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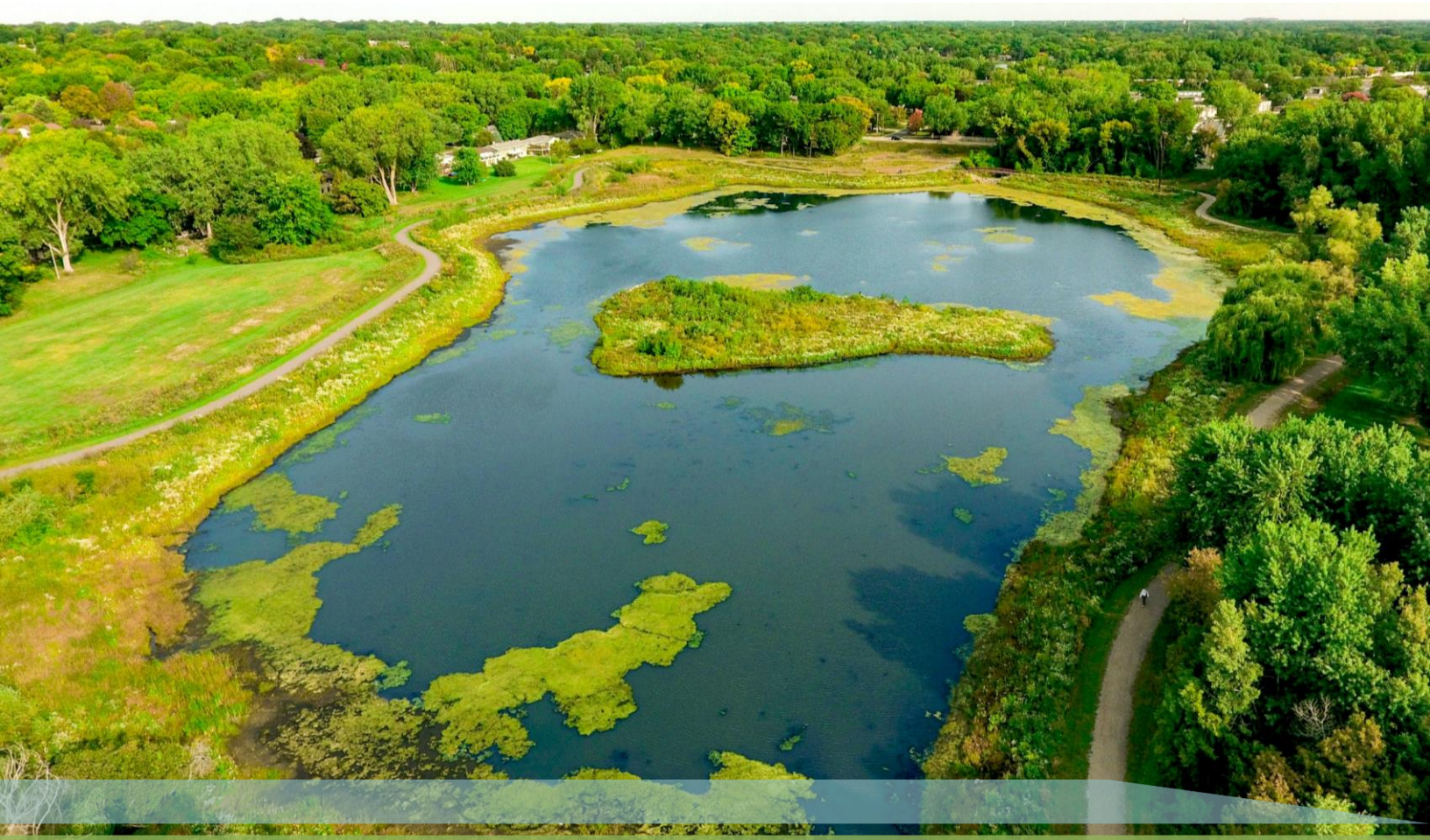
Maple Grove, MN | HEI No. R005555-0325
June 29, 2023



Hansen Park; September 16, 2020

RICE CREEK WATERSHED CHANGING CLIMATE AND FLOODPLAIN RESILIENCY PROJECT

RCWD RICE CREEK WATERSHED DISTRICT

MINNESOTA POLLUTION CONTROL AGENCY

RICE CREEK WATERSHED CHANGING CLIMATE AND FLOODPLAIN RESILIENCY PROJECT

June 29, 2023

Prepared for:
Rice Creek Watershed District

In Cooperation with:
Minnesota Pollution Control Agency and Freshwater Society

Prepared by:
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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 Engineer under the laws of the State of

Bret T. Zimmerman
License No. 53178

June 29, 2023
Date

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All elevations in this report are in reference to the North American Vertical Datum of 1988 (NAVD 88) unless otherwise noted.

1 BACKGROUND

The Rice Creek Watershed consists of 186 square miles in Anoka, Hennepin, Ramsey, and Washington Counties in the north metro of the twin cities. The Rice Creek Watershed District (RCWD) has a long history of coordinating regional surface water management activities. Its ongoing development of hydraulic and hydrologic models for the watershed have proven a vital resource for its member communities as they plan for future land use changes amid rapid development pressure. While the lower portion of the Rice Creek Watershed is mostly developed, the middle and upper portions of the watershed contain some of the most rapidly growing communities within the metro area. The District has rules in place to limit the increased runoff volume and runoff rates; however, the rules are related to current hydrology standards. RCWD's rules were implemented after significant development had already occurred in many areas of the watershed. The land development occurring prior to the District's implementation of its rules occurred with minimal, if any, stormwater management projects, which in turn has led to increased flooding vulnerability in many established communities, including areas of environmental justice concern. Identifying current and future risk due to hydrologic climate change and developing resiliency plans would allow the District and local communities to implement strategies including capital improvement storage practices on the landscape prior to potentially losing these storage locations due to development and addressing flood storage shortfalls in existing developed communities.

In 2022, the RCWD was awarded a *FY22 Planning Grant for Stormwater, Wastewater, and Community Resiliency* by the Minnesota Pollution Control Agency (MPCA). The grant's work plan was targeted to augment the existing district-wide hydrologic and hydraulic model to simulate larger rainfall depths, identify vulnerable locations by mapping the future conditions hydrology floodplain, and to identify potential capital improvement storage projects. RCWD also facilitated workshops through the assistance of Freshwater Society during the project. The workshops invited local community leaders to engage the communities in climate adaptation and resiliency planning. All communities under their individual authorities will need to communicate regarding potential projects to address effects of climate change. This report documents the study and outcomes.

2 FUTURE CLIMATE HYDROLOGY (FCH)

A key component of this stormwater resiliency project is developing future conditions hydrology simulations, consistent with climate driven extreme weather patterns, modeled through the existing district wide hydrologic and hydraulic model. The RCWD previously had developed a district-wide hydrologic and hydraulic model for the watershed. The district-wide model is updated annually with projects that are implemented along the public drainage system and regional scale projects.

There are various entities that have studied the climate related to extreme weather and hydrologic changes. For this project, the following four sources were considered.

- Climate Resilience Evaluation and Awareness Tool (CREATE) – US Environmental Protection Agency
- National Stormwater Calculator – US Environmental Protection Agency
- Equipping Municipalities with Climate Change Data to Inform Stormwater Management – University of Minnesota County Specific Atlas 14 Replication Tables – U of MN Noe et al
- U.S. Climate Resilience Toolkit – United States Global Change Research Program

For the RCWD, the CREATE source predicts a 16.3% increase in average annual rainfall under a warm/wet future climate and predicts an average of 15.8% increase for the 100-year storm intensity. For the 100-year storm intensity, the National Stormwater Calculator predicts a 18.9% increase under hot/dry conditions and an 18.7% increase under warm/wet conditions. The U of M Atlas 14 Replication Table for the counties within RCWD predicts an 44% increase in the 100-year storm intensity. The U of M Atlas 14 Replication Table for Anoka County appears to be an outlier compared to the other source data, therefore, that source was excluded from consideration in this study.

After reviewing these available future climate hydrologic condition forecasts, a 19% increase in storm intensity was utilized for this project to simulate future climate hydrology conditions. The rainfall depths for simulation of current Atlas 14 conditions and for the Future Climate Hydrology (FCH) are provided in **Table 1**.

Table 1: Modeled Rainfall Depths

Return Period Probability (% Chance)	100-year, 24-hour 1% Chance	500-year, 24-hour 0.2% Chance	100-year, 10-day 1% Chance
Current Hydrology[1]	7.1	9.7	7.2
Future Climate Hydrology (FCH)	8.5	11.5	8.6

[1] The Current Hydrology source for the 24-hour events is NOAA Atlas 14.

3 FUTURE CLIMATE HYDROLOGY SIMULATIONS

The 100-year FCH events for both the 24-hour and 10-day snowmelt events presented in Section 2 were simulated in the district-wide model. RCWD typically simulates a 100-year, 10-day snowmelt runoff event as part of the modeling products and outputs. The floodplain related to the future climate hydrology was remapped for the watershed. The mapped floodplain elevation is based on the critical event (higher elevation) between the 24-hour and 10-day event. Figures showing the current RCWD 100-year floodplain and the future climate hydrology floodplain are provided in **Figures 1a-e**. Please note that the RCWD's District Wide Model is a regional model, with a level of detail consistent with FEMA flood mapping of this region. Mapped floodplain generally follows the RCWD's public drainage systems and small streams within the watershed. The district-wide model and resulting floodplain are not to the scale of

local city storm sewer networks. The model is available to public and private parties to use in their individual analyses via a license agreement.

The floodplain shown on **Figures 1a-e** identifies vulnerable locations related to future climate hydrology. In general, there are increases to the floodplain footprint throughout the watershed. Areas with flatter landscape tend to show greater increases in the future climate hydrology floodplain. Middle Rice Creek (between Baldwin and Long Lake) shows large increases as well. Further down in the watershed the additional volume resulting from a 19% rainfall depth increases begins to compound from the various systems.

Changes to the modeled 100-year Lake Level for larger lakes in the watershed are shown in **Table 2**. Long Lake has a history of flooding and has been a known flood risk in the future. Results in Table 2 indicate that future climate hydrology could potentially increase the 100-year flood levels on the lake by 1.3 feet.

Table 2: 100-year Lake Levels

Lake	100-year Current Hydrology *(feet, NAVD 88)*	100-year Future Climate Hydrology *(feet, NAVD 88)*	Increase in 100-year Lake Level *(feet)*
Bald Eagle Lake	912.27	912.47	0.20
Baldwin Lake	886.88	887.57	0.69
Centerville Lake	887.32	887.75	0.43
Clear Lake	892.26	892.60	0.34
Golden Lake	890.17	890.33	0.16
Howard Lake	890.05	890.31	0.26
Johanna Lake	881.11	882.18	1.07
Long Lake	871.95	873.25	1.30
Marshan Lake	886.99	887.69	0.70
Otter Lake	913.93	914.12	0.19
Peltier Lake	887.41	887.83	0.42
Pike Lake	871.89	871.90	0.01
Reshanau Lake	886.98	887.68	0.70
Rice Lake	886.97	887.68	0.71
Rondeau Lake	887.89	888.30	0.41
Silver Lake	935.67	936.38	0.71
Moore Lake	879.23	879.89	0.66
Turtle Lake	892.61	892.70	0.09
White Bear Lake	923.72	924.05	0.33

4 POTENTIAL STORAGE PROJECTS SITE SCREENING

There are several ways to address the increases in peak flood identified in **Figures 1a-e** and **Table 2**, including but not limited to programs to encourage infiltrative land cover and soil practices and implementation of stormwater management rules. The RCWD and its municipal partners may consider further investigation to creating new or modifying existing programs to encourage site- level changes that reduces downstream discharge and volume related to the cumulative effects of additional impervious surface.

Consistent with the Workplan, this report identifies potential storage project locations and evaluates the feasibility of these locations in mitigation future flood impacts related to climate change. Due to the substantial size of the watershed, it is infeasible to evaluate all land parcels and depressional areas in the District for feasibility. To reduce the number of locations evaluated to a reasonable number and target the areas with the most likely characteristics required for a regional BMP partnership, a screening process was developed to identify potential storage project locations. There were three main geographic datasets used in the screening process: a) parcel data; b) NWI wetlands, and c) the Crop Productivity Index dataset developed by NRCS.

Any potential storage project will require either acquisition or an easement from the landowner. In order to reduce potential hurdles for project implementation, the parcel dataset was screened to identify public parcels. Public parcels were defined as parcels where the landowner is a city, county, state, or the Watershed District.

The Crop Productivity Index dataset provides a rating for soil productivity. The rating system is between 0 and 100, 0 being least productive and 100 being highest. For the screening process two limits were set, CPI < 20 and CPI < 40.

The initial screening consisted of merging the various datasets. The merging intended to identify wetland areas on public parcels that could potentially be enhanced, and public parcels with a low crop productivity rating. The merged datasets are shown on **Figures 2a-e** and include the following:

- Public Parcels & NWI Wetlands
- Public Parcels & CPI < 20
- Public Parcels and CPI < 40

The initial screening identified numerous areas throughout the watershed for potential storage projects. These areas ranged in size and geographic location. A second desktop screening process was completed that included manually verifying potential project locations using the merged datasets and aerial imagery to target areas with larger potential project areas and appropriate proximity to known flooding locations. The second screening resulted in a total of 29

potential project locations. The potential project sites are shown as polygons in blue and orange on **Figures 3a-e**.

The third and final screening process involved looking at LiDAR data to determine the storage potential of the area. This included looking at elevations of surrounding infrastructure (i.e. road and buildings) to determine if valuable storage is available below the critical elevations of the infrastructure. The screening also included looking at existing culvert sizes in the immediate area. If the current controlling structure was small (i.e., 24" culvert), then a storage project wouldn't have much potential to further meter out runoff compared to the existing condition.

The third screening resulted in 7 potential primary storage projects. The projects are shown in orange on **Figure 3a-e** and are indicated by the title "Primary" in the legend. A meeting was held between HEI and RCWD staff to review and receive concurrence on the sites that were to be pursued as potential capital improvement storage projects.

Sites that were not prioritized in the second and third screening processes are considered "Secondary" and may be further reviewed at a later date. These locations may be more suitable for target storage for smaller, more frequent events and/or provide water quality treatment.

5 IDENTIFIED CAPITAL IMPROVEMENT PROJECTS

The potential CIP sites identified through the third round of screening discussed in Section 4 were carried forward for conceptual design. The sites were assumed to be earthen embankment dams with a low flow principal spillway and a high flow emergency, or auxiliary spillway. The outlet structures and critical elevations for each site were determined based on reviewing available LiDAR data and aerial imagery. The sites were designed to a top of dam elevation that would not impact structures in the flood pool upstream of the flood control berms.

The general design criteria were to determine the critical elevation upstream of the site based on impacts to infrastructure or buildings. The top of dam elevation was set below the critical flood elevation. The auxiliary spillway elevation was set to 1-foot below the top of dam elevation. The 100-year event (current hydrology) was simulated to size the low flow outlet. The outlet structure was sized to pass the 100-year event below the auxiliary spillway. The 500-year event was then simulated to determine the size of the auxiliary spillway to keep the 500-year event below the top of dam elevation. The site locations are described below. Project portfolios were developed for each site and are shown in **Appendix A**. Statistics for each site including critical elevation, storage volumes, and inundated acres are provided in a table in **Appendix A**.

- Site 1 – Oasis Pond; RCD 4 Main Trunk; Roseville, MN; Upstream (south) of Little Johanna Lake; Modification of existing outlet control structure and berm.
- Site 2 – Jones Lake; RCD 5 / RCD 2 Main Trunk, New Brighton, MN; Upstream (south) of Hansen Park; Modification to outlet structure and earthen berm construction

- Site 3 – South Hansen Park; RCD 2 Main Trunk, New Brighton, MN; Upstream (south) of Hansen Park; Earthen berm construction
- Site 4 – Poplar Lake; Upstream of ACD 25 Main Trunk; White Bear Township and Shoreview, MN; Road Raise and smaller outlet structure
- Site 5 – ACD 53-62 Branch 5 and Branch 5 Lateral 2; Blaine, MN; Earthen berm construction and outlet control structure
- Site 6 – ACD 53-62 Branch 5 Lateral 1; Blaine, MN; Earthen berm construction and outlet control structure
- Site 7 – JD 2 Main Trunk; Forest Lake, MN; Earthen berm construction and outlet control structure

A Preliminary Opinion of Probable Construction Cost range (POPCC) was developed for each of the storage sites. The POPCC range was based on a base cost for outlet structures and a unit price cost on the cubic yards of embankment required to construct the dams. The POPCC range is shown on the table in **Appendix A**.

5.1 RESULTS

The seven identified potential capital improvement storage projects were added to the district-wide model and the 100-year, 24-hour event was simulated. The models were simulated with all sites implemented, individual runs with only specific sites were not completed as part of this analysis. Hydrographs at the outlet of each individual site for the 100-year event are shown in **Appendix B**. The hydrographs show the peak flow reduction provided by the sites. Reduction in peak flows for the 100-year, 24-hour event range from 3% to 90%. In addition to peak flow reductions, reduction in peak water surface downstream of the sites were analyzed. **Table 4** presents peak water surface elevations at critical locations downstream of the sites.

Table 3: Peak Water Surface Elevations

Site(s)	Flooding Location Potentially Impacted by Project	Peak Flood Elevation Current Hydrology (100-year, 24-hour) *(feet, NAVD 88)*	Increase in Peak Flood Elevation due to Future Climate Hydrology *(feet)*	Project Impact of Lowering Peak Flood Elevation (Current Hydrology) *(feet)*
1	**RCD 4 Main Trunk:** Little Johanna Lake	883.33	+0.59’	-0.22’
2 & 3	**RCD 2 Main Trunk:** Hansen Park	881.29	+0.82’	-1.26’
2 & 3	**RCD 2 Main Trunk:** Upstream of I694 (~1,300’ downstream of Hansen Park)	877.55	+0.70’	-1.72’
4	**ACD 25 Main Trunk:** Upstream of Birch St.	886.80	+0.64’	-0.00’
5 & 6	**ACD 53-62 Branch 1:** Upstream of Lexington Ave.	897.30	+0.58’	-0.08’
5 & 6	**ACD 53-62 Branch 1, Lateral 2:** Upstream of Sunset Ave. NE (Blaine/Lino Lakes Boundary)	897.23	+0.60’	-0.08’
7	**JD2 Main Trunk:** Upstream US61 [1]	917.51	+1.14’	-1.64’

[1] Overtopping elevation ~ 921.5

Site 1 shows a reduction in water levels by 0.2’ downstream at Little Johanna Lake. Although the reduction is not large, it could make the difference between structures being flooded for some rainfall event. Due to the size and volume of Johanna Lake, water level reductions downstream of Johanna Lake are insignificant.

Sites 2 and 3 show a large reduction peak water levels downstream of the site, at a location with a prior history of major flood damage in an Environmental Justice area. Both of these sites are projects that would add storage to existing areas that store and attenuate runoff. Because these sites are on the Main Trunk of a mostly linear ditch system, the benefits are realized for a significant distance downstream in the system.

Sites 4, 5, and 6 are all in the headwaters of the system. Peak water levels downstream of these sites remain nearly unchanged. This is due to the location of these projects and the relatively small drainage area. The smaller drainage areas result in less runoff volume that the sites can potentially store. Sites 5 and 6 are on the ACD 53-62 system. This is a very dendritic, or branched, system. Targeting storage in a system with multiple branches and laterals is

challenging. It is difficult to time the storage correctly to reduce the peak water levels downstream. Storage in these systems may still be beneficial for water quality purposes and may reduce inundation duration to locations downstream.

Stie 7 is the largest site that was identified. The first major roadway crossing downstream from Site 7 is US Highway 61. The site reduced the 100-year peak water levels downstream by 1.6'. This reduction is greater than the anticipated increase in water level related to future climate hydrology. The site, as currently identified, would have a footprint of approximately 0.75 square miles. This analysis showed that storing runoff at this location does result in a reduction in water levels downstream. Variations of the site with a smaller footprint could be explored to still provide flood damage reduction benefits downstream while resulting in a smaller flood pool footprint.

The simulations in this study analyzed the 100-year event. These sites could be designed to target storage for smaller, more frequent events. Sites 1, 4, 5 and 6 may show a greater reduction in peak flows downstream if designed to target the smaller, more frequent events.

The sites were analyzed to determine how well they would react to Future Climate Hydrology if they were implemented today based on current hydrologic design standards. Peak water surface elevations in the flood pool upstream of the sites are presented in **Table 4**. The model results indicate that will future climate hydrology the 100-year event upstream of the site would be between 0.3 and 1.1 feet higher than compared to the current Atlas 14 hydrology. This indicates that if structures were implemented now with current design standards, by the mid to end of century small improvements may need to be made to meet the design standards and hydrologic events of the future.

Table 4: Proposed Capital Improvement Projects: Peak Water Surface Elevation (ft, NAVD 88)

Site	100-year			500-year		
	Atlas 14 [1]	FCH [2]	Change	Atlas 14 [1]	FCH [2]	Change
1	897.85	898.32	(+0.47)	898.99	899.62	(+0.63)
2	899.05	900.16	(+1.12)	901.82	903.03	(+1.21)
3	881.33	882.14	(+0.81)	883.31	884.27	(+0.95)
4	893.81	894.14	(+0.34)	894.40	894.74	(+0.33)
5	897.93	898.48	(+0.55)	899.09	899.60	(+0.52)
6	897.66	897.96	(+0.29)	898.41	898.69	(+0.28)
7	919.23	919.91	(+0.67)	920.32	921.03	(+0.71)

[1] NOAA Atlas 14 Rainfall Depths, current standard for hydrologic modeling

[2] Future Climate Hydrology developed as part of this study, see Section 2

*All elevations are in feet, NAVD 88 vertical datum.

6 COMMUNITY OUTREACH

Results from this study will be shared at the District's city-county partner meetings, with the RCWD Citizen Advisory Committee, other stakeholders and elected officials, and in other communication efforts (including newsletters).

As part of this project, RCWD engaged Freshwater Society to facilitate a series of two community resilience building workshops. The purpose of the workshops was to identify opportunities within the watershed to build resilience related to local climate change. There were approximate 40 participants at the workshop from various city, county, and state agencies as well as other interested local stakeholders. Workshop participants identified infrastructure, social, and environmental features across the watershed that may be vulnerable to a changing climate. Strategies on how to address those features were then developed. The strategies were grouped in 18 different themes. The results from the community resilience building workshops are presented in the Freshwater report in **Appendix C**.

A number of the climate resiliency building strategies are not under the umbrella of work that RCWD performs (i.e., ensure drinking water systems all have a backup/resilience plan in place). A lead agency and potential project partners were identified for each strategy. The purpose of the workshops and subsequent report was to have a collaborative discussion around creating a resilient community, and to develop and prioritize strategize for resiliency. The report in **Appendix C** is not intended to be a plan of action but is intended to communicate the issues identified by community members. It will be up to the lead agencies or identified partners to carry this information forward and develop a plan of action.

7 SUMMARY AND RECOMMENDATIONS.

The purpose of this project was to determine the likely effects of future extreme rainfall and runoff events related to a changing climate and identify capital improvement projects to curb these effects. These efforts were accomplished through a combination of modeling, engineering analysis, and community engagement via workshops facilitated by Freshwater Society. The following list summarizes the findings of the study.

1. The District Wide Model, in conjunction with outside research on predicted precipitation patterns, indicates that some areas of the District will be at increased risk for flooding for low frequency, high magnitude flooding events. The locations with the greatest risk increase are generally JD 2, Middle Rice Creek, and Long Lake. Of these areas, Lexington and Mounds View in Middle Rice Creek are identified as areas of concern related to Environmental Justice.
2. Based on the screening exercises completed, mapping of climatic-related changes of floodplains, and evaluation of projects at these sites, Sites 2, 3, and 7, provide the greatest opportunity for reducing the negative impacts of climate change on flood risk. We recommend the RCWD and its municipal partners pursue the development of

projects at these sites to mitigate the potential for increased flood risk. As the scale of these projects is large, outside grant funding is likely necessary to proceed with further project development. Multiple funding opportunity opportunities exists supported by the state and federal government to further the addition of storage on the landscape, and the RCWD and its partners may consider pursuing multiple funding streams given the projects' likely multiple benefits.

3. Though the screening process did not identify significant reductions in flood risk for low frequency high magnitude events at Sites 1, 4, 5, and 6, there may be other benefits to completing projects at these sites that are outside of the scope of this study including water quality improvement or reduction in flood risk for higher frequency lower magnitude events.
4. The investigated sites are not the only locations in the RCWD providing opportunity for future flood risk mitigation. Though additional potential project site locations were not identified during the community outreach phase of this study, future opportunities may surface through other District efforts and outreach that may justify feasibility study at these locations. The modeling prepared from this study provides a launching point with which to efficiently evaluate other sites in the future at a relatively low effort. We recommend continued engagement with municipal partners in seeking out potential regional storage project locations.
5. There are several takeaways from this analysis for prioritizing future project site evaluations. See the additional discussion in Section 5.1.
6. The study did also identify a significant risk to increased water levels at Long Lake due to climate change for low-frequency, higher magnitude rainfall events. These increased peak flood elevations have the potential to result in severe flood damage to dozens of structures surrounding the lake and further upstream. Additional investigation is warranted regarding the outlet of Long Lake and modifications which may help alleviate the current and future flood risk.

Figures

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RICE CREEK WATERSHED DISTRICT

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Panola Dr N
Redwing Ave N
Morgan Ave N
Lofton Ave N
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Ostrum Tr N
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Xenium La
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45th Ave N
44th Ave N
Washington Ave N
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952A
Glenwood Ave
E Hennepin Ave
4th St
Como Ave
Main St
Harrison Blvd NW
University Ave NW
Foley Blvd NW
10
109th Ave NE
105th Ave NE
North Rd
Lake Dr
Birch St
Ash St
Naples St NE
Hodgson Rd
County Road I
County Road H
Old Hwy 8
CSAH 96
County Road F
Vadnais Blvd
County Rd E
Lydia Ave E
Beam Ave E
White Bear Ave N
Mcknight Rd N
County Road C
County Road B2
County Road B
Rice St N
Edgerton St
E Larpenteur Ave
Dale St
Lexington Ave N
New Brighton Blvd
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Stone Bridge Tr N
Myeron Rd N
Norell Ave N
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Partridge Rd N
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Keystone Ave N
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Manning Tr N
Stillwater Blvd N
Lake Elmo Ave N
Osgood Ave N
Stagecoach Tr N
S 3rd St
56th St N
50th St N
40th St N
35
8
35W
35E
61
120th St N
122nd St N
117th St N
137th St N
140th St N
Ash St
20th Ave S

100 Year Floodplain
100 Year Future Conditions Hydrology Floodplain
Public Drainage Systems and Waterways
Rice Creek WD Boundary
County Boundaries
City Boundaries
Interstate
US Highway
State Highway

0 1.75 3.5 7 Miles

N W E S

Rice Creek Watershed District
Figure 1a: 100-year Floodplain

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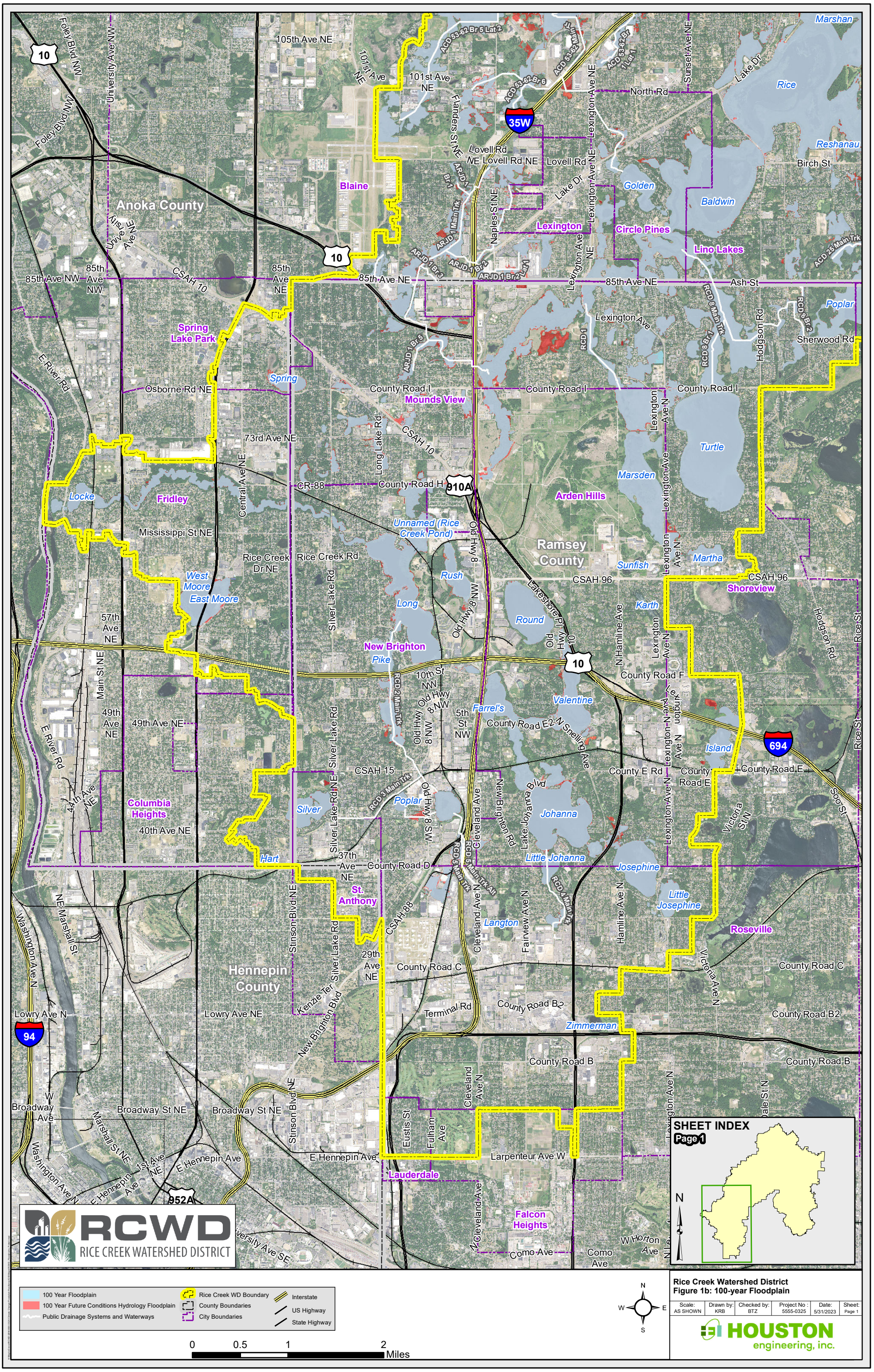
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ACD 53-62 Br 5 Lat 2
ACD 53-62 Main Trk
ACD 53-62 Br 1 Lat 1
Sunset Ave NE
Lake Dr
Marshan
Rice
Reshanau
Birch St
Golden
Baldwin
Lino Lakes
ACD 25 Main Trk
Ash St
Poplar
RCD 8 Br 2
Sherwood Rd
Hodgson Rd
RCD 8 Main Trk
RCD 8 Br 1
RCD 1
Lexington Ave
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Spring
Spring Lake Park
Osborne Rd NE
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CSAH 10
85th Ave NW
85th Ave NE
Anoka County
Blaine
Lexington
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ARJD 1 Main Trk
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49th Ave NE
57th Ave NE
73rd Ave NE
Central Ave NE
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910A
Locke
Fridley
Mississippi St NE
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Rice Creek Rd
West Moore
East Moore
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Rush
Long
Round
Arden Hills
Marsden
Turtle
Ramsey County
Sunfish
Martha
Karth
Shoreview
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Valentine
County Road F
County Road E2
N Snelling Ave
694
Island
County E Rd
County Road E
Rice St
Soo St
Victoria St N
Hodgson Rd
CSAH 15
RCD 3 Main Trk
Columbia Heights
40th Ave NE
44th Ave NE
Silver
Silver Lake Rd NE
Old Hwy 8 SW
Johanna
Lake Johanna Blvd
New Brighton Rd
Cleveland Ave
RCD 5 Main Trk
RCD 5 Main Trk Alt
Hart
37th Ave NE
County Road D
Little Johanna
Josephine
St. Anthony
CSAH 88
Langton
Fairview Ave N
RCD 4 Main Trk
Hamline Ave N
Little Josephine
Roseville
Victoria Ave N
County Road C
29th Ave NE
Hennepin County
Kenzie Ter
Silver Lake Rd
Stinson Blvd NE
NE Marshall St
Lowry Ave N
Lowry Ave NE
94
New Brighton Blvd
Terminal Rd
County Road B2
Zimmerman
County Road B
Eustis St
Fulham Ave
Cleveland Ave N
Lexington Ave N
W Broadway Ave
Broadway St NE
Marshall St NE
1st Ave NE
E Hennepin Ave
Washington Ave N
952A
Lauderdale
Falcon Heights
Como Ave
W Horton Ave
Larpenteur Ave W
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N
RCWD
RICE CREEK WATERSHED DISTRICT
100 Year Floodplain
100 Year Future Conditions Hydrology Floodplain
Public Drainage Systems and Waterways
Rice Creek WD Boundary
County Boundaries
City Boundaries
Interstate
US Highway
State Highway
0
0.5
1
2
Miles
N
W
E
S
Rice Creek Watershed District
Figure 1b: 100-year Floodplain
Scale: AS SHOWN
Drawn by: KRB
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RICE CREEK WATERSHED DISTRICT

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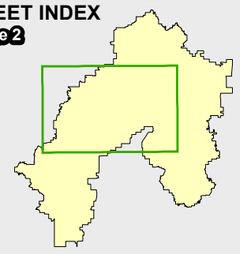

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Lexington Ave NE
Main St NE
Main St NE
Main St NE
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ACD 10-22-32 Br 3
ACD 10-22-32 Main Trk
ACD 10-22-32 Br 4a
ACD 10-22-32 Br 1A
ACD 10-22-32 Br 1
ACD 10-22-32 Main Trk
ACD 10-22-32 Br 1
ACD 10-22-32 Br 2
ACD 53-62 Br 2 Lat 1 Peebles
ACD 53-62 Br 2 Lat Devine
ACD 53-62 Br 2
ACD 53-62 Br 3
ACD 53-62 Br 2
ACD 53-62 Br 2 Lat 1
ACD 53-62 Br 1 Lat 2
ACD 53-62 Br 5
ACD 53-62 Br 4
ACD 53-62 Br 6 Lat 2
ACD 53-62 Br 6 Lat 1
ACD 53-62 Br 6
ACD 53-62 Main Trk
ARJD 1 Main Trk
ARJD 1 Br 3
ARJD 1 Br 2
ARJD 1 Br 2 Lat 1
ARJD 1 Br 4
Lake Dr
Sunset Ave NE
Apollo Dr
Hodgson Rd
Hodgson Rd
Lake Dr
Lake Dr
Naples St NE
Flanders St NE
Lexington Ave NE
Lexington Ave NE
Radisson Rd NE
Radisson Rd NE
101st Ave NE
109th Ave NE
109th Ave NE
109th Ave NE
109th Ave NE
105th Ave NE
Lovell Rd
NE Lovell Rd NE
Lovell Rd
North Rd
85th Ave NE
Ash St
Ash St
Ash St
120th St N
Frenchman Rd N
Egg Lake Rd N
137th St N
170th St N
80th St E
Freeway Dr
20th Ave N
20th Ave S
22nd Ave S
Otter Lake Rd
Centerville Rd
Main St
Main St
Crossways
Columbus
Rondeau
Peltier
George Watch
Marshan
Centerville
Rice
Reshanau
Wards
Sherman
Golden
Baldwin
Cedar
Poplar
Otter
Fish
Oneka
Egg
Forest Lake
Washington County
Lino Lakes
Anoka County
Centerville
Hugo
Blaine
Lexington
Circle Pines
35
35E
35W
61
JD 4 Main Trk
JD 4 Br 3
JD 4 Br 3 Lat 1
JD 4 Br 4
JD 7 Main Trk
JD 1 Br 1
JD 2 Br 4
JD 2 Main Trk
JD 3 Br 3
JD 3 Br 2
JD 3 Br 4
JD 3 Main Trk
JD 3 Br 1
JD 2 Br 1
ACD 72 Br 1
ACD 72 Br 1 Lat 3
ACD 72 Main Trk
ACD 55 Main Trk
ACD 55 Br 8
ACD 25 Main Trk
ACD 25 Br 2

100 Year Floodplain	Rice Creek WD Boundary	Interstate
100 Year Future Conditions Hydrology Floodplain	County Boundaries	US Highway
Public Drainage Systems and Waterways	City Boundaries	State Highway

0 0.5 1 2 Miles

N W E S

Rice Creek Watershed District
Figure 1c: 100-year Floodplain

Scale:	Drawn by:	Checked by:	Project No :	Date:	Sheet:
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RICE CREEK WATERSHED DISTRICT

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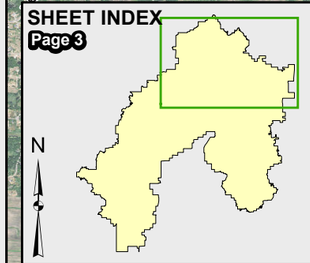

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W Broadway Ave
W Broadway Ave
8
220th St N
11th Ave SW
61
Lofton Ave N
Manning Tr N
Scandia
Forest Lake
Columbus
Potomac St NE
Kettle River Blvd
Howard
Mud
Clear
ACD 31 Br 6
ACD 31 Br 5
ACD 31 Br 7
ACD 31 Br 1
ACD 31 Br 3
ACD 31 Main Trk
ACD 31 Br 2
ACD 31
ACD 46 Main Trk
ACD 46 Br 3
ACD 46 Br 1
ACD 46 Br 4
ACD 46 Br 5
Columbus
ACD 15 Main Trk
JD 4 Br 2
202nd St N
200th St N
202nd St N
JD 7 Br 1
JD 6 Br 1
JD 5 Main Trk
JD 7 Br 3
JD 1 Main Trk
JD 7 Br 2
JD 7 Main Trk
JD 4 Br 3
JD 4 Br 3 Lat 1
JD 4 Br 4
Keystone Ave N
192nd St N
White Rock
Lake Dr
Crossways
Anoka County
JD 4 Main Trk
35
35E
Rondeau
Freeway Dr
Washington County
JD 2 Br 4
Horseshoe
ACD 10-22-32 Br 3
ACD 10-22-32 Main Trk
ACD 10-22-32 Br 4
Lino Lakes
ACD 10-22-32 Br 2
Blaine
ACD 10-22-32 Br 1
Main St
80th St E
35W
20th Ave N
170th St N
Hugo
JD 2 Main Trk
May Twp.

100 Year Floodplain
100 Year Future Conditions Hydrology Floodplain
Public Drainage Systems and Waterways
Rice Creek WD Boundary
County Boundaries
City Boundaries
Interstate
US Highway
State Highway

0 0.5 1 2 Miles

N W E S

Rice Creek Watershed District
Figure 1d: 100-year Floodplain

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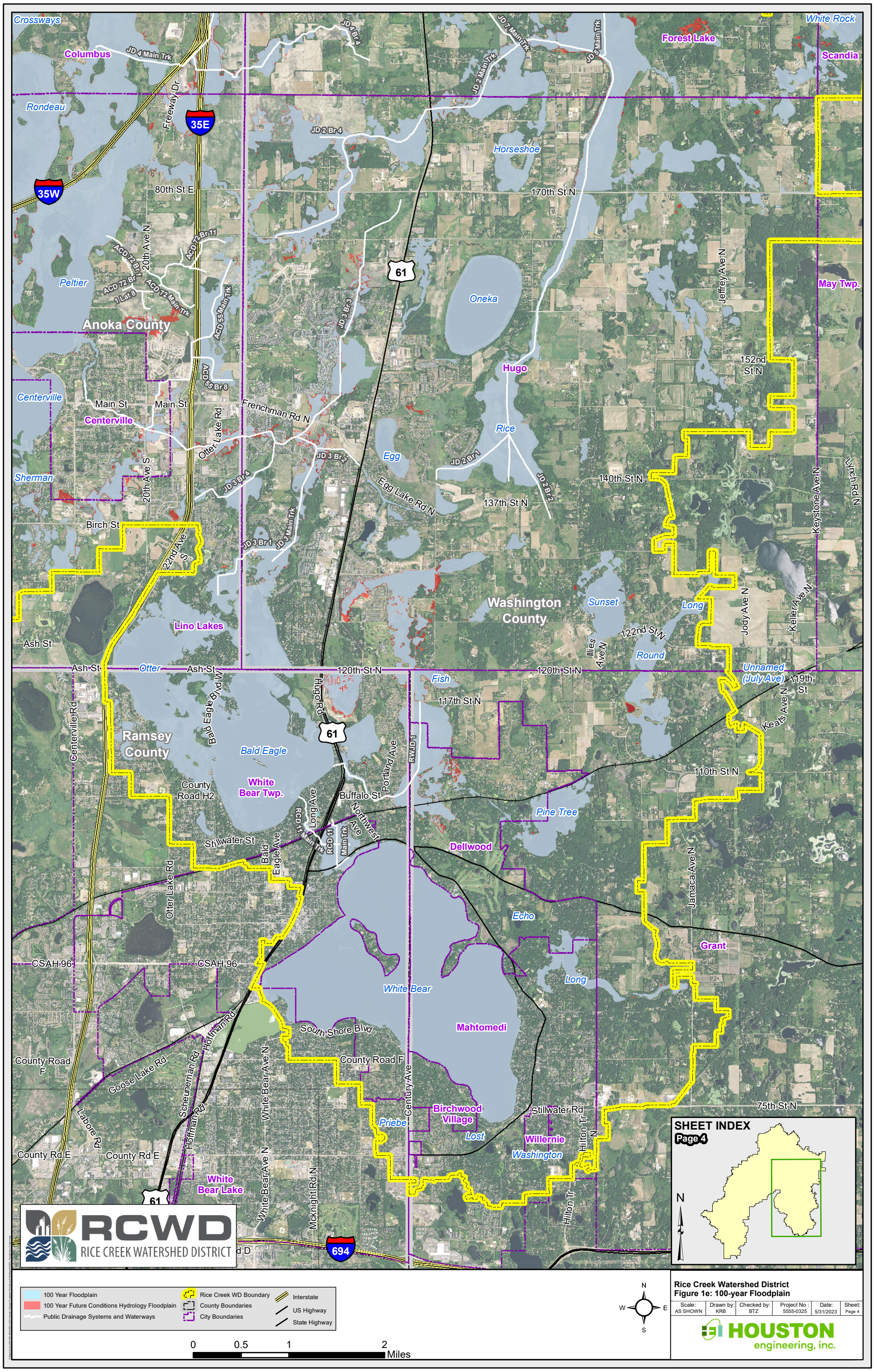

RCWD
RICE CREEK WATERSHED DISTRICT

Rice Creek Watershed District
Figure 1e: 100-year Floodplain

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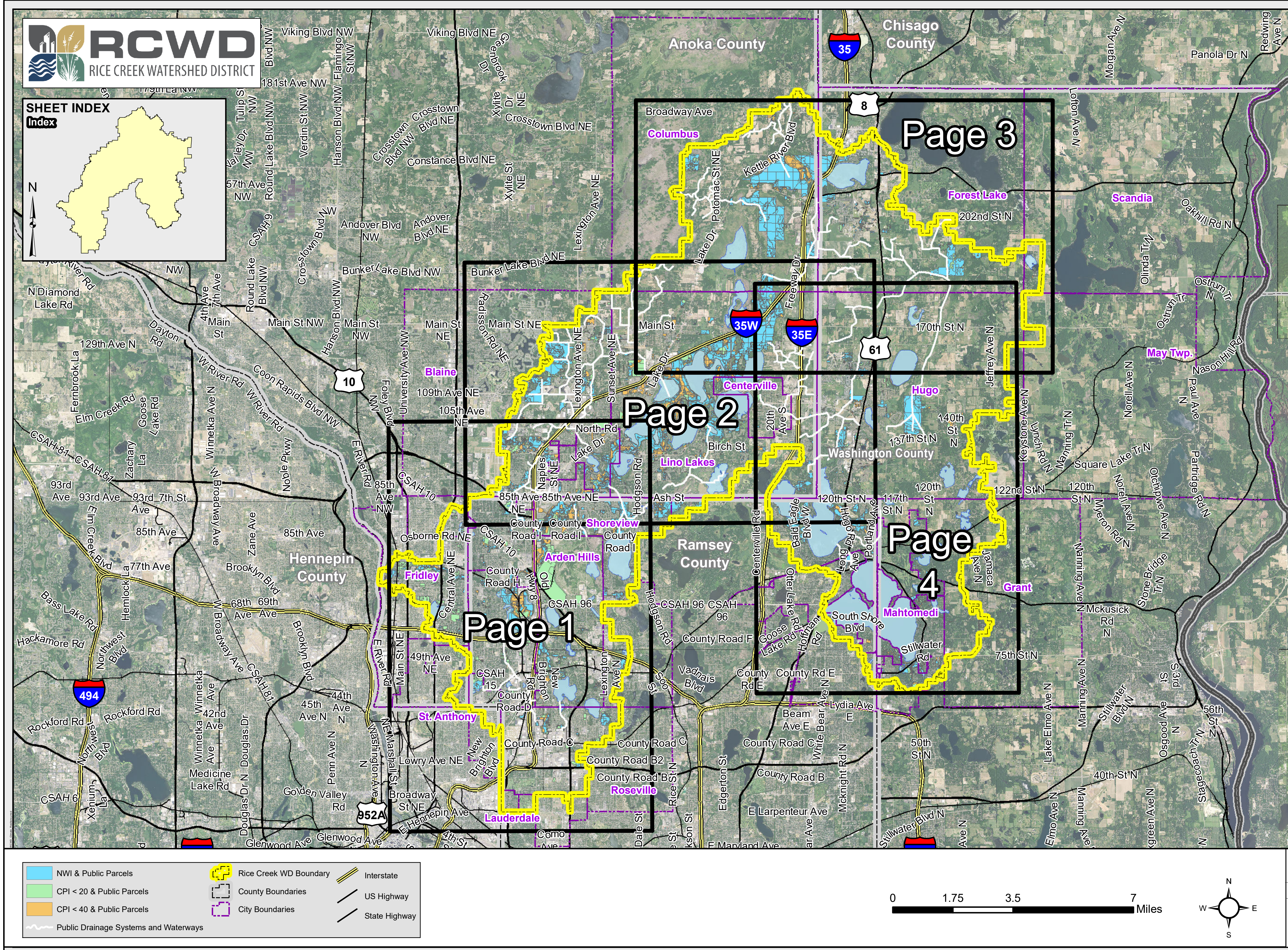

Rice Creek Watershed District
Figure 2a: Preliminary Screening

Scale:	Drawn by:	Checked by:	Project No :	Date:	Sheet:
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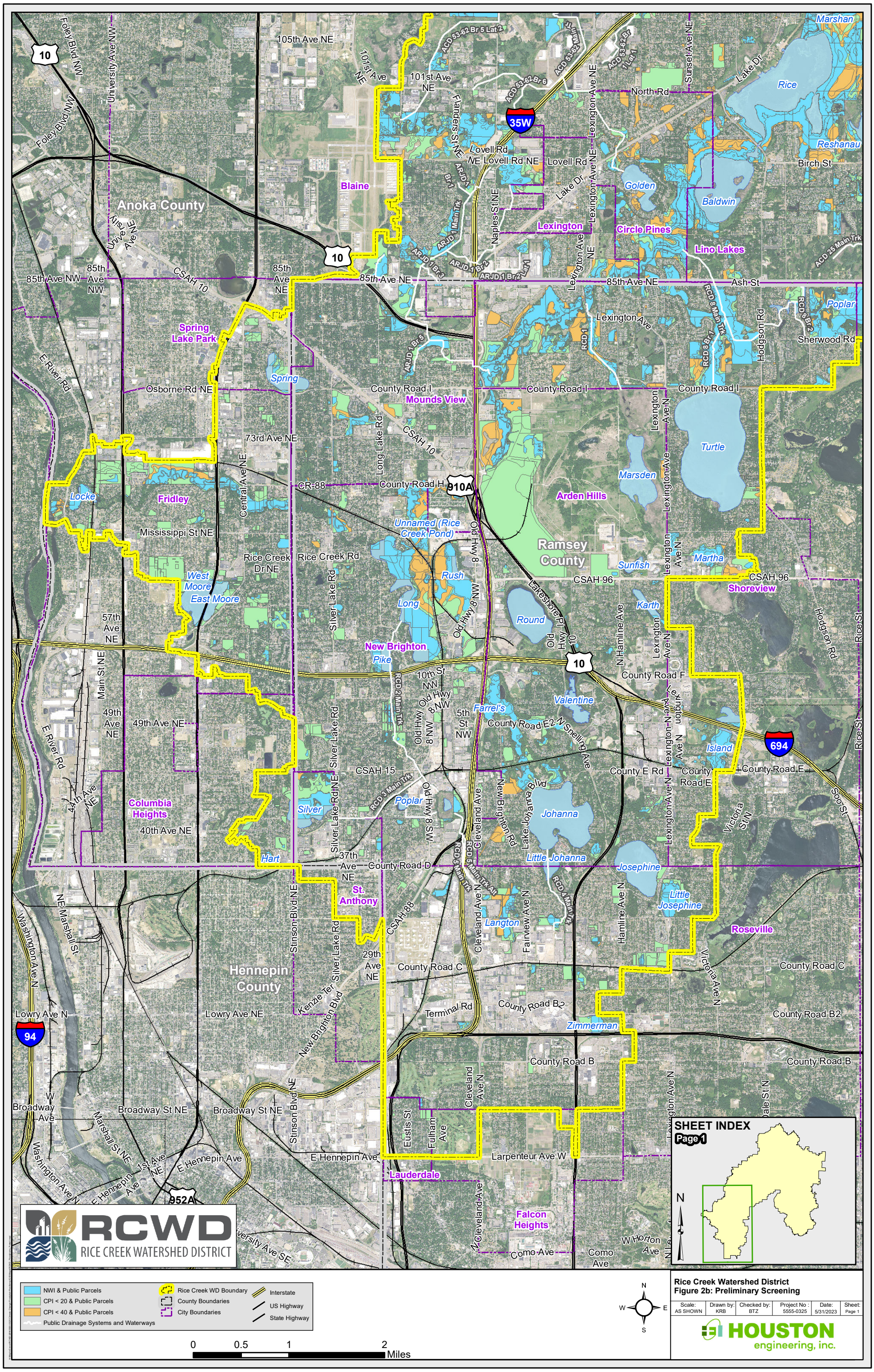
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101st Ave NE
101st Ave NE
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ACD 53-62 Main Trk
ACD 53-62 Br 1 Lat 1
ACD 53-62 Br 6
Sunset Ave NE
Lake Dr
Marshan
Rice
North Rd
35W
Flanders St NE
Lovell Rd
NE Lovell Rd NE
Lovell Rd
Lexington Ave NE
Reshanau
Birch St
Golden
Baldwin
Blaine
Anoka County
ARJD 1 Br 1
ARJD 1 Main Trk
Naples St NE
Lake Dr
Lexington Ave NE
Lexington
Circle Pines
Lino Lakes
ACD 25 Main Trk
ARJD 1 Br 3
ARJD 1 Br 2
ARJD 1 Br 2 Lat 1
University Ave NE
10
85th Ave NW
85th Ave NW
CSAH 10
85th Ave NE
85th Ave NE
85th Ave NE
Lexington Ave NE
Ash St
RCD 8 Main Trk
Poplar
RCD 8 Br 2
Spring Lake Park
ARJD 1 Br 5
Lexington Ave
RCD 1
Hodgson Rd
Sherwood Rd
E River Rd
Spring
Osborne Rd NE
County Road I
Mounds View
County Road I
County Road I
73rd Ave NE
Long Lake Rd
CSAH 10
Central Ave NE
CR-88
County Road H
910A
Arden Hills
Marsden
Turtle
Lexington Ave N
Locke
Fridley
Mississippi St NE
Unnamed (Rice Creek Pond)
Old Hwy 8
Ramsey County
Rice Creek
Rice Creek Rd
Rice Creek Dr NE
West Moore
East Moore
Rush
Long
Silver Lake Rd
Old Hwy 8 NW
Sunfish
Martha
CSAH 96
CSAH 96
Shoreview
Lakeshore Pl
Round
Karth
N Hamline Ave
Lexington Ave N
Hodgson Rd
Rice St
57th Ave NE
New Brighton
Pike
Old Hwy 10
10
10th St NW
Old Hwy 8 NW
RCD 2 Main Trk
Main St NE
County Road F
Valentine
Farrel's
5th St NW
County Road E2
N Snelling Ave
694
Island
49th Ave NE
49th Ave NE
E River Rd
CSAH 15
RCD 3 Main Trk
Old Hwy 8 SW
Silver Lake Rd NE
Silver Lake Rd
Lexington Ave N
County E Rd
County Road E
County Road E
Soo St
44th Ave NE
Columbia Heights
Silver
Poplar
New Brighton Blvd
Johanna
Victoria St N
40th Ave NE
Hart
37th Ave NE
County Road D
RCD 5 Main Trk
RCD 5 Main Trk Alt
Cleveland Ave
Lake Johanna
Little Johanna
Josephine
St. Anthony
CSAH 88
Langton
RCD 4 Main Trk
Hamline Ave N
Little Josephine
Roseville
Stinson Blvd NE
NE Marshall St
Hennepin County
29th Ave NE
County Road C
Fairview Ave N
Victoria Ave N
County Road C
Lowry Ave N
94
Lowry Ave NE
Kenzie Ter
New Brighton Blvd
Terminal Rd
County Road B2
Zimmerman
County Road B2
W Broadway Ave
Broadway St NE
Broadway St NE
Stinson Blvd NE
Marshall St NE
Washington Ave N
1st Ave NE
E Hennepin Ave
E Hennepin Ave
Eustis St
Fulham Ave
Cleveland Ave N
County Road B
County Road B
Larpenteur Ave W
Lauderdale
952A
Cleveland Ave N
Falcon Heights
Como Ave
Como Ave
W Horton Ave
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N
RCWD
RICE CREEK WATERSHED DISTRICT
NWI & Public Parcels
CPI < 20 & Public Parcels
CPI < 40 & Public Parcels
Public Drainage Systems and Waterways
Rice Creek WD Boundary
County Boundaries
City Boundaries
Interstate
US Highway
State Highway
0
0.5
1
2
Miles
N
W
E
S
Rice Creek Watershed District
Figure 2b: Preliminary Screening
Scale: AS SHOWN
Drawn by: KRB
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RICE CREEK WATERSHED DISTRICT

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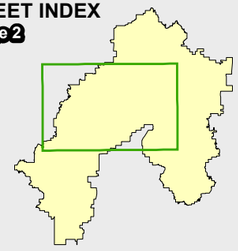

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Main St NE
Columbus
Crossways
Rondeau
Lake Dr
Freeway Dr
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35E
35W
JD 4
Main Trk
JD 4 Br 3
JD 4 Br 3 Lat 1
JD 4 Br 4
JD 4 Main Trk
Forest Lake
Washington County
JD 1 Br 1
JD 7 Main Trk
JD 2 Br 4
JD 2 Main Trk
80th St E
170th St N
61
Oneka
ACD 10-22-32 Main Trk
ACD 10-22-32 Br 4a
ACD 10-22-32 Br 3
ACD 10-22-32 Br 4
ACD 10-22-32 Br 1A
ACD 10-22-32 Br 1
ACD 10-22-32 Main Trk
ACD 53-62 Br 1
2 Lat Peebles
2 Lat Devine
ACD 53-62 Br 2
ACD 53-62 Br 3
1 LAT 2
ACD 53-62 Br 2 Lat 1
Sunset Ave NE
Radisson Rd NE
Radisson Rd NE
109th Ave NE
109th Ave NE
109th Ave NE
109th Ave NE
ACD 53-62 Br 5
ACD 53-62 Br 4
Blaine
105th Ave NE
101st Ave NE
ACD 53-62 Br 6 Lat 2
ACD 53-62 Br 6 Lat 1
ACD 53-62 Br 6
Flanders St NE
ACD 53-62 Main Trk
North Rd
Hodgson Rd
Lake Dr
Rice
Reshanau
Wards
Sherman
Lino Lakes
Birch St
Anoka County
Centerville
Centerville Rd
20th Ave S
Main St
Peltier
George Watch
Marshan
Apollo Dr
Main St
20th Ave N
ACD 72 Br 1
ACD 72 Br 1 Lat 3
ACD 72 Main Trk
ACD 55 Main Trk
ACD 55 Br 8
Otter Lake Rd
Frenchman Rd N
JD 3 Br 3
JD 3 Br 2
JD 3 Br 4
JD 3 Main Trk
JD 3 Br 1
Egg
Egg Lake Rd N
137th St N
JD 2 Br 1
Hugo
Fish
Lovell Rd
NE Lovell Rd NE
Lovell Rd
Golden
Baldwin
Lexington
Circle Pines
Lake Dr
Naples St NE
Lexington Ave NE
ARJD 1 Main Trk
ARJD 1 Br 6
ARJD 1 Br 2
ARJD 1 Br 2 Lat 1
ARJD 1 Br 4
Hodgson Rd
ACD 25 Main Trk
ACD 25 Br 2
Cedar
85th Ave NE
Ash St
Ash St
22nd Ave S
Otter
Ash St
120th St N
Poplar
FCD 6 Main Trk

NWI & Public Parcels
CPI < 20 & Public Parcels
CPI < 40 & Public Parcels
Public Drainage Systems and Waterways
Rice Creek WD Boundary
County Boundaries
City Boundaries
Interstate
US Highway
State Highway

0 0.5 1 2 Miles

N W E S

Rice Creek Watershed District
Figure 2c: Preliminary Screening

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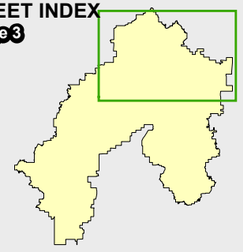

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W Broadway Ave
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11th Ave SW
61
Columbus
Potomac St NE
Kettle River Blvd
Howard
Mud
Clear
Forest Lake
Scandia
Manning Tr N
Lofton Ave N
ACD 31 Br 3
ACD 31
ACD 31 Br 6
ACD 31 Br 5
ACD 31 Br 7
ACD 31 Br 1
ACD 31 Main Trk
ACD 31 Br 2
ACD 46 Main Trk
ACD 46 Br 3
ACD 46 Br 1
ACD 46 Br 2
ACD 46 Br 5
Columbus
ACD 15 Main Trk
JD 4 Br 2
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200th St N
202nd St N
Keystone Ave N
192nd St N
White Rock
JD 7 Br 1
JD 7 Br 3
JD 6 Br 1
JD 5 Main Trk
JD 4 Br 3
JD 4 Br 2 Lat 1
JD 7 Br 4
JD 7 Main Trk
JD 4 Br 4
JD 4 Main Trk
Anoka County
Crossways
Lake Dr
35
35E
Rondeau
Freeway Dr
Washington County
ACD 10-22-32 Br 3
ACD 10-22-32 Main Trk
ACD 10-22-32 Br 4
Lino Lakes
ACD 10-22-32 Br 4
ACD 10-22-32 Br 2
JD 2 Br 4
Horseshoe
Blaine
Main St
80th St E
35W
20th Ave N
170th St N
Hugo
JD 2 Main Trk
May Twp.
ACD 10-22-32 Br 1A
ACD 10-22-32 Br 1
Ave NE
Ave N

NWI & Public Parcels
CPI < 20 & Public Parcels
CPI < 40 & Public Parcels
Public Drainage Systems and Waterways
Rice Creek WD Boundary
County Boundaries
City Boundaries
Interstate
US Highway
State Highway

0 0.5 1 2 Miles

N
W E
S

Rice Creek Watershed District
Figure 2d: Preliminary Screening

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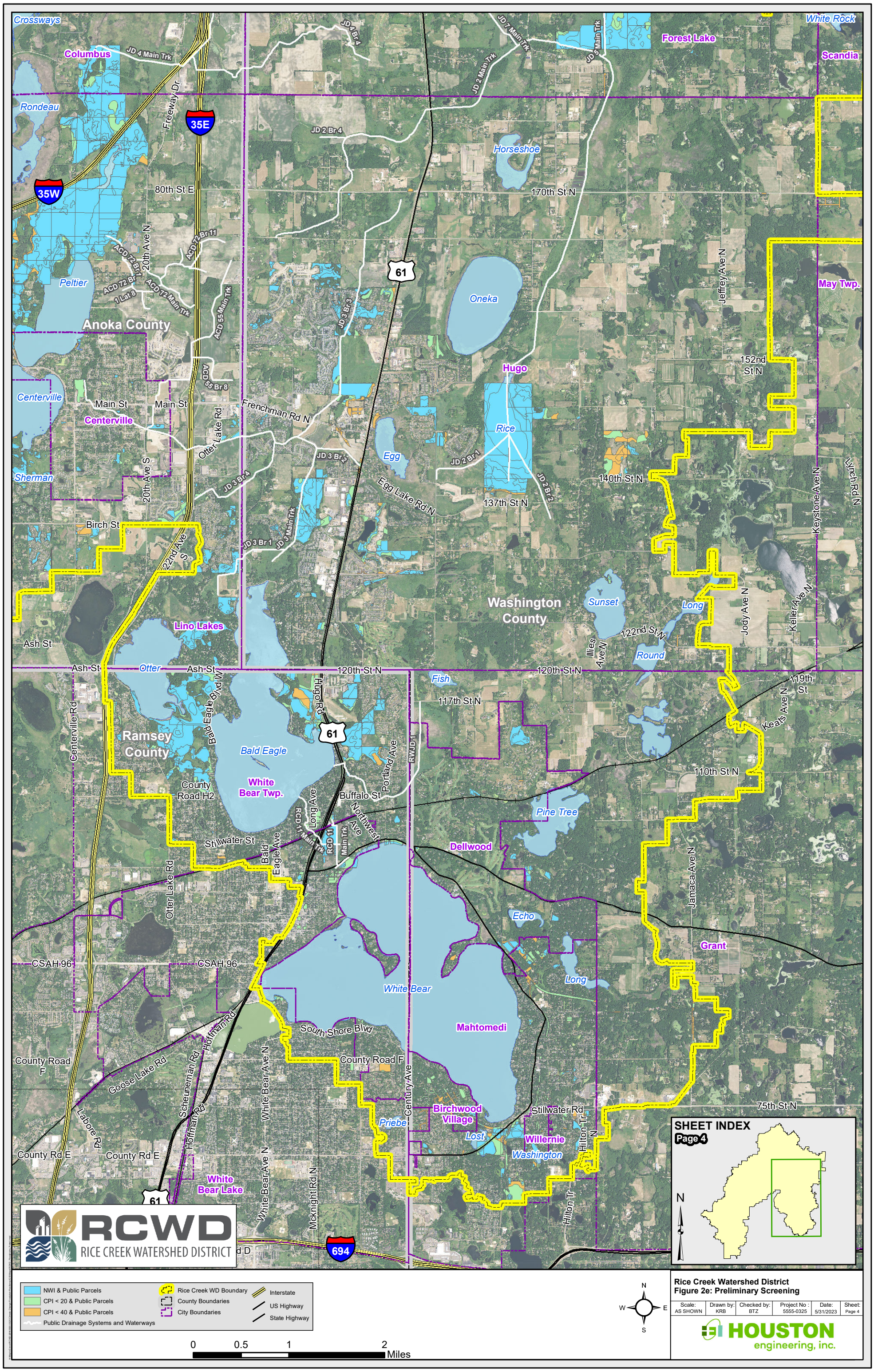

RCWD
RICE CREEK WATERSHED DISTRICT

Rice Creek Watershed District
Figure 2e: Preliminary Screening

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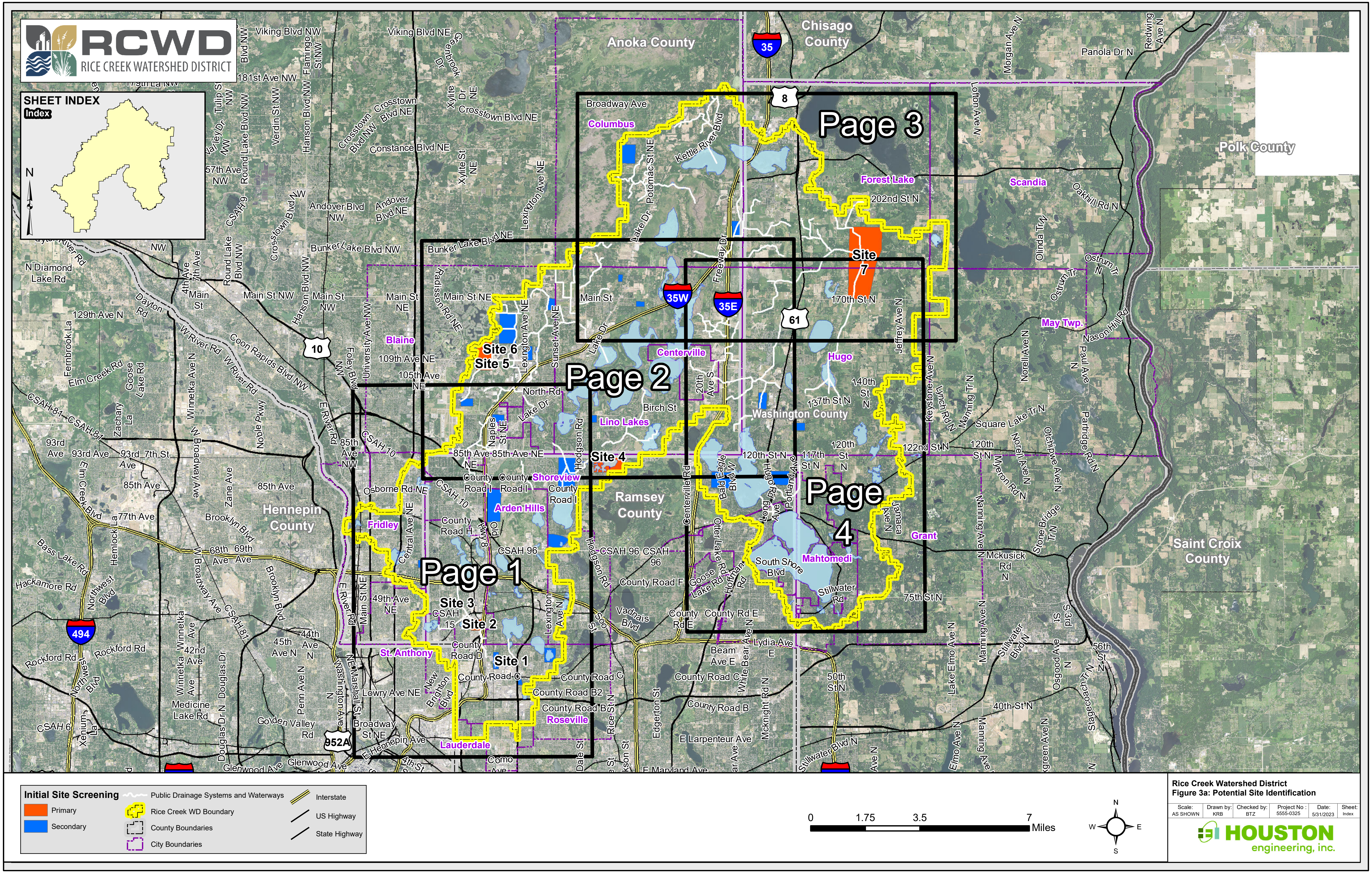
RCWD
RICE CREEK WATERSHED DISTRICT
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Index
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Anoka County
Chisago County
Polk County
Hennepin County
Ramsey County
Washington County
Saint Croix County
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Page 3
Page 4
Site 1
Site 2
Site 3
Site 4
Site 5
Site 6
Site 7
Columbus
Forest Lake
Scandia
May Twp.
Blaine
Centerville
Hugo
Lino Lakes
Shoreview
Arden Hills
Fridley
Mahtomedi
Grant
St. Anthony
Roseville
Lauderdale
Initial Site Screening
Primary
Secondary
Public Drainage Systems and Waterways
Rice Creek WD Boundary
County Boundaries
City Boundaries
Interstate
US Highway
State Highway
0
1.75
3.5
7
Miles
N
W
E
S
Rice Creek Watershed District
Figure 3a: Potential Site Identification
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Checked by: BTZ
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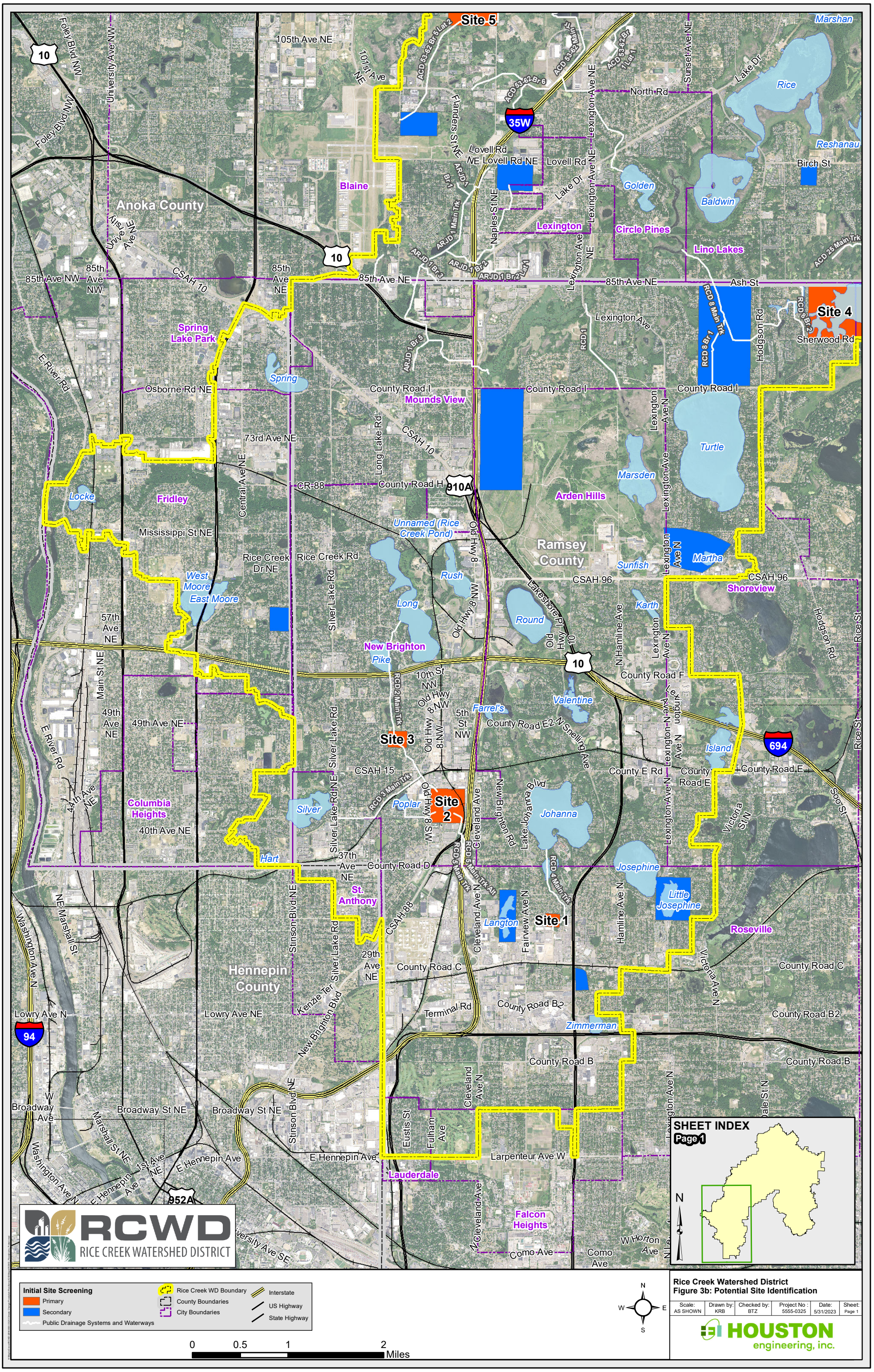
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Site 3
Site 2
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Ramsey County
Hennepin County
Blaine
Spring Lake Park
Mounds View
Fridley
Columbia Heights
New Brighton
St. Anthony
Arden Hills
Shoreview
Roseville
Lauderdale
Falcon Heights
Lexington
Circle Pines
Lino Lakes
Marshan
Rice
Reshanau
Golden
Baldwin
Birch St
Turtle
Marsden
Martha
Sunfish
Karth
Round
Rush
Long
Pike
Silver
Poplar
Hart
Johanna
Josephine
Little Josephine
Langton
Island
Valentine
Farrel's
Zimmerman
Locke
West Moore
East Moore
Spring
Unnamed (Rice Creek Pond)
35W
10
694
94
952A
105th Ave NE
85th Ave NW
85th Ave NE
73rd Ave NE
57th Ave NE
49th Ave NE
40th Ave NE
37th Ave NE
29th Ave NE
Lovell Rd
North Rd
Ash St
Sherwood Rd
Osborne Rd NE
Mississippi St NE
Rice Creek Dr NE
Rice Creek Rd
County Road I
County Road H
County Road F
County E Rd
County Road E
County Road E2
County Road D
County Road C
County Road B2
County Road B
CR-88
CSAH 10
CSAH 15
CSAH 88
CSAH 96
Broadway Ave
Broadway St NE
Lowry Ave N
Lowry Ave NE
Terminal Rd
Larpenteur Ave W
Como Ave
W Horton Ave
E Hennepin Ave
Foley Blvd NW
University Ave NW
University Ave NE
Flanders St NE
Naples St NE
Lexington Ave
Lexington Ave N
Lexington Ave NE
Sunset Ave NE
Lake Dr
Hodgson Rd
Rice St
Soo St
Victoria St N
Victoria Ave N
Silver Lake Rd
Silver Lake Rd NE
Long Lake Rd
Old Hwy 8 NW
Old Hwy 8 SW
Old Hwy 10
Lakeshore Pl NW
N Hamline Ave
Hamline Ave N
Fairview Ave N
Cleveland Ave
Cleveland Ave N
New Brighton Blvd
Lake Johanna Blvd
N Snelling Ave
Hodgson Rd
Kenzie Ter
Stinson Blvd NE
Main St NE
NE Marshall St
Marshall St NE
Washington Ave N
E River Rd
Foley Blvd NW
Central Ave NE
Eustis St
Fulham Ave
Terminal Rd
ACD 53-62 Br 5 Lat 2
ACD 53-62 Main Trk
ACD 53-62 Br 6
ACD 53-62 Br 1 Lat 1
ACD 25 Main Trk
ARJD 1 Br 1
ARJD 1 Main Trk
ARJD 1 Br 3
ARJD 1 Br 2
ARJD 1 Br 2 Lat 1
ARJD 1 Br 5
RCD 8 Main Trk
RCD 8 Br 1
RCD 8 Br 2
RCD 1
RCD 2 Main Trk
RCD 3 Main Trk
RCD 5 Main Trk
RCD 5 Main Trk Alt
RCD 4 Main Trk
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N
RCWD
RICE CREEK WATERSHED DISTRICT
Initial Site Screening
Primary
Secondary
Public Drainage Systems and Waterways
Rice Creek WD Boundary
County Boundaries
City Boundaries
Interstate
US Highway
State Highway
0
0.5
1
2
Miles
N
W
E
S
Rice Creek Watershed District
Figure 3b: Potential Site Identification
Scale: AS SHOWN
Drawn by: KRB
Checked by: BTZ
Project No : 5555-0325
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RICE CREEK WATERSHED DISTRICT

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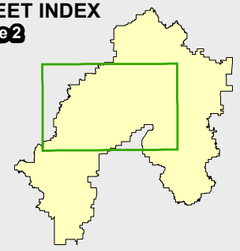

Site 6
Site 5
Blaine
Lexington
Circle Pines
Lino Lakes
Centerville
Columbus
Forest Lake
Hugo
Oneka
Rondeau
Peltier
George Watch
Marshan
Rice
Reshanau
Wards
Sherman
Golden
Baldwin
Cedar
Otter
Poplar
Fish
Egg
Washington County
Anoka County
Crossways
Main St NE
Lexington Ave NE
Radisson Rd NE
109th Ave NE
105th Ave NE
101st Ave NE
Apollo Dr
Lake Dr
Hodgson Rd
North Rd
Lovell Rd
Naples St NE
Flanders St NE
Sunset Ave NE
Main St
Freeway Dr
20th Ave N
20th Ave S
Centerville Rd
Otter Lake Rd
Frenchman Rd N
Egg Lake Rd N
80th St E
170th St N
737th St N
Birch St
Ash St
85th Ave NE
120th St N
22nd Ave S
Main St
35
35E
35W
61
ACD 53-62 Br 3
ACD 53-62 Br 5
ACD 53-62 Br 5 Lat 2
ACD 53-62 Br 6
ACD 53-62 Br 6 Lat 1
ACD 53-62 Br 4
ACD 53-62 Br 1
ACD 53-62 Br 1 Lat 1
ACD 53-62 Main Trk
ACD 53-62 Br
2 Lat Peebles
2 Lat Devine
1 LAT 2
ACD 10-22-32 Main Trk
ACD 10-22-32 Br 1
ACD 10-22-32 Br 1A
ACD 10-22-32 Br 3
ACD 10-22-32 Br 4a
ACD 10-22-32 Br 4
ACD 10-22-32 Br 2
ACD 25 Main Trk
ACD 25 Br 7
ACD 72 Br 11
ACD 72 Br 1 Lat 3
ACD 72 Main Trk
ACD 55 Main Trk
ACD 55 Br 8
JD 4 Main Trk
JD 4 Br 3
JD 4 Br 3 Lat 1
JD 4 Br 4
JD 1 Br 1
JD 7 Main Trk
JD 2 Br 4
JD 2 Main Trk
JD 2 Br 1
JD 3 Br 3
JD 3 Br 4
JD 3 Main Trk
JD 3 Br 1
AR JD 1 Main Trk
AR JD 1 Br 3
AR JD 1 Br 2
AR JD 1 Br 2 Lat 1
AR JD 1 Br 4
RCD 8 Main Trk

Initial Site Screening
- Primary
- Secondary

- Public Drainage Systems and Waterways
- Rice Creek WD Boundary
- County Boundaries
- City Boundaries
- Interstate
- US Highway
- State Highway

0 0.5 1 2 Miles

N W E S

Rice Creek Watershed District
Figure 3c: Potential Site Identification

Scale:	Drawn by:	Checked by:	Project No :	Date:	Sheet:
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HOUSTON engineering, inc.

RCWD
RICE CREEK WATERSHED DISTRICT

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Page 3

N

Broadway Ave
W Broadway Ave
W Broadway Ave
8
220th St N
11th Ave SW
61
Lofton Ave N
Manning Tr N
Scandia
Forest Lake
Columbus
Potomac St NE
Kettle River Blvd
Howard
Mud
Clear
ACD 31 Br 3
ACD 31
ACD 31 Br 1
ACD 31 Main Trk
ACD 31 Br 6
ACD 31 Br 5
ACD 31 Br 7
ACD 31 Br 2
ACD 46 Main Trk
ACD 46 Br 3
ACD 46 Br 1
ACD 46 Br 4
ACD 46 Br 5
Columbus
JD 4 Br 2
ACD 15 Main Trk
202nd St N
200th St N
202nd St N
Keystone Ave N
192nd St N
White Rock
JD 5 Main Trk
JD 7 Br 1
JD 7 Br 3
JD 6 Br 1
JD 7 Main Trk
JD 7 Br 2
JD 4 Br 3
JD 4 Br 3 Lat 1
JD 4 Br 4
JD 4 Main Trk
Anoka County
Crossways
Lake Dr
JD 4 Main Trk
35
35E
Rondeau
Freeway Dr
Site 7
Washington County
JD 2 Br 4
Horseshoe
170th St N
Hugo
JD 2 Main Trk
May Twp.
ACD 10-22-32 Main Trk
ACD 10-22-32 Br 4
ACD 10-22-32 Br 3
ACD 10-22-32 Br 4
ACD 10-22-32 Br 2
Lino Lakes
Blaine
Main St
35W
80th St E
20th Ave N
ACD 10-22-32 Br 1A
ACD 10-22-32 Br 1
Ave NE

Initial Site Screening
- Primary
- Secondary

- Public Drainage Systems and Waterways
- Rice Creek WD Boundary
- County Boundaries
- City Boundaries

- Interstate
- US Highway
- State Highway

0 0.5 1 2 Miles

N W E S

Rice Creek Watershed District
Figure 3d: Potential Site Identification

Scale:	Drawn by:	Checked by:	Project No :	Date:	Sheet:
AS SHOWN	KRB	BTZ	5555-0325	5/31/2023	Page 3

HOUSTON engineering, inc.

Site 7

Crossways
Columbus
JD 4 Main Trk
JD 4 Br 4
JD 7 Main Trk
JD 5 Main Trk
Forest Lake
White Rock
Scandia
Rondeau
Freeway Dr
35E
35W
JD 2 Main Trk
JD 2 Br 4
Horseshoe
80th St E
170th St N
ACD 72 Br 11
20th Ave N
ACD 72 Br 1 Lat 1
ACD 72 Br 1 Lat 8
ACD 72 Main Trk
ACD 55 Main Trk
61
Peltier
Oneka
JD 3 Br 3
Jeffrey Ave N
May Twp.
Anoka County
Hugo
152nd St N
ACD 55 Br 8
Centerville
Main St
Centerville
Frenchman Rd N
Otter Lake Rd
Rice
Egg
JD 3 Br 2
JD 2 Br 1
JD 2 Br 2
Sherman
20th Ave S
JD 3 Br 4
Egg Lake Rd N
140th St N
137th St N
Birch St
JD 3 Main Trk
JD 3 Br 1
22nd Ave S
Keystone Ave N
Lynch Rd N
Washington County
Sunset
Long
Jody Ave N
Keller Ave N
Lino Lakes
122nd St N
Illies Ave N
Round
Ash St
Ash St
Otter
Ash St
120th St N
120th St N
Unnamed (July Ave)
119th St
Fish
117th St N
Keats Ave N
Centerville Rd
Bald Eagle Blvd W
Hugo Rd
61
Portland Ave
RWJD 1
Ramsey County
Bald Eagle
110th St N
County Road H2
White Bear Twp.
Buffalo St
Long Ave
Northwest Ave
RCD 11 Main Trk
RCD 11
Main Trk
Pine Tree
Stillwater St
Bald Eagle Ave
Dellwood
Otter Lake Rd
Jamaca Ave N
Echo
CSAH 96
CSAH 96
Grant
White Bear
Long
Mahtomedi
South Shore Blvd
Hoffman Rd
County Road F
Goose Lake Rd
Scheuneman Rd
White Bear Ave N
Century Ave
Birchwood Village
Stilwater Rd
75th St N
Priebe
Lost
Willernie
Washington
Hilton Tr N
Hilton Tr
Labore Rd
County Rd E
County Rd E
White Bear Lake
Mcknight Rd N
694

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N

RCWD
RICE CREEK WATERSHED DISTRICT

Initial Site Screening
- Primary
- Secondary
- Public Drainage Systems and Waterways

- Rice Creek WD Boundary
- County Boundaries
- City Boundaries

- Interstate
- US Highway
- State Highway

0 0.5 1 2 Miles

N W E S

Rice Creek Watershed District
Figure 3e: Potential Site Identification

Scale:	Drawn by:	Checked by:	Project No :	Date:	Sheet:
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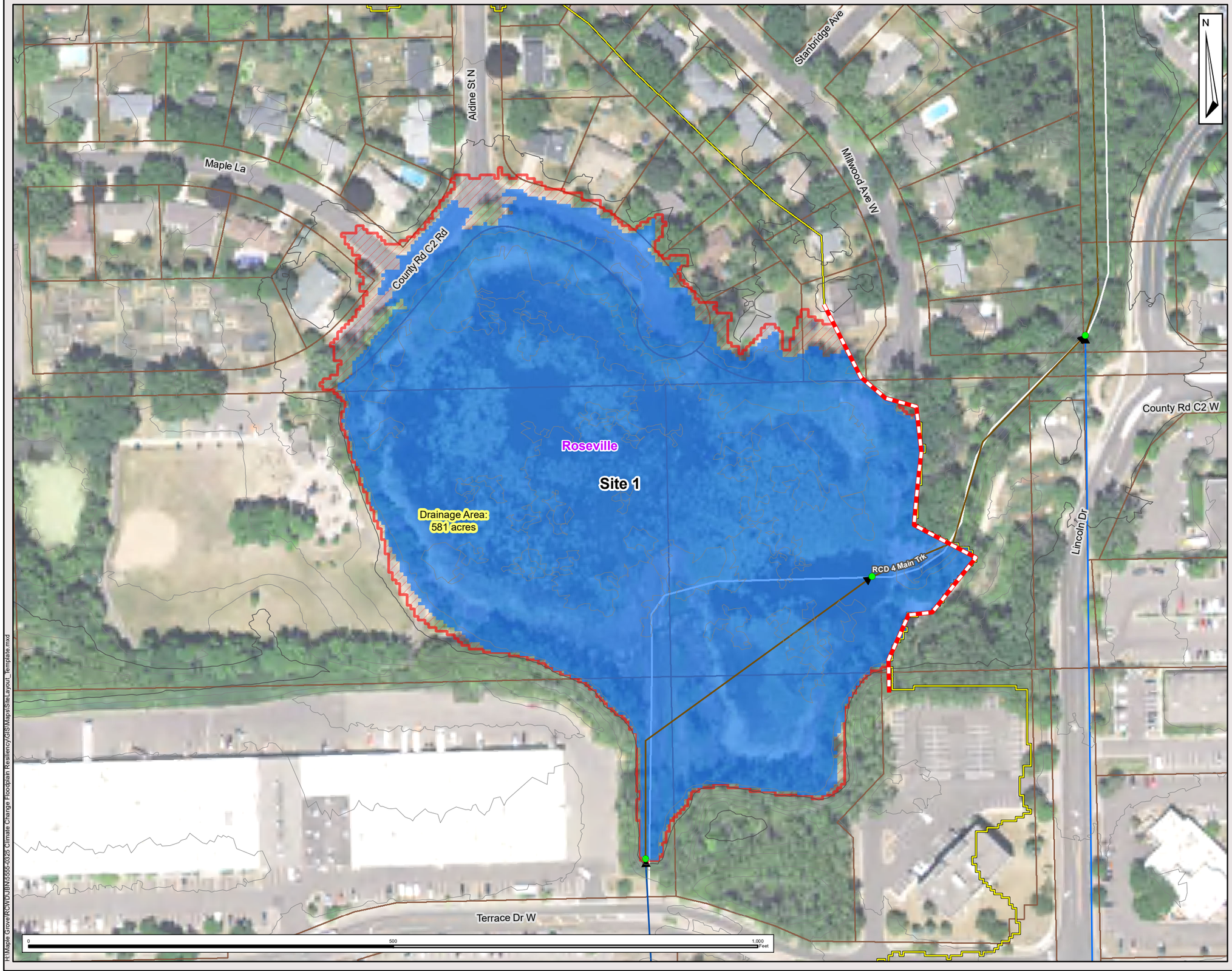
Appendix A

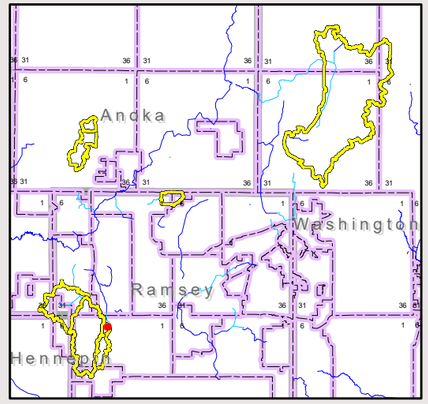
Project Portfolios and Site Statistics

Proposed Site Statistics

Site	Drainage Area (acres)	Principal Spillway Outlet Structure Size	Max Height (feet)	Spillway Elevation (feet, NAVD 88	Top of Dam Elevation (feet, NAVD 88)	Spillway Inundation Area (acres)	Top of Dam Inundation Area (acres)	Spillway Storage (ac-ft)	Top of Dam Storage (ac-ft)	Spillway Storage (inches)	Top of Dam Storage (inches)	POPCC[1]
1	581	6.5' weir	9.4	897.8	898.8	8.7	9.2	17	26	0.3	0.5	$150k – $425k
2	2,682	weir	8.7	899.0	900.0	46.5	48.4	171	218	0.8	1.0	$150k - $300k[2]
3	4,454	18" Culvert + weirs	6.4	881.3	882.3	6.4	7.7	14	21	<0.1	0.1	$150k - $330k[3]
4	361	24" Culvert	1.5	893.8	894.8	111.8	162.1	156	295	5.2	9.8	$140k - $250k
5	825	48" Culvert	3.2	897.9	898.9	13.3	70.4	5	46	0.1	0.7	$170k - $600k
6	235	12" Culvert	2.6	897.7	898.7	51.3	104.0	28	108	1.4	5.5	$150k – $390k
7	12,047	36" Culvert	9.3	919.2	920.2	356.6	483.1	362	788	0.4	0.8	$180k – $630k

[1] Preliminary Opinion of Probable Construction Cost (POPCC) includes cost for construction only. Does not include permitting, final design, land acquisition, etc.
[2] POPCC including hydraulic dredging of material = $5,180,000
[3] POPCC including hydraulic dredging of material = $2,200,000





Drainage Area (ac): 825
Outlet Structure Culvert Size: 48"
Embankment Length (ft): 1,496
Average Height (ft): 2.0
Maximum Height (ft): 3.2
Embankment Volume (CY): 1,536
Auxiliary Spillway:
- Elevation (ft): 899.3
- Inundation (ac): 13.3
- Storage (ac-ft / in): 5.1 / 4.6

Embankment:
- Elevation (ft): 900.3
- Inundation (ac): 70.4
- Storage (ac-ft / in): 45.5 / 7.8

- Embankment
- Contour Intermediate
- Contour Index
- Nodes
- Auxiliary Spillway Pool Footprint
- Top of Dam Pool Footprint
- Drainage Area
- Public Drainage Systems and Waterways
- Parcels (Jan 2023)
- Cities

Modeling Links
- Circular
- Natural
- Special
- Rectangular
- Trapezoidal
- Orifices
- Pumps
- Weirs

2021 NAIP Imagery

Site 1
RCD 2345

Drawn by:	Checked by:	Project No :	Date:	Scale:
KRB	BTZ	5555-0325	6/8/2023	As Shown

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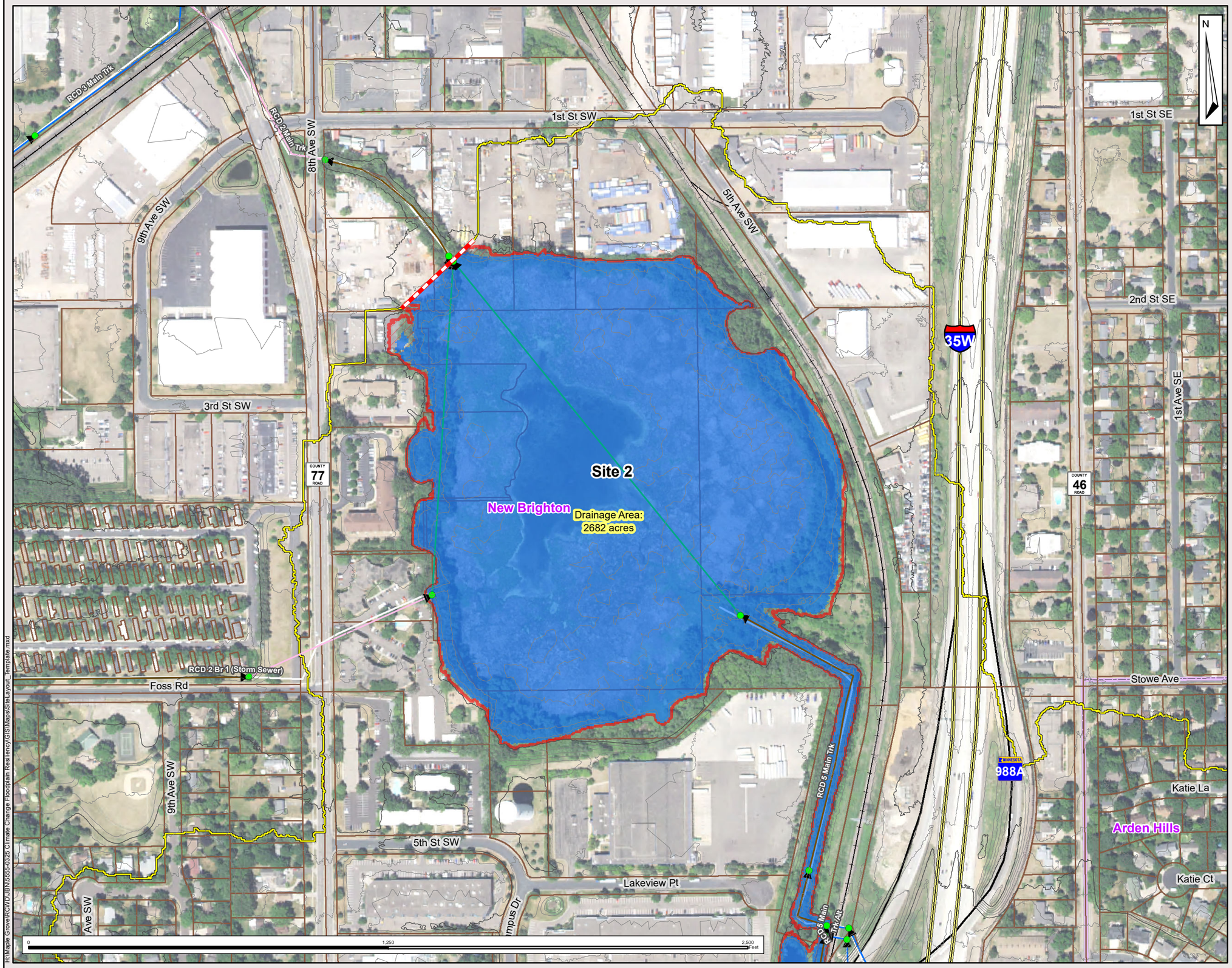

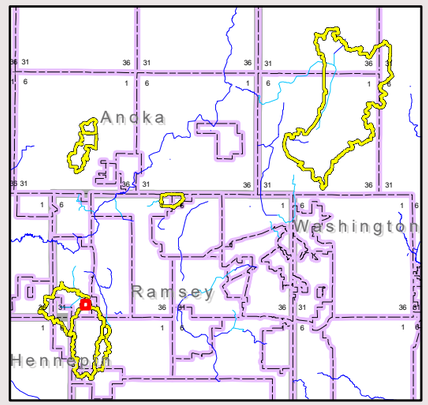

Drainage Area (ac): 2,682
Outlet Structure: Fixed Weir Size
Embankment Length (ft): 292
Average Height (ft): 3.0
Maximum Height (ft): 8.7
Embankment Volume (CY): 544
Auxiliary Spillway:
Elevation (ft): 900.5
Inundation (ac): 46.5
Storage (ac-ft / in): 170.9 / 44.1
Embankment:
Elevation (ft): 901.5
Inundation (ac): 48.4
Storage (ac-ft / in): 218.3 / 54.2

- Embankment
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- Contour Index
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- Auxiliary Spillway Pool Footprint
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- Cities

Modeling Links

- Circular
- Natural
- Special
- Rectangular
- Trapezoidal
- Orifices
- Pumps
- Weirs

2021 NAIP Imagery

Site 2
RCD 2345

Drawn by:	Checked by:	Project No :	Date:	Scale:
KRB	BTZ	5555-0325	6/8/2023	As Shown

HOUSTON engineering, inc.

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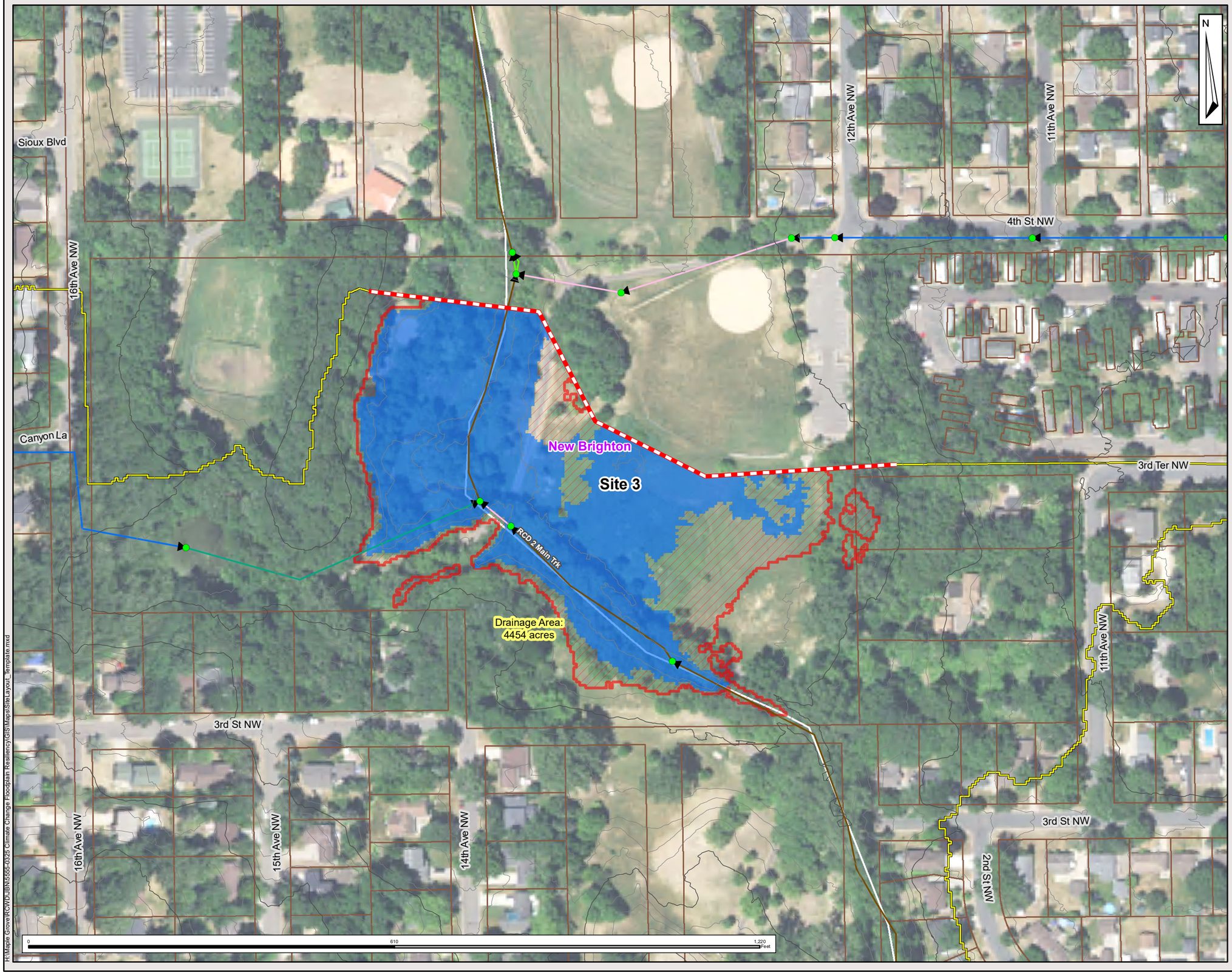

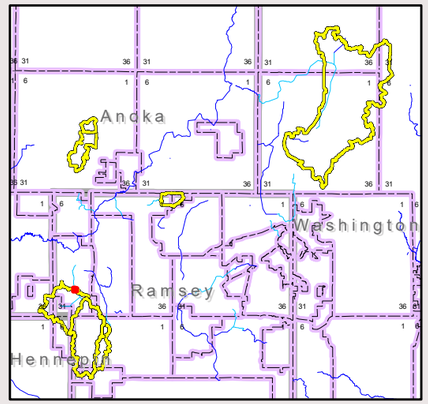

Drainage Area (ac): 4,454
Outlet Structure: Fixed Weir Size
Embankment Length (ft): 756
Average Height (ft): 1.8
Maximum Height (ft): 6.4
Embankment Volume (CY): 684
Auxiliary Spillway:
- Elevation (ft): 880.3
- Inundation (ac): 6.4
- Storage (ac-ft / in): 14.3 / 26.8

Embankment:
- Elevation (ft): 881.3
- Inundation (ac): 7.7
- Storage (ac-ft / in): 21.3 / 33.4

Embankment
Contour Intermediate
Contour Index
Nodes
Auxiliary Spillway Pool Footprint
Top of Dam Pool Footprint
Drainage Area
Public Drainage Systems and Waterways

Parcels (Jan 2023)
Cities

Modeling Links
- Circular
- Natural
- Special
- Rectangular
- Trapezoidal
- Orifices
- Pumps
- Weirs

2021 NAIP Imagery

Site 3
RCD 2345

Drawn by:	Checked by:	Project No :	Date:	Scale:
KRB	BTZ	5555-0325	6/8/2023	As Shown

HOUSTON engineering, inc.

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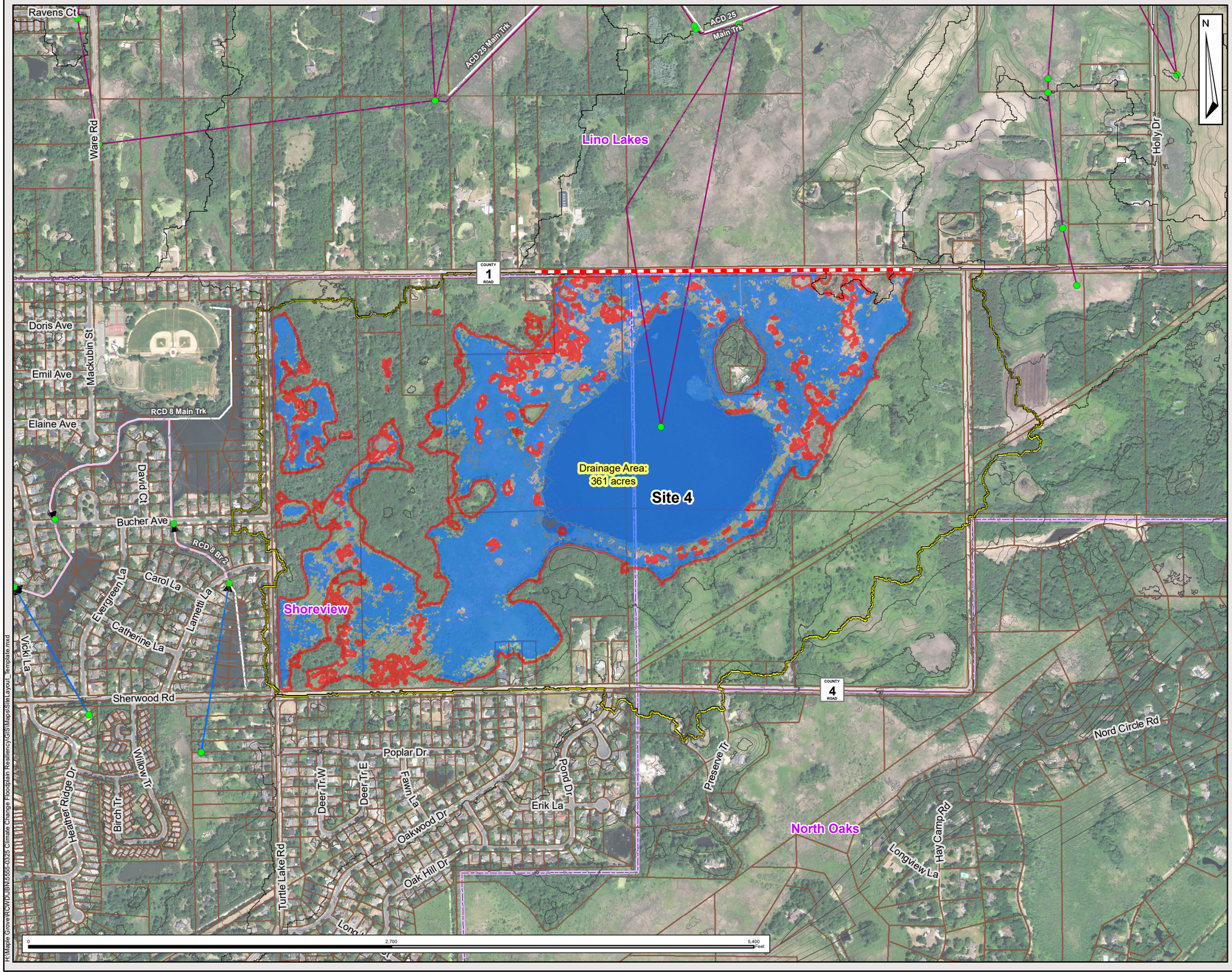

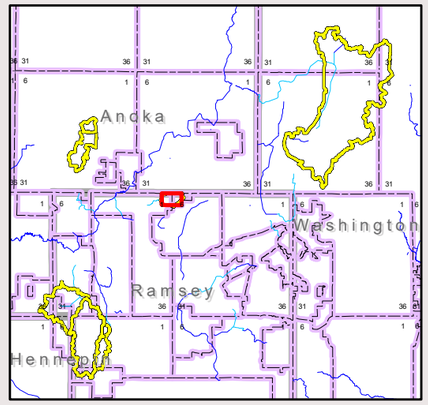

Drainage Area (ac): 361
Outlet Structure Culvert Size: 24"
Embankment Length (ft): 2,061
Average Height (ft): 0.6
Maximum Height (ft): 1.5
Embankment Volume (CY): 420
Auxiliary Spillway:
Elevation (ft): 893.9
Inundation (ac): 111.8
Storage (ac-ft / in): 156.4 / 16.8
Embankment:
Elevation (ft): 894.9
Inundation (ac): 162.1
Storage (ac-ft / in): 294.8 / 21.8

- Embankment
- Contour Intermediate
- Contour Index
- Nodes
- Auxiliary Spillway Pool Footprint
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- Parcels (Jan 2023)
- Cities

Modeling Links

- Circular
- Natural
- Special
- Rectangular
- Trapezoidal
- Orifices
- Pumps
- Weirs

2021 NAIP Imagery

Site 4
ACD 25

Drawn by:	Checked by:	Project No :	Date:	Scale:
KRB	BTZ	5555-0325	6/8/2023	As Shown

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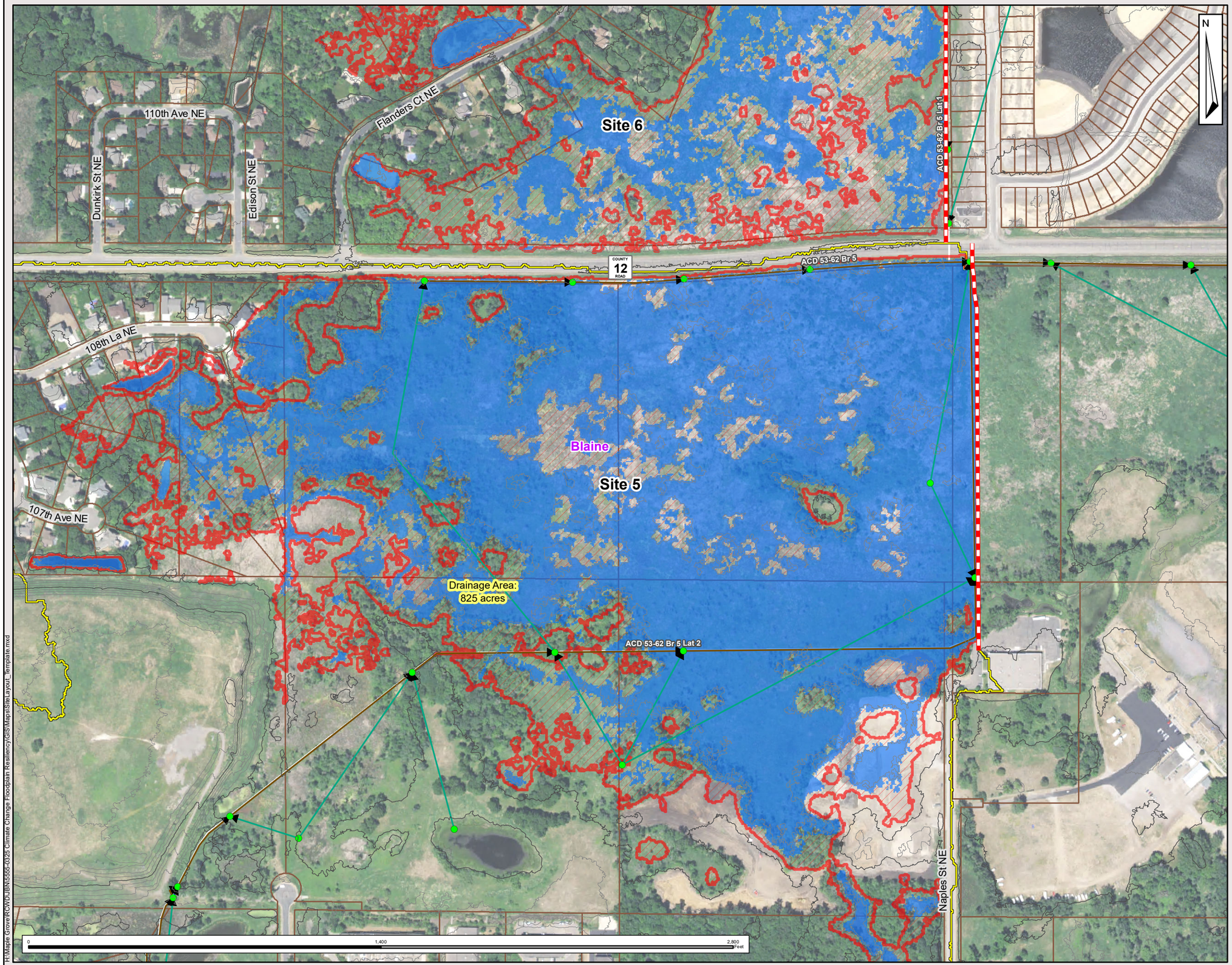

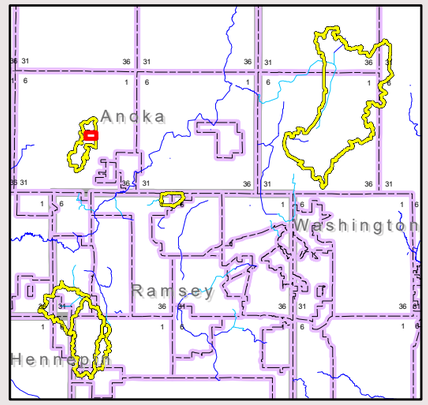

Drainage Area (ac): 825
Outlet Structure Culvert Size: 48"
Embankment Length (ft): 1,496
Average Height (ft): 2.0
Maximum Height (ft): 3.2
Embankment Volume (CY): 1,536
Auxiliary Spillway:
- Elevation (ft): 899.3
- Inundation (ac): 13.3
- Storage (ac-ft / in): 5.1 / 4.6

Embankment:
- Elevation (ft): 900.3
- Inundation (ac): 70.4
- Storage (ac-ft / in): 45.5 / 7.8

- Embankment
- Contour Intermediate
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- Cities

Modeling Links
- Circular
- Natural
- Special
- Rectangular
- Trapezoidal
- Orifices
- Pumps
- Weirs

2021 NAIP Imagery

Site 5
LRC

Drawn by:	Checked by:	Project No :	Date:	Scale:
KRB	BTZ	5555-0325	6/8/2023	As Shown

HOUSTON engineering, inc.

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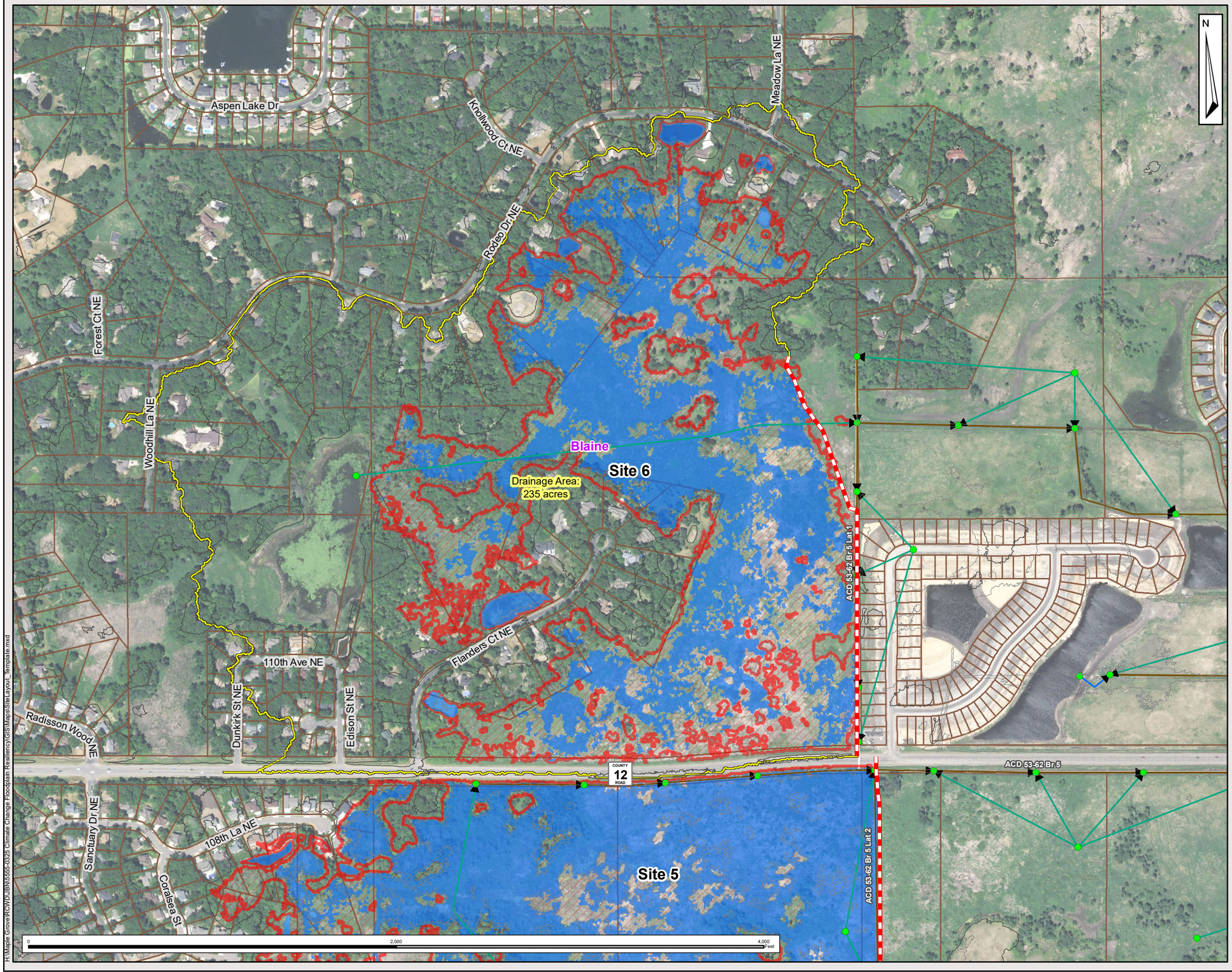

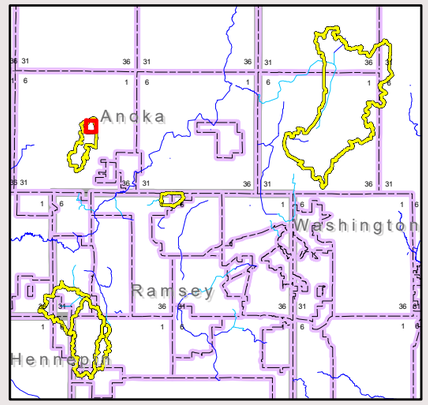

Drainage Area (ac): 235
Outlet Structure Culvert Size: 12"
Embankment Length (ft): 1,708
Average Height (ft): 1.2
Maximum Height (ft): 2.6
Embankment Volume (CY): 894
Auxiliary Spillway:
- Elevation (ft): 897.6
- Inundation (ac): 51.3
- Storage (ac-ft / in): 27.9 / 6.5

Embankment:
- Elevation (ft): 898.6
- Inundation (ac): 104.0
- Storage (ac-ft / in): 108.3 / 12.5

- Embankment
- Contour Intermediate
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- Nodes
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- Public Drainage Systems and Waterways
- Parcels (Jan 2023)
- Cities

Modeling Links
- Circular
- Natural
- Special
- Rectangular
- Trapezoidal
- Orifices
- Pumps
- Weirs

2021 NAIP Imagery

Site 6
LRC

Drawn by:	Checked by:	Project No :	Date:	Scale:
KRB	BTZ	5555-0325	6/8/2023	As Shown

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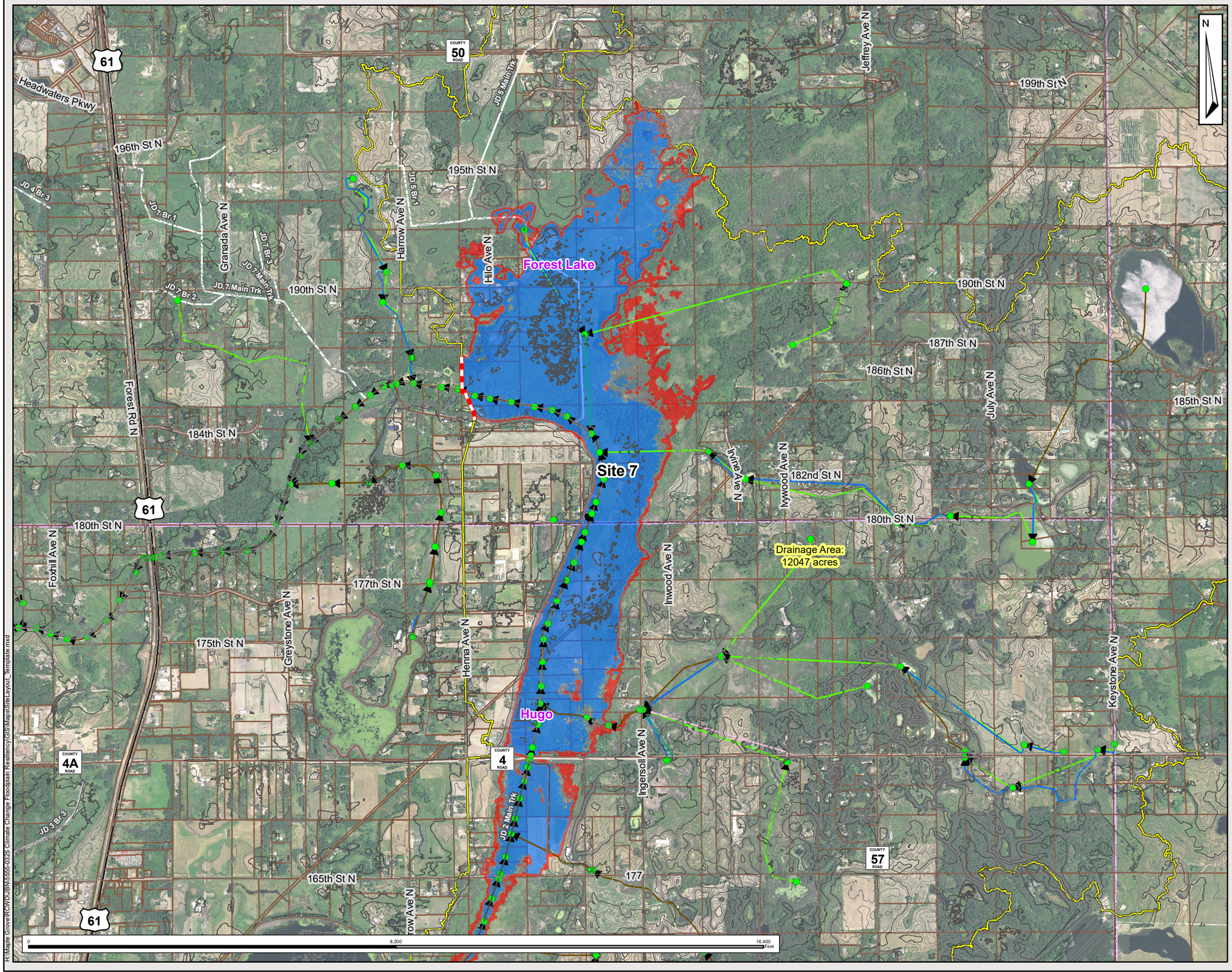

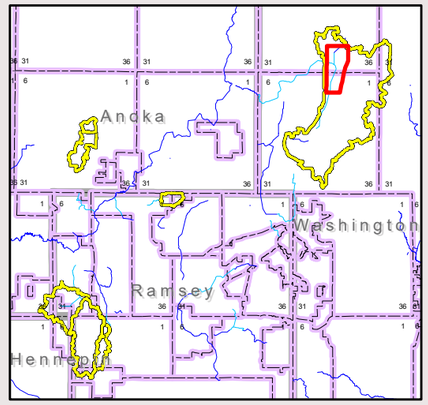

Drainage Area (ac): 12,047
Outlet Structure Culvert Size: 36"
Embankment Length (ft): 1,328
Average Height (ft): 2.3
Maximum Height (ft): 9.3
Embankment Volume (CY): 1,691
Auxiliary Spillway:
- Elevation (ft): 921.6
- Inundation (ac): 356.6
- Storage (ac-ft / in): 362.1 / 12.2

Embankment:
- Elevation (ft): 922.6
- Inundation (ac): 483.1
- Storage (ac-ft / in): 787.6 / 19.6

- Embankment
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- Parcels (Jan 2023)
- Cities

Modeling Links
- Circular
- Natural
- Special
- Rectangular
- Trapezoidal
- Orifices
- Pumps
- Weirs

2021 NAIP Imagery

Site 7
JD2

Drawn by:	Checked by:	Project No :	Date:	Scale:
KRB	BTZ	5555-0325	6/8/2023	As Shown

HOUSTON engineering, inc.

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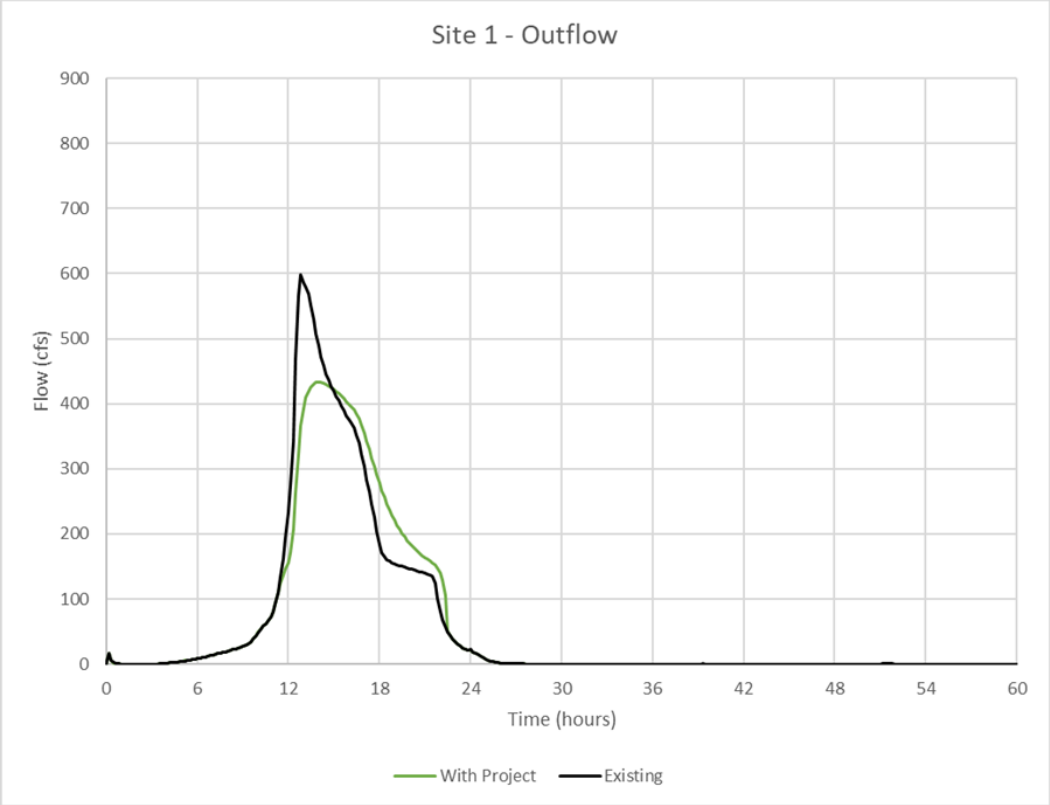
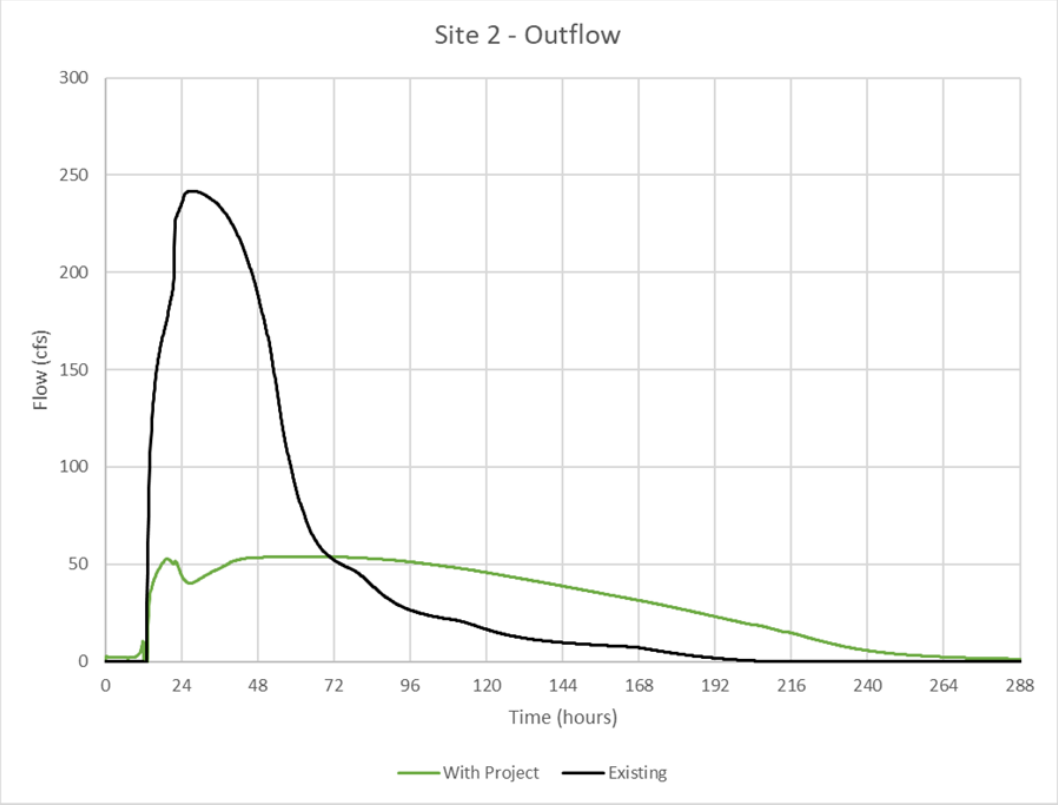
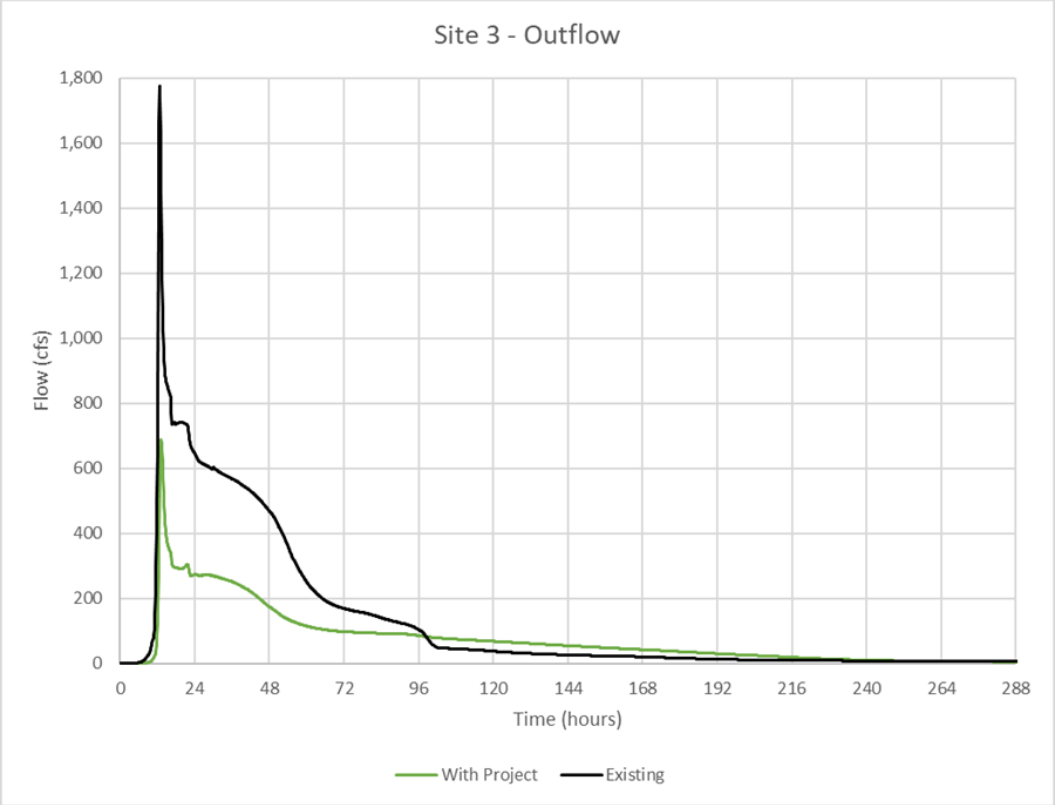
Appendix B

Proposed Site Outflow Hydrographs


Site 1 - Outflow
900
800
700
600
500
400
300
200
100
0
Flow (cfs)
0
6
12
18
24
30
36
42
48
54
60
Time (hours)
With Project
Existing


Site 2 - Outflow
300
250
200
150
100
50
0
Flow (cfs)
0
24
48
72
96
120
144
168
192
216
240
264
288
Time (hours)
With Project
Existing


Site 3 - Outflow
1,800
1,600
1,400
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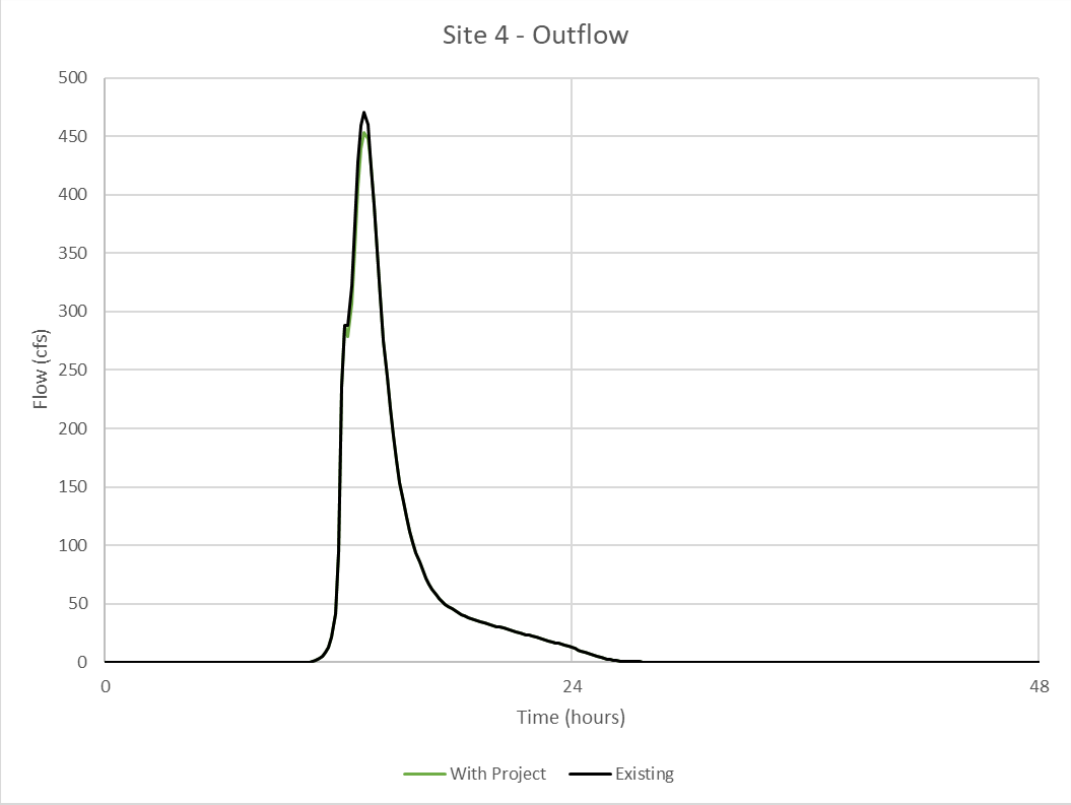
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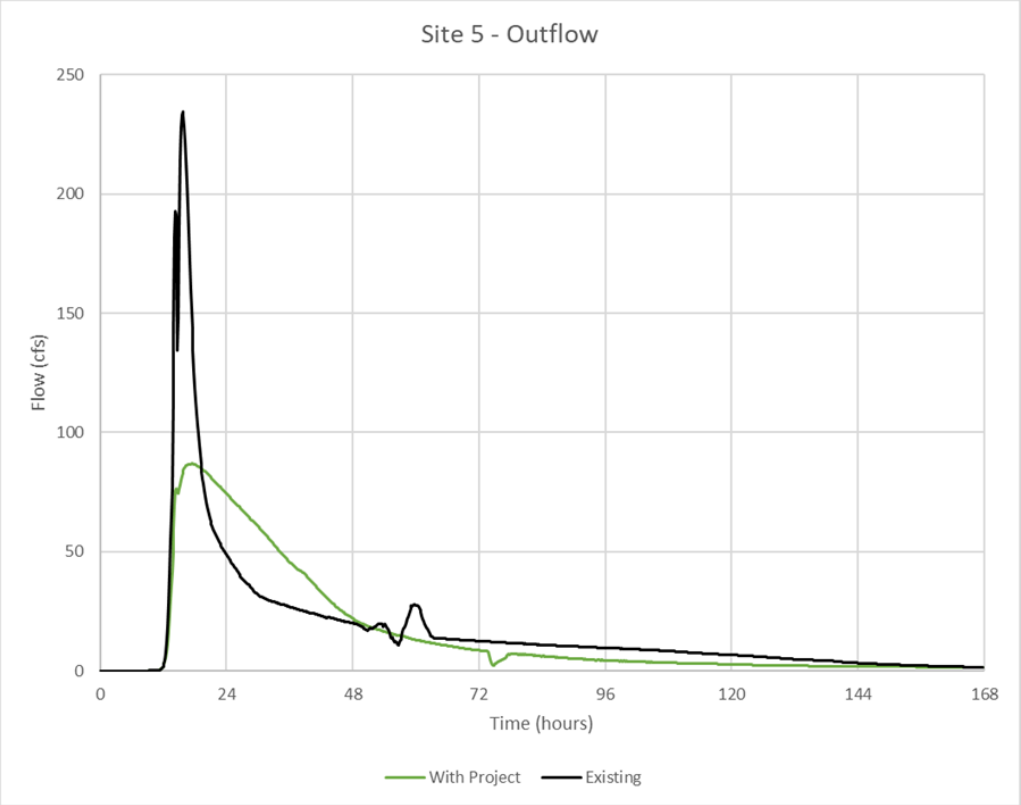
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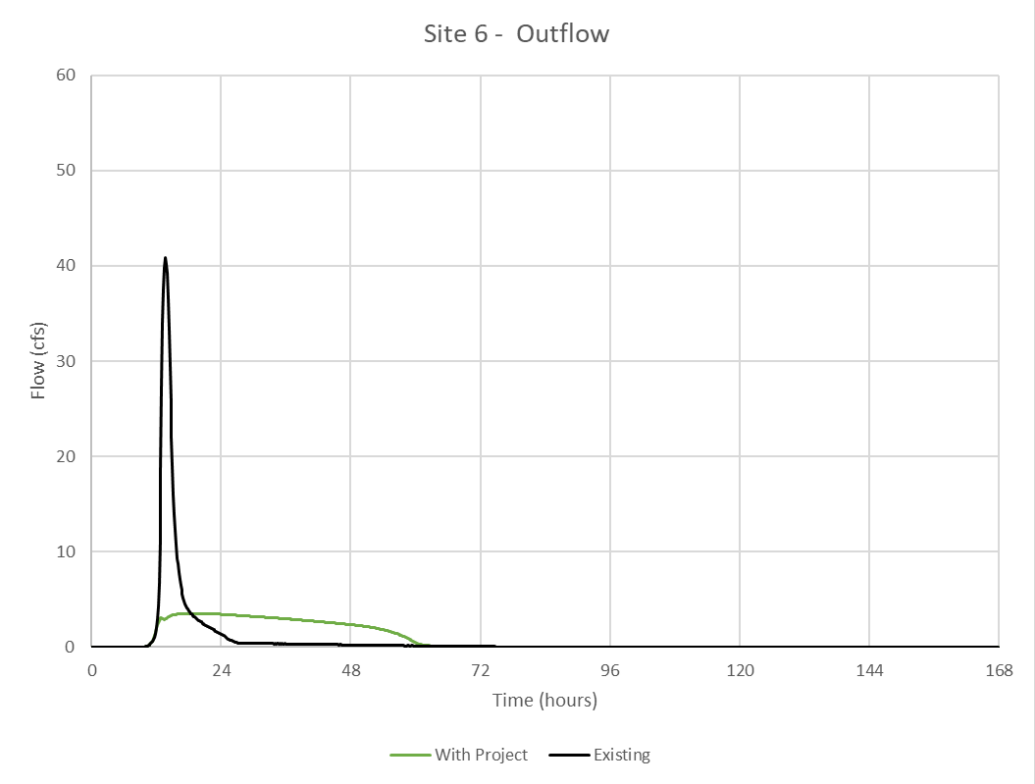
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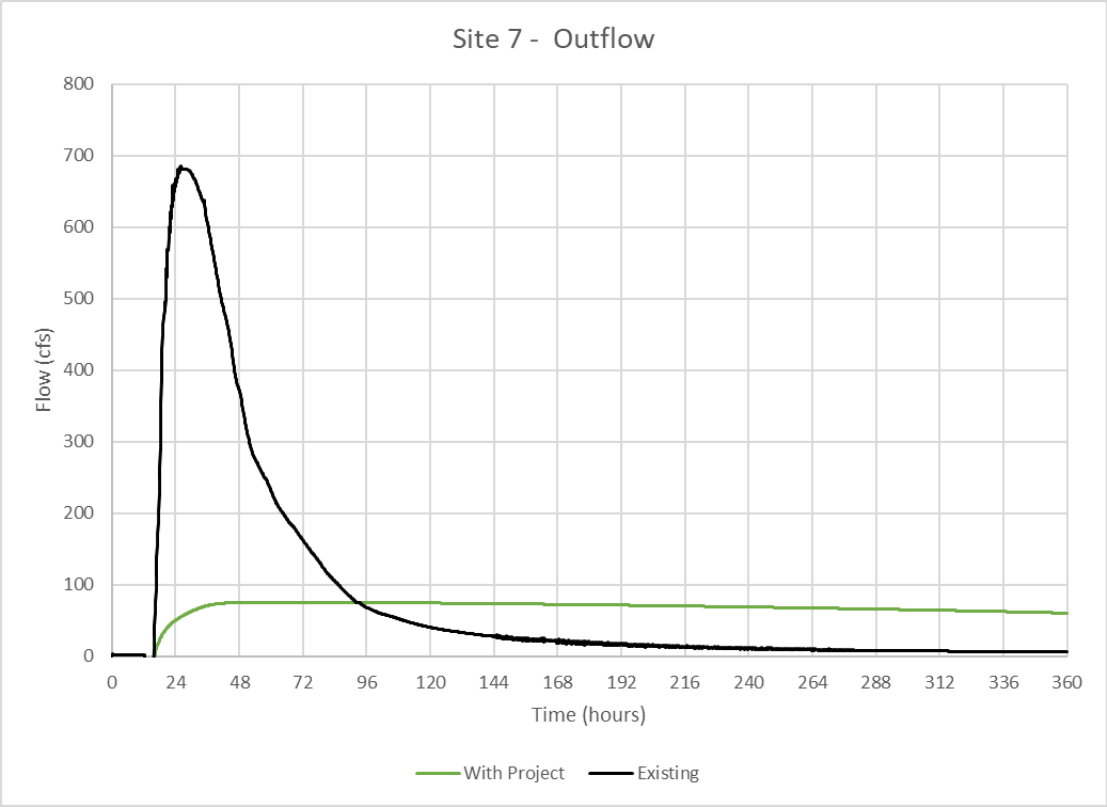
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Time (hours)
With Project
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Appendix C

Community Resilience Building Workshop Series Summary Report

Prepared by:
Freshwater Society

Rice Creek Watershed District

Community Resilience Building Workshop Series Summary

Shoreview Community Center, February 2023 + March 2023

Summary prepared by

FRESHWATER

Table of Contents

Funding for this work made possible by:

MINNESOTA POLLUTION CONTROL AGENCY

CLEAN WATER LAND & LEGACY AMENDMENT

Introduction

Background

The Rice Creek Watershed District (RCWD) received a grant from the Minnesota Pollution Control Agency (MPCA) in 2022 to pursue a project that would move the watershed toward more climate resilient practices. RCWD invited Freshwater to convene and facilitate a series of two Community Resilience Building (CRB) workshops to connect local insights with hydraulic models that mapped flooding locations (produced by Houston Engineering) to identify opportunities to build resilience in the watershed related to local climate change. Climate change is one of the greatest challenges facing society today. In Minnesota, there is a risk due to increases in extreme heat, extreme rainfall, higher summertime dew points, warmer winters, and the intensity of severe storms.

Many different topics and issues were broached as workshop participants worked together to brainstorm how to create a more resilient Rice Creek watershed. While many of the strategies proposed are directly related to the hydraulic models and flooding issues, there are also opportunities to pursue co-benefits that address other climate hazards, like extreme heat and warming winters, in addition to flooding. From structural solutions to social ones, the following report documents how key stakeholders are thinking about climate resiliency in the watershed. What emerges are exciting opportunities for the RCWD, cities, counties, and other collaborators to pursue.

Process & Methodology

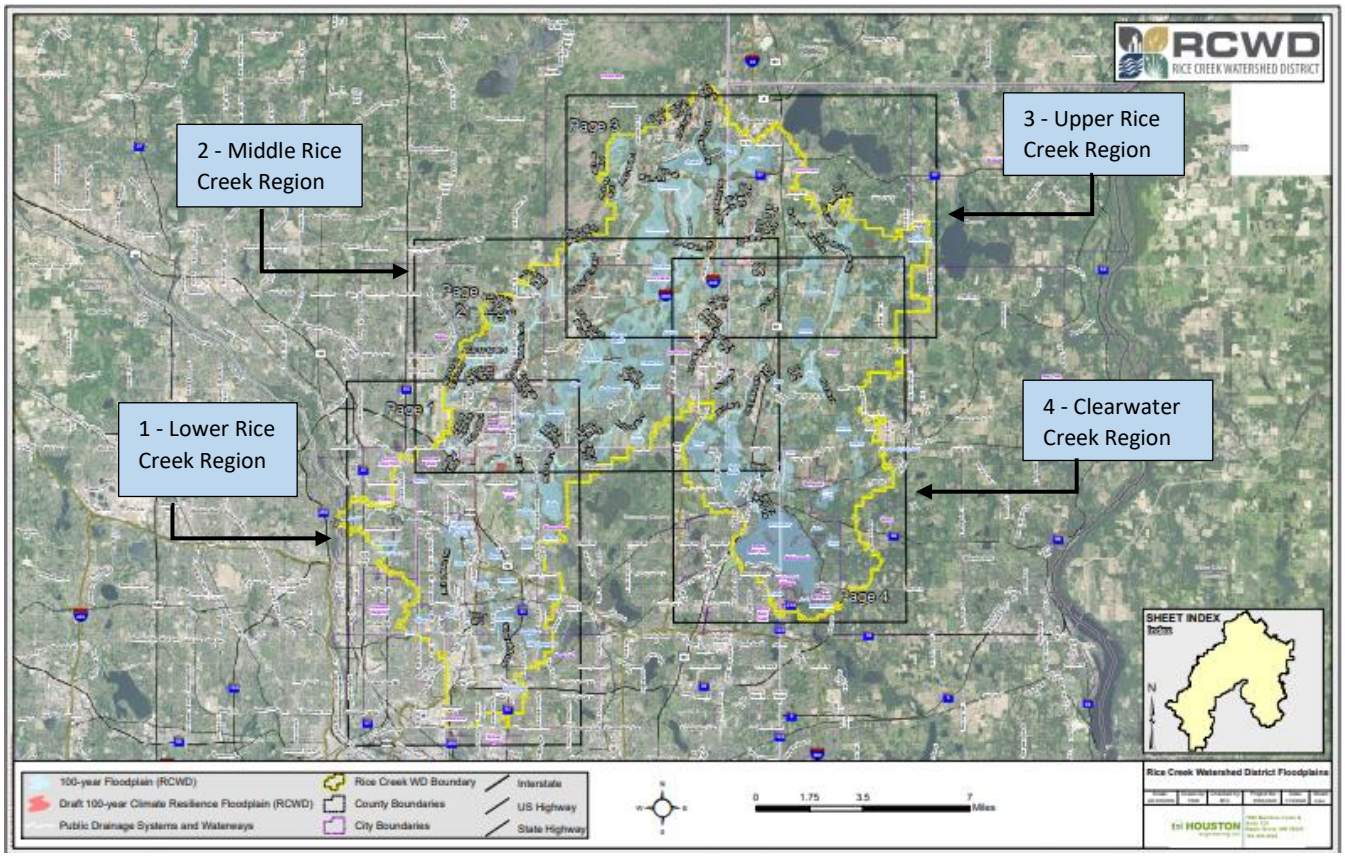
In early 2023, staff and volunteers from entities across the Rice Creek Watershed District came together in-person at the Shoreview Community Center to engage in conversations about climate resiliency in the district. The first workshop, held in February 2023, began with participants hearing a brief presentation from RCWD about the impacts of climate change in the watershed. Participants were then asked to rank which hazards they feel are most pressing to address in the watershed – with the following being the collective ranking, from most pressing to least pressing as thought by participants:

1. Flooding and extreme precipitation
2. Drought
3. Extreme heat
4. Warming winters and ice

Next, participants were asked to identify infrastructural, social and environmental **features** across the watershed that may be vulnerable to climate hazards. These features ranged from specific roadways in the watershed to nursing homes and power stations. This exercise set up the group well for the second workshop, held in March 2023, to consider what specific **strategies** could be pursued to protect the identified features from climate hazards, particularly flooding and extreme precipitation, now and in the future.

Process/Methodology (cont.)

The Rice Creek watershed covers 186 square miles and encompasses parts of Washington, Ramsey, Anoka and Hennepin counties, including all or portions of 28 cities and townships. Since this watershed encompasses a large surface area and has many unique attributes, the core workshop planning team decided to split up the watershed by **planning region** so that participants could explore a smaller area of the watershed more completely. The below image shows how the watershed was broken up for the purposes of the workshops. You can read more about each region in the appendix.



Once the workshops were complete, all the features and their corresponding strategy suggestions were compiled into a spreadsheet, and then analyzed and synthesized by **themes**. The body of this report reflects all the strategy suggestions that came out of the workshop as categorized by themes, and includes **where** to consider targeting the strategy, **how high a priority** the strategy was ranked in the workshops, and which **entities** might be best positioned to pursue the strategy.

Themes + Strategies for Climate Resilience

The following sections outline the key themes that came up throughout the workshops, and the action recommendations provided by participants to address the issues/themes. The sections are ordered alphabetically, and do not reflect an overall priority. While broken out into separate sections in this report, the themes are not mutually exclusive and there is a lot of interplay between them.

Each table below has a column that identifies the general or specific locations/populations to target or prioritize for the implementation of the suggested strategy, and an indication of whether the suggested strategy was ranked as High, Medium or Low Priority within the workshop. The number of dots included in the priority ranking column correlate to an exercise conducted in the workshop, where participants were given a sheet of five sticky dots and asked to place the dots next to strategies they felt were most important. The higher the number of dots next to a strategy, the more people felt it should be prioritized, so dot number is another indication of how the strategies could be prioritized.

The tables also include a column indicating the agency partners who may be engaged with potentially implementing the strategy. The most likely agency to lead the strategy, if implemented, is indicated in **bold**. Generally, strategies that involve land use management are led by Cities due to their zoning and land use authorities. Cities are also the likely lead for most community engagement efforts due to their close relationship with their constituents. The RCWD is the most likely lead for regional stormwater management efforts. Multiple road authorities (Cities, Counties, and MnDOT) are likely to lead efforts involving the transportation systems. Soil and Water Conservation Districts (SWCDs) are most often the first point of contact regarding rural land practices and soil conservation.

Accessibility

A top issue workshop participants considered was accessibility. While equal accessibility of services and opportunities should always be pursued no matter the conditions, the importance of accessibility becomes more crucial in times of emergency. For example, during flooding events, emergency routes should always remain accessible and predesignated alternative routes should provide redundancy to the system so people have multiple options to get around. There was also an awareness of improving accessibility of information. Various parts of the watershed, like around Bald Eagle Ave, are home to immigrant populations who may not speak English as a first language. Ensuring that communications are disseminated in multiple languages and in a variety of ways, like via TV/Radio, print, etc., means that messages will have a greater likelihood of reaching more people in times of stress. Lastly, accessibility to public indoor spaces is important during times of inclement climate events. Identifying areas where people can congregate safely and describing how to get to these safe zones could be important information to communicate to the public ahead of hazard events.

Accessibility Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Ensure communication and engagement is in multiple languages and cultural approaches	▪ Nine North Radio Station ▪ Immigrant, low-income and BIPOC populations – around Bald Eagle Ave and Oneka Lake area	High Priority, 10 dots	**Multiple Agencies**

Designate alternative routes for roads that tend to flood during extreme precipitation events, and communicate these alternate routes to the public	• Frenchman Road • Roads around medical facilities	High Priority, 4 dots	**Cities, Counties, MnDOT /** RCWD
Create accessible areas for people to congregate in times of emergency that offer shelter, basic supplies, and other resources	• Community centers • Libraries	Not ranked in workshop, 1 dot	**Cities, Counties**
Offer alternative transportation in emergencies, like school buses or paratransit			**Cities, Counties /** School Districts

Agricultural BMPs

According to workshop participants, there is some agricultural land in the North and East portions of the Clearwater Creek planning region, specifically east of Oneka Lake. This agricultural land may be negatively impacted by several climate-related hazards, including drought and extreme precipitation. To make these landscapes more resilient to these hazards, the farming community may consider increasing agricultural best management practices (BMPs), which may include planting of perennial and/or cover crops, engaging in more frequent crop rotation, and focusing on maintaining good soil health. In the event of more extreme heat waves, it might become important for food producers to explore indoor farming as well.

Ag BMP Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Increase ag best management practices adoption, including crop rotation, perennials, and focusing on soil health	• North and east portions of SE watershed area • East of Oneka Lake	High priority	**SWCD /** NRCS, BWSR, MDA
Explore indoor farming opportunities	• North and east portions of SE watershed area • East of Oneka Lake	Not ranked in workshop	**Cities /** MDA

Chlorides

Road salt use is on the rise, especially as warming winters and more frequent freeze/thaw patterns lead to more ice accumulation in communities. While road salt is the most frequently used method to melt ice, chloride runoff into water bodies is detrimental to surface water and aquatic habitat health. To lessen the use of chloride in the watershed, some approaches include finding salt alternatives, collecting excess salt before it washes into storm drains, and more education efforts on smart salting and salt alternatives. The following suggestions could be pursued through RCWD's Watershed Communication and Outreach Program.

Chloride Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*

Reduce road salt usage, and collect excess salt	• Areas adjacent to chloride impaired water bodies • Hwy 96 which drains into Ditch 14 • Roadways – 36 & Fairview, Mississippi Street	High Priority	**Cities, Counties, MnDOT**
Educate about smart salting practices	• Community groups - FFA, FH, Scouts, Sports teams, Do Good Roseville • Seniors/Assisted living homes – around Bald Eagle Ave and Oneka Lake area • Residential homes, especially near lakes and rivers	Medium Priority, 1 dot	**Cities /** RCWD / Counties
Investigate salt alternatives		Medium Priority, 3 dots	**Cities, Counties, MnDOT /** RCWD

Collaboration

One of the benefits of conducting the community resiliency workshops is for professionals to come together and brainstorm how they can better work together towards a resilient community amongst themselves and with the broader watershed. Many ideas were brought forth highlighting opportunities for collaboration across various professional and community groups.

Collaboration Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Work through trusted community members to spread information about climate hazards in a culturally appropriate way (See Trusted Messengers program)	• Immigrant/ESL communities • Faith communities & cultural groups	High Priority, 13 dots	**Cities /** RCWD
Create “wholesale” incentives for people who install green infrastructure or stormwater BMPs as a group rather than individually	• Locke Lake – dredged wetland	High Priority, 13 dots	**RCWD** / Cities, Counties, BWSR

Pursue mutual aid opportunities and agreements across groups	• Low income or EJ communities – ex. By East Moore Lake • Emergency management facilities/systems – ex. RTMC, Sheriff's department, Army Reserve Center • Community Groups – ex. FFA, FH, Scouts, Sports Teams, Do Good Roseville	High Priority, 4 dots	**RCWD, Cities, Counties**
Recruit, mobilize and support people to help in hazards	• Faith communities and cultural groups • Community Groups – ex. FFA, FH, Scouts, Sports Teams, Do Good Roseville	High Priority, 3 dots	**Cities, Counties /** RCWD
Recruit volunteers to protect historic developments from hazards through maintenance and installation of BMPs	• Faith communities and cultural groups • Community Groups – ex. FFA, FH, Scouts, Sports Teams, Do Good Roseville	Medium Priority	**Cities /** RCWD, Counties

Communication + Community

While collaboration with various groups may be important, communicating threats, news, and knowledge is also an important aspect of a well-connected and well-prepared watershed, and can further build trust between community members and professional services working on climate resiliency. As noted above in the Accessibility section, it may be important to broaden messaging, and to provide more than just one-way communications. Establishing a system where people can alert professionals to issues or concerns could be beneficial and creates a two-way communication stream.

It was recognized by those in the room that they don't have nearly all the answers, and why recognition of this fact implores professionals to truly listen to and incorporate needs and solutions communicated by the broader community to inform plans of action. When entities show that they are committed to citizen wellbeing, this builds more trust between community and governmental entities.

Communication + Community Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Create more 2-way streams of communication – where listeners/viewers not only take in information but can also easily and accessibly share their own thoughts and feedback and engage in dialogue	• Nine North TV station • Radio stations • Websites	High Priority, 7 dots	**Cities** / Counties, RCWD

Tree up from community to service providers to communicate need – explore a grassroots approach		High Priority, 6 dots	**Cities** / Counties, RCWD
Hire consultants to do translations of messaging and material	• Immigrant/ESL communities	High Priority, 5 dots	**Cities** / Counties, RCWD
Coordinate neighborhood check-in protocols, where community members check-in on each other before, during and/or after a hazard event	• Senior/Assisted Living – Bald Eagle Ave, Oneka Lake Area	Low Priority	**Cities** / Counties, RCWD
Add more demonstration sites to the watershed district – that is, experimental projects at a site that demonstrate a best management practice to the community. RCWD may look to their Public Drainage System or Groundwater Management and Stormwater Reuse programs in the RCWD 2020 plan to justify and fund this action	• Community centers – Anpetu Teca, Shoreview Community Center, Fridley Community Center, Circle Pines Community Center	Not ranked in workshop	**RCWD /** Cities, Counties, SWCDs

Emergency Planning and Response

For institutions like schools, medical facilities and nursing homes, it's imperative to have an emergency response plan in place, and to ensure those who may be impacted by an emergency are familiar with the plan and can act on it if a hazard event does occur. Some specific planning suggestions include establishing a formal sandbag distribution center so there is a one stop hub for supplies in the event of a flooding emergency. Another suggestion is to look at the ICS emergency communication system and determine if there are capabilities to create greater efficiencies, or if natural resource emergencies can be integrated into the system.

Emergency Planning and Response Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Ensure drinking water systems all have a backup/resilience plan in place and execute this plan efficiently and effectively if necessary	• DWSMA • Drinking water infrastructure	High Priority, 17 dots	**Cities /** MDH, Met Council, HSEM
Ensure emergency plans are in place for a variety of community buildings and services	• Power Stations • Prisons • Community Centers • Medical facilities (Allina) • Restaurants, Bars, Grocery stores • Schools • Senior/Assisted living homes	High Priority, 11 dots	**Cities /** HSEM

Get involved with ICS alert system – investigate if there are more efficiencies possible with using this system and if there is an opportunity for natural resource integration into the system	• Emergency management system	High Priority, 8 dots	**Cities** / HSEM, Counties

Funding + Incentives

Workshop participants spent time thinking about funding mechanisms for hazard mitigation work, and possible incentive programs that could be leveraged to encourage people to implement climate solutions in their work and lives. A couple of suggested actions include prioritizing investment in green infrastructure, applying for more planning grants, and subsidizing tree plantings in the watershed. Incentives could be explored to encourage people to protect trees, pursue climate resilient development and going beyond code, and homeowner transitions from traditional lawns to native/pollinator lawns. A handful of the below suggestions may be pursued through the Water Quality Grant Program or Mini-Grants Program as outlined in the RCWD 2020 Watershed Management Plan.

Funding + Incentives Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Invest in green infrastructure – find areas to implement more of these projects	• Parks and trails systems • Low income and/or EJ communities	High Priority, 11 dots	**Cities /** RCWD, Counties, BWSR, SWCDs
Explore incentives and planning money for getting groups involved in developing climate resiliency projects	• Community groups – FFA, FH, Scouts, Sports teams, Do Good Roseville, etc • Faith communities and cultural groups	High Priority, 11 dots	**Cities** / RCWD
Pursue grant funding for water quantity projects – invest in drinking water systems	• DWSMAs	High Priority, 7 dots	**Cities /** RCWD, MDH
Incentivize installation of more drain tile to promote infiltration	• Parking lots	Medium Priority, 4 dots	**SWCDs /** RCWD
Incentivize developers and builders to go above and beyond the standard building codes to promote greener development		High/Medium Priority, 4 dots	**Cities /** RCWD, BWSR
Incentivize or require community gardens	• Food shelves	High Priority, 1 dot	**SWCDs /** MDA, NRCS
Incentivize or require keeping trees – adopt fines		High Priority	**Cities**
Subsidize tree planting in the watershed		High Priority	**Cities** / SWCDs

Provide relocation assistance during flooding events	• Mobile home communities • Low income/EJ communities • Homes situated in a floodplain	High priority	**Cities /** HSEM, Counties
Incentivize lawn transition from grass to native/pollinator plants		Medium Priority	**RCWD** / Cities
Increase funding to expand and maintain parks and trail systems before and after hazard events	• Parks and trails systems	2 dots	**Cities** / Counties

Land Use + Landscape Resiliency

How cities and townships develop the land has broad implications on the ability to adapt to climate hazards. Some suggested actions for the watershed include not siting any new development in a floodplain, especially emergency or community hubs like schools and medical facilities. Exploring ways to develop more densely was another suggestion made to preserve natural areas, like woodlands and wetlands. This may warrant exploration of a building/zoning code change.

A resilient landscape is one that alleviates negative impacts of hazards like flooding and extreme precipitation, extreme heat, drought, and warming winters and ice. Workshop participants identified multiple ways for the RCWD to move toward a resilient landscape through the installation of additional green infrastructure. The term “green infrastructure” means infrastructure that is built with nature to diminish negative impacts of natural hazards. Some examples of green infrastructure are rain gardens, vegetative buffers, and bioswales. RCWD may look to their Public Drainage System or Groundwater Management and Stormwater Reuse programs in the RCWD 2020 plan to justify and fund these actions.

Land use + Landscape Resiliency Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Rethink parking lots as opportunities to lessen impacts of climate hazards • Parking lots covered with solar panels or shaded by trees • More green space in parking lots with native plantings; infiltration areas, including permeable pavers and tree trenches	• Any new development – parking lots	Medium Priority, 16 dots	**Cities /** RCWD
Preserve floodplain, woodlands, and wetlands – restrict building in these and other vulnerable areas		High Priority, 4 dots	**Cities** / RCWD
Educate about and encourage turf alternatives, like through the Lawns to Legumes program		High Priority, 4 dots	**SWCDs /** RCWD

Design parks to flood	• Island Lake Park • Rice Creek Park	High Priority, 3 dots	**Counties** / Cities, RCWD
Pursue installation of vegetated buffers around lakes, rivers, and streams in the watershed	• Impaired lakes • Stream at County Highway 10 • Lino Lakes Creek • People who own land on lakes, rivers or streams	High Priority, 2 dots	**SWCDs** / RCWD
Promote mixed use development; pursue the "15-minute city" concept		5 dots	**Cities /** Counties

Monitoring + Data Collection

It's difficult to understand how a system operates unless it is consistently monitored, and its behavior is documented over a period of time. Monitoring uncovers trends from system activity and lets us know what interventions might be working in a system, and which ones may not be. Since water professionals have limited capacity, time, and money to monitor certain areas, there may be solutions to gather more data by encouraging volunteer citizen monitoring, like through the CAMP program that's managed by the Metropolitan Council. Additionally, there may be several sites around the watershed that will want to be especially targeted for monitoring. This might include sites of historic contamination and/or superfund sites. In the Clearwater Creek planning region, these potentially contaminated areas might be around Hwy 61 and Bald Eagle Ave, and some roads and railroad tracks near Hwy 96. It could be beneficial to monitor plumes of contamination from sites such as these to better understand contaminant migration potential.

In addition, a copious amount of data questions arose from the workshop crowd, in particular questions about what data is currently available and what data it might make sense to collect to communicate back to the public, and to help professionals understand which work ought to be targeted and prioritized first. The following suggested strategies could be justified and funded through the Public Drainage System Inspection, Maintenance and Repair program, the Modeling and Planning Program, or the Surface Water Monitoring and Management Program as outlined in RCWD's 2020 Watershed Management Plan.

Monitoring + Data Collection Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Study capacity and structural soundness of stormwater systems throughout watershed	• MNDOT stormwater around Hwy 96 which drains into ditch 11	High Priority, 8 dots	**RCWD /** Cities, Counties, MnDOT
Use maps to identify networks of people who weren't in the room for these workshops – and work to better understand how they can be engaged in this topic	• Low income/EJ communities – By East Moore Lake	High Priority, 6 dots	**Cities /** RCWD
Encourage citizens to become water monitoring volunteers	• Impaired lakes • Stream at County Highway 10 • Lino Lakes Creek	High Priority, 3 dots	**RCWD /** DNR

Create a database that communicates service-learning opportunities to the public	• Faith communities + cultural groups • Community groups • Watershed residents	High Priority, 2 dots	**RCWD /** DNR
Monitor plumes to identify migration potential at brownfield and superfund sites	• Hwy 61 and Bald Eagle Ave • Several road and railroad tracks near Hwy 96	High Priority, 1 dot	**MPCA** / MDH
ID particular vulnerabilities throughout the watershed and map them so this information is readily available when targeting new projects	• Failing septic systems • Brownfields, superfund sites and historic dump sites • Invasive species sites • Sacred sites • Flood risk areas – roadways, lakes, streams • Historic developments	High/Medium Priority	**RCWD /** MPCA, Counties, DNR, MHS

Outreach + Engagement

Exploring innovative ways to inform and engage people about climate resiliency is another crucial aspect of creating a truly climate resilient community. Below are some suggested actions proposed at the workshop to focus outreach and engagement efforts. Some of the following strategies could be pursued through RCWD's Watershed Communication and Outreach Program, as described in the 2020 Watershed Management Plan.

Outreach and Engagement Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Educate and change cultural norms and expectations through demonstration sites, workshops, and public campaigns	• See Living Waters Church for demonstration site example	High Priority, 11 dots	**RCWD /** Cities, SWCDs
Support neighborhood community building (NNO, mutual aid, call trees) – harnessing community for collective actions	• Community groups • Neighborhood associations • Residents	High Priority, 11 dots	**Cities**
Integrate art and creativity into education and awareness campaigns – find ways to reach more audiences and meet them where they are based on their interests and goals	• Community Centers	High Priority	Multiple agencies
Create a coordinated outreach approach from LGUs to activate/mobilize/communicate about hazards and resources		High Priority	Multiple agencies
Normalize and hold regular community meetings where people can be innovative about solutions for the watershed	• Community centers • Community groups	High Priority	Multiple agencies

Hold watershed appreciation events – communication should focus on shared goals	• Nature centers • Community centers	Not ranked in workshop	**RCWD** / Cities, Counties

Operations + Maintenance

It's one thing to install a new piece of gray or green infrastructure, and quite another to keep it operating and maintained over a longer period. Significant resources must be allocated for operation and maintenance of systems to ensure they are performing to their highest standard. Below are some suggested strategies for where to consider prioritizing operations and maintenance of systems.

Operations & Maintenance Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Increase maintenance timeline for roadways and stormwater infrastructure, and collect data as you go		High Priority, 7 dots	**Cities /** Counties, MnDOT
Water trees, especially during droughts		High Priority, 4 dots	**Cities /** Counties, MnDOT
Fund and improve road conditions in predominately low income and/or BIPOC communities	• Lexington, MN	High Priority, 1 dot	**Cities /** Counties, MnDOT
More frequently inspect septic systems	• Rural areas	High Priority	**Counties /** MPCA

Planting Trees, Native Plants + Pollinators

Increasing the number of trees, native plants and pollinators planted in the watershed were also top strategies suggested to increase climate resiliency. These plants serve multiple benefits when it comes to mitigating climate hazards. In terms of flooding, the deep roots of established trees, natives and pollinator plants infiltrate water back into the ground, diminishing the water above ground that contributes to flooding. Trees also provide shade and cooling properties that can be highly beneficial during extreme heat waves.

Planting Trees, Native Plants + Pollinator Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Plant more trees throughout the watershed, ensuring that the species selected are diverse, resilient, and sited appropriately	• Watershed wide	High Priority, 9 dots	**SWCDs /** Cities, Counties
Plant native, pollinator friendly and/or drought tolerant plants in place of lawns, and in other strategic areas throughout watershed	• Rough areas of golf courses • In boulevards, along highways, parks and along biking/ped trails	High Priority, 3 dots	**SWCDs /** Cities, Counties

Regulation + Enforcement

Rules and regulations were another topic of conversation amongst workshop participants, and there were some suggestions made about how regulations could be updated to reflect more resilient practices. These include increasing regulatory floodplain policies, updating building and zoning codes to require storm shelter spaces and allow composting toilets, higher tree preservation standards in development, and amend ordinances to allow deep root/tall grasses and plants.

Regulation and Enforcement Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Establish higher tree preservation standards and/or require tree/native plant % replacement to offset loss from new development	• Any new development	High Priority, 9 dots	**Cities**
Create a new code that lowers the minimum amount of parking spaces required at a site	• Any new development	Medium Priority, 8 dots	**Cities**
Require a SWPPP (Stormwater Pollution Prevention Plan) to be a part of all new construction	• Any new development	High/Medium Priority, 5 dots	**Cities /** RCWD
Change ordinances to not require turf lawns in HOAs, and allow deep roots/tall grasses/plants		High Priority	**Cities**
Require storm shelters as a part of the building code	• Schools • Nursing Homes • Community Centers	High Priority	**Cities /**MN Department of Labor & Industry (MNDOLI)
Allow composting toilets		High/Medium Priority	**Cities /** MDOLI

Resilience Hub

So called “resilience hubs” are gaining attention across cities for their ability to be centers for people to access information about what to do in a climate emergency, to provide basic resources, and as places to take refuge during an intense climate event. Participants discussed how a resilience hub of this nature doesn’t necessarily need to be built from scratch, but may be housed in an existing building where people congregate, like a church, community center, school or library.

Resilience Hub Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Add a resilience hub structure to a public space	• Parks and trail systems	High Priority, 5 dots	**Counties /** Cities, RCWD

Establish an existing structure as a resilience hub, adding an area where people can access information, support, and take refuge from inclement weather	• Community centers • Restaurants/Bars/Grocery stores • Schools/universities • Nature Centers • Social service/Homeless service buildings • Faith building • Library	High/Medium Priority	**Cities /** RCWD, Counties
Retrofit a bus or other vehicle to act as a "roaming resilience hub" – carrying supplies and resources to people around the watershed	• Public transportation vehicles	Not ranked in workshop	**Cities /** RCWD, Counties

Stormwater management

Stormwater management best practices come in many different forms and functions. Below, you'll read some of the suggestions from the workshop. There is a degree of conflict between some of the suggestions which will need to be considered when making decisions about actions to pursue. RCWD may look to their Public Drainage System Inspection, Maintenance and Repair program to support several of the following strategies.

- **Drainage**
    - Appropriate drainage of water following a precipitation event may be crucial to avoid flooding in unwanted areas. Diverting water through installation of culverts and draining tile to infiltration basins are a couple actions that could be pursued.

Diversion + Drainage Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Drain tile to infiltration basins	• Bridges • Roadways	High/Medium Priority, 3 dots	**RCWD /** Cities, Counties / MnDOT
Improve drainage from farmland	• Agricultural land – north and east portions of SE watershed area	High Priority, 1 dot	**SWCDs /** RCWD, MDA
Invest in pumps and hoses to divert to catch basins			**Cities /** Counties, MnDOT

- **Infiltration + Runoff**
    - Infiltrating water back into the ground is another way to reduce flooding. Several practices were suggested to help water soak back into the ground where it falls, including through green infrastructure, permeable pavement/surfaces, and bioswales with multiple infiltration basins. These sorts of surfaces can also help slow runoff, so that flash flooding and flows can be further avoided. RCWD may refer to the Natural Waterway Management program for guidance on pursuing some of the below suggestions.

Infiltration + Runoff Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Pursue installation of green infrastructure that holds more water as an infiltration solution (ex. rain gardens)	• Around Locke Lake	High Priority, 26 dots	**RCWD /** Cities, Counties
Increase opportunities for infiltration at various sites (ex. permeable surfaces, green infrastructure, bioswales with multiple infiltration basins)	• New developments • Parking lots	High/Medium Priority, 14 dots	**Cities /** RCWD
Reduce and slow runoff	• Roadways • Bridges	Medium Priority, 8 dots	**RCWD /** Cities, Counties / MnDOT
Increase buffer zones	• Shorelines • Bridges • Roadways	Medium Priority, 8 dots	**RCWD /** Cities, Counties / MnDOT
Direct runoff to wetlands for recharge	• Wetlands	High Priority	**RCWD /** Cities, Counties / MnDOT

- **Storage**
    - Increasing water storage capacity may also help alleviate flooding in unwanted areas. Siting storage structures, like holding tanks, in strategic places such as around ditches and beneath parking lots and bridges might be considered. Additionally, creating rain barrel demonstration sites in public places like around schools, libraries, parks, or medical facilities would provide water storage with an added benefit of educating the public about this issue. Finally, strategically designing certain outdoor areas to flood during rain events could be another useful strategy, for example designing golf courses to provide water storage during a flood, or a park.

Storage Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Pursue unique and innovative pilot projects that are multi-beneficial in terms of social and environmental benefits (ex. an amphitheater that is designed to store water during floods and acts as a community gathering space at other times)	• Parks and trails • Community centers • Public outdoor spaces	High Priority, 13 dots	**Cities /** RCWD, Counties

Increase storage capacity of stormwater infrastructure system – adding holding tanks, retention basins, and storage pipes for runoff, both underground and around certain developments	• Under parking lots • Stormwater infrastructure system (pipes, storm sewers, culverts) • Under schools/universities (City of Hugo, North Star Elementary, etc.) • New developments (ex. Near 35W) • Mobile home communities • Historic developments	High Priority, 2 dots	**Cities /** RCWD, BWSR
Design particular spaces for flooding when necessary, and allowing for more water storage	• Parks and trails • Golf courses (ex. Hugo)	High Priority	**Cities /** RCWD, BWSR
Increase upstream water storage	• Around bridges • Roadways	Medium Priority, 8 dots	**RCWD /** MnDOT, Counties, Cities

Surface Water Quality + Quantity

Impacts to surface water quality and quantity can be exacerbated by climate hazard events. For example, extreme precipitation and flooding can wash a greater volume of pollutants into water bodies, and extreme heat can encourage the proliferation of bacteria and algal blooms in a wetland, lake or stream. To lessen further degradation of surface water bodies from climate hazards, it has been suggested to focus on riparian and shoreland zones, like planting more deep-rooted plants around water bodies to help catch toxins before they reach the water.

Surface Water Quality + Quantity Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Install fountains in water bodies for aeration	• Impaired lakes	High Priority, 1 dot	**DNR /** Counties
Install natural buffers around water bodies to protect against flooding and pollution	• Impaired lakes • Stream at County Highway 10 • Lino Lakes Creek • Locke Lake	High Priority	**SWCDs /** RCWD, Counties, Cities

Water Conservation + Reuse

In times of drought, it may become even more necessary for the community to conserve water. This may mean reducing the amount of water used to maintain certain landscapes, like residential lawns. Some were also concerned about threats to drinking water supply, like in times of drought, and suggest practicing intentional drinking water conservation at times like these, or expanding groundwater recharge areas.

Implementing water reuse practices was discussed at the workshop, as it is seen as an emerging solution to some of our most pressing water issues. The RCWD could investigate green infrastructure that encourages the recycling of water, particularly for watering places like

golf courses, public lands, and lawns. The RCWD may look to their Groundwater Management and Stormwater Reuse Assessment program to justify and fund the below activities.

Water Conservation + Reuse Strategies from Workshop	*Locations and/or populations to target for the implementation of this strategy*	*Priority Ranking from Workshop*	***Lead Agency** / Partners*
Explore opportunities for water reuse throughout the watershed Reuse water to water lawns/golf courses	• Golf courses • Public spaces • Parks and trails • Lawns	High Priority, 15 dots	**Cities /** RCWD, Counties
Reduce watering during times of drought	• Lawns • Parks and trails • Golf courses	High Priority	**Cities**
Engage community around water conservation principles and tactics	• Residences • Community centers	High Priority	**RCWD /** Cities, Counties

Conclusion

This document highlights the numerous actions that the RCWD, cities, counties, and others may consider pursuing to get ever closer to a more climate resilient watershed, as contributed by stakeholders from across the watershed during the Community Resilience Building workshops. The information here is meant to be used as a resource to help inform the activities and priorities stakeholders include in their work plans over the coming years. Many of the suggestions require multiple entities to coordinate to be most effective, so collaboration across many of these strategies will be key.

From community engagement and partnership strategies to structural green infrastructure and storage basin installation, the watershed District and partners have endless opportunities to create a more resilient watershed. The momentum and excitement from these workshops must now be carried forward by Rice Creek watershed stakeholders to see the work through.

Appendix A – Core Team + Workshop Participants

Core Workshop Planning Team Participants:

The Core Team met a few times before the workshops to determine workshop purpose, logistics, and invitees. Below is a list of those who comprised this core team.

Alan Rupnow, *Ramsey County*
Andrew Nelson, *City of Lino Lakes*
Connie Taillon, *City of White Bear Lake*
Craig Schlichting, *City of New Brighton*
Eric Wojchik, *Metropolitan Council*
Jessica Collin-Pilarski, *Washington County*
Kendra Sommerfeld, *Rice Creek Watershed District*
Michael Wagner, *Anoka County*
Nicholas Tomczik, *Rice Creek Watershed District*
Noelle Bakken, *City of Roseville*
Rachel Juba*, City of Hugo*
Rachel Workin, *City of Fridley*
Ryan Johnson, *City of Roseville*

Workshop #1 Participants – February 28th, 2023 3-7PM at Shoreview Community Center

Lower Rice Creek Planning Region:
Abigail Phillips, *Ramsey County Environmental Health*
Alana Howey, *Resilient Roseville*
Ann White Eagle*, Ramsey County Soil & Water*
Bryant Ficek, *City of Roseville Public Works, Environment, and Transportation Commission*
Cyndi Arneson, *ISD 623/Roseville Public Schools*
Emilia Gusdal, *Roseville Area High School Progressives*
Heidi Ferris, *Fridley Environmental Commissioner*
Holly Swiglo, *Roseville Area High School Progressives*
Ivy Song, *Roseville Area High School Progressives*
Jim Kosluchar, *City of Fridley*
Judd Freed, *Ramsey County Emergency Management Services*
Kathy Ramundt, *Do Good Roseville*
Mary T'Kach, *Ramsey County Public Health*
Noelle Bakken, *City of Roseville*
Paul Gardner, *Roseville Citizen*
Rachel Workin, *City of Fridley*
Ryan Johnson, *City of Roseville*
Wayne Groff, *City of Roseville City Council*

Workshop Facilitators:
Chyann Erickson, *Freshwater*
Eileen Kirby, *Freshwater*
Eric Wojchik, *Metropolitan Council*
Jen Kader, *Freshwater*
Kendra Sommerfeld, *Rice Creek Watershed District*
Lila Franklin, *Freshwater*

Clearwater Creek Planning Region:
Alan Rupnow, *Ramsey County*
Connie Taillon, *City of White Bear Lake*
Jeff Luxford, *White Bear Lake Environmental Advisory Commission*
Jessica Collin-Pilarski, *Washington County*
Joe Crowe, *NE Metro Climate Action*
Lori Olinger, *NE Metro Climate Action*
Lori Tella, *Washington Conservation District*
Mike Parenteau, *White Bear Lake Conservation District*
Susan Vento, *Metropolitan Council*
Tim Wald*, White Bear Lake Area School District*

Middle Rice Creek Planning Region:
Jon Sevald, *Moundsview Community Development*
Michael Wagner, *Anoka County*

Upper Rice Creek Planning Region:
Andy Nelson, *City of Lino Lakes*
Lindsay Buchmeier, *Lino Lakes Environmental Board*
Nick Tomczik, *Rice Creek Watershed District*

Workshop #2 Participants: - March 22nd, 2023 3-7PM at Shoreview Community Center

Lower Rice Creek Planning Region:
Abigail Phillips, *Ramsey County Environmental Health*
Bryan Mayer, *Ramsey County Emergency Management Services*
Bryant Ficek, *City of Roseville Public Works, Environment, and Transportation Commission*
Cyndi Arneson, *ISD 623/Roseville Public Schools*
Dale Howey, *Resilient Roseville*
Emilia Gusdal, *Roseville Area High School Progressives*
Heidi Ferris, *Fridley Environmental Commissioner*
Holly Swiglo, *Roseville Area High School Progressives*
Ivy Song, *Roseville Area High School Progressives*
Justin Townsend, *Ramsey County Soil & Water*
Kathy Ramundt, *Do Good Roseville*
Mary T'Kach, *Ramsey County Public Health*
Noelle Bakken, *City of Roseville*
Paul Gardner, *Roseville Citizen & MPCA*
Rachel Workin, *City of Fridley*
Wayne Groff, *City of Roseville City Council*

Workshop Facilitators:
Chyann Erickson, *Freshwater*
Eileen Kirby, *Freshwater*
Eric Wojchik, *Metropolitan Council*
Jen Kader, *Freshwater*
Kendra Sommerfeld, *Rice Creek Watershed District*
Lila Franklin, *Freshwater*

Clearwater Creek Planning Region:
Angela Defenbaugh, *Washington Conservation District*
Bill Lazarus, *University of Minnesota*
Connie Taillon, *City of White Bear Lake*
Daniel Elder, *Washington County*
Heidi Hughes, *City of White Bear Lake*
Jeff Luxford, *White Bear Lake Environmental Advisory Commission*
Jessica Collin-Pilarski, *Washington County*
Lori Olinger, *NE Metro Climate Action*
Lori Tella, *Washington Conservation District*
Scott Costello, *White Bear Lake Conservation District*
Megan Forbes, *RCWD Citizen Advisory Committee*
Tim Wald, *White Bear Lake Area School District*
Tom Anderson, *Metropolitan Council*
Tracy Shimek, *White Bear Lake Community Development*

Middle Rice Creek Planning Region:
Cassie Cavegn, *Lino Lakes Environmental Board*
Michael Wagner, *Anoka County*

Upper Rice Creek Planning Region:
Andy Nelson, *City of Lino Lakes*
Nick Tomczik, *Rice Creek Watershed District*

Appendix B – Planning Regions Used in Workshops

More about each region –

1 - Lower Rice Creek Planning Region

- This region is located on the south and west sides of the watershed, encompassing parts of Roseville, Falcon Heights, Columbia Heights, Fridley, Shoreview, Lauderdale, Lexington, Arden Hills, Spring Lake Park and Moundsview. Its major lakes include Silver, Valentine, Josephine, Turtle, Round, Johanna, Long, and Marsden Lakes.

2 - Middle Rice Creek Planning Region

- This region is located in the middle portion of the watershed, encompassing parts of Blaine, Centerville, Lexington, and Lino Lakes. Its major lakes include Marshan, Reshanau, Peltier, George Watch and Centerville Lakes.

3 - Upper Rice Creek Planning Region

- This region is located in the upper portion of the watershed, encompassing parts of Columbus, Forest Lake, Lino Lakes, and Hugo. Its major lakes include Rondeau, Crossways, Columbus, Howard, Mud, and Clear Lakes.

4 - Clearwater Creek Planning Region

- This region is located on the east side of the watershed, encompassing parts of White Bear Lake, Hugo, Centerville, Mahtomedi, Dellwood and Willernie. Its major lakes include White Bear, Bald Eagle, Pine Tree, Rice, Round, Sunset, Oneka and Horseshoe Lakes.