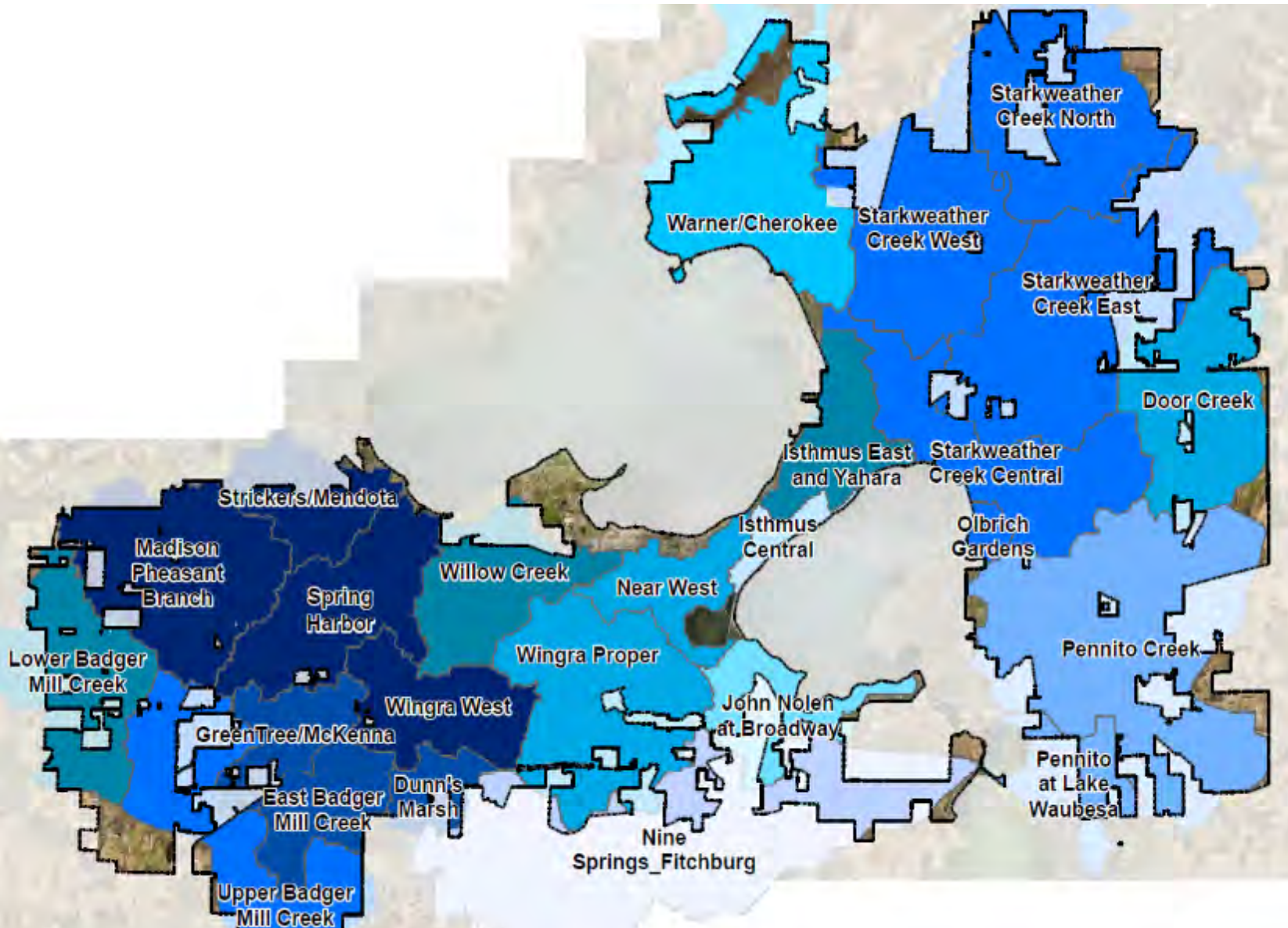




Wingra West Watershed Study Solutions

by City of Madison Engineering Division
April 26, 2022

Watershed Study Phasing



Proposed and Actual Schedule

Round 1 Watershed Studies

Projected:
Spring-Summer
2019 **Actual:**
Spring-Winter
2019
*Create and
Calibrate Model*

Projected: Fall-
Winter 2019
Actual:
Summer 2020
*2nd Public
Meeting*


Projected:
Spring-Summer
2020 **Actual:**
Spring-Summer
2021
*3rd Public
Meeting*

Projected:
Summer-Fall
2019 **Actual:**
Fall-Winter
2019
*Identify Flood
Impacts*

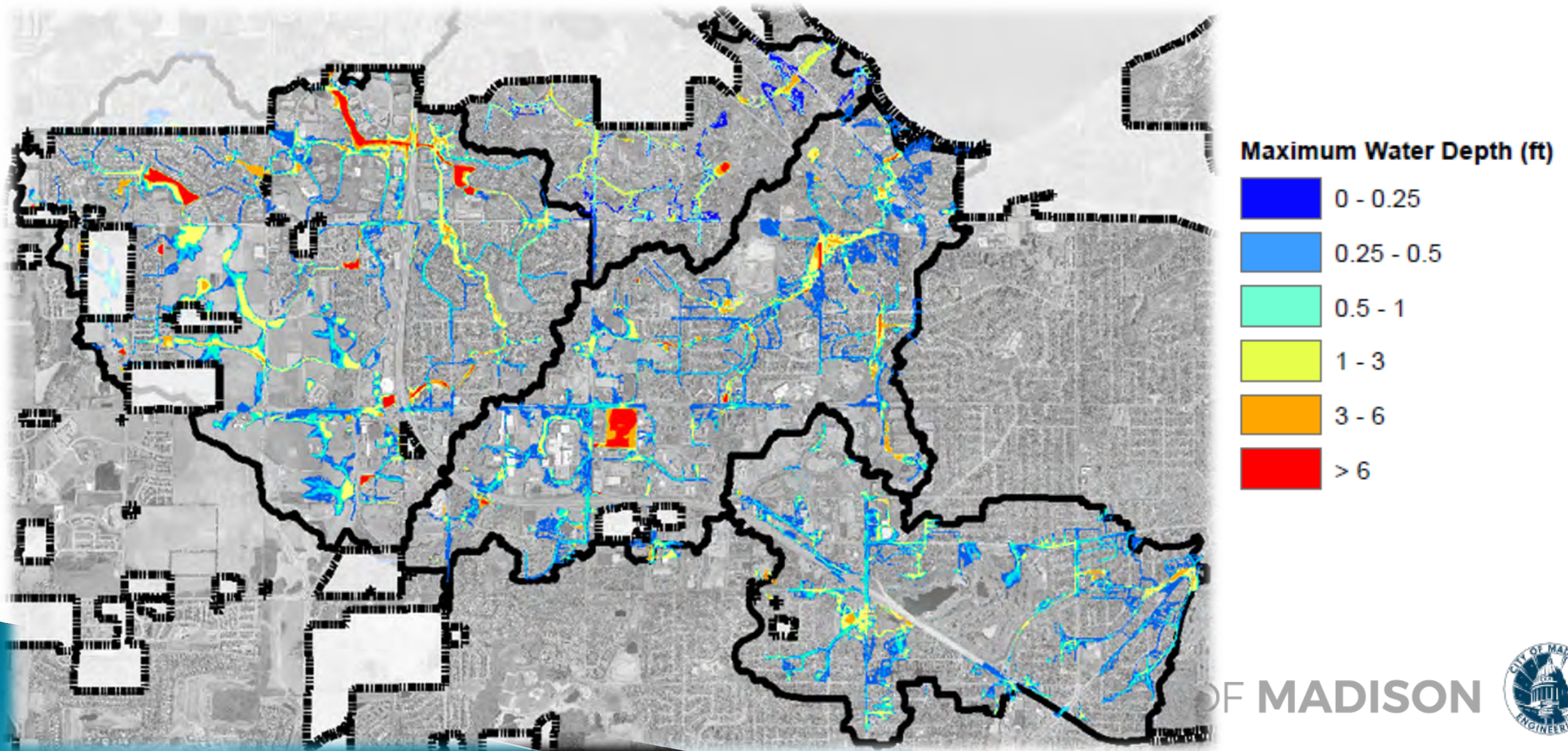
Projected:
Winter-Spring
2020 **Actual:**
Spring-Winter
2020
*Evaluate
Solutions*

Projected:
Summer-Fall
2020 **Actual:**
Summer-Fall
2021
Finalize Study

Wingra West Watershed Report Milestones

- ▶ PIM 1: 5/1/2019
- ▶ PIM 2: 7/23/2020
- ▶ PWI : 12/3/2020
- ▶ Parks Specific: 12/14/2020
- ▶ Golf Specific: 2/3/2021
- ▶ PIM 3: 6/17/2021
- ▶ Report Final Draft finished : 11/3/2021
- ▶ Report Public comment periods 2/4/2022–3/4/2022
- ▶ Golf Sub committee: 4/26/2022  We are here.
- ▶ BPC : 2022 (soon)
- ▶ BPW: 2022 (soon)

Existing Conditions 1% Chance (100-yr) Event Inundation Mapping



Wingra West Watershed Proposed Mitigation Measures

Storm Sewer Pipe Size
Increases

Detention Improvements

Odana Hills Golf Course

Odana Pond

Orchard Ridge Park

UW Research Park

Southeast

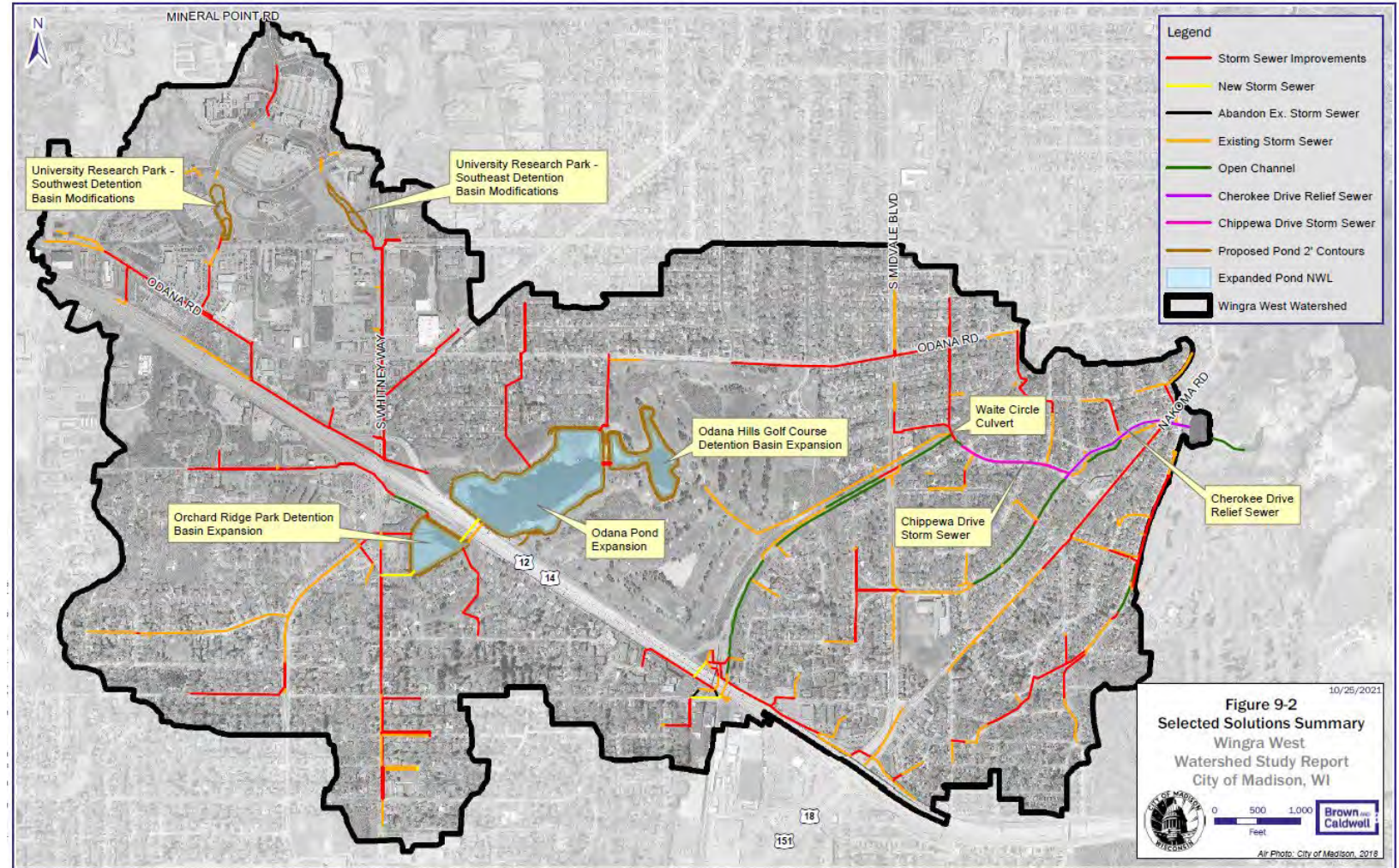
UW Research Park

Southwest

Relief Sewers

Cherokee / Chippewa

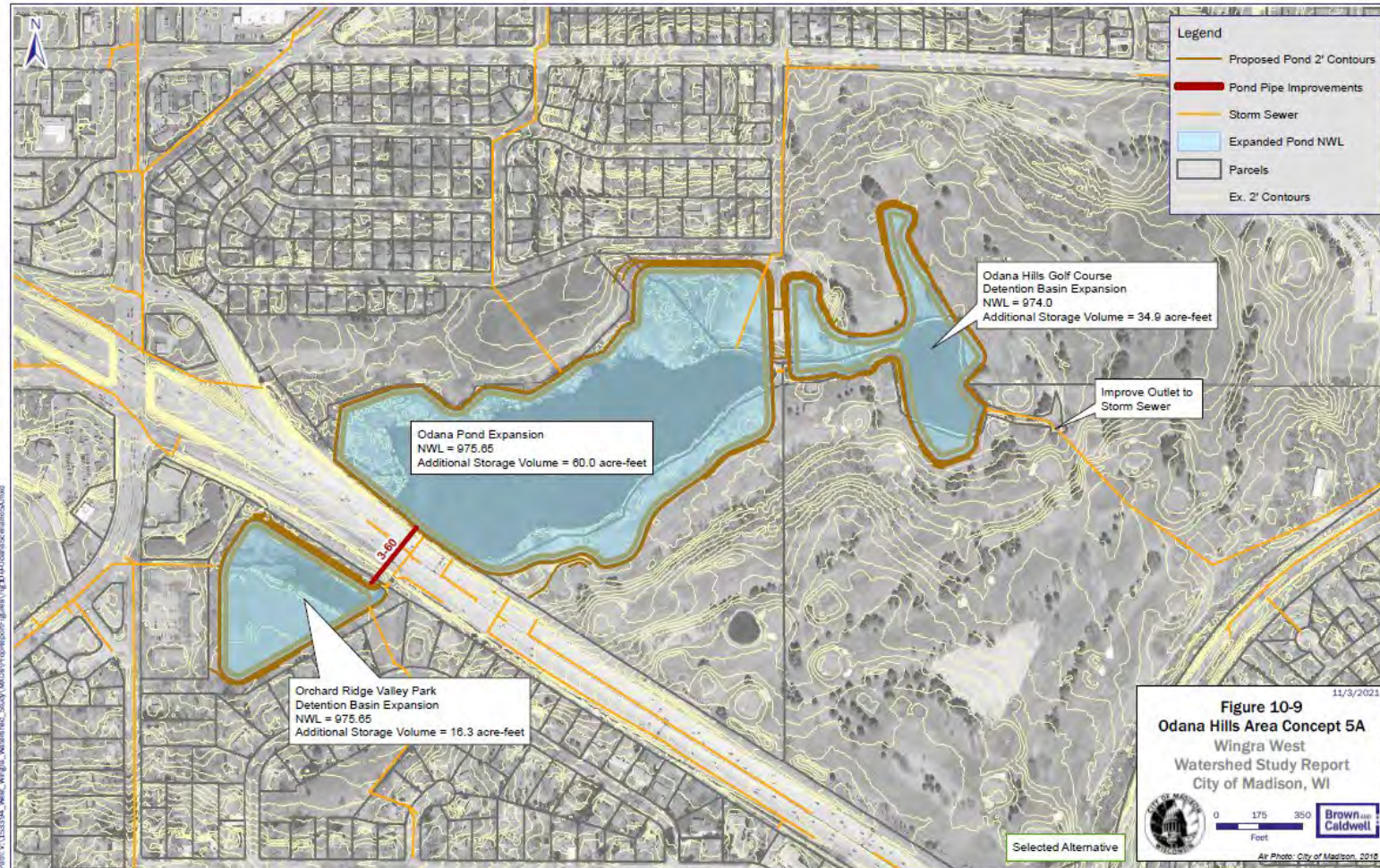
Waite Circle Culvert



Results

- ▶ 10% Chance Target – no ponding on streets
 - Existing Conditions: 7.0 miles out of 15.9 miles of storm sewer not meeting target (44%)
 - Proposed Conditions: 0.5 miles out of 15.9 miles of storm sewer not meeting target (3%) – reduced 6.5 miles
- ▶ 4% Chance Target – streets passable for emergency vehicles
 - Existing Conditions: 8.3 miles out of 41.6 miles of streets not meeting target (20%)
 - Proposed Conditions: 0.4 miles out of 41.6 miles of streets not meeting targets (1%) – reduced 7.9 miles
- ▶ 1% Chance Target – no structure flooding
 - Existing Conditions: 167 out of 2,914 structures not meeting target (6%)
 - Proposed Conditions: 33 out of 2,914 structures not meeting target (1%) – reduced 134 structures

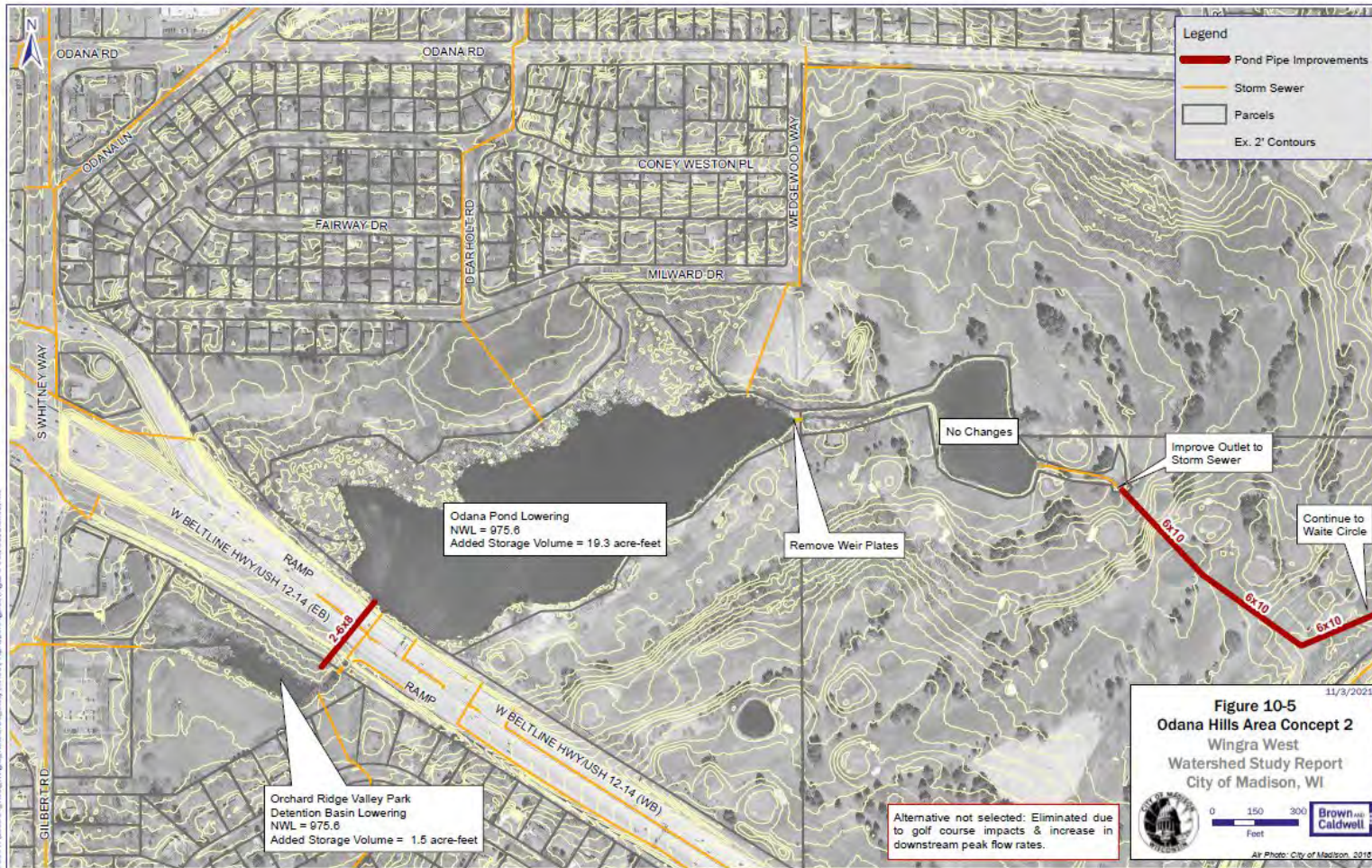
Modified Golf Course / Odana Pond NWL = 975.65'



Details

- Outlet pipe remains in place
- Weir plate removed on Odana Pond
- All ponds expanded and dredged
- Significant permitting hurdles
- Concept used to size storage and develop cost estimate, pond footprint flexible

Concept 2: Not Selected – Maximize Conveyance



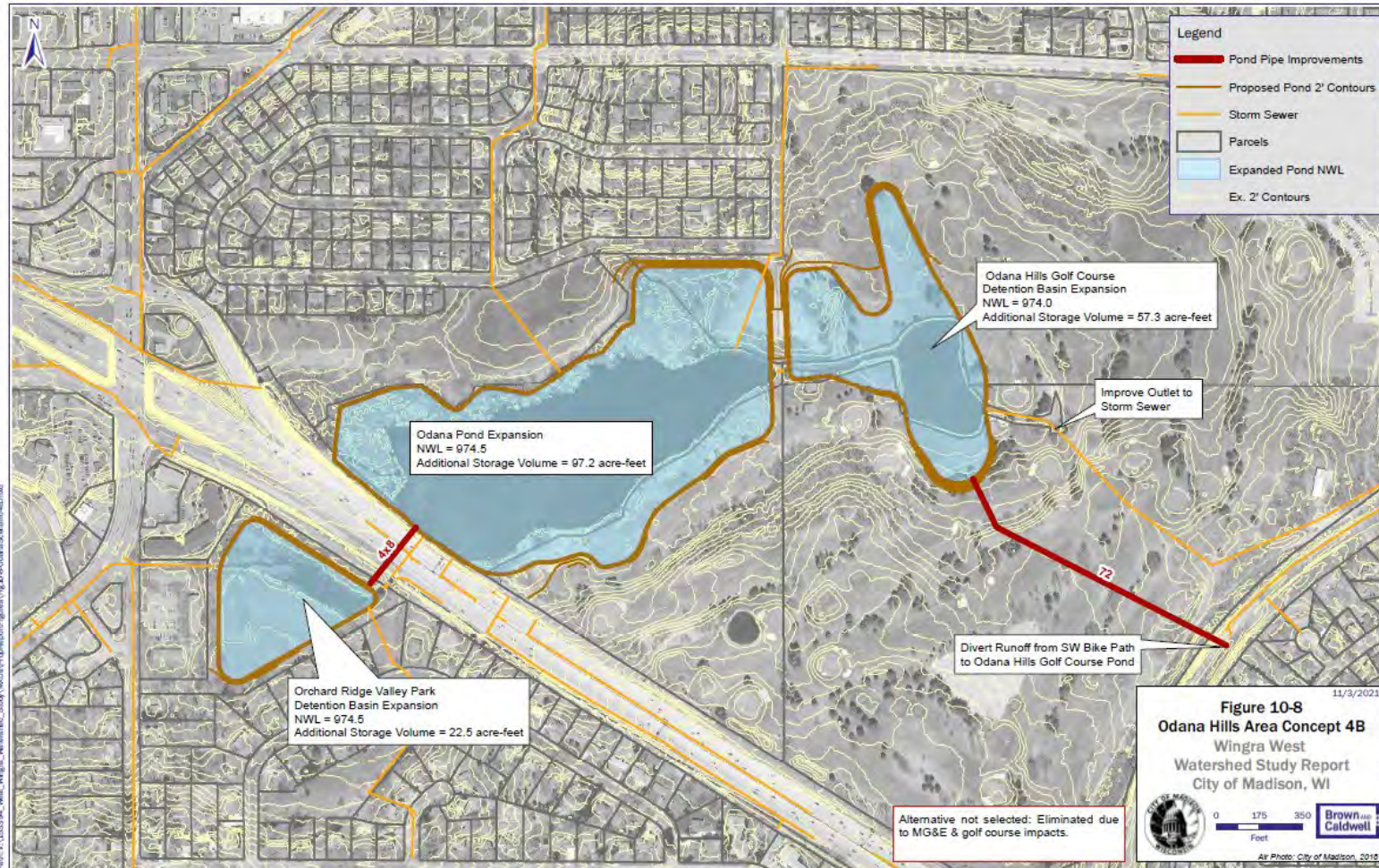
Details

- Sized outlet pipe required to achieve goals without expanding ponds.
- Weir plate removed on Odana Pond
- 6' x 10' outlet required
- Significant impacts downstream do to increased flow
- Concept Not Selected

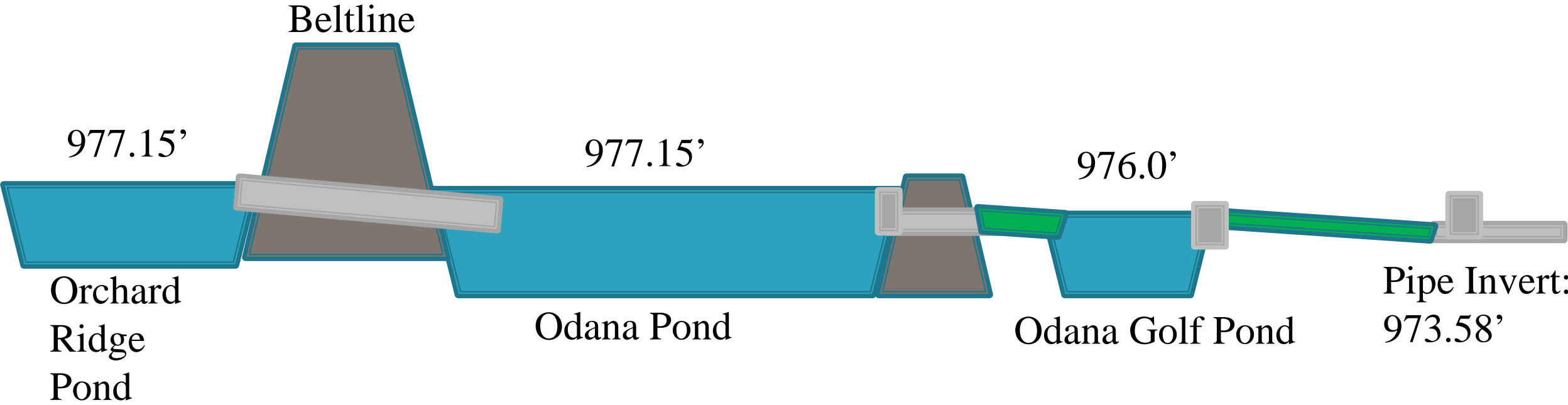
Concept 4B: Not Selected- Maximize Storage

Details

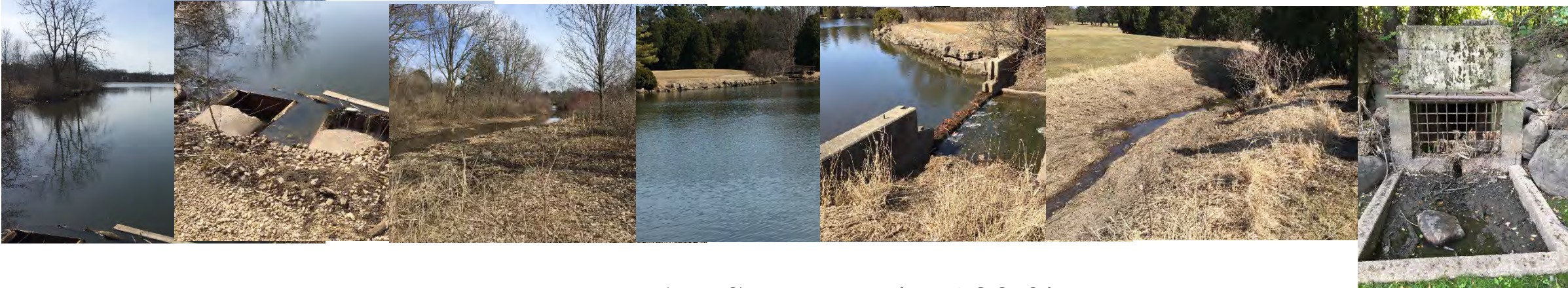
- Ponds lowered to lowest possible level while utilizing existing 42" pipe 974.5'
- Diversion of flow from SW bike Path routed to pond in 72" pipe
- Plan reduces flow at Waite Circle by 220 cfs . Proposed flow is 860 cfs.
- Significant Golf Course Impacts
- Concept Not Selected



Existing Conditions Odana Pond Complex Schematic



Pond Complex Schematic: Existing Conditions



1% Storm Peak : 983.0'

977.15'

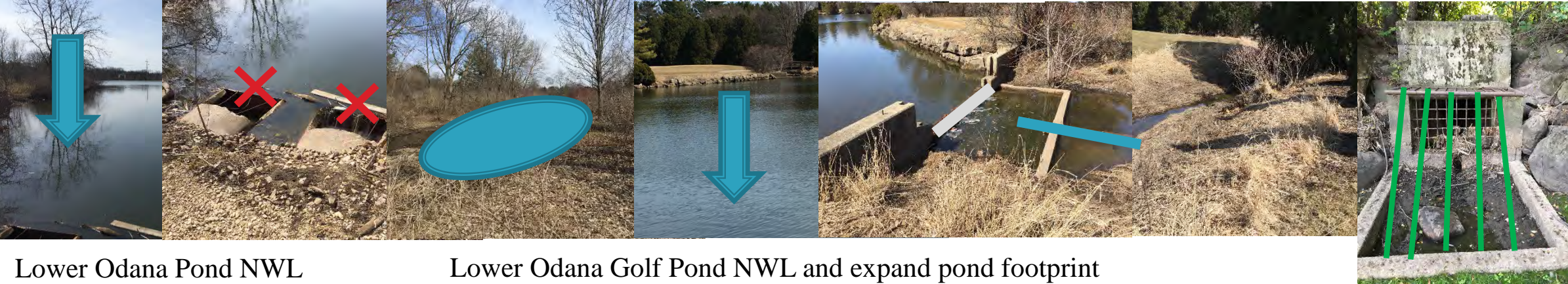
976.0'

Pipe Invert:
973.58

Odana Pond

Odana Golf Pond

Pond Complex Schematic: Proposed Conditions



Lower Odana Pond NWL

Lower Odana Golf Pond NWL and expand pond footprint

New outlet: less clogging

1% Storm Peak : 981.6'

975.65'

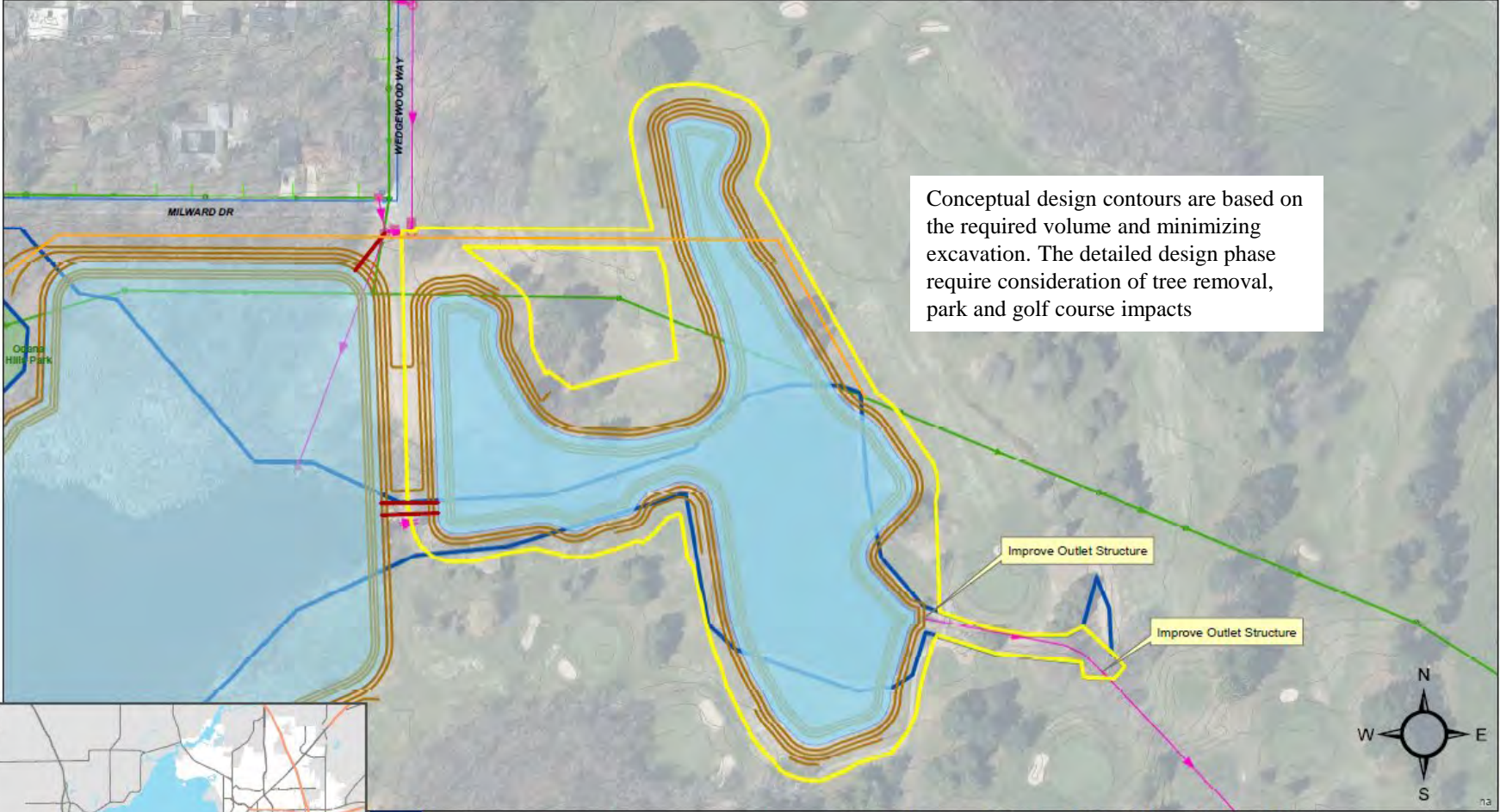
974.0'

Pipe Invert:
973.58

Odana Pond

Odana Golf Pond

Proposed Odana Hills Golf Course Pond



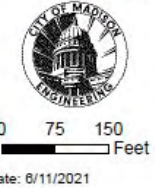
- 80,000 cy of excavation
- 20,000 cy dredging
- Lower pond 2'
- Improve outlet
- Cost Estimate
 - \$ 6.1 million
- Could be done in stages



Pond	Other	Water Valve	Storm Sewer Improvements
Storm Pipe	Sanitary Mains	Water Hydrant	Pond NWL
Access Structures	SAS	Park	Estimated Project Boundary
Apron	Sanitary Laterals	Sanitary Sewer Relocation	
Inlet	Water Main		

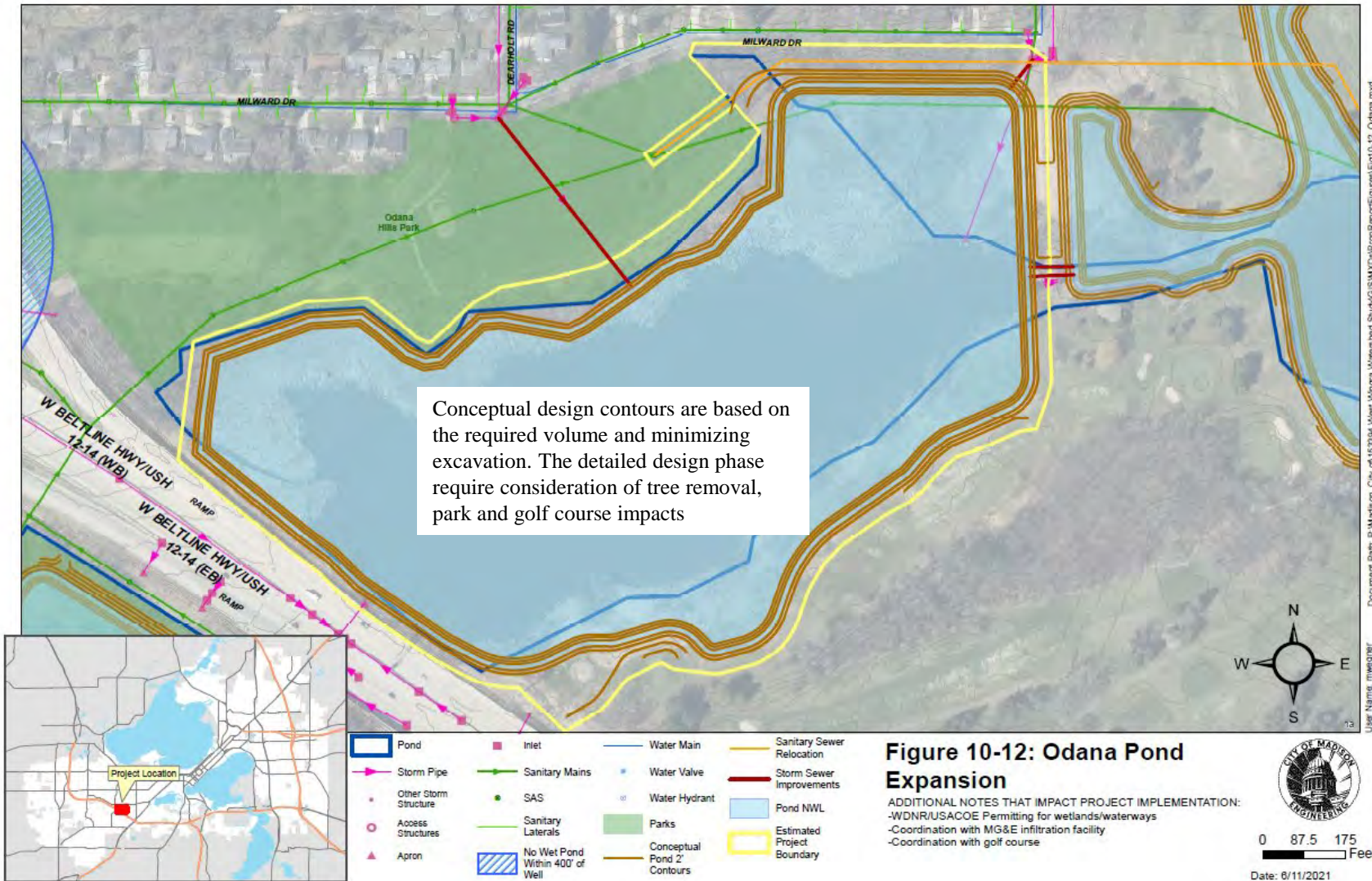
Figure 10-11: Odana Hills Golf Course Detention Basin Expansion

ADDITIONAL NOTES THAT IMPACT PROJECT IMPLEMENTATION:
 -WDNR/USACOE Permitting for wetlands/waterways
 -Coordination with golf course



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User Name: mwagner

Proposed Odana Pond



- 188,000 cy of excavation
- 121,000 cy dredging
- Lower pond 1.5'
- Cost Estimate
 - \$ 14 million
- Significant permitting hurdles

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Orchard Ridge Valley Pond

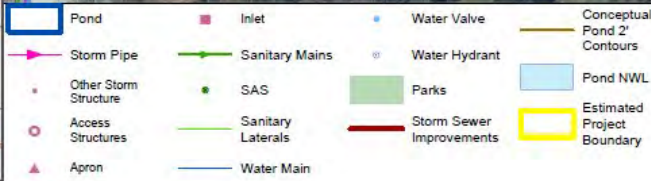
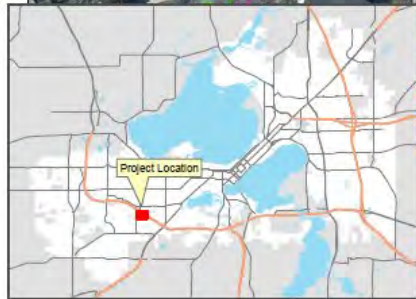
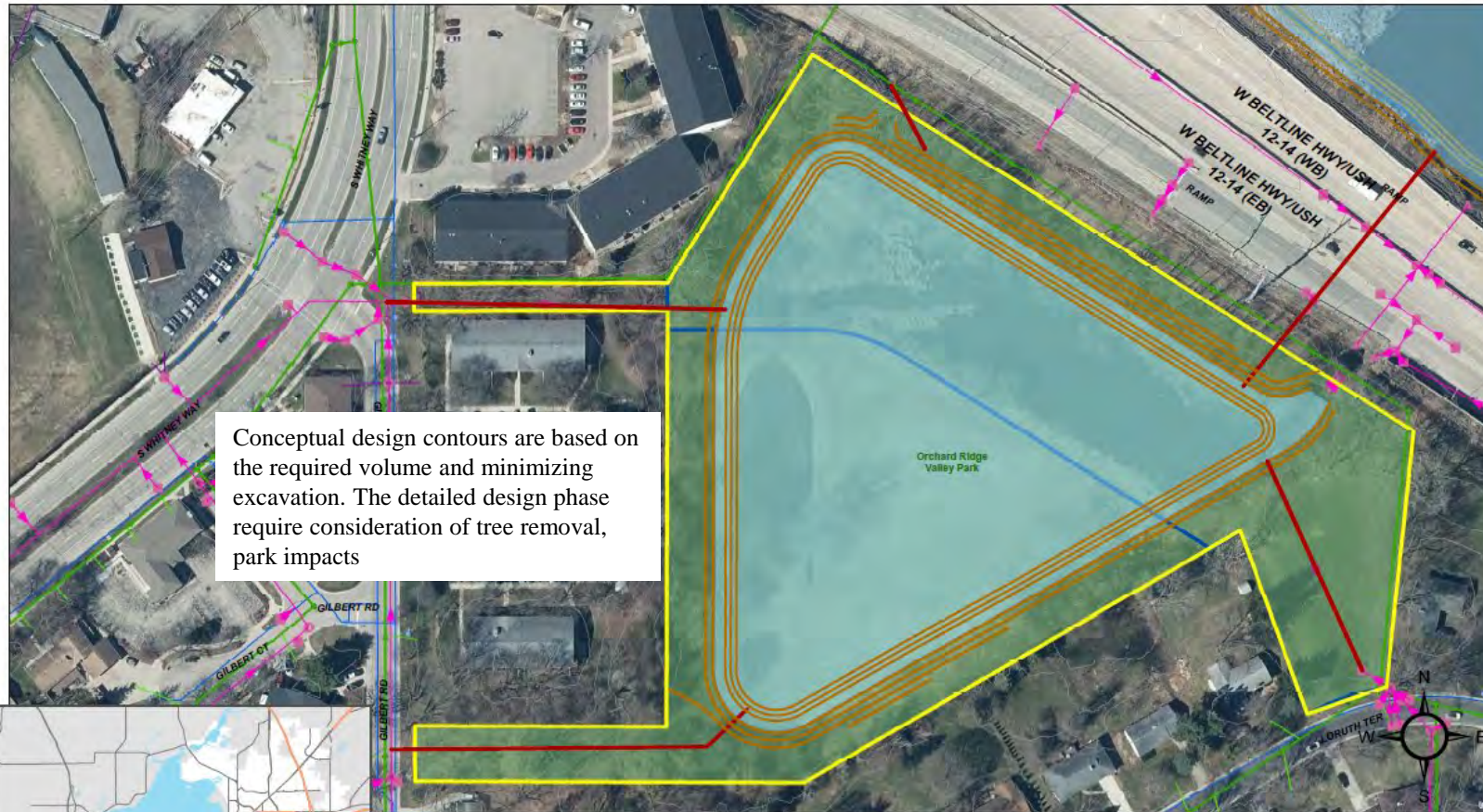
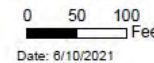


Figure 10-13: Orchard Ridge Valley Park Detention Basin Expansion

ADDITIONAL NOTES THAT IMPACT PROJECT IMPLEMENTATION:
 -Outlet Sewer crosses ATC easement
 -WDNR/USACOE Permitting for wetlands/waterways



- 56,000 cy of excavation
- 19,000 cy dredging
- 60” storm sewer under beltline
- Lower pond 1.5’
- Cost Estimate
 - \$ 9.3 million
- Significant permitting hurdles

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User Name: mwagner

Public Comments on the Wingra West Report

Comments pertaining to the Odana Pond Complex

- ▶ How did the plans address climate change?
- ▶ Expanding the ponds to the north will impact the forested area. What are the plans for replanting, noise mitigation and cross country ski connectivity.
- ▶ Why expand the footprint of the ponds instead of the depth?
- ▶ Will the installation of a well help with soggy conditions at the course?
- ▶ What will happen with the MGE Infiltration system?

How did the plans address climate change?

- ▶ The proposed plan is to expand the pond to prevent flooding of adjacent homes for the current 1% probability storm (6.66 inches) This is a significant increase in flood protection. The improvement will let this pond handle future larger events better than now, but if the 1% storm depth increases (which is predicted), the most cost effective option will be to lower the water surface of the pond.

Expanding the ponds to the north will impact the forested area. What are the plans for replanting, noise mitigation and cross country ski connectivity

- ▶ The proposed solutions are at a pretty high level and really intended to be a guide at this level.
- ▶ As the proposed solutions move towards implementation phase additional detail will go into the design. The loss of high quality trees , Noise mitigation and ski connectivity would definitely need to be addressed/ mitigated.
- ▶ pond contours changed to avoid impacting as many trees.

Why expand the footprint of the ponds instead of the depth?

- ▶ Lowering the normal water level of the ponds is providing more storage without increasing the footprint of the pond.
- ▶ Digging a pond deeper and then holding water in the new deeper pond does not help with managing peak flow rates. Schematic added to comment section to show the modifications.

Will the installation of a well help with soggy conditions at the course?

- ▶ There will likely be minimal impacts on course conditions due to the installation of a irrigation well.

What will happen with the MGE Infiltration system? Will the pump be used to draw down the pond?

- MGE is continuing to use the infiltration field to fulfill permit requirements. One of the concerns with the final design of the pond is to address MGEs infiltration requirement concerns.
- There is not a need to lower the pond with the pump, the main concern would be the ecological impact of drawing down the pond past a specific (yet to be determined elevation) in order for MG&E to meet permit requirements.
- Keeping the pond lower and then pumping water to the infiltration bed, would provide additional benefit for storm management, but it may negatively impact aquatic wildlife.