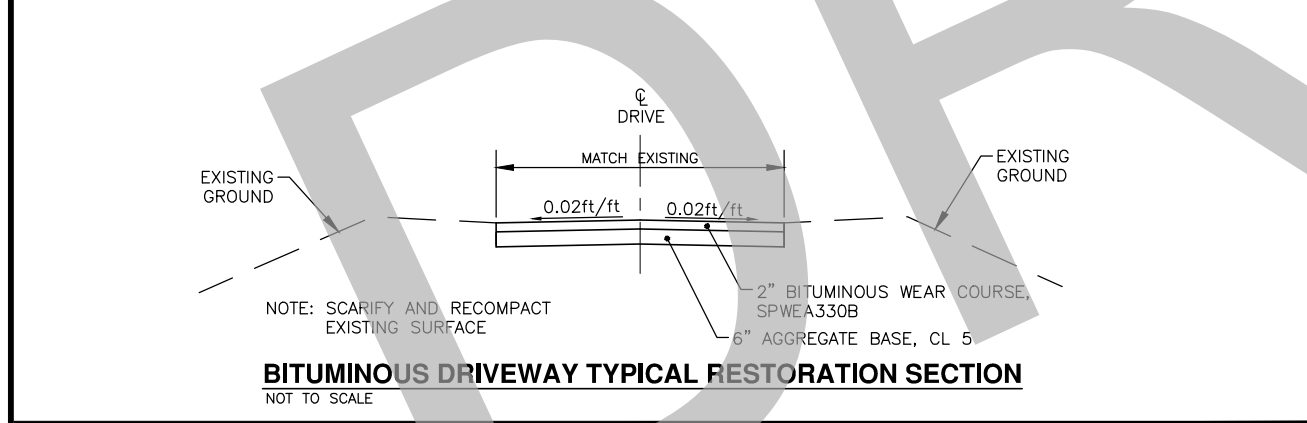
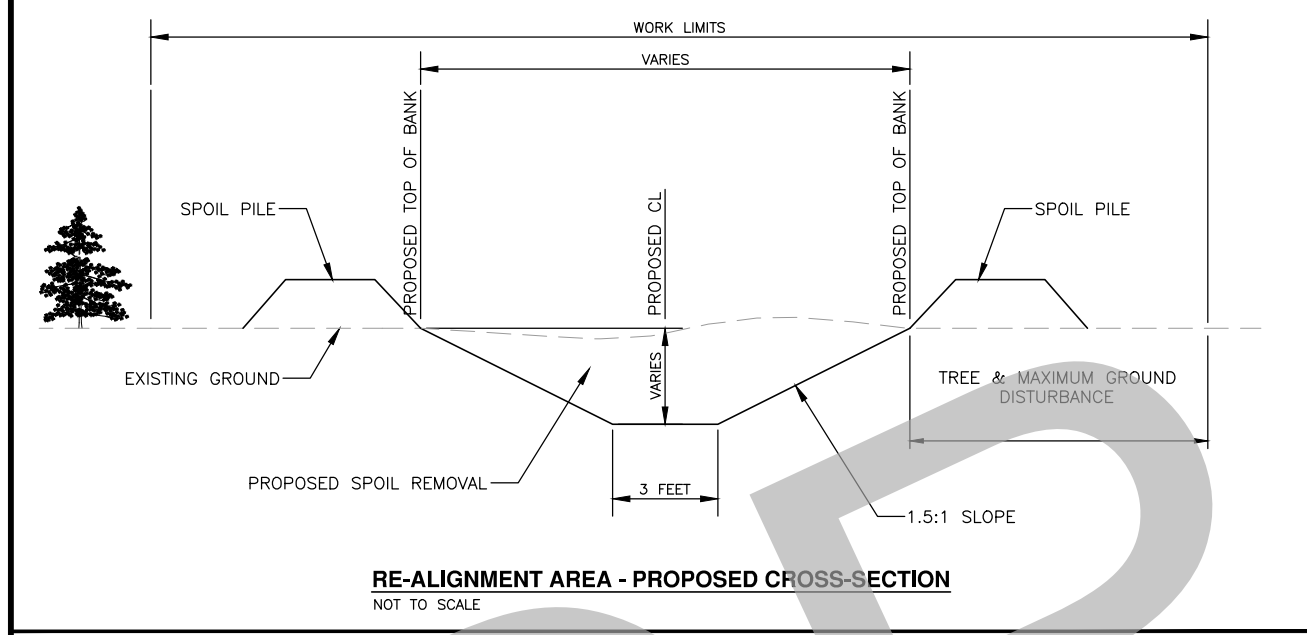
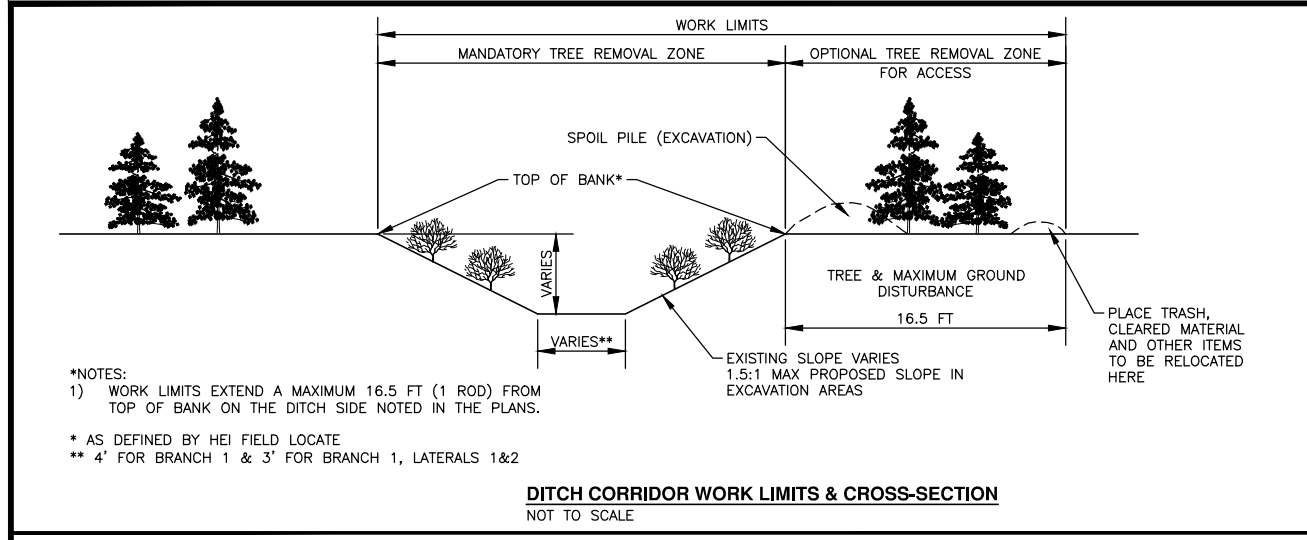
STANDARD:

The ROAD (STREET) WORK (W20-1) sign shall have the legend ROAD (STREET) WORK, XX FT, XX MILES, or AHEAD.

S:\5555-205 ACD 53_62 Repair Project Branch 1\CAD\final_Construction\5555205-Traffic-FINAL.dwg: T:\Traffic_Sheet 4.12 Save Date: 5/8/2014 9:32 AM Plot Date: 6/2/2014 10:41 AM (dmcalpine)

*PER MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MN MUTCD 2012)

		I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.			Maple Grove	Drawn by DJL	Date 5-8-14	ACD 53-62 BRANCH 1 REPAIR PROJECT BLAINE, MN RICE CREEK WATERSHED DISTRICT	TRAFFIC CONTROL PLAN	SHEET
No.	Revision	Date	By		Signature: _____ Date: _____ Printed Name: <u>Nancy Stowe</u> License #: <u>48259</u>	P: 763.493.4522 F: 763.493.5572	Checked by DM			



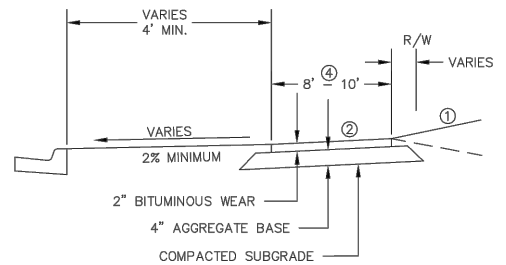
STANDARD PLATES
THE FOLLOWING MNDOT STANDARD PLATES, APPROVED BY THE DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION SHALL APPLY ON THIS PROJECT.

PLATE NO.	PLATE NAME
3123 J	METAL APRON FOR C.S. PIPE
3124 B	METAL APRON CONNECTION
3129A	METAL APRON FOR CORRUGATED POLYETHYLENE PIPE
3134D	RIPRAP AT CSP OUTLETS

S:\5555-205 ACD 53_03 Repair Project Branch 1\CD\01\Final_Construction\5555205-DT Final.dwg Detail Sheet 13_Save_Date:08/16/2014 9:13 AM-Plot_Date:08/16/2014 10:41 AM (dmccalpine)

No.	Revision	Date	By	Signature: Nancy Stowe Printed Name: Nancy Stowe	Date: 8/6/14 License #: 48259
1	REVISED CONCRETE WALK CROSS-SLOPE PER CO#1	8/6/14	DDM		

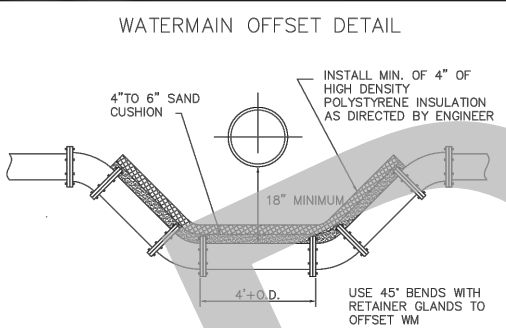
	Maple Grove	Drawn by DJL	Date 5-8-14	ACD 53-62 BRANCH 1 REPAIR PROJECT BLAINE, MN RICE CREEK WATERSHED DISTRICT	DETAILS PROJECT NO. 5555-205	SHEET 13 of 59
	P: 763.493.4522 F: 763.493.5572	Checked by DM	Scale AS SHOWN			



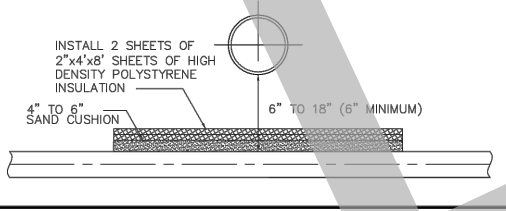
- NOTES:
- ① - SLOPE VARIES 1:2 TO 1:4
 - ② - CROSS SLOPE 2%
 - ③ - RESTORE ALL DISTURBED AREAS WITH 4" TOPSOIL AND SOD.
 - ④ - CHECK WITH CITY ENGINEERING DEPARTMENT FOR REQUIRED WIDTH.

OFF ROAD TRAIL
TYPICAL SECTION Plate No. ST-16

2014 STANDARD DETAIL PLATE
City of Blaine - Engineering Department
10901 Town Square Drive NE, Blaine, Minnesota 55449 (763)785-6172 Fax(763)785-6130



WATERMAIN INSULATION DETAIL



WATERMAIN OFFSET
& INSULATION DETAIL Plate No. WS-5

2014 STANDARD DETAIL PLATE
City of Blaine - Engineering Department
10901 Town Square Drive NE, Blaine, Minnesota 55449 (763)785-6172 Fax(763)785-6130

DRAFT

S:\5555-205 ACD 53_02 Repair Project Branch 1\CAD\Final_Construction\5555305-DT Final.dwg-detail Sheet 14-Draw_Dates/2014 9:13 AM-Plot_Dates/2014 10:42 AM-(dmccalpine)

		I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.			Maple Grove	Drawn by DJI	Date 5-8-14	ACD 53-62 BRANCH 1 REPAIR PROJECT BLAINE, MN RICE CREEK WATERSHED DISTRICT	DETAILS PROJECT NO. 5555-205	SHEET 14 of 60
No.	Revision	Date	By		Signature: _____ Date: _____ Printed Name: Nancy Stowe License #: 48259	P: 763.493.4522 F: 763.493.5572	Checked by DM			

3:30 Discussion on possible
future board workshop
items.

Requested possible workshop agenda items (not in any order of priority) as passed out at June workshop:

1. Request to discuss Cities taking on RCWD regulatory program From 4/23 /14 Board meeting?. – start conversation on 6/9 per your direction.
2. Request to discuss policy on election of officers and subcommittees. From 3/26/14 board meeting.
3. Request to discuss policy on “walk ups” and putting items in board packet vs. walking items up.
4. Request to have Discussion on Board Policy on Per diems-
5. Request to have discussion on revisit options for expanded monitoring program-
6. Request to Provide historic permit progress /update. – propose to wait until Elizabeth comes back from leave.
7. Request to discuss Regulatory costs summary for 2013 and 2014 to date. – planned for July budget workshop
8. Request to discuss Updates to the C/S program.
9. Request to Invite Doug Thomas to discuss 1W 1P.
10. Request to Revisit the Drainage record (from previous workshop) to get consensus.
11. Request to discussion on process options to Transfer of WCD 6
12. Request to add past per diems to administrative 2015 budget, Manager Waller.
13. Discussion on Board communication and protocol.
14. Discussion on voting protocol.