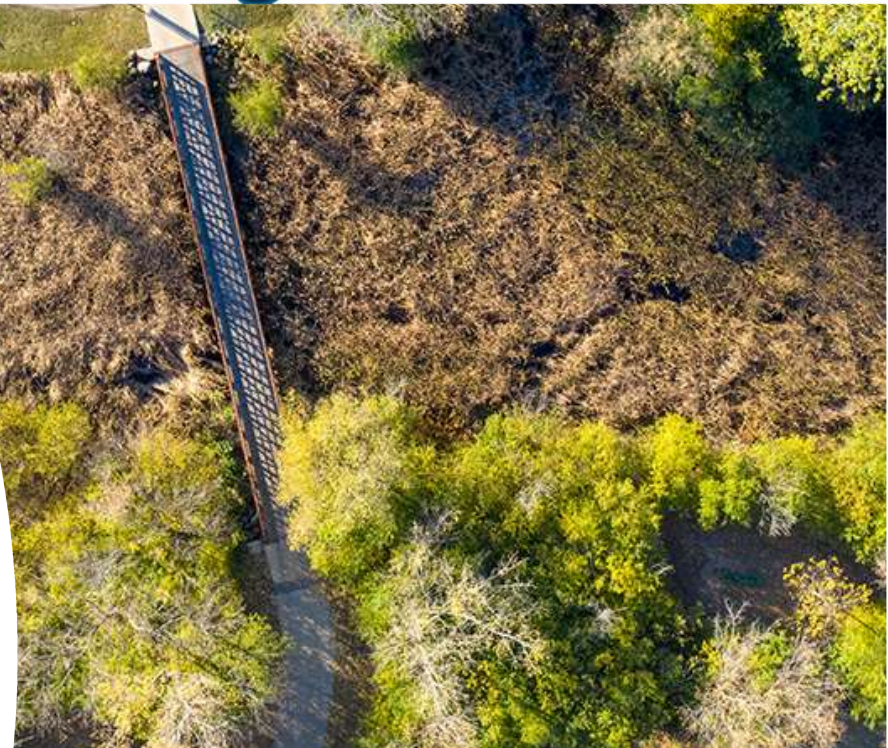




FITCHRONA ROAD AND GOOSE LAKE STORMWATER UPDATE

June 12, 2024



Overview of what we will cover

- Describe our connection to the area and roles with the Fitchrona Road and Goose Lake Stormwater Improvement project
- Describe our revised approach to mitigating the flooding
- Discuss how our stormwater approach ties in with the Badger Mill Creek Stakeholder goals

Thanks for having us – we are excited to be here!

Project Manager

Cory Horton, P.E.,
CFM, CPESC,
EnvSP
Ruekert & Mielke, Inc.



Senior Project Engineer

Rick Eilertson, P.E.,
EnvSP
AECOM



REQUEST FOR PROPOSAL
FOR
FITCHRONA ROAD AND GOOSE LAKE STORMWATER IMPROVEMENTS
DESIGN AND PERMITTING



Issued By
City of Fitchburg Public Works Department
and
Town of Verona Public Works Department
December 12, 2023

For further information regarding this RFP, contact
Ben Schalle, P.E.
City of Fitchburg Environmental Engineer
Ben.Schalle@fitchburgwi.gov
(608) 270-4262

Proposals must be submitted
by
11:00 a.m.
January 16, 2024

LATE PROPOSALS WILL BE REJECTED

- Ruekert-Mielke / AECOM hired by City of Fitchburg and Town of Verona
- Connection to the area/stakeholders/project
 - History with the project
 - Personal connection to City/Town/Stakeholders
 - Connection to Fitchrona Road project and stormwater modeling

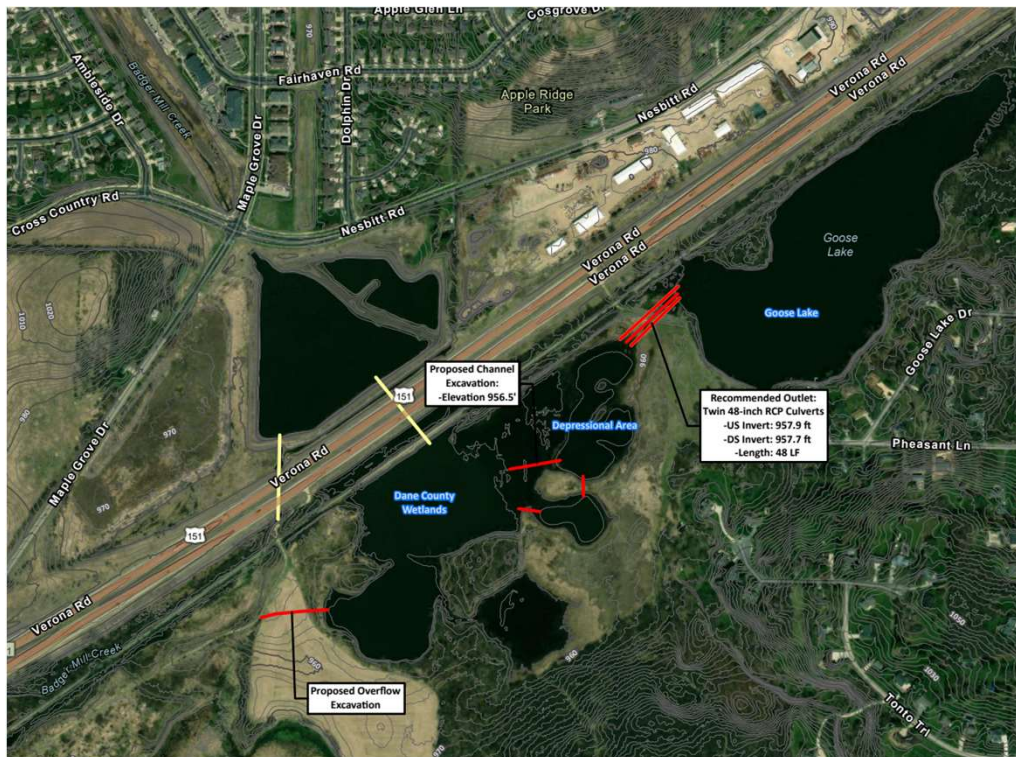
2021 Stormwater Study - approach to address flooding

Project Manager

Cory Horton, P.E.,
CFM, CPESC,
EnvSP
Ruekert & Mielke, Inc.



- Conveyance improvements
 - Add twin 48-inch culverts to the outlet of Goose Lake
 - Concrete overflow out of Goose Lake
 - Overflow excavation to convey high flows out of the system
- Local Storage improvements
 - Lower levels of Goose Lake and downstream wetland areas
- Backflow prevention



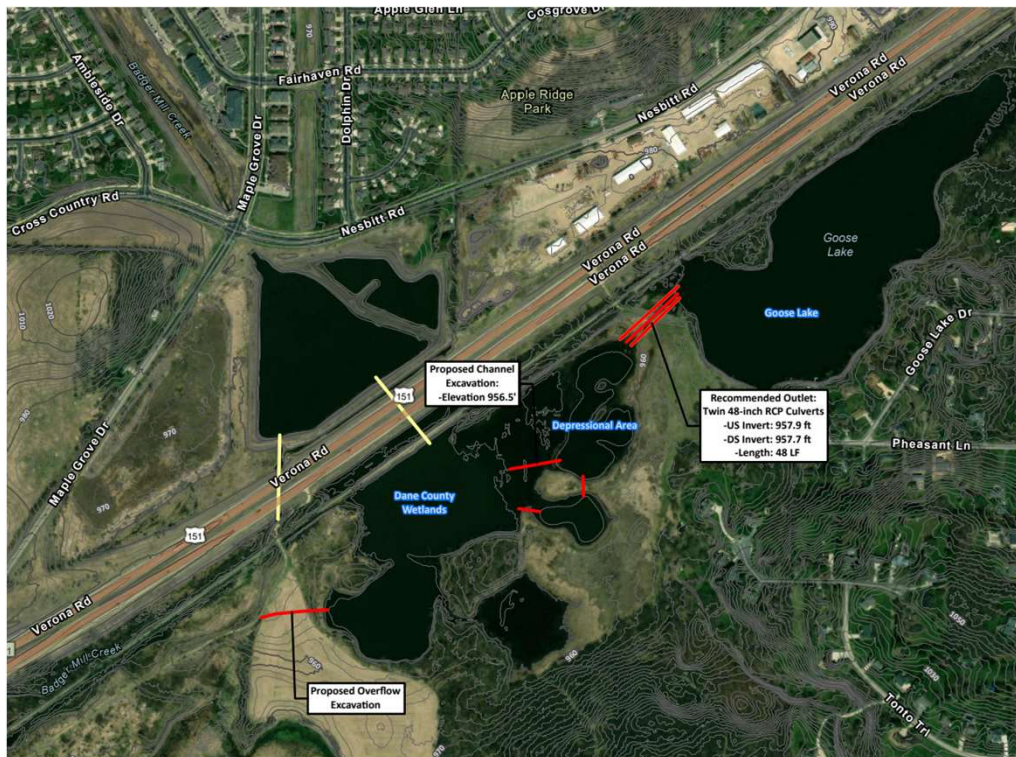
Previous approach to flooding

Project Manager

Cory Horton, P.E.,
CFM, CPESC,
EnvSP
Ruekert & Mielke, Inc.



- Conveyance focused on handling larger flow events
 - Big pipes and overflow capacity
 - Decreases Fitchrona Road flooding
 - Sends higher peak flows out of the system
 - Flood heights downstream
- Storage improvements focused downstream of Fitchrona Road
- Static design not adaptable-resilient
- Did not provide water to meet the goals of BMC stakeholders



Past flooding experience

Project Manager

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Ruekert & Mielke, Inc.



- This system is different than most
 - Floods occur due to long duration high volume flood events rather than flashy short duration events
 - Frequently flooding occurs during wet periods when system is “full” – (high pond and groundwater levels) followed by rain event.
 - Flood peak happens hours-days after a major rain
 - Flood duration is long and waters usually take days or even weeks to recede







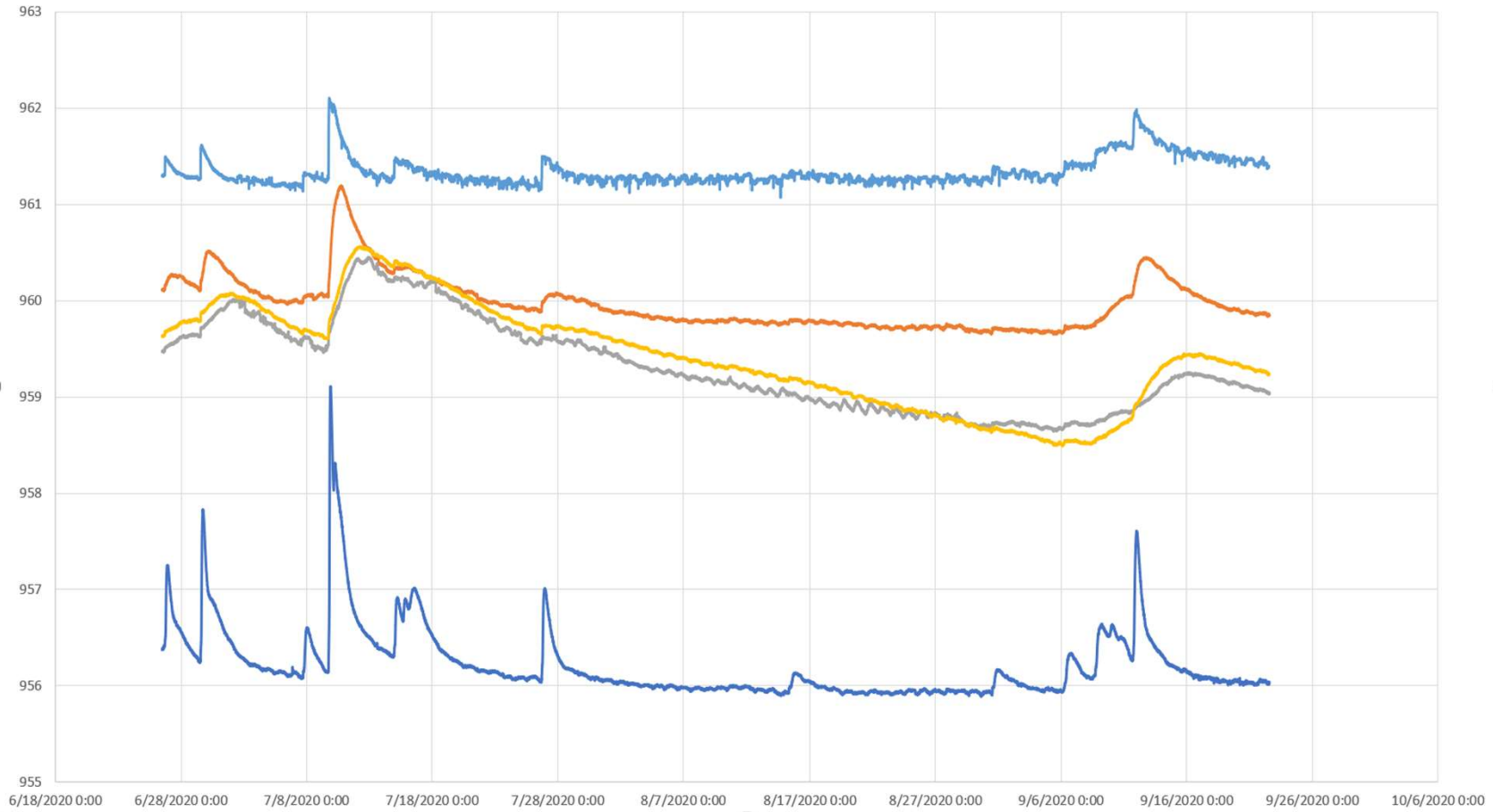
C:\USERS\CLAUDIA\GUY\DESKTOP\AUTOCAD\WATER_LEVEL_FIGURE.DWG



Transducer Location Map

Drawn By: CGUY
DATE: 6/29/2020
REVISION:

WATER LEVELS



Wisconsin Department of Natural Resources

Well / Drillhole / Borehole Filling & Sealing

Form 3300-005

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295 and 299, Wis. Stats., and ch. NR 141 Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295 and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose.

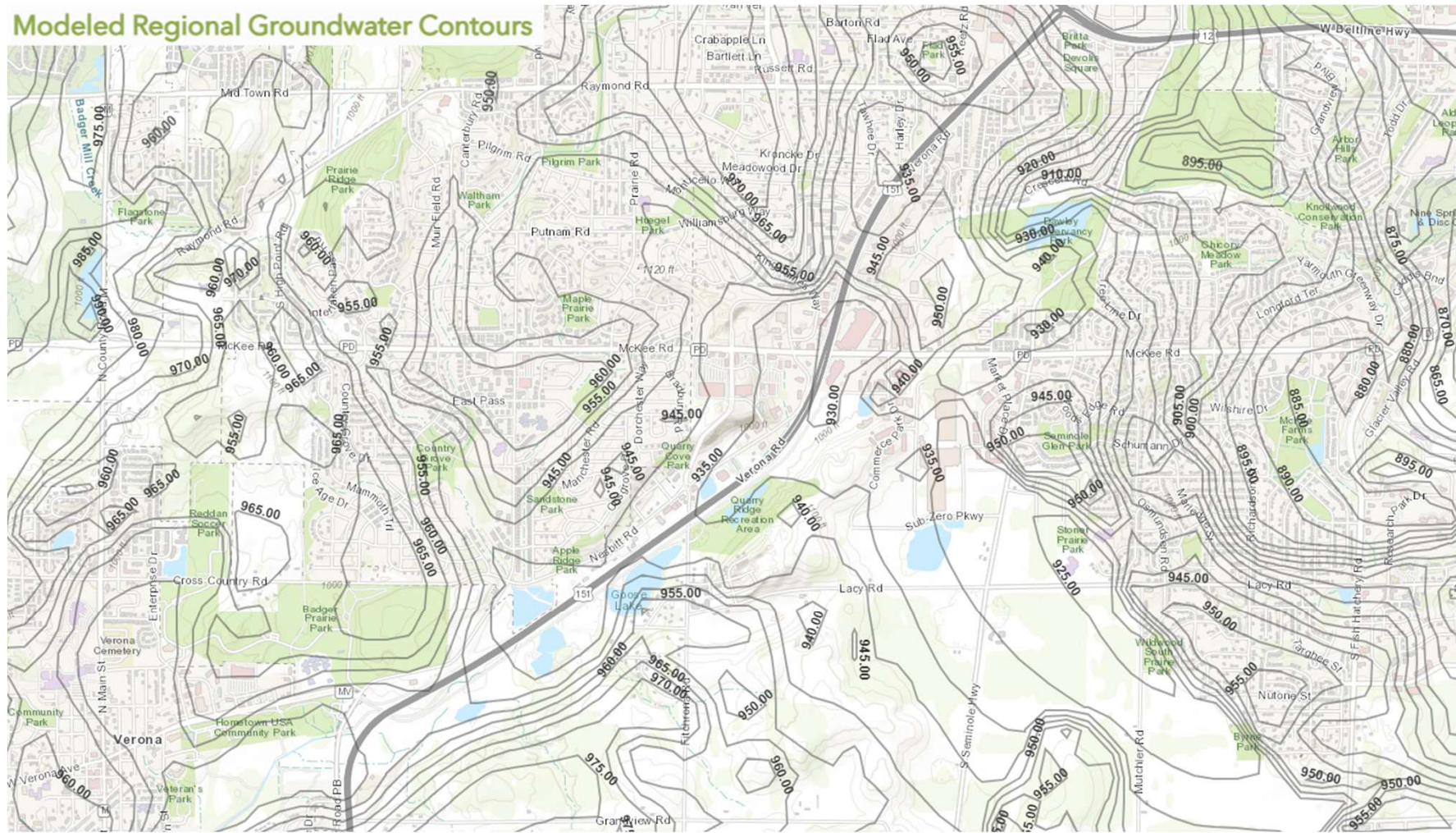
Date of Filling & Sealing: 09/11/2019

Rec #: 162571

Verification. Check only if well filling & sealing was done previously and you are just verifying that work.: No

1. Well Location Information					
County: Dane		WI Unique Well #:		DNR Hicap Well #:	
Latitude: (DD.DDDDD°) 43.0041 °N		Longitude: (DD.DDDDD°) 89.4836 °W		GPS Method Code: GPS008	
Gov't Lot #:	Qtr/Qtr: NW	Quarter: SW	Section #: 7	Township #: 6 North	Range #: 9 East
Well Street Address: 2740 FITCHRONA RD				Subdivision Name:	
Well City/Village/Town: City of FITCHBURG		Well Zip Code: 53711	Lot #:	Does a new well replace this well? No	
Reason for Filling & Sealing: CITY WATER				WI Unique Well # of Replacement Well:	
2. Facility / Owner Information					
Facility Name:		FID #:	License/Permit/Monitoring #:		
Original Well Owner:		Service Category:			
Present Well Owner: CITY OF FITCHBURG		Mailing Address of Present Owner: 5520 LACY RD			
		City: FITCHBURG	State: WI	Zip Code: 53711	
3. Well / Drillhole / Borehole Information					
Well Type: Water Well		Original Construction Date: (mm/dd/yyyy)		Construction Type: Drilled	
Formation Type:		Total Well Depth From Ground Surface (ft.): 120.00		(specify Other):	
Casing Diameter (in.): 6.00		Lower Drillhole Diameter (in.):		Casing Depth (ft.):	
Was well annular space grouted? Unknown		If yes, to what depth (ft.):		Depth to Water (ft.): 2.00	
4. Pump, Liner, Screen, Casing & Sealing Material					

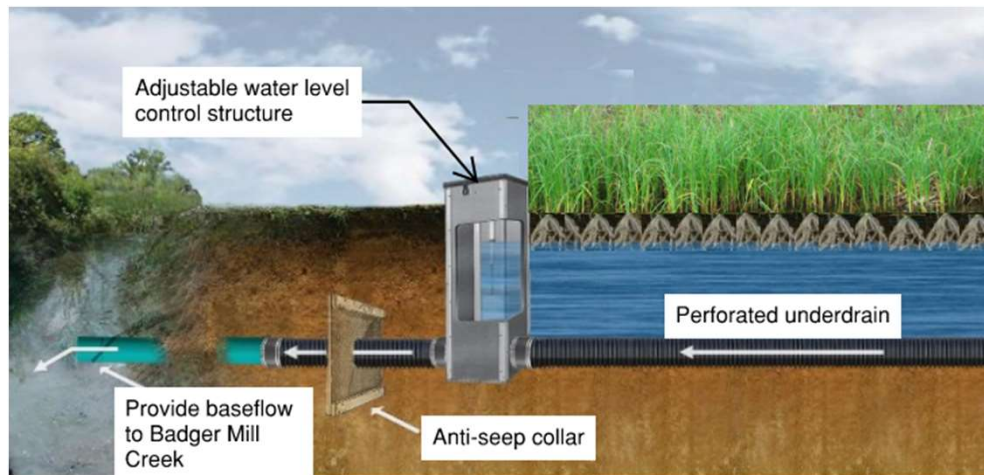
Modeled Regional Groundwater Contours



Key aspects of our revised approach

Project Manager

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CFM, CPESC,
EnvSP
Ruekert & Mielke, Inc.



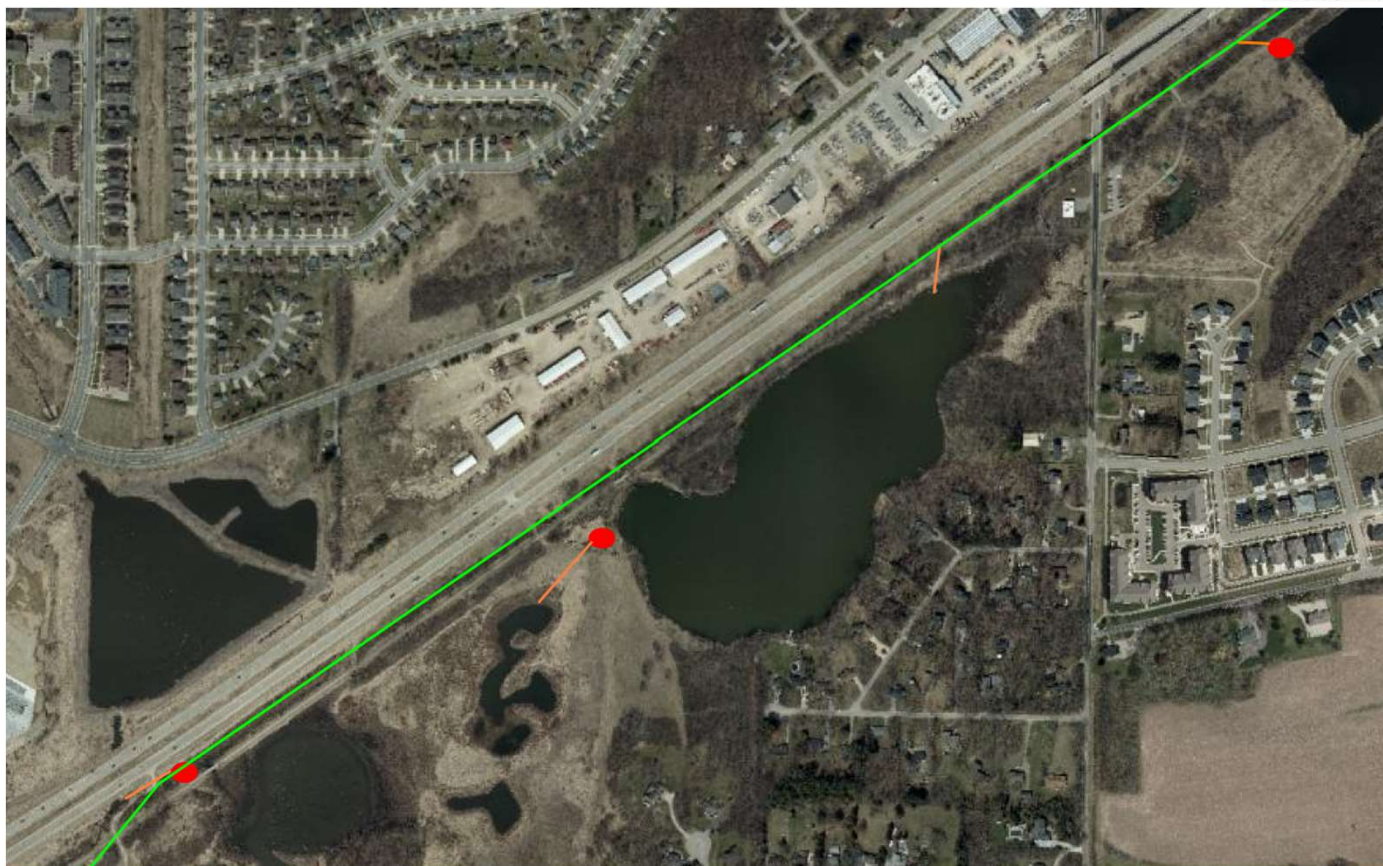
Underdrain and Water Level Control Structure
to Convert High Groundwater to Baseflow

- Conveyance improvements are focused on maintaining water levels before a rain event vs quickly conveying large events after they occur.
 - Use low flow water level control structures vs large pipes (straw vs pipe)
 - Allows adaptive control
 - Conveys cooler cleaner water
 - Provides better base flow component
- Add storage upstream
 - Water level control structures to lower Quarry Ridge pond (and maybe even beyond)
 - Will also maintain groundwater levels that may allow Nesbit Limestone Pond/Infiltration to work better
- Prevent downstream flood level increases

Key aspects of our revised approach

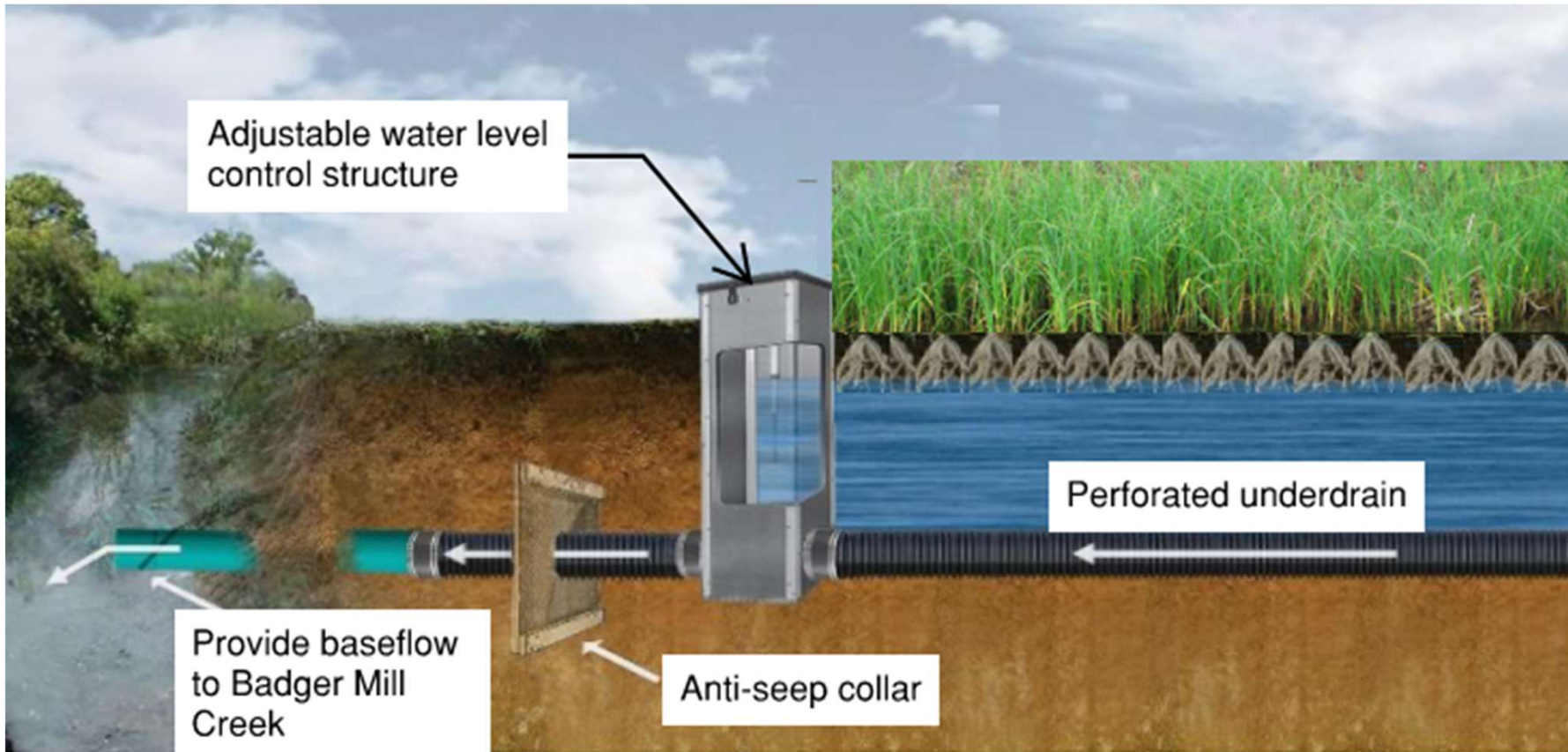
Project Manager

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 Ruekert • Mielke

AECOM



Underdrain and Water Level Control Structure to Convert High Groundwater to Baseflow

Environmental and Regulatory Approach

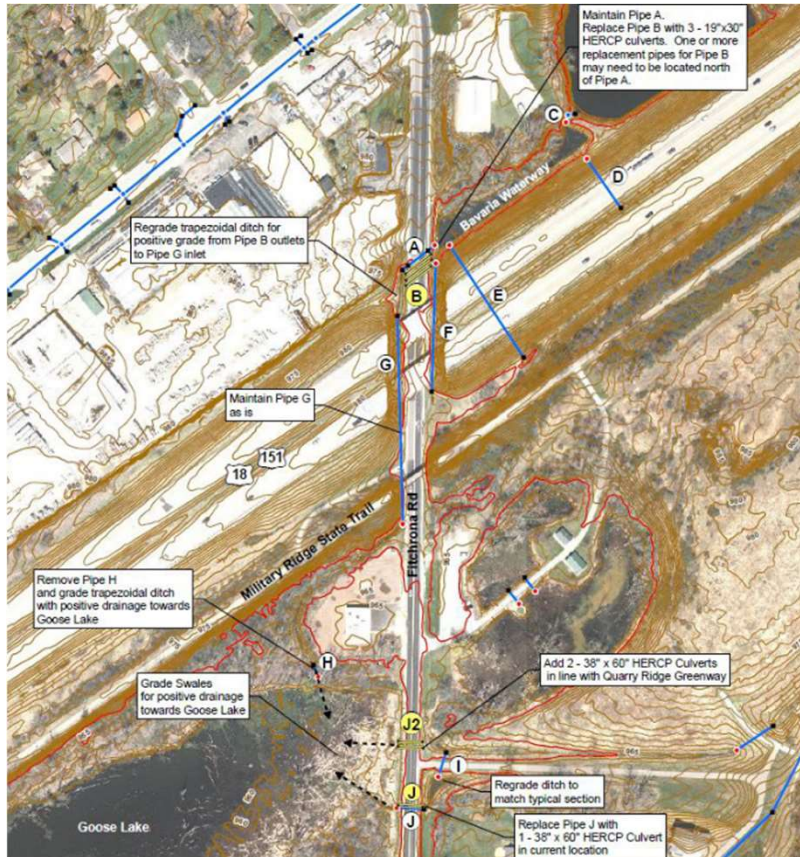


- New DNR general permit for hydrologic restoration
- Use water level control to restore wetland fringe and to improve water quality
- Look for ways to improve flooding while improving environment and water quality

Modeling approach

Senior Project
Engineer

Rick Eilertson, P.E.,
EnvSP
AECOM

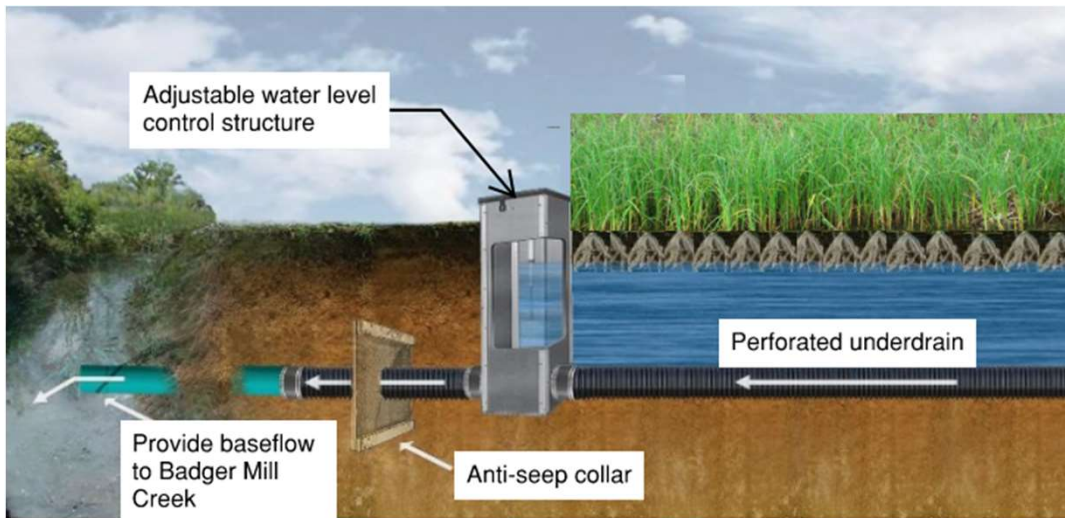


- Look at area comprehensively (upstream and downstream)
- Consider storm duration
- Combine existing models to paint a complete picture
- Maximize flood mitigation of Fitchrona Road while not increasing downstream flooding

Badger Mill Creek Base Flow

Project Manager


Cory Horton, P.E.,
CFM, CPESC,
EnvSP
Ruekert & Mielke, Inc.



Underdrain and Water Level Control Structure to Convert High Groundwater to Baseflow

If we control high groundwater levels, we can:

- Minimize direct wetland impacts
- Increase emergent wetlands
- Create additional live storage
- Reduce Fitchrona Road flood heights
- Protect downstream from flooding
- Add needed base flow to Badger Mill Creek

- 
- Additional work for addressing BMC goals
 - Groundwater monitoring
 - Water quality sampling
 - Water temperature monitoring
 - Baseflow estimates
 - Groundwater modeling
 - Long term performance monitoring

Time for Discussion-Questions-Ideas!

■ Thank You!

Project Manager

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CFM, CPESC,
EnvSP
Ruekert & Mielke, Inc.



Senior Project
Engineer

Rick Eilertson, P.E.,
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AECOM

