



TECHNICAL MEMORANDUM

To: Claudia Guy, PE, City of Fitchburg
Chris Barnes, PE, Town of Verona

From: Ann-Marie Kirsch, PE, AE2S

Re: **Fitchrona Road/Goose Lake Flood Study**

Date: July 16, 2021

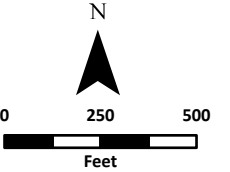
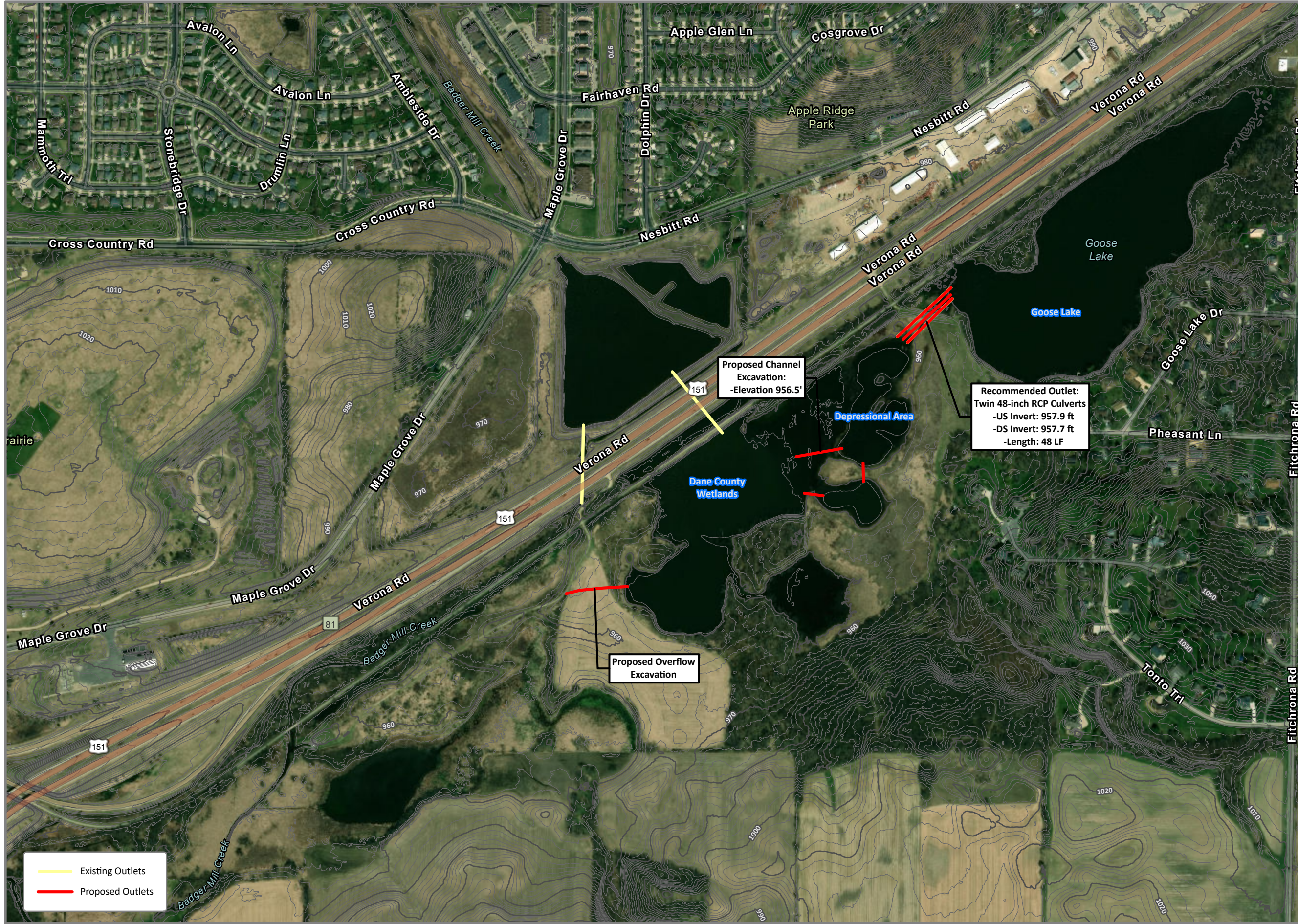
RECOMMENDATIONS

Goose Lake to Badger Mill Creek Capacity Improvements

Based on the analysis completed for this study, the recommended improvements are shown in **Figure 1** on the following page and summarized below:

- Improved Goose Lake outlet structure— Twin 48-inch concrete pipe culverts (lowers normal water surface elevation of Goose Lake about 1.6 feet (959.3 ft to 957.9 ft).
- Grade a new channel between depressional areas south of USH 18/151.
- Lower the overflow and grade a channel at southwest end of the depressional areas, which then flows through a natural wetland area before flowing into Lower Badger Mill Creek.
- Install a backflow preventer on the 30-inch corrugated metal pipe under USH 18/151.

Changes in the 100-year water surface elevation and flow rates are summarized in **Figure 2**. Note that improving the conveyance through the Dane County Park lands results in a change in timing of hydrograph peaks, resulting in an increase in the peak discharge rate downstream of the confluence of the Goose Lake outflow and the main stem of Lower Badger Mill Creek. While the Wisconsin Department of Natural Resources states that this is not a regulatory issue, increasing downstream peak discharge rates may have an impact on downstream property owners.



1 inch = 500 feet

Locator Map Not to Scale

City of Fitchburg
Dane County, WI

Figure 1
**RECOMMENDED
ALTERNATIVE**

REGIONAL STORMWATER
MANAGEMENT STUDY AND
DESIGN- FITCHRONA ROAD
AND GOOSE LAKE

Date: 3/10/2021



Information depicted may include data unverified by AE2S. Any reliance upon such data is at the user's own risk. AE2S does not warrant this map or its features are either spatially or temporally accurate.

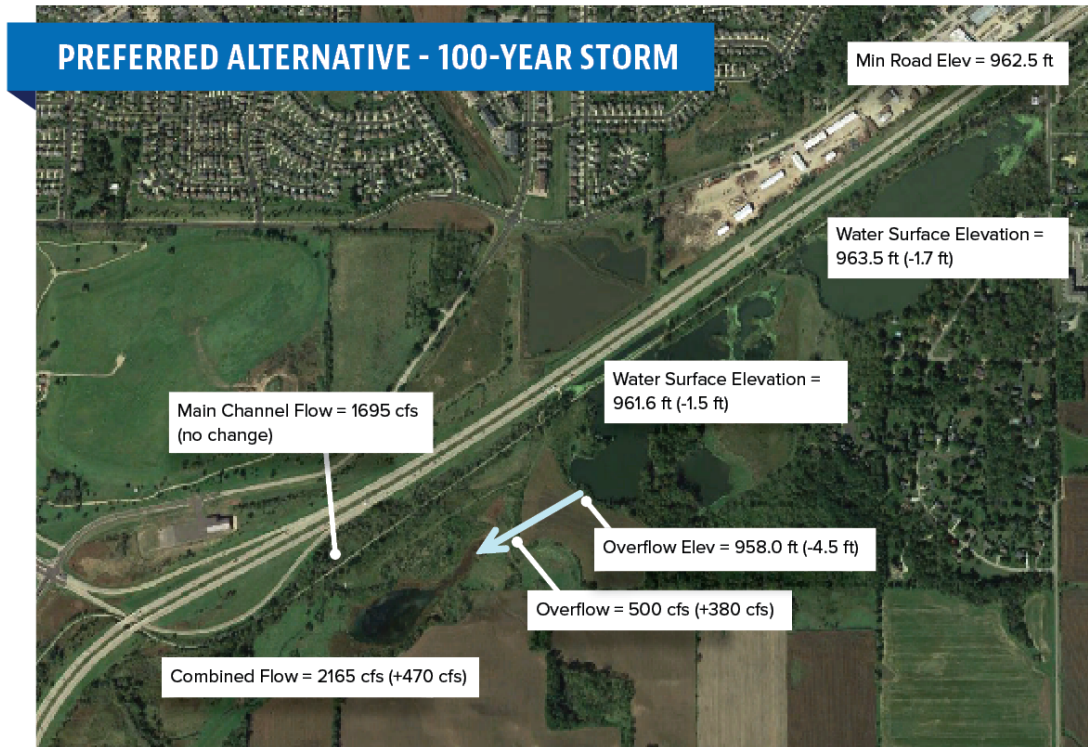
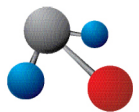


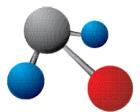
Figure 2 Preferred Alternative Impacts on 100-year Storm

Table 1 shows the existing and proposed Goose Lake flood levels relative to the elevation that Fitchrona Road begins to flood from backwater in Goose Lake. In existing conditions, the least severe storm event expected to impact Fitchrona Road from backwater conditions is between the 5- and 10-year storm event. This is improved to between the 25- and 50-year storm event with the preferred alternative.

Table 1: Preferred Alternative Flood Risk

EVENT	EXISTING CONDITIONS	PREFERRED ALTERNATIVE
100-year	965.2	963.5
50-year	964.7	962.7
25-year	964.0	961.9
10-year	962.7	960.8
5-year	961.8	960.3
2-year	961.1	959.9

Min. Fitchrona Road Elev = 962.5 ft



Fitchrona Road Capacity Improvements

Fitchrona Road can also frequently flood (1-2 year return period) from upstream flooding sources—Quarry Ridge basin overflow and the Nesbitt/Bavaria Pond overflow. Downstream conveyance capacity improvements at Goose Lake combined with doubling the existing storm sewer along the west side of Fitchrona Road along the roadway will reduce the risk of flooding from upstream sources to approximately a 5-year return period.

We recommend installation of 400 LF of 30-inch diameter concrete storm sewer pipe as part of the upcoming reconstruction project for Fitchrona Road, provided there is room in the roadway for the additional storm sewer. We do not recommend additional storm sewer capacity if it would require boring under USH 18/151 because of the high costs and permitting issues associated with boring as compared to the benefits of providing the additional conveyance capacity.

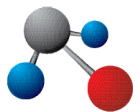
Recommended Alternative Opinion of Probable Costs

Opinion of probable costs for the preferred alternative for Goose Lake to Lower Badger Mill Capacity Improvements is \$293,600, which includes a 40 percent estimating contingency, 18 percent for engineering and administrative costs, and \$10,000 for WDNR/USACE Permitting. The opinion of probable cost does not include land acquisition costs or costs associated with securing drainage easements. The opinion of probable cost does not include the cost of materials and installation of the proposed 30-inch storm sewer along Fitchrona Road (estimated at \$60,000), nor does it include roadway restoration and other associated costs. The opinions of probable cost should be considered a Class 4 estimate as classified by the Association for the Advancement of Cost Engineering (AACE International), which is consistent with an opinion of probable cost prepared as part of a feasibility study.

BACKGROUND

Purpose

AE2S was contracted by the City of Fitchburg and Town of Verona, Wisconsin, to evaluate existing flooding issues at Goose Lake, which extend to Fitchrona Road, resulting in extended road closures. The scope of services included two public information meetings, and the evaluation of three alternatives to increase the level of service at Fitchrona Road. Finally, AE2S evaluated the impact of current plans to increase capacity under Fitchrona Road to reduce the risk of flooding from upstream sources, combined with plans to lower Goose Lake Water surface



elevations. The purpose of this memo is to describe the results of our analyses and recommendations for future improvements to the Goose Lake outlet and Fitchrona Road drainage infrastructure.

Modeling Approach

The computer model, XP-SWMM, was used to compute peak flow rates for the 2-, 5-, 10-, 25-, 50-, and 100-year storm events based on the MSE4 rainfall distribution and rainfall depths from NOAA Atlas 14 (2.84, 3.49, 4.09, 5.01, 5.80, and 6.66 inches, respectively). Hydraulic modeling was also completed using the XP-SWMM tool. Electronic copies of the hydrologic and hydraulic models are included with this memo as **Appendix A**.

Data Sources

The following data sources were used as part of this study:

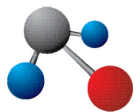
- AECOM XP-SWMM model and supporting memorandum
- City of Madison and Dane County LiDAR DEM and Orthophotos
- Dane County parcel data
- WisDOT record drawings for USH 18/151
- Historical aerial photographs
- Flood Insurance Study HEC-HMS model, obtained from WDNR
- Flood Insurance Study report (current effective)
- City of Fitchburg storm sewer GIS layer
- Dane County 1-foot topographic information
- Site visits and observations

All elevations reported in this memorandum are relative to NAVD88, unless otherwise noted.

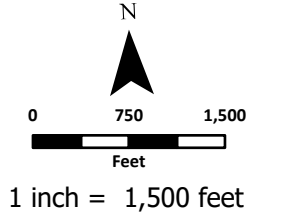
EXISTING CONDITIONS

The Goose Lake watershed is approximately 1770 acres in size (see **Figure 4**), and the level of development within the tributary area has greatly increased over the last 20 years. While previously predominantly rural and rural-residential in character, much of the watershed is now dominated by large-scale commercial development accompanied by infrastructure changes including the USH 18/151 expansion and grade separation at CTH PD. A general location map is shown in **Figure 3**, on the following page.

The existing drainage patterns are generally from northeast to southwest. One subwatershed flows through the Nesbitt-Limestone basin, south across USH 18/151 to the Quarry Ridge Basin,



and then west to Goose Lake. Another subwatershed flows through the Nesbitt-Bavaria Pond before flowing south to Goose Lake. There are several other treatment practices located more upstream in the watershed, including the Nesbitt Heights pond, Nesbitt Heights infiltration cells, Jung's pond, and many smaller private facilities. During large storm events, overflow will travel directly from the Nesbitt-Limestone basin to the Nesbitt-Bavaria pond along the north side of USH 18/151, and from Jamestown Basin to the Nesbitt-Bavaria pond along the east side of Fitchrona Road. **Figure 16** shows local drainage patterns in more detail. Goose Lake also receives direct runoff from the rural residential area surrounding the lake and upstream agricultural lands. **Figure 4** shows relevant watersheds, with the area that flows to Goose Lake from Fitchrona Road shown in red, the area flowing directly into the lake shown in orange, and the area that flows into the wetland complex downstream of Goose Lake shown in yellow.



Locator Map Not to Scale

City of Fitchburg
Dane County, WI

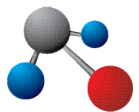
Figure 3
PROJECT LOCATION

REGIONAL STORMWATER
MANAGEMENT STUDY AND
DESIGN- FITCHRONA ROAD
AND GOOSE LAKE

Date: 3/10/2021



Information depicted may include data unverified by AE2S. Any reliance upon such data is at the user's own risk. AE2S does not warrant this map or its features are either spatially or temporally accurate.



Downstream of USH 18/151, the primary outflow from Goose Lake and the depressional areas in the Dane County Park flows into the Lower Badger Mill Creek. The City of Madison owns and maintains a regional stormwater management basin on the main stem of Lower Badger Mill Creek immediately upstream of the confluence with the flow from Goose Lake. The tributary drainage area to the regional stormwater management facility is approximately 6200 acres.

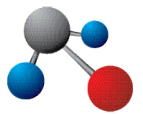
This project is focused on reduction of flooding risk at Fitchrona Road, and it does not address water quality improvement explicitly.

FEMA Floodplains

As shown in **Figure 5**, the project site is in a regulated floodplain. However, the base flood elevation of Goose Lake is based on backwater from Badger Mill Creek, and it is regulated as Zone A (flood fringe). Based on conversation with Uriah Monday, of WDNR, he does not see the need to update the hydrologic or hydraulic regulatory model as part of this project, as the storage in Goose Lake is not accounted for in the current model.

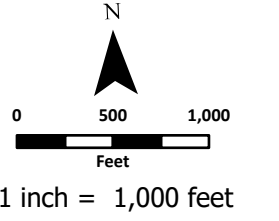
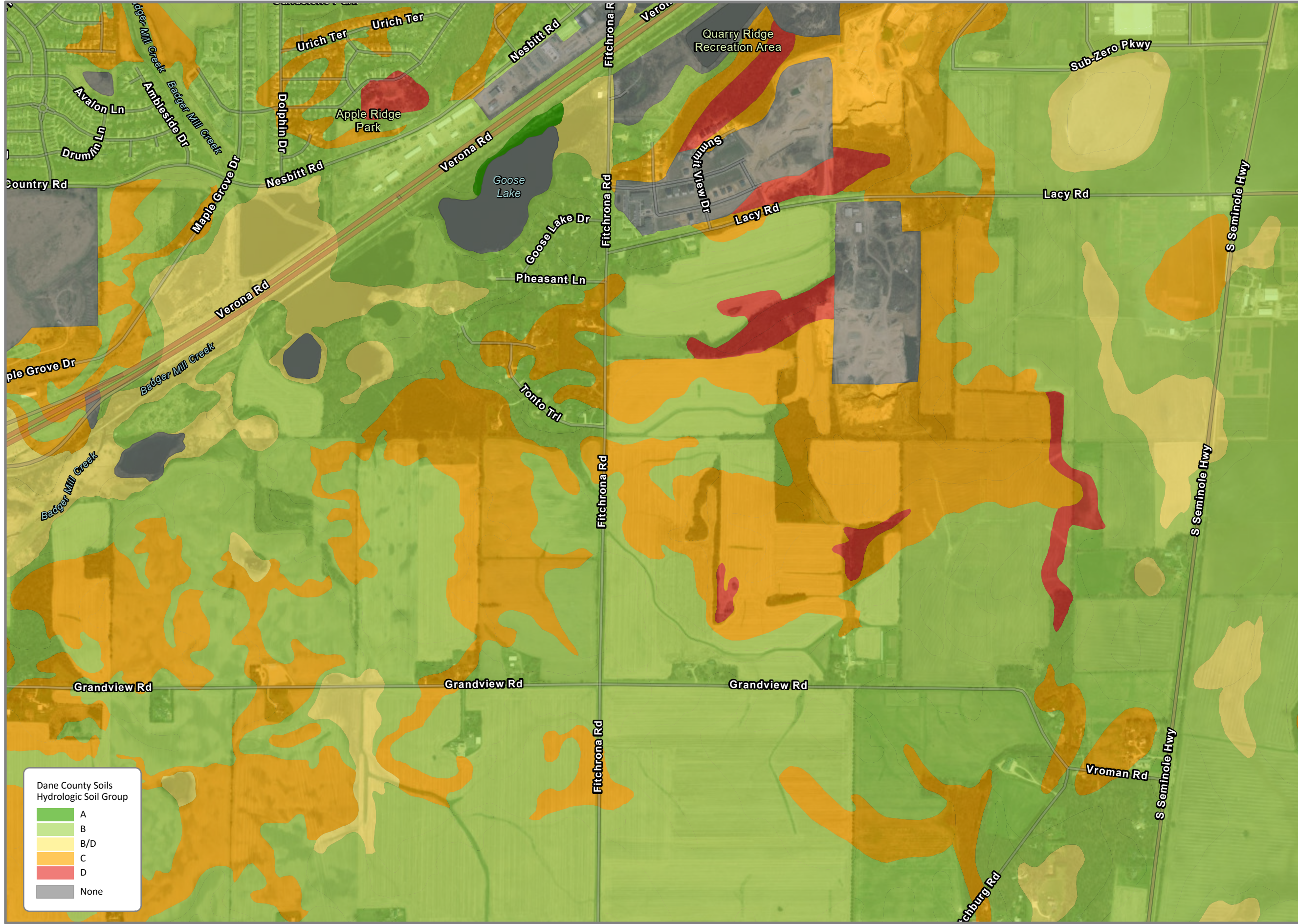


Figure 5 Floodplain Map



Soils

The soils in the project area are primarily silty loams and sandy loams. These soils are classified as Hydrologic Soils Groups B, C, and B/D meaning that they have moderate to very slow infiltration rates, especially in the undrained condition, and have high runoff potential during rainfall events. Hydrologic Soils Groups are shown in **Figure 6**.



Locator Map Not to Scale

City of Fitchburg
Dane County, WI

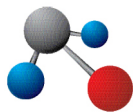
Figure 6
SOILS

REGIONAL STORMWATER
MANAGEMENT STUDY AND
DESIGN- FITCHRONA ROAD
AND GOOSE LAKE

Date: 3/10/2021



Information depicted may include data unverified by AE2S. Any reliance upon such data is at the user's own risk. AE2S does not warrant this map or its features are either spatially or temporally accurate.
 Coordinate System: NAD 1983 HARN WISCRS Dane County Feet | Edited by: akirsch | W:\Fitchburg Public Works\14827-2019-003\GIS\GIS\Fitchburg Stormwater Improvements.aprx | 2- Soils



Hydrology/Hydraulics

Figure 7 shows the existing drainage pattern for Goose Lake as it flows north under USH 18/151, along the roadway south of the regional stormwater detention pond, and then returning to the south through the triple-cell box culvert to the main stem of Lower Badger Mill Creek. The low elevation on Fitchrona Road is south of the USH 181/151 overpass and has a minimum elevation of approximately 962.5 feet. Lack of downstream conveyance causes water to back up onto Fitchrona Road, causing long-term road closures and risk to the traveling public.

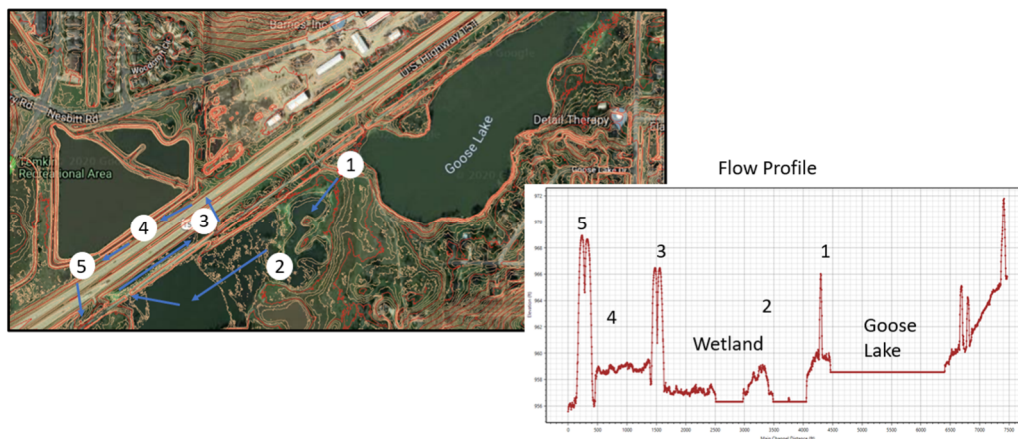
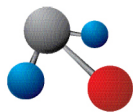


Figure 7 Local Drainage Patterns

The existing Goose Lake Outlet is a pair of 18-inch corrugated metal pipes under the Dane County Parks trail. At one point in time, there were outlet flap gate backflow preventers on the pipes, but one is currently missing and the other is permanently left in the open position.

Downstream of Goose Lake is a series of interconnected depressional areas, which have been modified through construction activities by Dane County Parks Department over the years. Based on review of historical aerial photos, the water surface elevation varies from year to year depending on hydrologic / climate conditions. The primary discharge is through a flat slab bridge under the Military Ridge Bike trail and then to the northeast to a 30-inch corrugated metal pipe under USH 181/151, with inverts of approximately 960 ft.

Flow along the highway travels to the southwest where it reaches Lower Badger Mill Creek at the outlet of the existing City of Madison regional stormwater detention basin. The ditch has very little slope but has about a foot and half drop near the basin outfall. The outflow hydrographs of the regional detention basin were extracted from the HEC-HMS model for the Flood Insurance



Study for Lower Badger Mill Creek. The outflow hydrographs were read into the XP-SWMM model as a direct input.

Lower Badger Mill Creek then flows through the triple-cell 9-ft x 8-ft rectangular box culvert under USH 18/151 (B-13-426), which continues to flow southwest toward the City of Verona. The invert elevations for B-13-426 are 955.4 ft at the inlet and 955.2 ft at the outlet. Note that the design 100-year flow for B-13-426 (designed in 1994) is 1130 cfs, compared to the FIS value of 1723 cfs.

In addition to the primary flow pattern, the wetland area southwest of Goose Lake will overflow during more extreme rainfall events. The overflow elevation is approximately 962.5 ft, which is essentially the same elevation as the low point of Fitchrona Road. As shown in **Figure 8**, the overflow during the 100-yr storm is approximately 120 cfs, corresponding to seven percent of the total discharge through the main stem of Lower Badger Mill Creek.

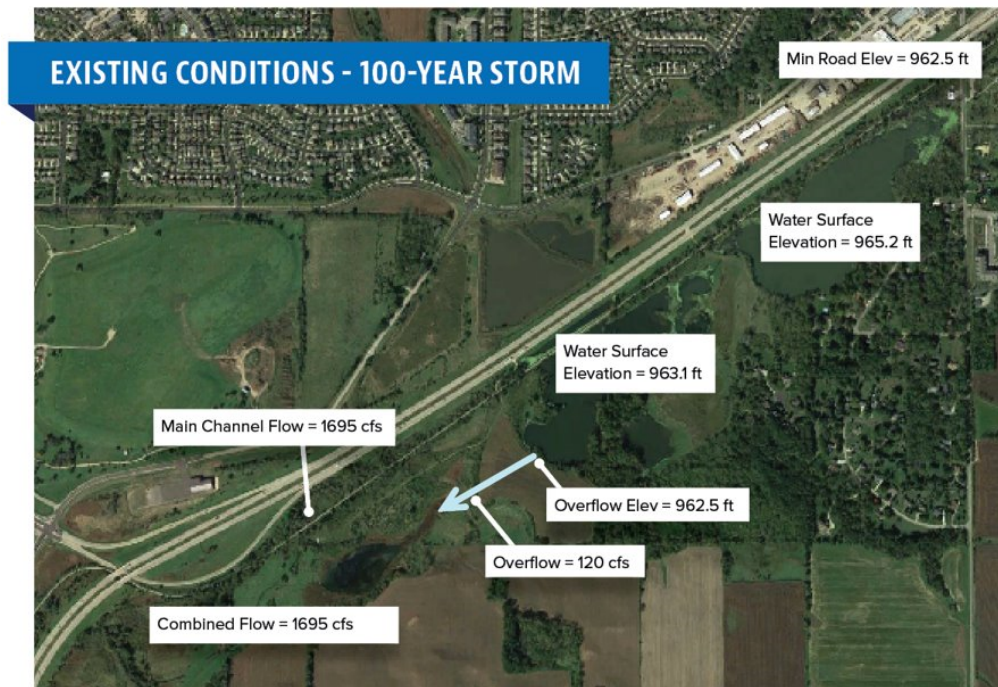


Figure 8 Existing Conditions 100-year storm event

Table 2 is a summary of peak water surface elevations at Goose Lake for the 2- through 100-year storm events. As indicated, water begins to flood Fitchrona Road between the 5- and 10-yr storm events.

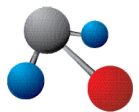


Table 2: Pre-Project Goose Lake Water Surface Elevations

EVENT	EXISTING CONDITIONS
100-year	965.2
50-year	964.7
25-year	964.0
10-year	962.7
5-year	961.8
2-year	961.1

Min. Fitchrona Road
 Elev = 962.5 ft

ALTERNATIVES ANALYSIS

It should be noted that the alternatives discussed below differ from the alternatives detailed in the Scope of Services in our contract with the City and the Town. As analysis began, it became apparent that there was not adequate fall in the grade to “short-cut” the system on the south east side of USH 18/151 downstream of the triple cell box culvert. To get enough head differential, discharge from Goose Lake would need flow into Lower Badger Mill Creek further downstream of the triple cell box culvert. The original concepts were presented at the first public information meeting, but the revised concepts were presented at the second public information with discussion of how and why the revised alternatives were necessary.

Recordings of the first and second public information meetings can be found at the links below:

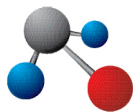
Public Information Meeting #1 (July 2, 2020):

<http://factv.fitchburgwi.gov/CablecastPublicSite/show/12465?channel=3>

Public Information Meeting #2 (October 14, 2020):

<http://factv.fitchburgwi.gov/CablecastPublicSite/show/12666?channel=3>

In general, alternatives included combinations of increasing outlet capacity at Goose Lake through enlarging the pipes, increasing overflow at the southeast end of the depressional area south of USH18/151 through grading, and lowering the normal water surface elevation of Goose Lake by adjusting the outlet invert elevations.

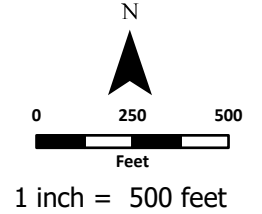
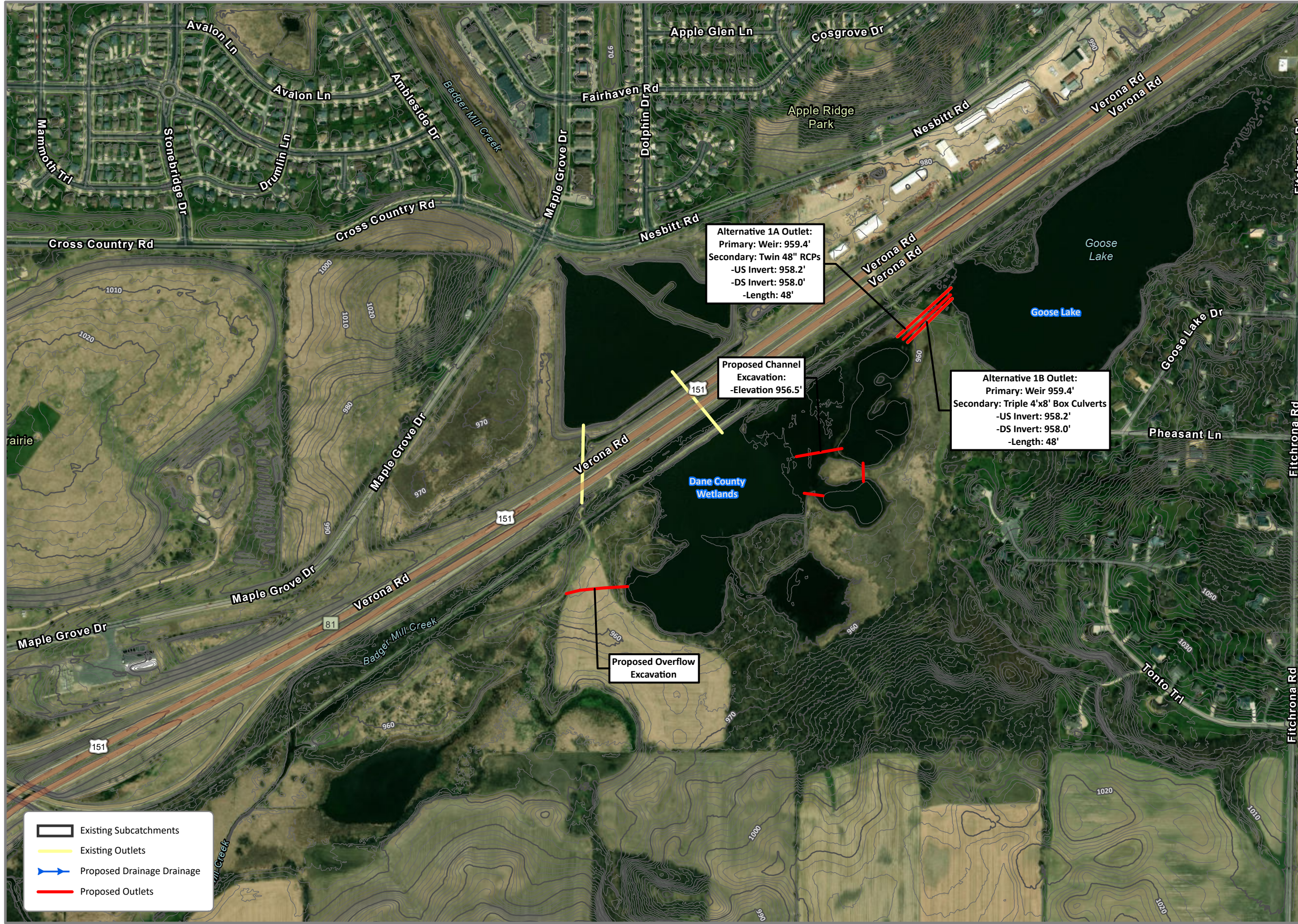


Alternatives 1a and 1b

The components of Alternatives 1a and 1b include the following:

- Goose Lake outlet structure—Concrete weir at elevation 959.4 ft with twin 48-inch concrete pipes (1a) or triple 8-ft x 4-ft box culvert (1b)
- Channelization between depressional areas south of USH 18/151.
- Construction of lower overflow at the SW end of depressional areas, which then flows through a natural wetland area before joining Lower Badger Mill Creek.
- Backflow preventer on 30-inch CMP under USH 18/151.

Details of proposed alternative improvements are shown in **Figure 9**. Changes in water surface elevation and flow rates for Alternative 1a are summarized in **Figure 10**, and for Alternative 1b in **Figure 11**.



Locator Map Not to Scale

City of Fitchburg
Dane County, WI

Figure 9 ALTERNATIVES 1A AND 1B

REGIONAL STORMWATER
MANAGEMENT STUDY AND
DESIGN- FITCHRONA ROAD
AND GOOSE LAKE

Date: 3/10/2021



Information depicted may include data unverified by AE2S. Any reliance upon such data is at the user's own risk. AE2S does not warrant this map or its features are either spatially or temporally accurate.
 Coordinate System: NAD 1983 HARN WISCRS Dane County Feet | Edited by: akirsch | W:\Fitchburg Public Works\14827-2019-003\GIS\GIS\Fitchburg Stormwater Improvements.aprx | 5- Alternatives 1A and 1B

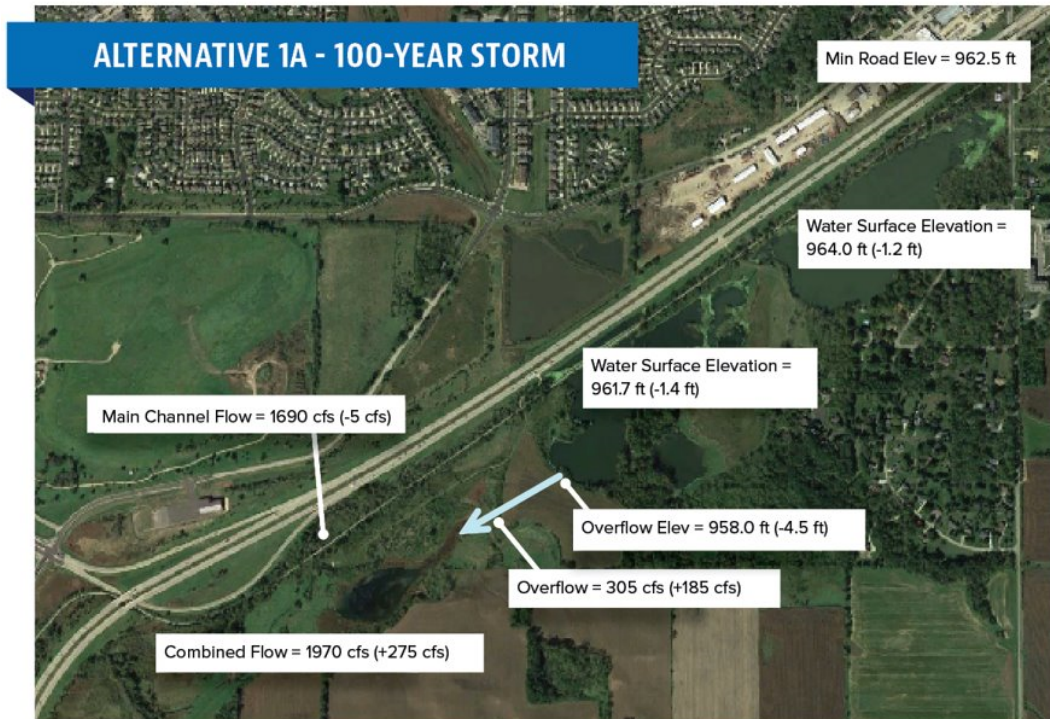
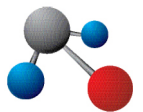


Figure 10: Alternative 1a Impacts on 100-year Storm

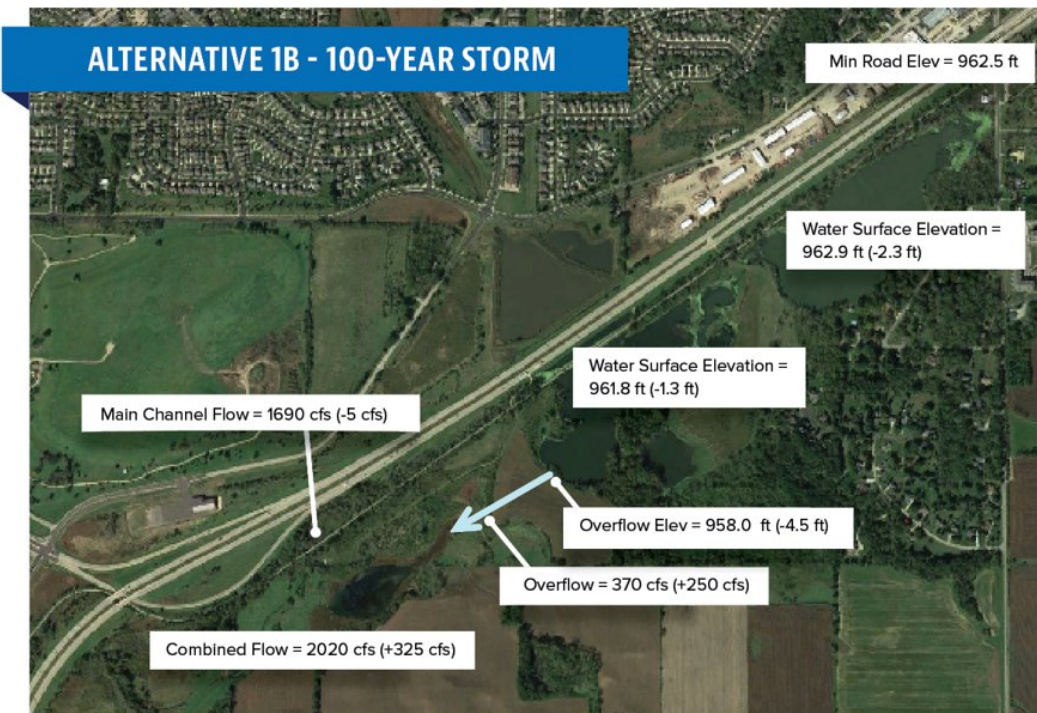


Figure 11 Alternative 1b Impacts on 100-year Storm

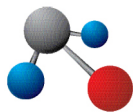


Table 3 shows the relative flood risk reductions to Fitchrona Road for both alternatives. Alternative 1a reduces the flood risk to the 25-year storm, and Alternative 1B reduces the flood risk to approximately the 50-year storm.

Table 3: Alternatives 1a and 1b Flood Risk Reduction

EVENT	EXISTING CONDITIONS	ALTERNATIVE 1A	ALTERNATIVE 1B
100-year	965.2	964.0	962.9
50-year	964.7	963.3	962.4
25-year	964.0	962.5	961.8
10-year	962.7	961.5	961.1
5-year	961.8	960.8	960.6
2-year	961.1	960.2	960.1

Fitchrona Road Floods

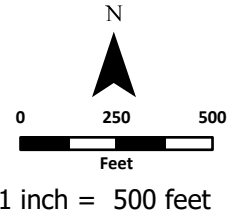
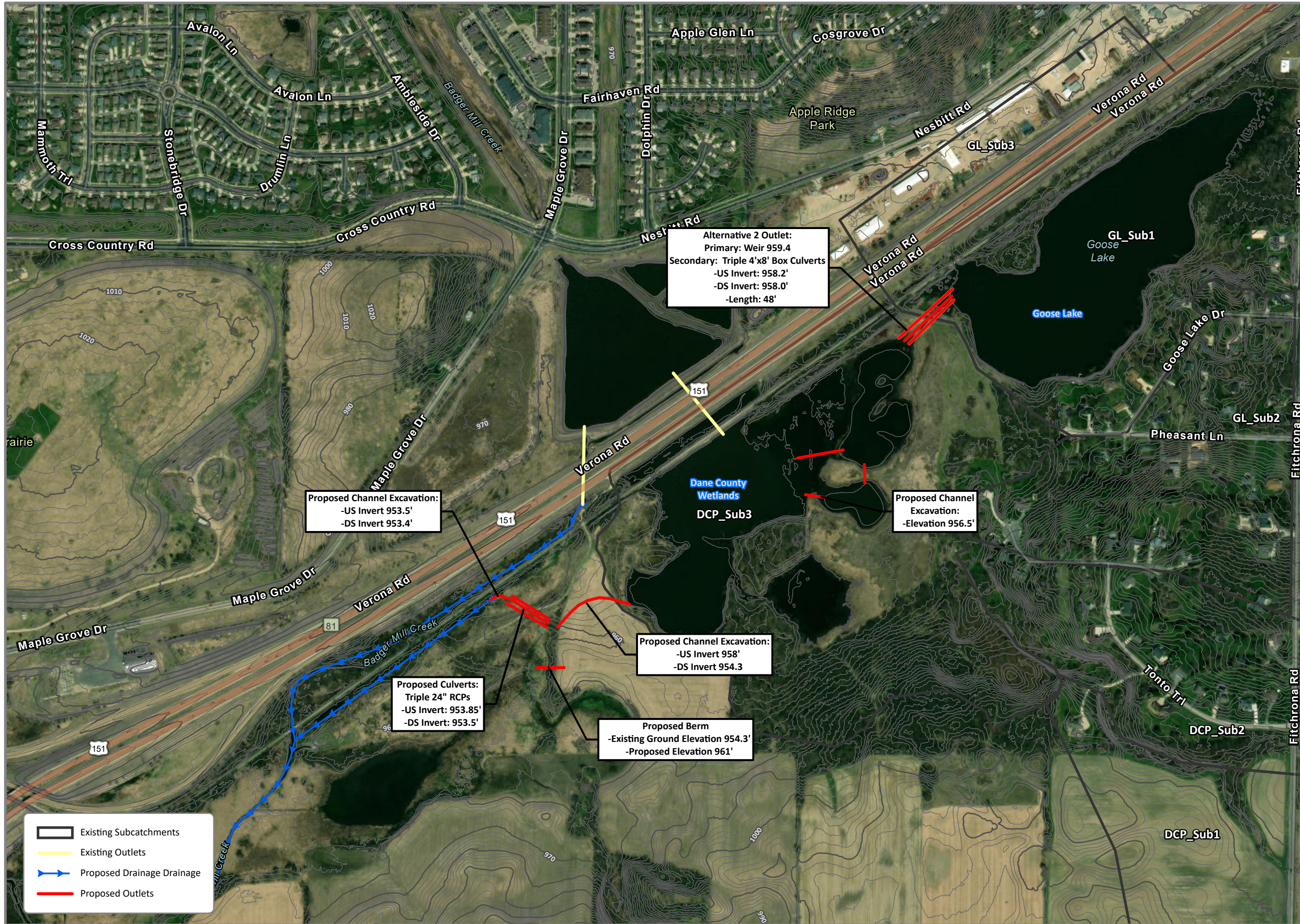
Alternative 2

The components of Alternative 2 include the following:

- Goose Lake outlet structure—Concrete weir at elevation 959.4 ft with triple 8-ft x 4-ft box culvert.
- Channelization between depressional areas south of USH 18/151.
- Construction of lower overflow at SW end of depressional areas, with a berm to prevent flow into existing wetland southwest of overflow.
- Triple 24-inch concrete pipes under Dane County trail/path with channelization along Military Ridge Bike Trail.
- Backflow preventer on 30-inch CMP under USH 18/151

Note that the profile of the bike trail may need to be raised to prevent flooding, should the discharge be rerouted along Military Ridge Bike Trail.

Details of proposed alternative improvements are shown in **Figure 12**. Changes in water surface elevation and flow rates are summarized in **Figure 13**.



Locator Map Not to Scale

City of Fitchburg
Dane County, WI

Figure 12
ALTERNATIVE 2

REGIONAL STORMWATER
MANAGEMENT STUDY AND
DESIGN- FITCHRONA ROAD
AND GOOSE LAKE

Date: 3/10/2021



Information depicted may include data unverified by AE2S. Any reliance upon such data is at the user's own risk. AE2S does not warrant this map or its features are either spatially or temporally accurate.

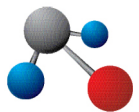


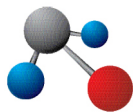
Figure 13 Alternative 2 Impacts on 100-year Storm

Table 4 shows the relative flood risk reductions to Fitchrona Road for Alternative 2, which reduces the flood risk to the 50-year storm. Results for Alternatives 1a and 1b are also included for comparison.

Table 4: Alternative 2 Flood Risk

EVENT	EXISTING CONDITIONS	ALTERNATIVE 1A	ALTERNATIVE 1B	ALTERNATIVE 2
100-year	965.2	964.0	962.9	963.0
50-year	964.7	963.3	962.4	962.5
25-year	964.0	962.5	961.8	961.9
10-year	962.7	961.5	961.1	961.1
5-year	961.8	960.8	960.6	960.6
2-year	961.1	960.2	960.1	960.1

← Fitchrona Road Floods



Alternative 3

The components of Alternative 3 include the following:

- Goose Lake outlet structure—Triple 8-ft x 4-ft box culvert (lowers normal water surface elevation of Goose Lake to 957.9 ft.
- Channelization between depressional areas south of USH 18/151.
- Construction of lower overflow at SW end of depressional areas, with a berm to prevent flow into existing wetland southwest of overflow.
- Triple 24-inch concrete pipes under Dane County trail/path with channelization along Military Ridge Bike Trail.
- Backflow preventer on 30-inch CMP under USH 18/151

Note that like Alternative 2, the profile of the bike trail may need to be raised to prevent flooding, should the discharge be rerouted along Military Ridge Bike Trail.

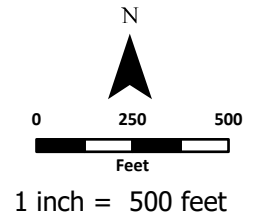
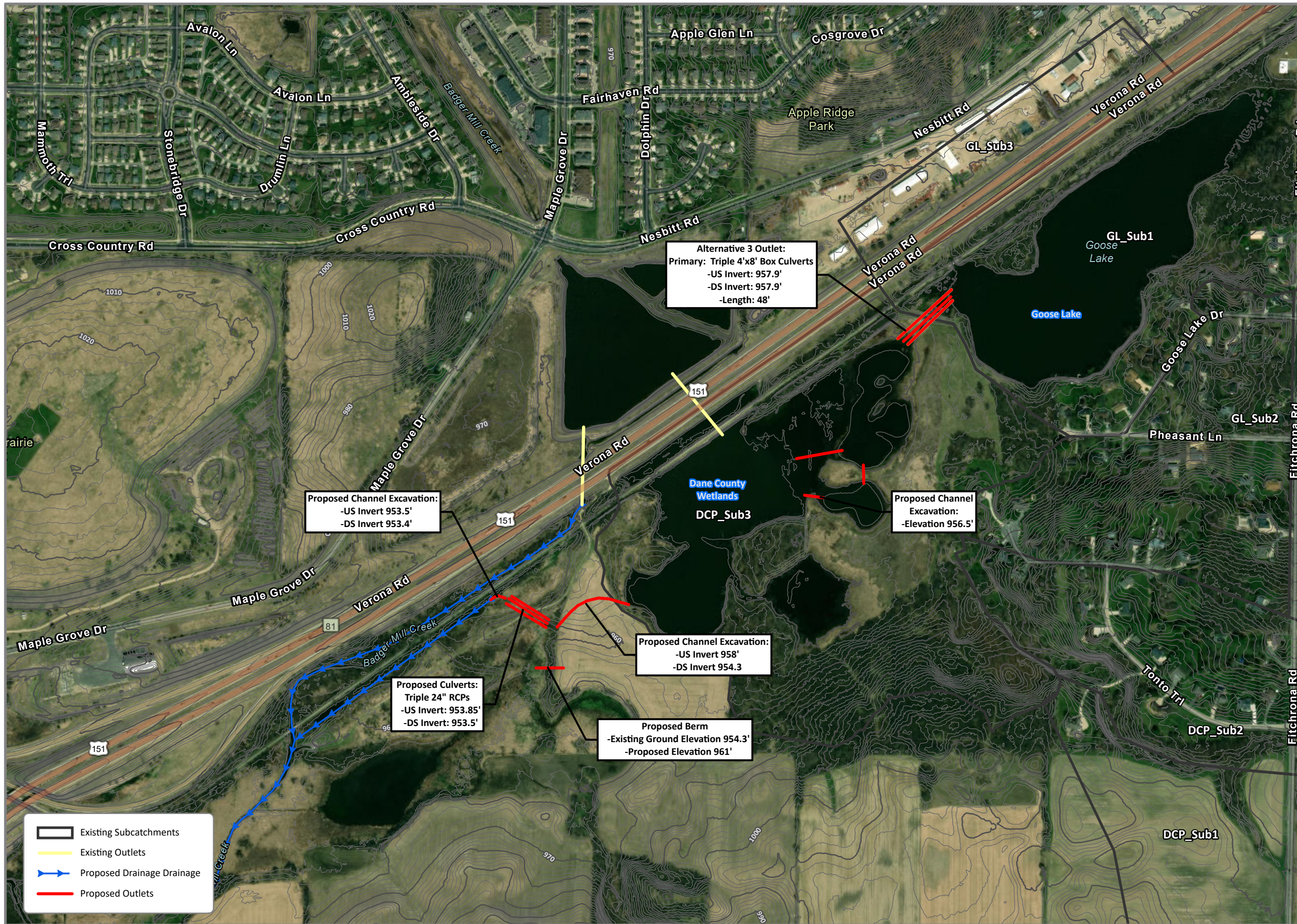
Details of proposed alternative improvements are shown in **Figure 14**. Changes in water surface elevation and flow rates are summarized in **Figure 15**.

Table 5 shows the relative flood risk reductions to Fitchrona Road for Alternative 3, which reduces the flood risk to greater than the 50-year storm, but less that the 100-year storm. Results for Alternatives 1a,1b, and 2 are also included for comparison.

Table 5: Alternative 3 Flood Risk

EVENT	EXISTING CONDITIONS	ALTERNATIVE 1A	ALTERNATIVE 1B	ALTERNATIVE 2	ALTERNATIVE 3
100-year	965.2	964.0	962.9	963.0	962.7
50-year	964.7	963.3	962.4	962.5	962.1
25-year	964.0	962.5	961.8	961.9	961.5
10-year	962.7	961.5	961.1	961.1	960.6
5-year	961.8	960.8	960.6	960.6	959.9
2-year	961.1	960.2	960.1	960.1	959.2

Fitchrona Road Floods



Locator Map Not to Scale

City of Fitchburg
Dane County, WI

Figure 14
ALTERNATIVE 3

REGIONAL STORMWATER
MANAGEMENT STUDY AND
DESIGN- FITCHRONA ROAD
AND GOOSE LAKE

Date: 3/10/2021



Information depicted may include data unverified by AE2S. Any reliance upon such data is at the user's own risk. AE2S does not warrant this map or its features are either spatially or temporally accurate.

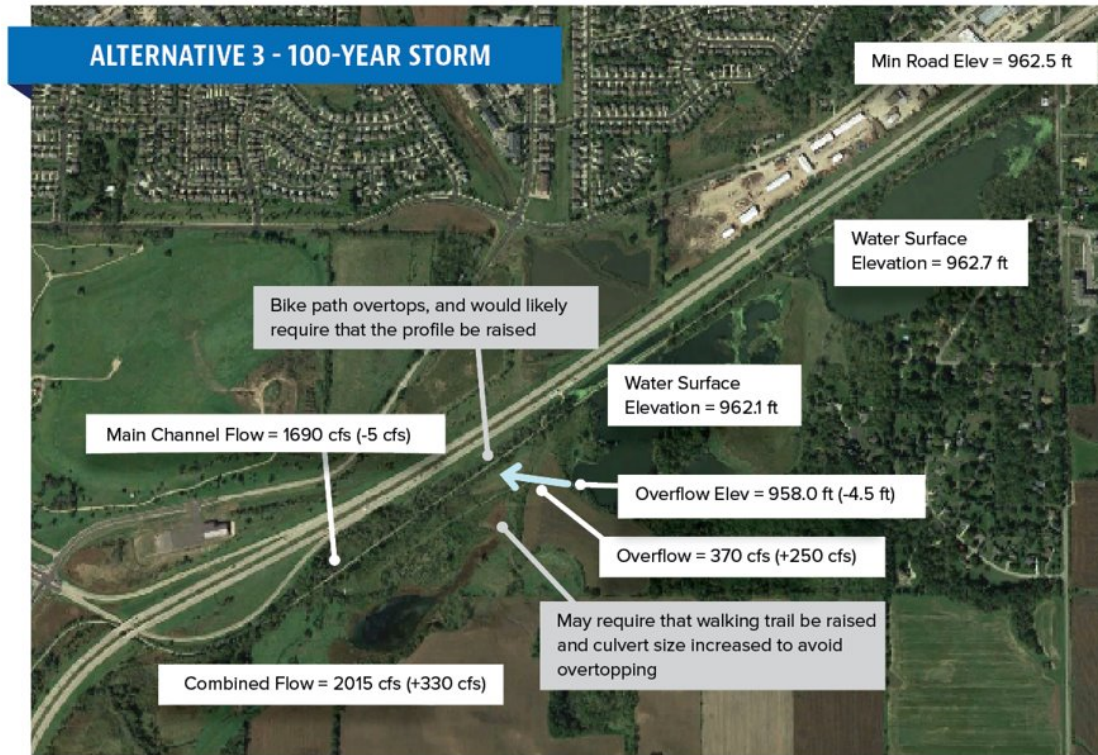
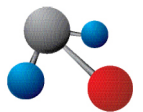
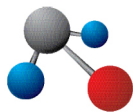


Figure 15 Alternative 3 Impacts on 100-year Storm



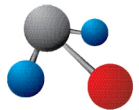
Preferred Alternative

As discussed in the opening section of this technical memorandum, the preferred alternative is a combination of components from Alternative 1a and Alternative 3. The combination of components is intended to maximize the improvements in drainage to Goose Lake and Fitchrona Road while minimizing the projected cost of the overall project. Table 6 summarizes the predicted highwater elevations at Fitchrona Road compared to existing conditions and other alternatives considered.

Table 5: Alternative 3 Flood Risk

EVENT	EXISTING CONDITIONS	ALTERNATIVE 1A	ALTERNATIVE 1B	ALTERNATIVE 2	ALTERNATIVE 3	PREFERRED ALTERNATIVE
100-year	965.2	964.0	962.9	963.0	962.7	963.5
50-year	964.7	963.3	962.4	962.5	962.1	962.7
25-year	964.0	962.5	961.8	961.9	961.5	961.9
10-year	962.7	961.5	961.1	961.1	960.6	960.8
5-year	961.8	960.8	960.6	960.6	959.9	960.3
2-year	961.1	960.2	960.1	960.1	959.2	959.9

Fitchrona Road Floods



Opinions of Probable Costs for Alternatives

Table 7 summarizes the opinion of probable cost for each alternative, including the preferred alternative described at the beginning of this memorandum. Opinions of probable cost do not include the cost of the proposed 30-inch storm sewer under Fitchrona Road. The opinion of probable cost for the Fitchrona storm sewer is \$60,000, exclusive of other roadway design and construction costs.

Table 7: Opinion of Probable Costs for Alternatives

Alternative	Description of Alternative	Probable Costs
1A	Increase downstream conveyance (larger pipes exiting Goose Lake)	\$301,500
1B	Increase downstream conveyance (much larger pipes exiting Goose Lake)	\$522,700
2	Increase downstream conveyance with flow along bike path to Badger Mill Creek	\$623,400
3	Increase storage in the system including downstream conveyance	\$607,600
Preferred Combination	1A for conveyance, 3 for water level	\$293,600

FITCHRONA ROAD LOCAL DRAINAGE EVALUATION

Once the preferred alternative was selected, the proposed tailwater impacts on Goose Lake were used to evaluate the drainage system under Fitchrona Road. The existing drainage configuration at Fitchrona Road is shown in **Figure 16**. In general, the Nesbitt-Limestone pond drains to the Quarry Ridge Basin under USH 18/151, but overflow from larger events flows along USH 18/151 to the Nesbitt/Bavaria Basin. Local drainage north and west of the Quarry Ridge Basin flows north through storm sewer, crosses under Fitchrona Road, then returns south along the storm sewer on the west side of Fitchrona Road, around the MMSD pump station, and then to Goose Lake.

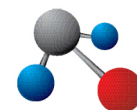


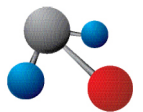
Figure 16 Fitchrona Road Drainage Schematic

The existing conditions model shows that overflow from the Nesbitt/Bavaria pond onto Fitchrona Road is extremely frequent (1-2 year recurrence interval). Overflow from the Nesbitt-Limestone Pond to the Nesbitt/Bavaria pond is not significantly affected by downstream water surface elevation of Goose Lake.

For the 10-year storm, the maximum flow through the 15- and 18-inch pipes flowing under Fitchrona road is backflow of approximately 20 cfs. After the peak on the main drainage subsides, the peak positive discharge is approximately 10 cfs between the two pipes.

The pipe from south to north on east side of Fitchrona Road also has backflow under frequent storm conditions, and it drains approximately two acres of direct tributary area. Alternative analysis shows little to no benefit of redirecting the runoff from this area to Goose Lake directly.

Doubling the pipe capacity from north to south on west side of Fitchrona Road reduces flood risk to almost 5-year recurrence interval. However, as discussed previously in the AECOM study, construction issues will be significant at the USH 18/151 crossing. If desired, the additional



capacity may need to be bored under the highway or constructed in the bridge embankment with approval from WisDOT for the work.

While eliminating the risk of flooding from upstream sources may prove to be difficult for the City and Town, downstream improvements at Goose Lake and the Dane County park will provide significant benefit, as the duration of flooding will be significantly reduced from days or weeks to hours. Under current conditions, water flooding Fitchrona Road recedes very slowly—mostly through evaporation and infiltration because the ultimate overflow elevation is at the same elevations as the low point of Fitchrona Road. This flood recession can take a week or more. If downstream constrictions are removed, the localized flooding at Fitchrona Road, even from upstream sources will last only as long as the storm continues, generally a time span of two to three hours.

- Attachment A: XP-SWMM Models (electronic format)
- Attachment B: PIM #1 Presentation
- Attachment C: PIM #2 Presentation
- Attachment D: Survey 1-2-3 Results

Attachment A

XP-SWMM Model
(native electronic format only)

Attachment B

Public Information Meeting #1

July 2, 2020

Fitchrona Road Flood Study

PUBLIC INFORMATION MEETING #1

July 2, 2020

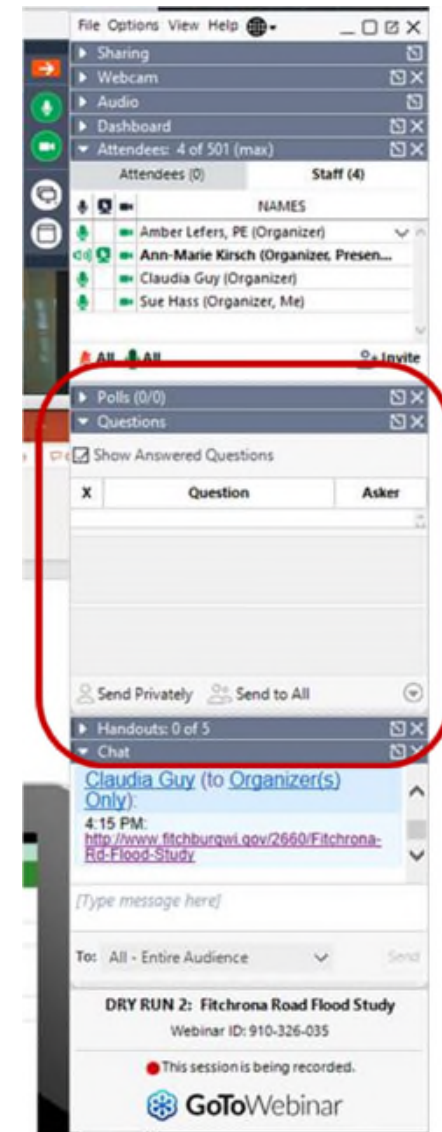


TEAM INTRODUCTIONS

- **Ann-Marie Kirsch, PE** | AE2S Project Manager
- **Claudia Guy, PE** | City of Fitchburg Environmental Engineer
- **Chris Barnes, PE** | Town of Verona Public Works Project Manager
- **Amber Lefers, PE** | AE2S Water Resources Practice Leader

MEETING FORMAT AND Q&A

- GoToWebinar for access
- Questions can be asked
 - Electronically during or after the presentation using the **Question function**



MEETING FORMAT AND Q&A

- GoToWebinar for access
- Questions can be asked
 - Electronically during or after the presentation using the **Question function**
- After the public meeting through **email** to
Claudia Guy: Claudia.Guy@Fitchburgwi.gov
Chris Barnes: Cbarnes@town.Verona.wi.us



SURVEY 123

Don't forget to fill out Survey 123 regarding local flooding at <https://www.esri.com>

Town of Verona/City of Fitchburg Public Meeting Survey

Overview Analyze Data

6/22/20 - 7/1/20 Filter Feature Report Export Open in Map Viewer Show individual response

Name	Phone Number	Email	How long have you lived in your current home?	In which municipality do you reside?	Other - In which municipality do you reside?	What is your address?	What do you experience on your p...

How long have you lived in your current home?
0-5 Years

In which municipality do you reside?
City of Fitchburg

What is your address?
5520 Lacy Rd, Fitchburg, WI 53711

When do you experience flooding on your property?
Flooding Occurs After Heavy Rain

How often does flooding occur on your property?
Sometimes (1-3 Times per Year)

Please describe what type of flooding you see on your property? Check all that apply.

- Water in my yard that recedes within two days.
- Standing water in my yard that persists for three or more days.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Town of Verona/City of Fitchburg Public Meeting Survey

Name

Phone Number

Email

How long have you lived in your current home?
0-5 Years
5-15 Years
15+ Years

PURPOSE OF REGIONAL STORMWATER PLAN

- Flooding closed Fitchrona Road to traffic in 2001, 2007, 2008, 2009, 2010, 2013, 2017, 2018, and 2019.
- Subsequent plans call for increased pipe capacity under Fitchrona Road.
- Suspected downstream “roadblocks” to adequate drainage.



Fitchrona Road, looking south to 18/151, photo taken June 26, 2013

STORMWATER FLOODING IS LIKE AN INTERSTATE TRAFFIC JAM



Traffic (or water) backs up when too many cars (or water) tries to get through



Beltline, looking west from Park Street, WisDOT

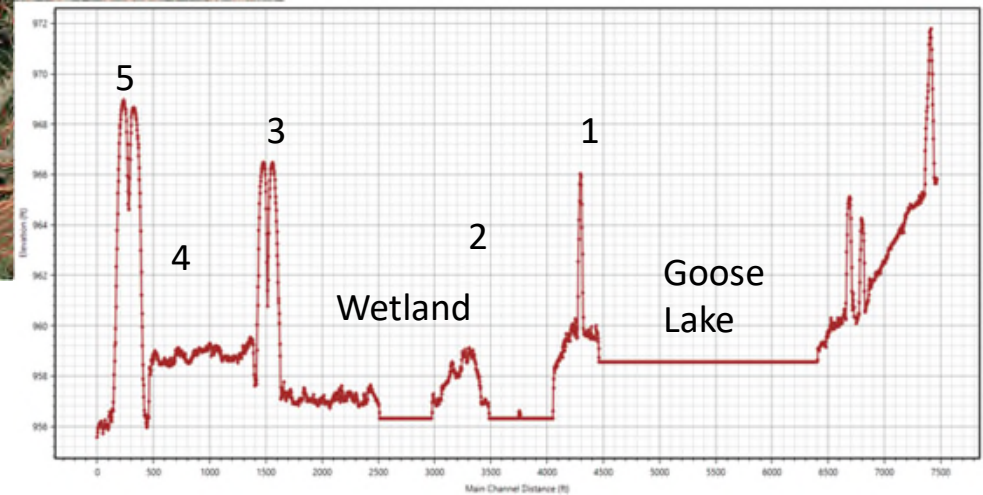


Traffic (or water) flows fine when capacity is adequate

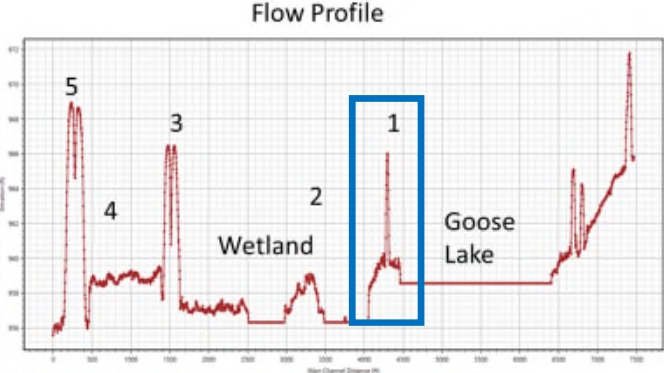
ROADBLOCKS DOWNSTREAM OF FITCHRONA ROAD



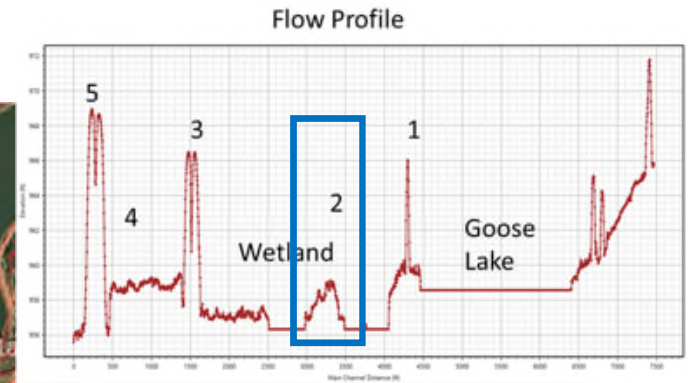
Flow Profile



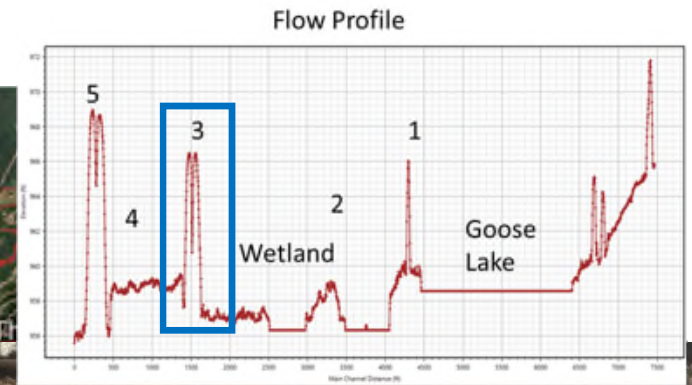
ROADBLOCKS DOWNSTREAM OF FITCHRONA ROAD



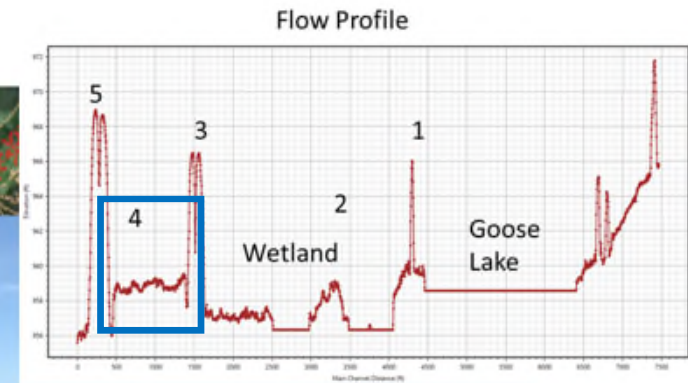
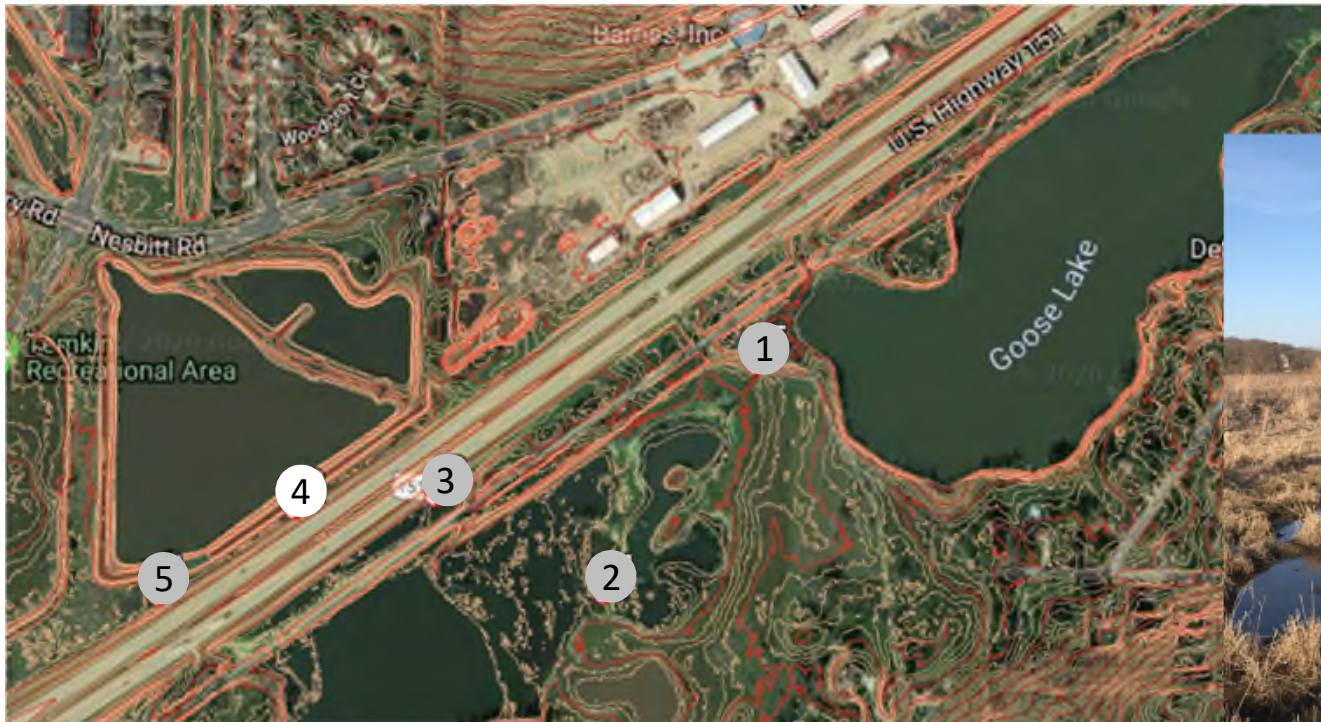
ROADBLOCKS DOWNSTREAM OF FITCHRONA ROAD



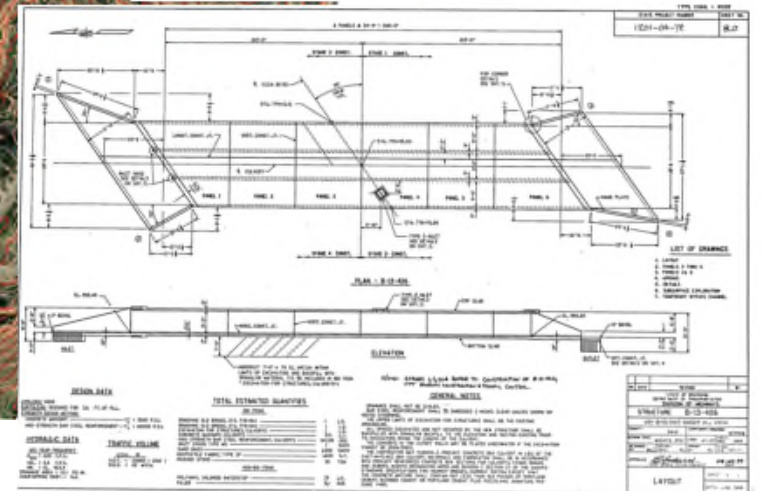
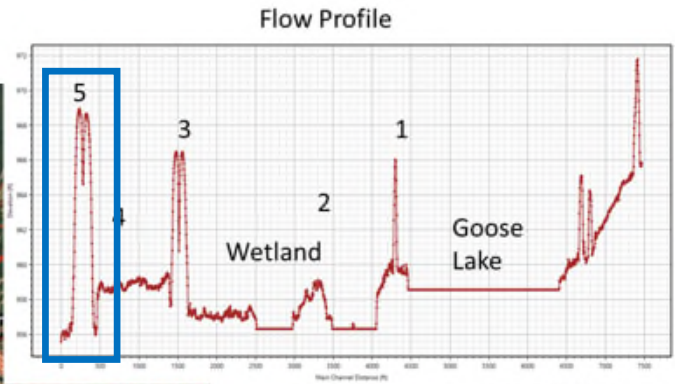
ROADBLOCKS DOWNSTREAM OF FITCHRONA ROAD



ROADBLOCKS DOWNSTREAM OF FITCHRONA ROAD



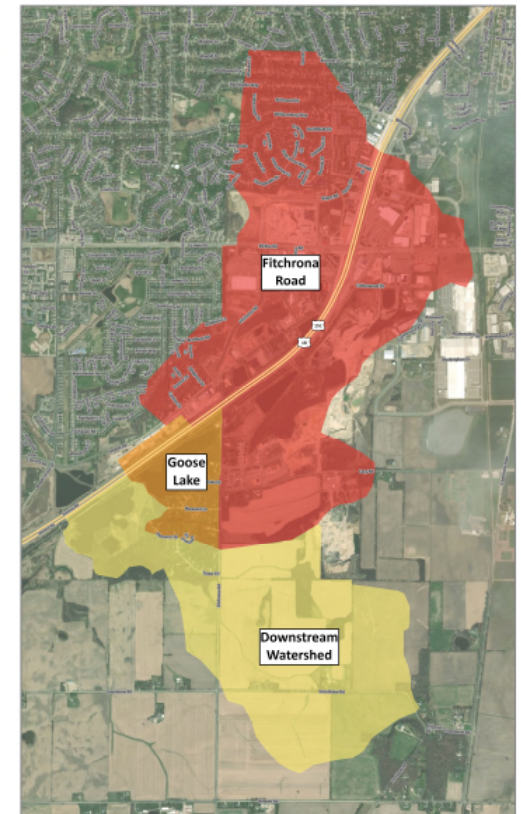
ROADBLOCKS DOWNSTREAM OF FITCHRONA ROAD



**How much
water
flows
through the
system?**

HURDLES TO SOLUTIONS

- Factors affecting runoff:
 - Drainage area size
 - Rainfall depth, duration, and distribution
 - Soil types
 - Land use/level of imperviousness
 - Open channel or storm sewer
 - Slope of watershed/travel time



Bridge clearance

HURDLES TO SOLUTIONS

- Why not just raise the road?
Easiest solution, right?
 - Not enough clearance below bridges on USH 18/151
 - Bridges still have over 20 years of service life yet.
 - Even if bridges were replaced, it would require significant changes to USH 18/151 roadway profile, fill, and possibly land acquisition.



Truck stuck under railroad bridge in Madison, 2019

HURDLES TO SOLUTIONS

**Avoiding
downstream
impacts**



Regulatory

HURDLES TO SOLUTIONS

- Changes to Floodplain/Floodway require Letter of Map Change (LOMC) from FEMA
- Land disturbance of 1 or more acres requires WDNR permit
- May require wetland/shoreland permitting for wetland impacts from WDNR and/or Dane County
- Work in Right-of-way permit required from WisDOT
- Coordination with Dane County Parks





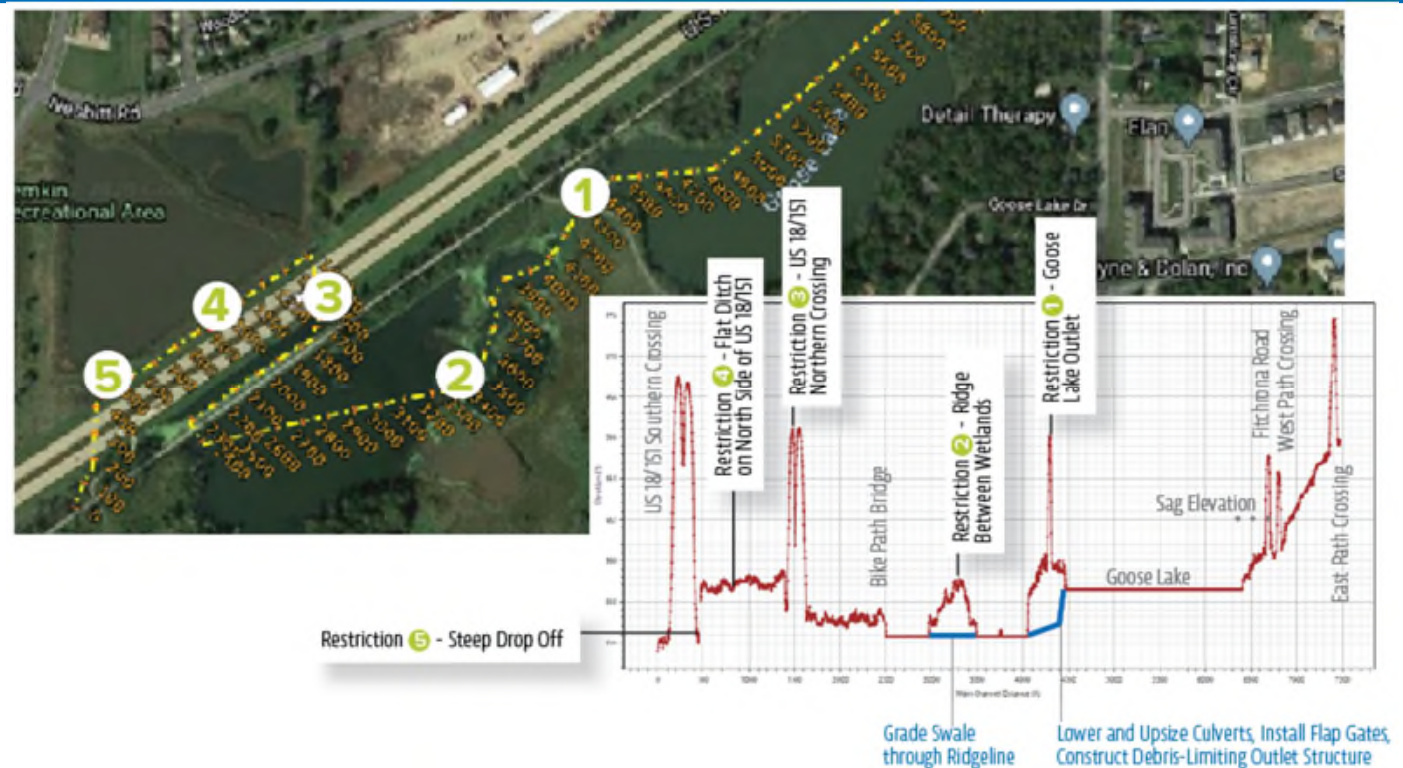
POTENTIAL SOLUTIONS

- Increase downstream conveyance

OPTION 1

Increase downstream conveyance

- Increase downstream conveyance
 - Larger culverts at locations 1 and 3
 - Grading at locations 2 and 4



OPTION 1

Potential feasibility concerns

- Avoiding increase in peak flows to downstream properties
- Cost of culvert under USH 18/151
- Need sufficient room for grading on northwest side of USH 18/151



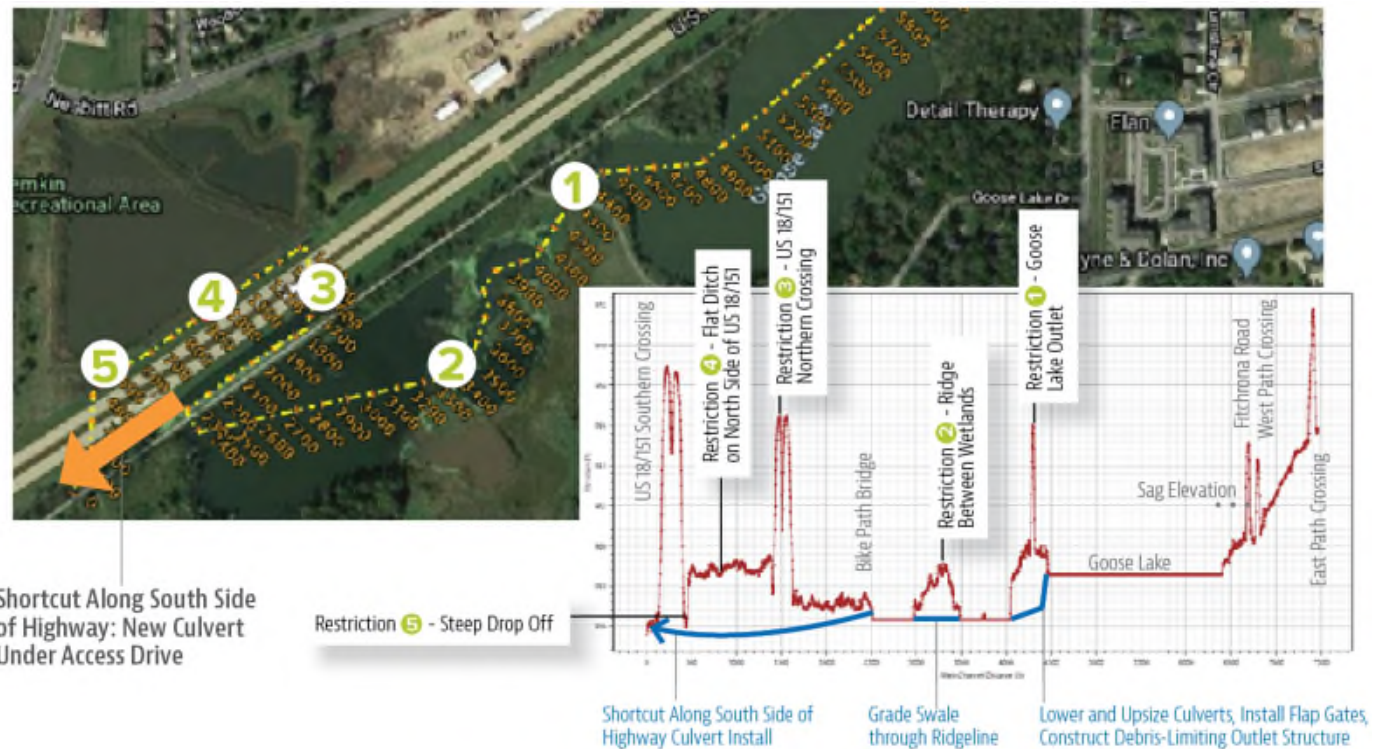
POTENTIAL SOLUTIONS

- Increase downstream capacity
- Similar to Option 1 but with a shortcut

OPTION 2

Increase downstream conveyance with shortcut

- “Shortcuts” the system through new culvert under driveway between highway and trail.
- Still requires larger culverts at location 1 and grading at location 2.



OPTION 2

Benefits and feasibility concerns

Benefits

Compared to Option 1

- No new culvert under USH 18/151
- No major grading required through ditch

Potential Feasibility Concerns

- Avoiding increase in peak flows to downstream properties



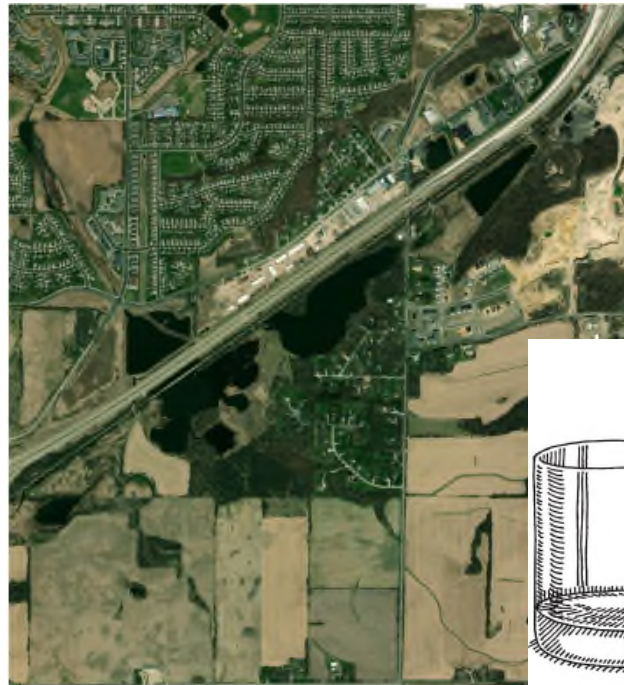
POTENTIAL SOLUTIONS

- Increase downstream capacity
- Similar to Option 1 but with a shortcut
- **Increase storage in the system at Goose Lake and/or park**

OPTION 3

Increase storage in the system

- Significant online storage already in the system
 - Increase downstream detention by lowering permanent water surface elevation, or
 - Requires backflow preventers on outlet pipes at location 1



OPTION 3

Benefits and feasibility concerns

Benefits

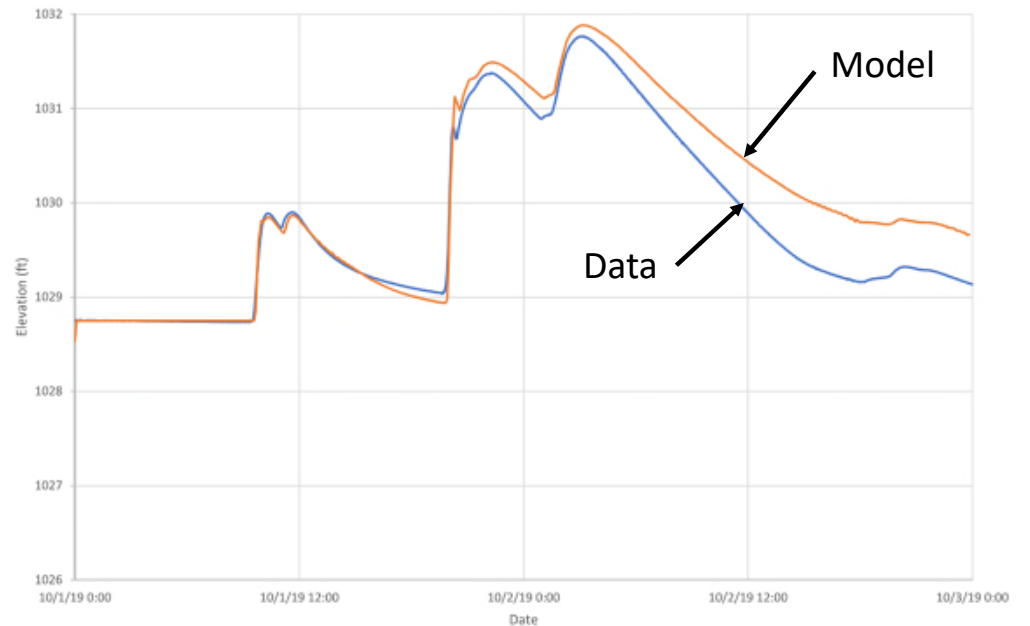
- Could be designed to provide additional water quality treatment

Potential Feasibility Concerns

- Regulatory and stakeholder challenges associated with lower water surface elevations on Goose Lake
- Amount of additional storage needed in Dane County Park

NEXT STEPS

- Complete existing watershed modeling to Badger Mill Creek
- Confirm model is reasonable based on available data
- Compare existing Goose Lake overflow to Badger Mill Creek flood flows



NEXT STEPS



Analyze three options described previously



Hold Public Informational Meeting #2 as alternative analysis nears completion

SCHEDULE



● Internal kick-off meeting



Public Information Meeting (PIM) #1



Existing Conditions Analysis (complete July 10)



Draft Alternatives Analysis
(complete August 15)



Late August - PIM #2



Final Report/Recommendations
(complete September 30)

Questions?

Don't forget to fill out Survey 123 regarding local flooding at <https://arcg.is/1zime50>

<http://www.fitchburgwi.gov/2660/Fitchrona-Rd-Flood-Study>



Contact

Claudia Guy, PE
City of Fitchburg
Claudia.Guy@Fitchburgwi.gov

Chris Barnes, PE
Town of Verona
Cbarnes@town.Verona.wi.us



Attachment C

Public Information Meeting #2

October 14, 2020

Fitchrona Road and Goose Lake Watershed Study

PUBLIC INFORMATION MEETING #2

October 14, 2020

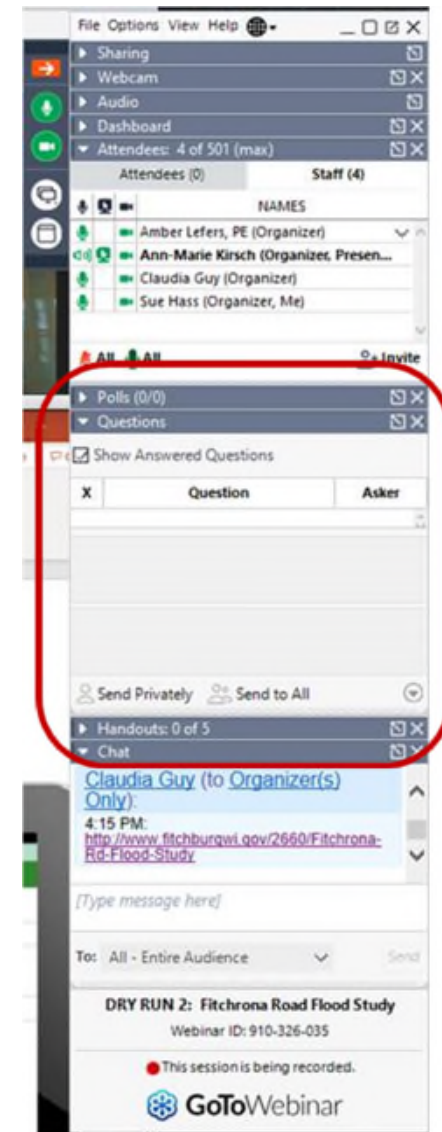


TEAM INTRODUCTIONS

- **Ann-Marie Kirsch, PE** | AE2S Project Manager
- **Claudia Guy, PE** | City of Fitchburg Environmental Engineer
- **Chris Barnes, PE** | Town of Verona Public Works Project Manager
- **Amber Lefers, PE** | AE2S Water Resources Practice Leader

MEETING FORMAT AND Q&A

- GoToWebinar for access
- Questions can be asked
 - Electronically during or after the presentation using the **Question function**



MEETING FORMAT AND Q&A

- GoToWebinar for access
- Questions can be asked
 - Electronically during or after the presentation using the **Question function**
- After the public meeting through **email** to
Claudia Guy: Claudia.Guy@Fitchburgwi.gov
Chris Barnes: Cbarnes@town.Verona.wi.us



PURPOSE OF STUDY

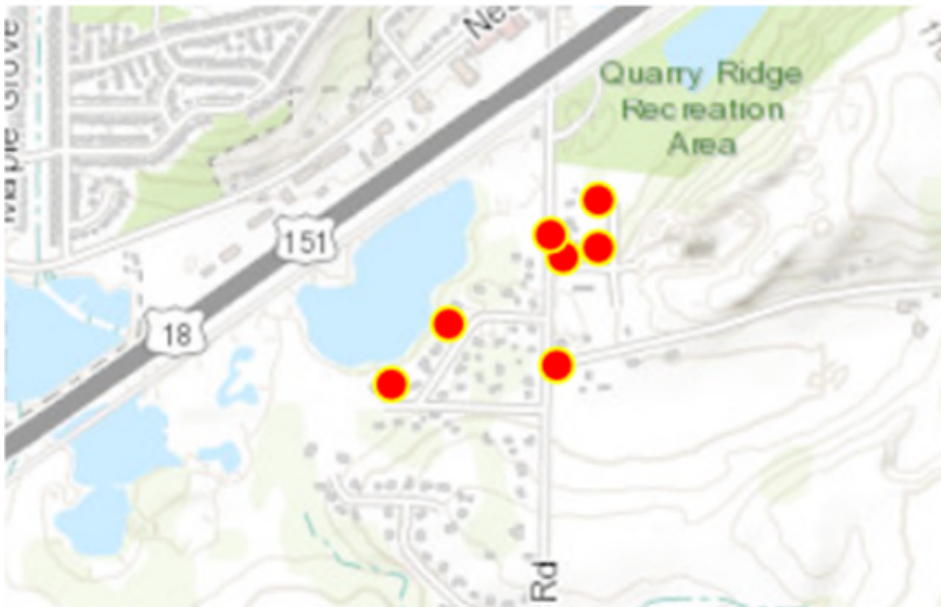
- Flooding closed Fitchrona Road to traffic in 2001, 2007, 2008, 2009, 2010, 2013, 2017, 2018, and 2019.
- Subsequent plans call for increased pipe capacity under Fitchrona Road.
- Suspected downstream “roadblocks” to adequate drainage.



Fitchrona Road, looking south to 18/151, photo taken June 26, 2013

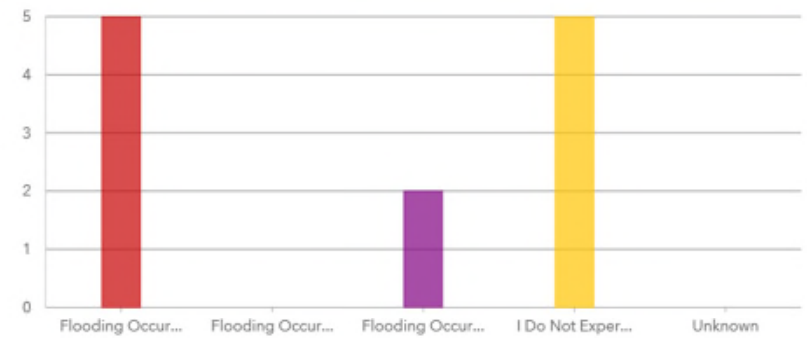
SURVEY 123 RESULTS

Eleven Respondents—Seven Residing in Fitchrona Road Immediate Area



When do you experience flooding on your property? *

Column Bar Pie Map



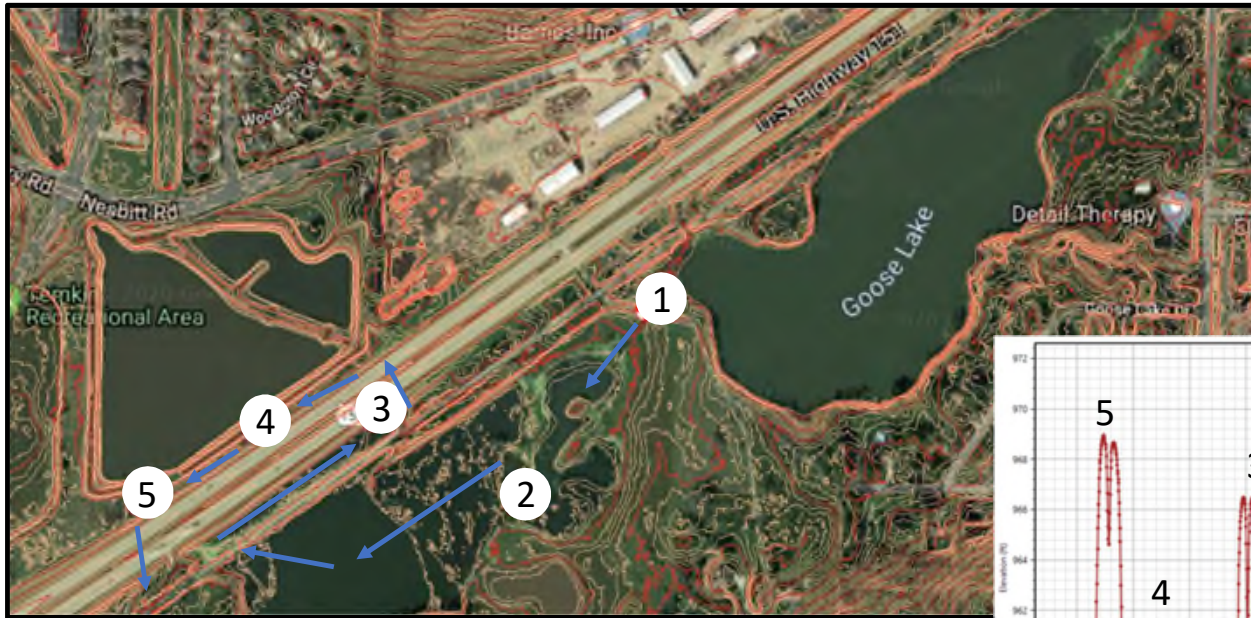
[Hide table](#)

Empty categories [Sort](#)

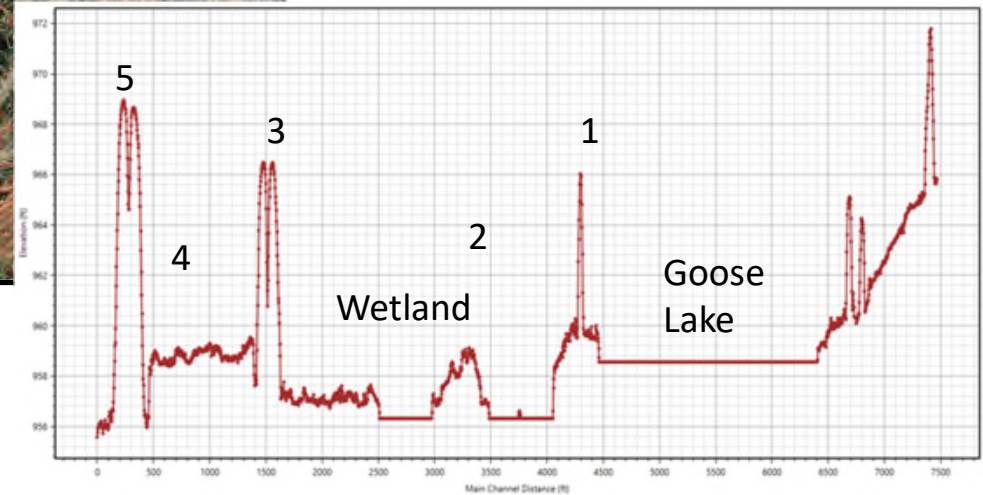
Answers	Count	Percentage
Flooding Occurs After Heavy Rain	5	41.67%
Flooding Occurs After Snow Melt	0	0%
Flooding Occurs After Heavy Rain and After Snow Melt	2	16.67%
I Do Not Experience Flooding on my Property	5	41.67%
Unknown	0	0%

Answered: 12 Skipped: 0

ROADBLOCKS DOWNSTREAM OF FITCHRONA ROAD



Flow Profile



EXISTING CONDITIONS



STORM EVENT COMPARISON

Goose Lake Water Surface Elevations

EVENT	EXISTING CONDITIONS
100-year	965.2
50-year	964.7
25-year	964.0
10-year	962.7
5-year	961.8
2-year	961.1



Fitchrona Road Floods

Road to Solutions

Recap of Issues from PIM #1

- Factors affecting runoff
- Bridge Clearance at USH 18/151
- Desire to minimize downstream impacts to the extent possible
- Regulatory considerations



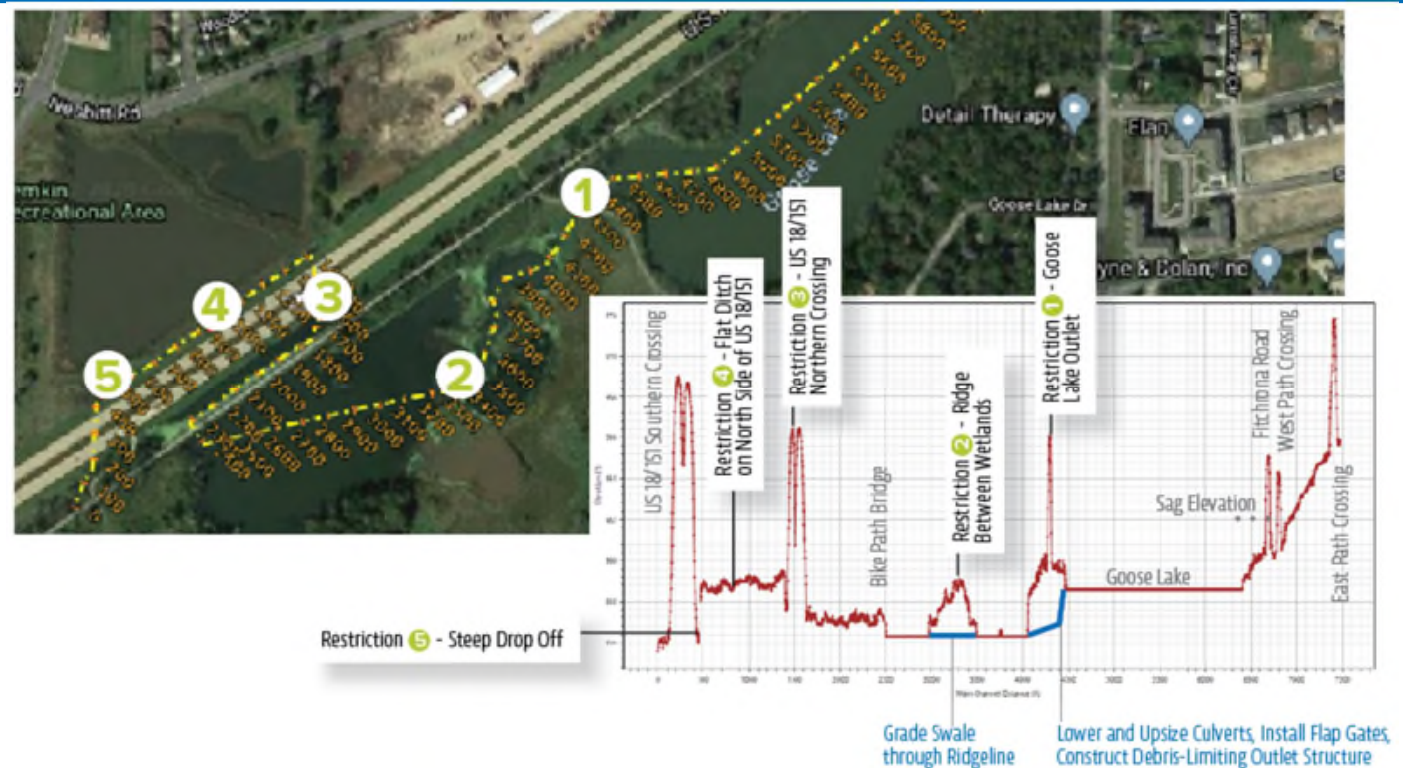
RECAP OF ORIGINAL ALTERNATIVES PRESENTED AT PIM #1

Original Alternative	Description of Alternative
1	Increase downstream conveyance
2	Increase downstream conveyance with shortcut
3	Increase storage in the system

ORIGINAL ALTERNATIVE 1

Increase downstream conveyance

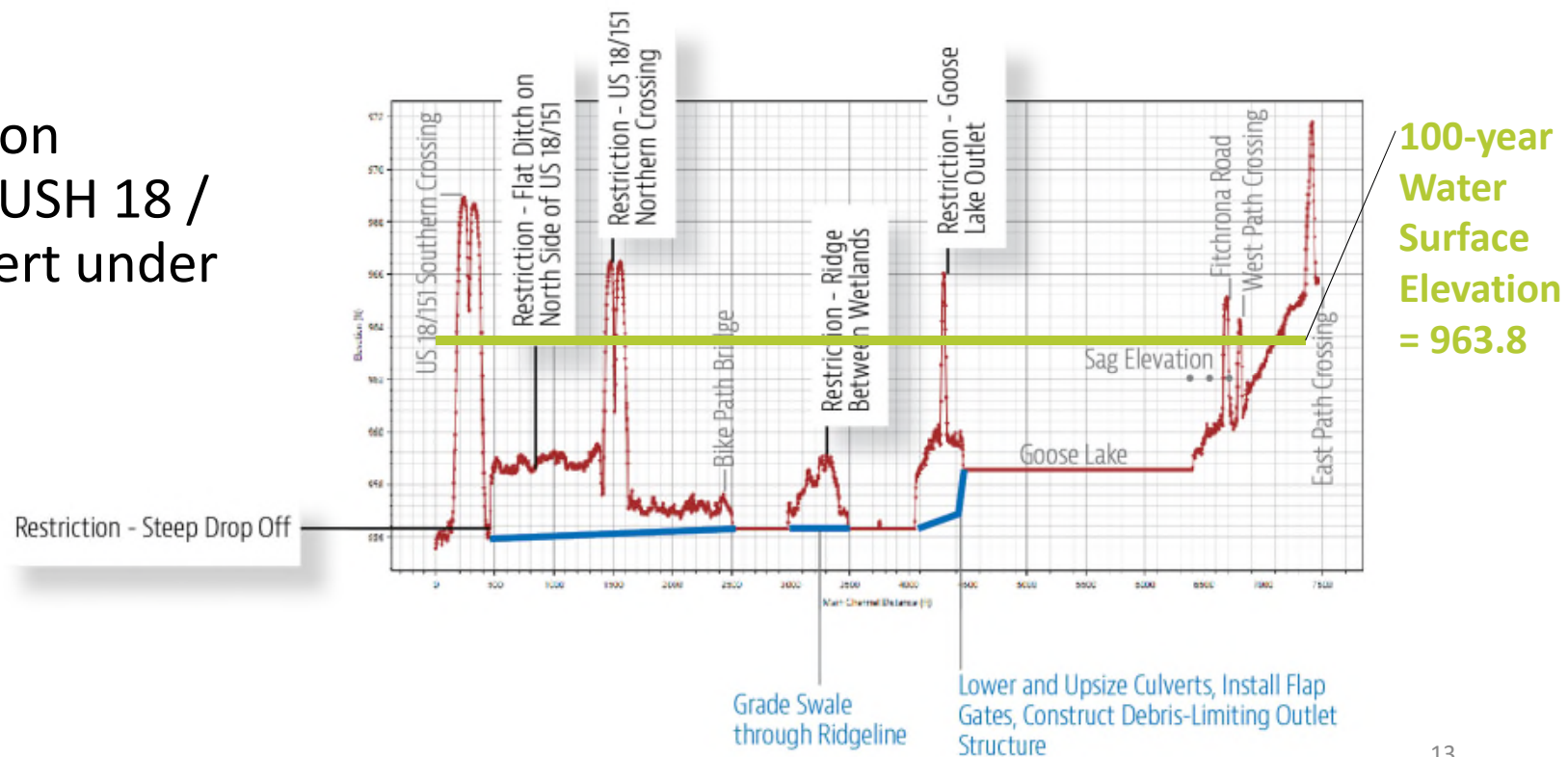
- Increase downstream conveyance
 - Larger culverts at locations 1 and 3
 - Grading at locations 2 and 4



ORIGINAL ALTERNATIVE 1

Increase downstream conveyance

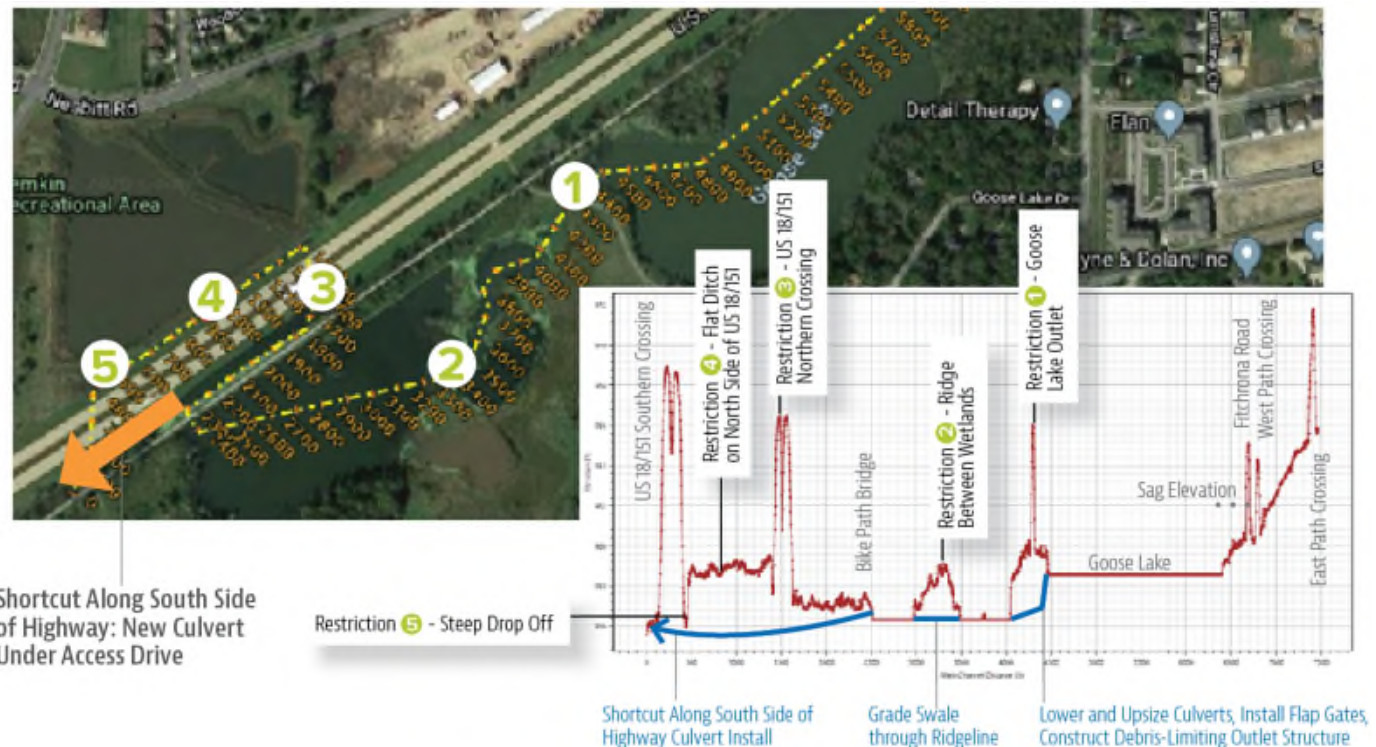
- Flood elevation upstream of USH 18 / 151 box culvert under is too high.



ORIGINAL ALTERNATIVE 2

Increase downstream conveyance with shortcut

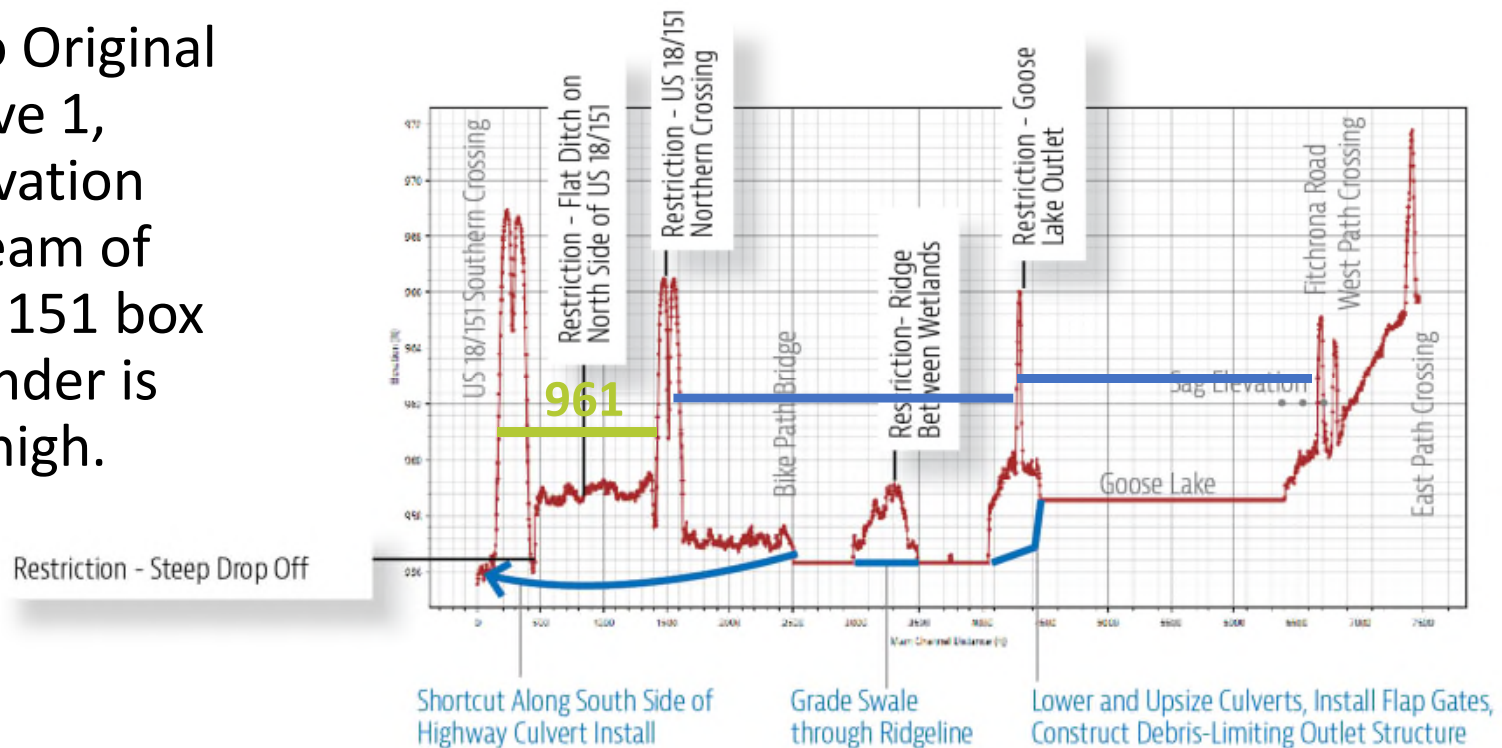
- “Shortcuts” the system through new culvert under driveway between highway and trail.
- Still requires larger culverts at location 1 and grading at location 2.



ORIGINAL ALTERNATIVE 2

Increase downstream conveyance with shortcut

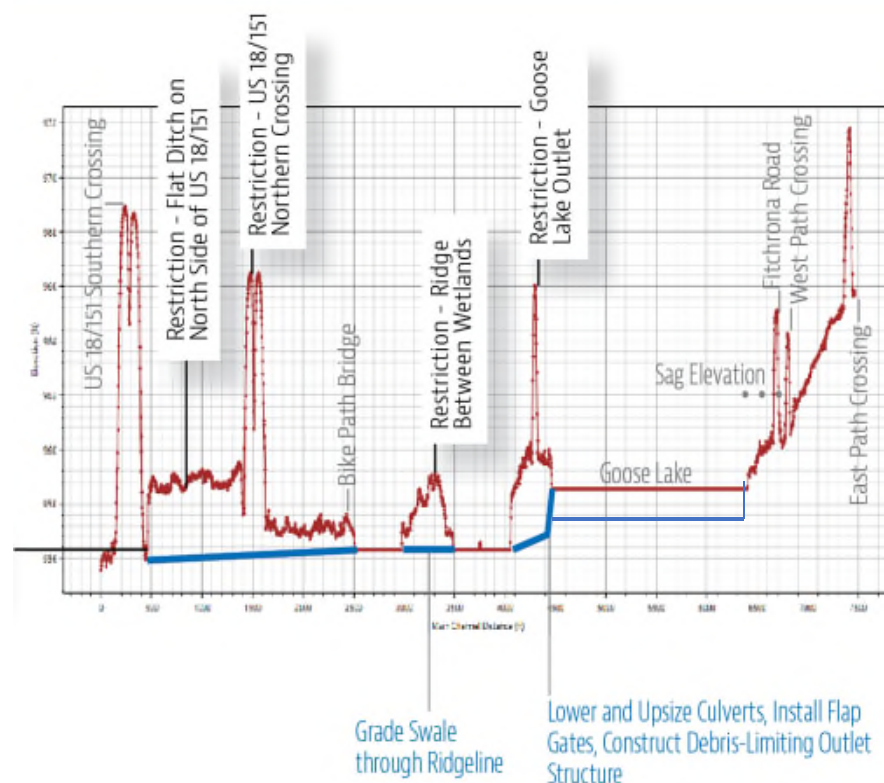
- Similar to Original Alternative 1, flood elevation downstream of USH 18 / 151 box culvert under is also too high.



ORIGINAL ALTERNATIVE 3

Increase storage in the system

- Increasing storage is part of the solution, but not the only part.
- Lower the normal water surface elevation without adversely impacting riparian landowners
- Still need to provide additional downstream conveyance



DOWNSTREAM
IMPACTS
REQUIRED A
FRESH
APPROACH

Original Alternative	Description of Alternative
1	Increase downstream conveyance— “roadblock” upstream of USH 18/151 culvert
2	Increase downstream conveyance with shortcut— downstream water surface elevations still too high with energy losses through system
3	Increase storage in the system— part of the solution, but not the only part.

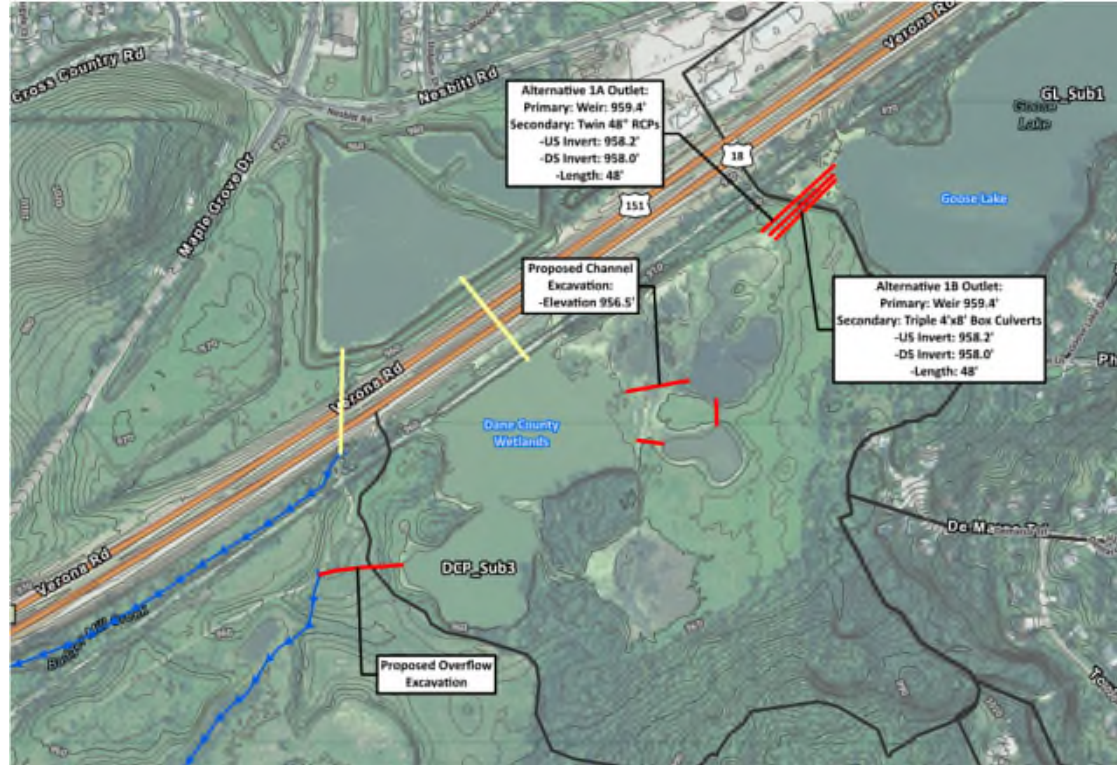
Questions so far?

Summary of Changes to Alternatives

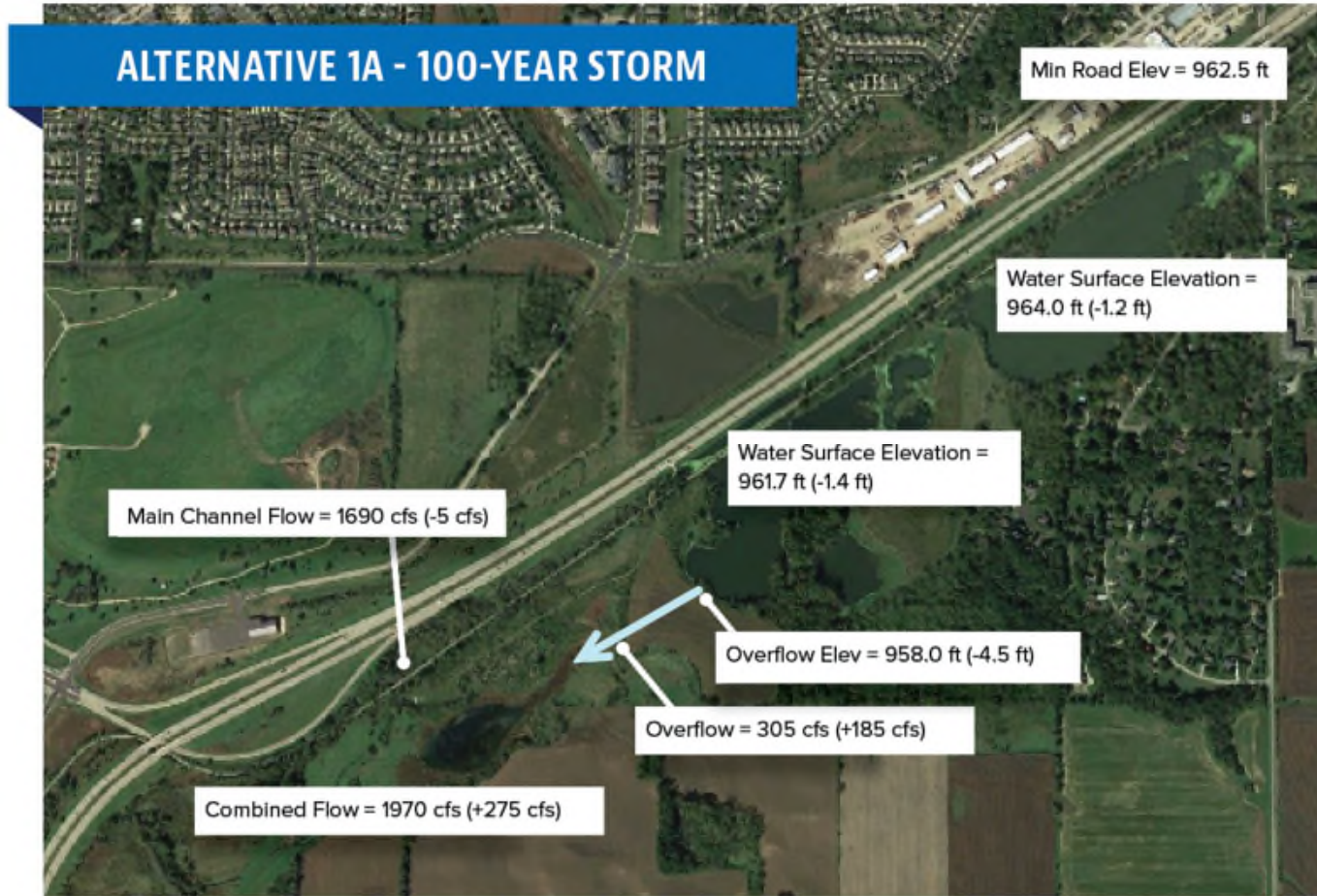
Alternative	Description of Alternative	Summary of Changes
1A	Increase downstream conveyance (larger pipes exiting Goose Lake)	Moderate increase to Goose Lake Outlet Capacity Grade Outlet Channels from Downstream Wetlands
1B	Increase downstream conveyance (much larger pipes exiting Goose Lake)	Same as 1A, but Significant Increase to Goose Lake Outlet Capacity

ALTERNATIVES 1A & 1B

Increase downstream conveyance



ALTERNATIVES 1A CHANGES




ALTERNATIVES 1B CHANGES



STORM EVENT COMPARISON

Goose Lake Water Surface Elevations

EVENT	EXISTING CONDITIONS	ALTERNATIVE 1A	ALTERNATIVE 1B
100-year	965.2	964.0	962.9
50-year	964.7	963.3	962.4
25-year	964.0	962.5	961.8
10-year	962.7	961.5	961.1
5-year	961.8	960.8	960.6
2-year	961.1	960.2	960.1

 Fitchrona Road Floods

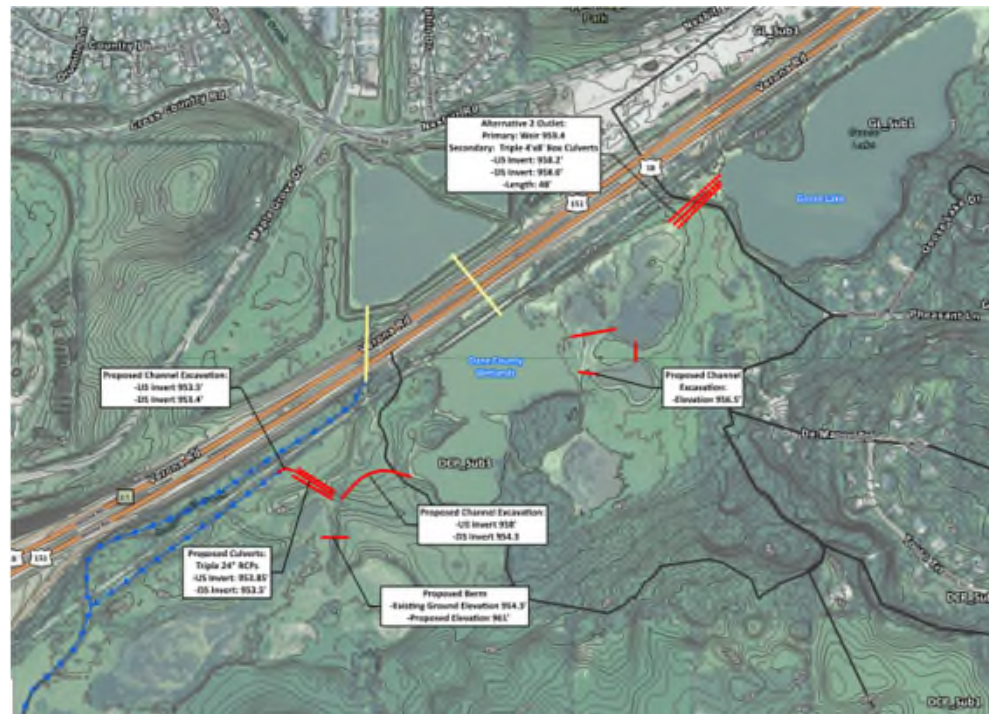
Summary of Changes to Alternatives

Alternative	Description of Alternative	Summary of Changes
1A	Increase downstream conveyance (larger pipes exiting Goose Lake)	Moderate increase to Goose Lake Outlet Capacity Grade Outlet Channels from Downstream Wetlands
1B	Increase downstream conveyance (much larger pipes exiting Goose Lake)	Same as 1A, but Significant Increase to Goose Lake Outlet Capacity
2	Increase downstream conveyance with flow along bike path to Badger Mill Creek	Same as 1B, but drainage along Military Ridge Trail

ALTERNATIVE 2

Increase downstream conveyance

- Similar to Alternative 1B but modifies overflow route.



ALTERNATIVE 2 CHANGES



FREQUENT EVENT COMPARISON

Goose Lake Water Surface Elevations

EVENT	EXISTING CONDITIONS	ALTERNATIVE 1A	ALTERNATIVE 1B	ALTERNATIVE 2
100-year	965.2	964.0	962.9	963.0
50-year	964.7	963.3	962.4	962.5
25-year	964.0	962.5	961.8	961.9
10-year	962.7	961.5	961.1	961.1
5-year	961.8	960.8	960.6	960.6
2-year	961.1	960.2	960.1	960.1

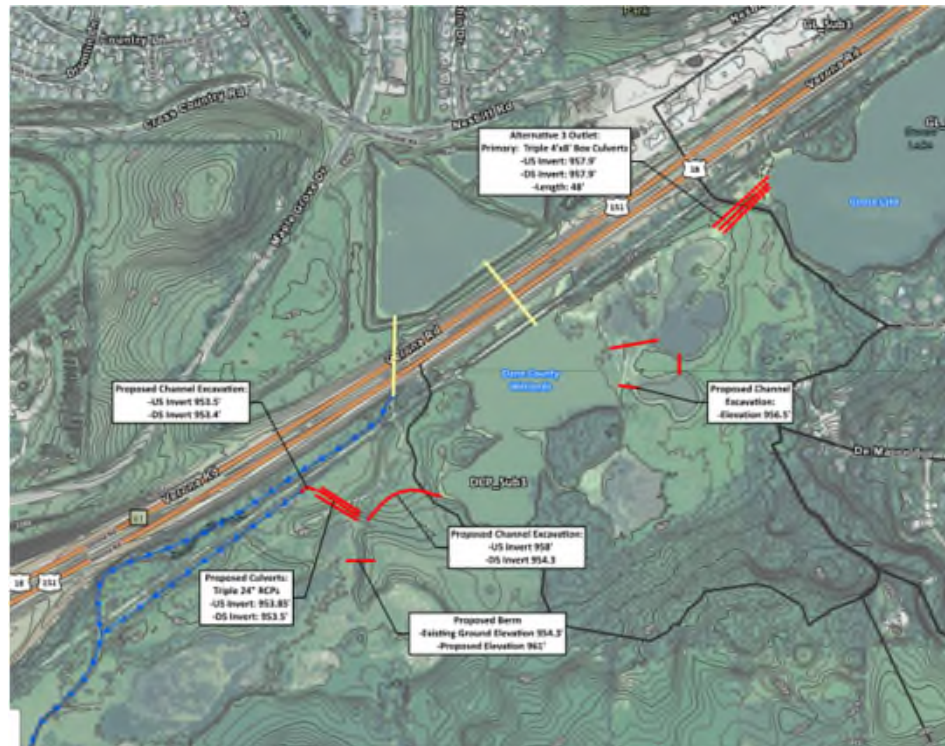
 Fitchrona Road Floods

Summary of Changes to Alternatives

Alternative	Description of Alternative	Summary of Changes
1A	Increase downstream conveyance (larger pipes exiting Goose Lake)	Moderate increase to Goose Lake Outlet Capacity Grade Outlet Channels from Downstream Wetlands
1B	Increase downstream conveyance (much larger pipes exiting Goose Lake)	Same as 1A, but Significant Increase to Goose Lake Outlet Capacity
2	Increase downstream conveyance with flow along bike path to Badger Mill Creek	Same as 1B, but drainage along Military Ridge Trail
3	Increase storage in the system including downstream conveyance	Same as 2, but lowers Goose Lake Water Level

ALTERNATIVE 3

Downstream conveyance & Lower Goose Lake water surface



ALTERNATIVE 3 CHANGES




ALTERNATIVE 3 - 100-YEAR STORM



FREQUENT EVENT COMPARISON

Goose Lake Water Surface Elevations

EVENT	EXISTING CONDITIONS	ALTERNATIVE 1A	ALTERNATIVE 1B	ALTERNATIVE 2	ALTERNATIVE 3
100-year	965.2	964.0	962.9	963.0	962.7
50-year	964.7	963.3	962.4	962.5	962.1
25-year	964.0	962.5	961.8	961.9	961.5
10-year	962.7	961.5	961.1	961.1	960.6
5-year	961.8	960.8	960.6	960.6	959.9
2-year	961.1	960.2	960.1	960.1	959.2

 Fitchrona Road Floods

PRELIMINARY PREFERRED PLAN

- Combination of Alternative 1A and 3
 - Overflow Route: Alt 1A
 - Outlet Capacity: Alt 1A
 - Lowering Goose Lake: Alt 3

LIKELY CONSTRUCTION COSTS

Alternative	Description of Alternative	Probable Costs
1A	Increase downstream conveyance (larger pipes exiting Goose Lake)	\$301,500
1B	Increase downstream conveyance (much larger pipes exiting Goose Lake)	\$522,700
2	Increase downstream conveyance with flow along bike path to Badger Mill Creek	\$623,400
3	Increase storage in the system including downstream conveyance	\$607,600
Preferred Combination	1A for conveyance, 3 for water level	\$293,600

Updated CONSTRUCTION COSTS

Alternative	Description of Alternative	Probable Costs
1A	Increase downstream conveyance (larger pipes exiting Goose Lake)	\$459,500
1B	Increase downstream conveyance (much larger pipes exiting Goose Lake)	\$680,700
2	Increase downstream conveyance with flow along bike path to Badger Mill Creek	\$781,400
3	Increase storage in the system including downstream conveyance	\$765,600
Preferred Combination	1A for conveyance, 3 for water level	\$451,600

NEXT STEPS

- Confirm preferred option
- Evaluate Fitchrona Road drainage design based on preferred option
- Meet with Wisconsin DNR to review future permitting requirements
- Submit FEMA grant application
- Decision Point—stakeholder buy-in, funding sources
 - Capital Improvement Plan
 - Design and Construction

Questions?

<http://www.fitchburgwi.gov/2660/Fitchrona-Rd-Flood-Study>



Contact

Claudia Guy, PE
City of Fitchburg
Claudia.Guy@Fitchburgwi.gov

Chris Barnes, PE
Town of Verona
Cbarnes@town.Verona.wi.us



Attachment D

Survey 1-2-3
Input from Residents

Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: June 26, 2020 3:07 PM

Name

Jon Schellpfeffer

Phone Number

6088459449

Email

jons@charter.net

How long have you lived in your current home?

15+ Years

In which municipality do you reside?

Town of Verona

What is your address?

2565 Tonto Trl, Verona, WI 53593

When do you experience flooding on your property?

I Do Not Experience Flooding on my Property

How often does flooding occur on your property?

Never

Please describe what type of flooding you see on your property? Check all that apply.

I do not experience flooding on my property.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Worse

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Poor

What is the main cause of flooding in your opinion?

Development in the Watershed

Do you have a sump pump?

No

In which seasons does your sump pump run? Check all that apply.

I do not have a sump pump.

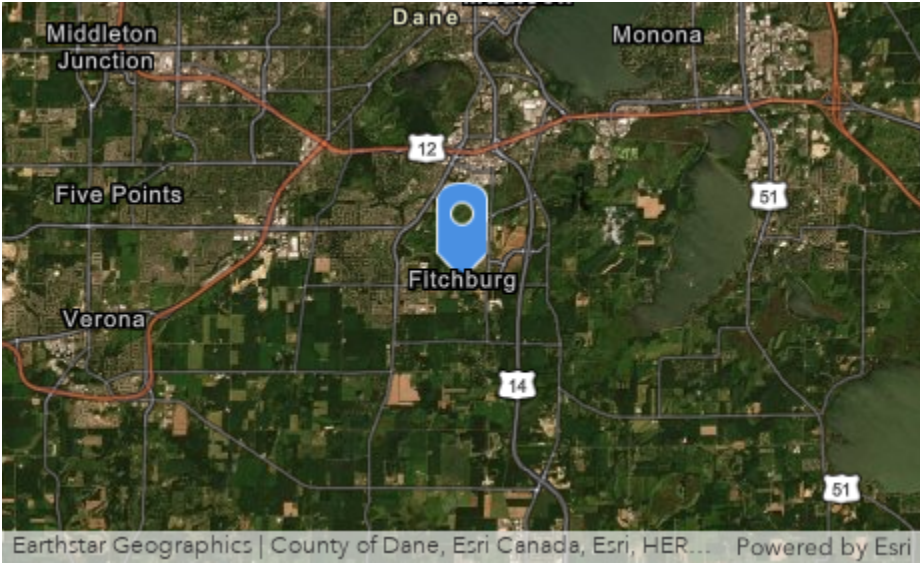
For the season the sump pump runs most, on average how often does it run?

I do not have a sump pump.

Comments

Helpful Photo

Location



Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: June 27, 2020 8:32 AM

Name

Josh Jetson

Phone Number

6082135375

Email

joshjetson@uwalumni.com

How long have you lived in your current home?

0-5 Years

In which municipality do you reside?

City of Fitchburg

What is your address?

2721 Turnstone Circle, Fitchburg wi 53719

When do you experience flooding on your property?

Flooding Occurs After Heavy Rain

How often does flooding occur on your property?

Occasionally (1-2 Times over the Past Five Years)

Please describe what type of flooding you see on your property? Check all that apply.

Water in my yard that recedes within two days.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Don't Know

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Fair

What is the main cause of flooding in your opinion?

Climate Change

Do you have a sump pump?

Yes

In which seasons does your sump pump run? Check all that apply.

I have a sump pump, but it does not run.

For the season the sump pump runs most, on average how often does it run?

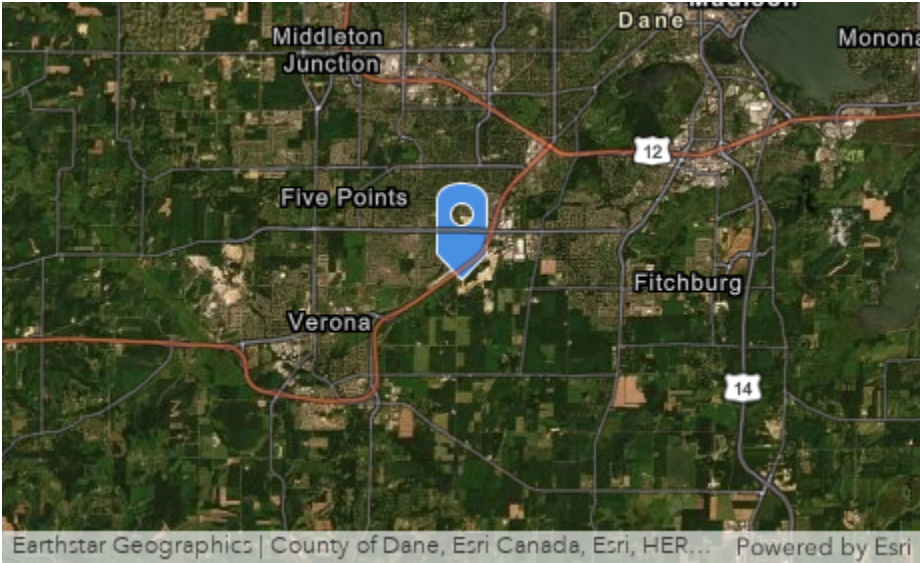
Never

Comments

Biggest concern for us is flooding under the Verona road bridge.

Helpful Photo

Location



Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: June 28, 2020 9:07 AM

Name

Craig Pringle

Phone Number

6083338912

Email

cpringle26@hotmail.com

How long have you lived in your current home?

15+ Years

In which municipality do you reside?

City of Fitchburg

What is your address?

2700 Fitchrona Rd, Fitchburg, WI 53719-1811

When do you experience flooding on your property?

I Do Not Experience Flooding on my Property

How often does flooding occur on your property?

Never

Please describe what type of flooding you see on your property? Check all that apply.

I do not experience flooding on my property.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Stayed the Same

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Fair

What is the main cause of flooding in your opinion?

Inadequate Downstream Conveyance Causes Water to Back up into my Neighborhood

Do you have a sump pump?

Yes

In which seasons does your sump pump run? Check all that apply.

Spring

For the season the sump pump runs most, on average how often does it run?

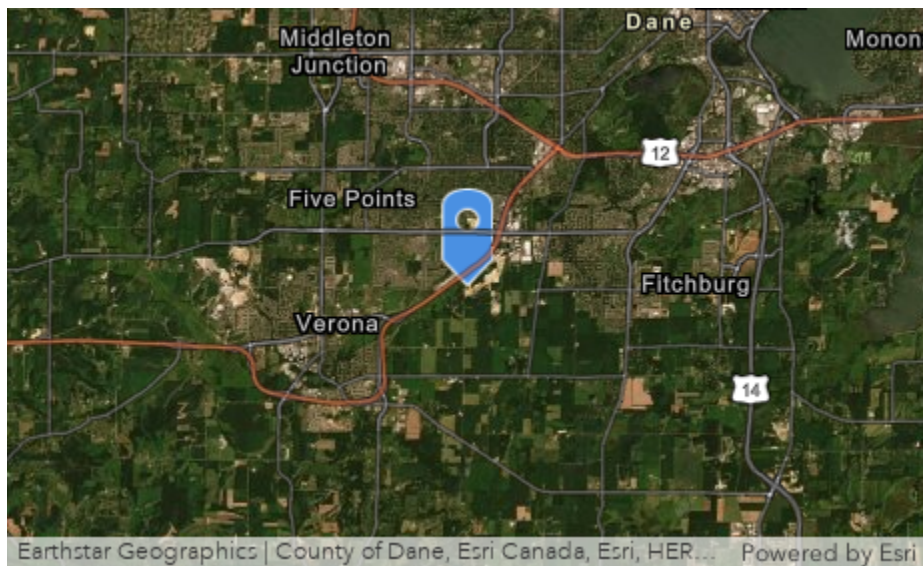
Seldom

Comments

The water table has definitely risen over the last 15 years, which seems to have caused the lake level in Goose Lake to be quite a bit higher, which would seem to reduce the amount of runoff it can handle during those larger high intensity storm events that happen every several years. It probably doesn't help that the natural outflow of the lake seems minimal as well. Perhaps a more controlled outfall into Badger Mill Creek could help by either preventing the roadway from flooding at all, or at a minimum help the flooding recede faster if it does.

Helpful Photo

Location



Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: June 28, 2020 10:45 AM

Name

Brodie Birke

Phone Number

6086929873

Email

Brodie.birkel@gmail.com

How long have you lived in your current home?

5-15 Years

In which municipality do you reside?

Town of Verona

What is your address?

6426 Demarco Trail Verona, WI 53593

When do you experience flooding on your property?

Flooding Occurs After Heavy Rain and After Snow Melt

How often does flooding occur on your property?

A Lot (4 or More Times per Year)

Please describe what type of flooding you see on your property? Check all that apply.

Standing water in my yard that persists for three or more days.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Worse

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Poor

What is the main cause of flooding in your opinion?

Inadequate Downstream Conveyance Causes Water to Back up into my Neighborhood

Do you have a sump pump?

No

In which seasons does your sump pump run? Check all that apply.

I do not have a sump pump.

For the season the sump pump runs most, on average how often does it run?

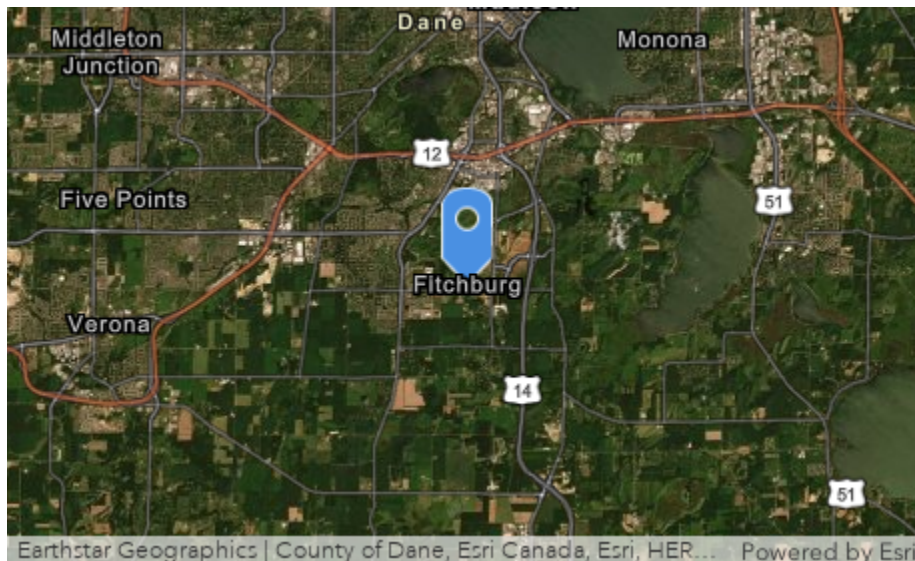
I do not have a sump pump.

Comments

In addition to Inadequate Downstream Conveyance the flooding began to worsen once the quarry housing development started on the corner of Lacy and Fitchrona Roads. Both of these problems go hand in hand. Because of the new, higher water table our yard floods more frequently during heavy rains. I've spent time measuring the standing water height compared to Badger Mill Creek height with a laser construction level and it is substantial. Also the flooding in the Goose Lake area has cutoff walking trails and caused an unhealthy amount of mosquitos. We can not send out children outside in the summer without head to toe coverage of DEET at all hours of the day. We've had no choice but to begin broadcast spraying for mosquitos which is even more harmful to other non-nuisance insects but it's the only way to enjoy the outdoor space we own. I'm growing tired of finger pointing between municipalities. The solution for road flooding and yard flooding is to dig a trench into Badger Mill Creek.

Helpful Photo

Location



Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: June 28, 2020 12:33 PM

Name

Diane Remeika

Phone Number

6088457292

Email

dremeika@scollrem.com

How long have you lived in your current home?

15+ Years

In which municipality do you reside?

City of Fitchburg

What is your address?

6311 Lacy Road Verona WI 53593

When do you experience flooding on your property?

Flooding Occurs After Heavy Rain

How often does flooding occur on your property?

Sometimes (1-3 Times per Year)

Please describe what type of flooding you see on your property? Check all that apply.

Flood waters have entered my home.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Worse

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Poor

What is the main cause of flooding in your opinion?

Development in the Watershed

Do you have a sump pump?

Yes

In which seasons does your sump pump run? Check all that apply.

Spring, Summer, Fall

For the season the sump pump runs most, on average how often does it run?

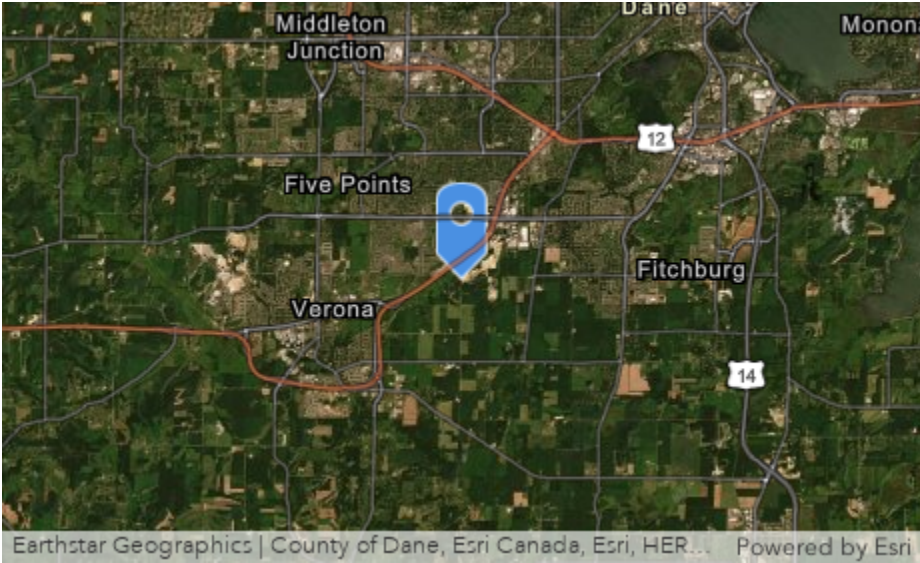
Seldom

Comments

For clarification: my property is a business, not a residence.

Helpful Photo

Location



Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: July 2, 2020 7:41 AM

Name

Holly Dowling

Phone Number

608332-2865

Email

Dowlinghm@icloud.com

How long have you lived in your current home?

15+ Years

In which municipality do you reside?

Town of Verona

What is your address?

6352 Goose Lake Drive, Verona WI. 535

When do you experience flooding on your property?

Flooding Occurs After Heavy Rain

How often does flooding occur on your property?

A Lot (4 or More Times per Year)

Please describe what type of flooding you see on your property? Check all that apply.

Water in my yard that recedes within two days.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Worse

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Fair

What is the main cause of flooding in your opinion?

Development in the Watershed

Do you have a sump pump?

No

In which seasons does your sump pump run? Check all that apply.

I do not have a sump pump.

For the season the sump pump runs most, on average how often does it run?

I do not have a sump pump.

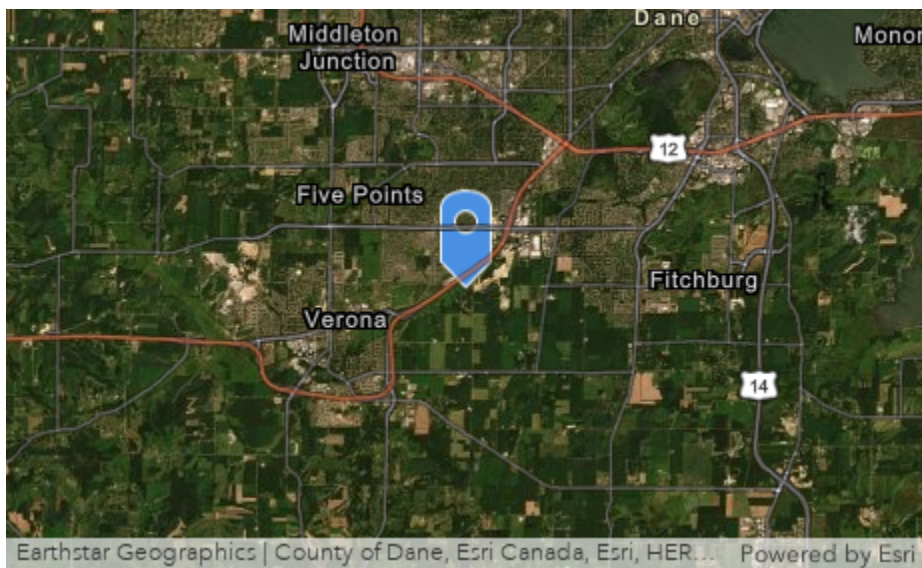
Comments

In addition to my concern about the flooding on Fitchrona Road I am concerned about the constant flow of contaminated runoff entering Goose

Lake Pond. This body of water used to be the home to muskrats and hundreds of snapping and painted turtles. I believe the influx of unregulated storm water runoff into the pond is responsible for the ever changing water levels, dead trees, and loss of important wild life. Although it is only my observations, and not a detailed study, over the course of the last 29 years that has lead me to this conclusion.

Helpful Photo

Location



Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: July 4, 2020 7:29 AM

Name

Reed Rodenkirch

Phone Number

920-450-8789

Email

rrodenkirch@csmith.com

How long have you lived in your current home?

0-5 Years

In which municipality do you reside?

City of Fitchburg

What is your address?

6266 Summit View Dr

When do you experience flooding on your property?

I Do Not Experience Flooding on my Property

How often does flooding occur on your property?

Never

Please describe what type of flooding you see on your property? Check all that apply.

I do not experience flooding on my property.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Worse

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Don't Know

What is the main cause of flooding in your opinion?

Development in the Watershed

Do you have a sump pump?

Yes

In which seasons does your sump pump run? Check all that apply.

Spring

For the season the sump pump runs most, on average how often does it run?

Daily

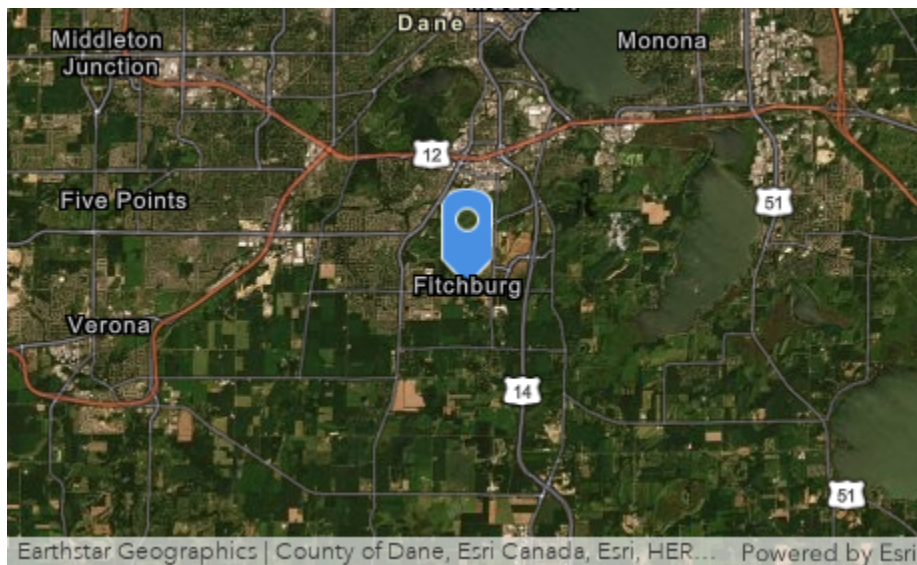
Comments

Obviously as the watershed develops the combination of new impervious surfaces and steep grade generally east to west will concentrate storm

water as observed at the HWY 151 underpass which, already at a dramatic low elevation, floods during any heavy rain event. The grade of the Hwy 151 as it bisects the various storm-water ponds located either side have created quite a challenge.

Helpful Photo

Location



Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: July 6, 2020 2:55 PM

Name

Russ Herty

Phone Number

608-220-6352

Email

russ.hefty@attt.net

How long have you lived in your current home?

0-5 Years

In which municipality do you reside?

506 Sugar Ave. Belleville wi 53508

What is your address?

506 Sugar Ave. Belleville WI 53508

When do you experience flooding on your property?

I Do Not Experience Flooding on my Property

How often does flooding occur on your property?

Unknown

Please describe what type of flooding you see on your property? Check all that apply.

I do not experience flooding on my property.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Worse

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Poor

What is the main cause of flooding in your opinion?

Development in the Watershed

Do you have a sump pump?

No

In which seasons does your sump pump run? Check all that apply.

I do not have a sump pump.

For the season the sump pump runs most, on average how often does it run?

I do not have a sump pump.

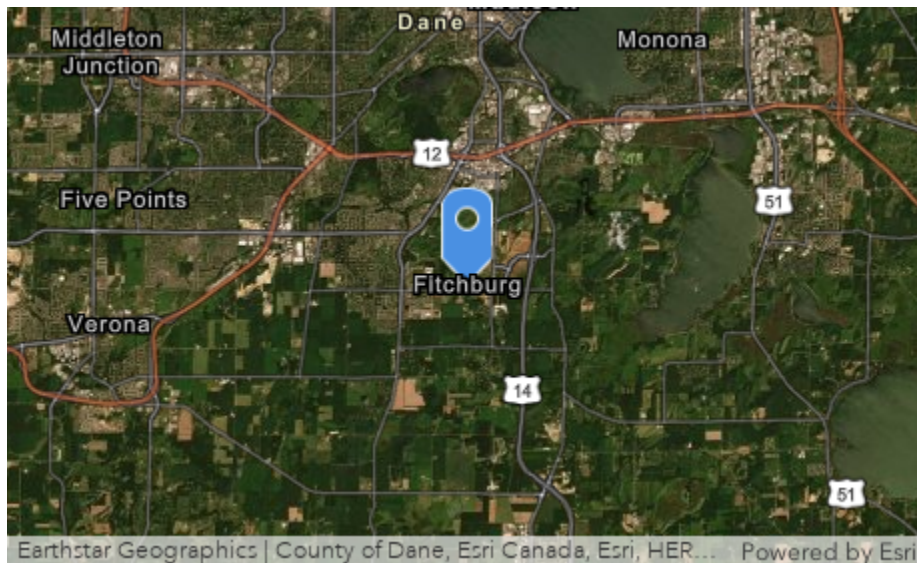
Comments

Hi, I grew up in the Hillside Heights neighborhood in the Town of Verona in the '60's and '70's. At that time Goose Lake was a high quality kettle pond

which supported a diverse wildlife community, and was extensively used by migrating waterfowl. I documented this as part of a project for a class while I was attending the University of Wisconsin. Water levels of Goose Lake at that time ranged from approx. 1.5 ft. to 5 ft. The water budget for Goose Lake was altered when the Town of Fitchburg "improved" the stormwater in the Jamestown conveying water to Goose Lake. Prior to that project runoff ponded between 18-151 and the Chicago Northwestern Railway just southwest of a DOT Weight Station. That water infiltrated into the sand and gravel outwash deposits in the valley. No Stormwater reached Goose Lake from this area. Today Goose Lake is highly eutrophic, dominated by algae reducing water clarity to near zero. I measured water depth last summer was a uniform 9 feet deep.

Helpful Photo

Location



Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: July 6, 2020 3:11 PM

Name

Tim Keogh

Phone Number

3057939786

Email

timk622@gmail.com

How long have you lived in your current home?

5-15 Years

In which municipality do you reside?

Town of Verona

What is your address?

6386 Pheasant Ln, Verona, WI 53593

When do you experience flooding on your property?

Flooding Occurs After Heavy Rain

How often does flooding occur on your property?

Occasionally (1-2 Times over the Past Five Years)

Please describe what type of flooding you see on your property? Check all that apply.

Water in my yard that recedes within two days.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Better

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Good

What is the main cause of flooding in your opinion?

Climate Change

Do you have a sump pump?

Yes

In which seasons does your sump pump run? Check all that apply.

Summer

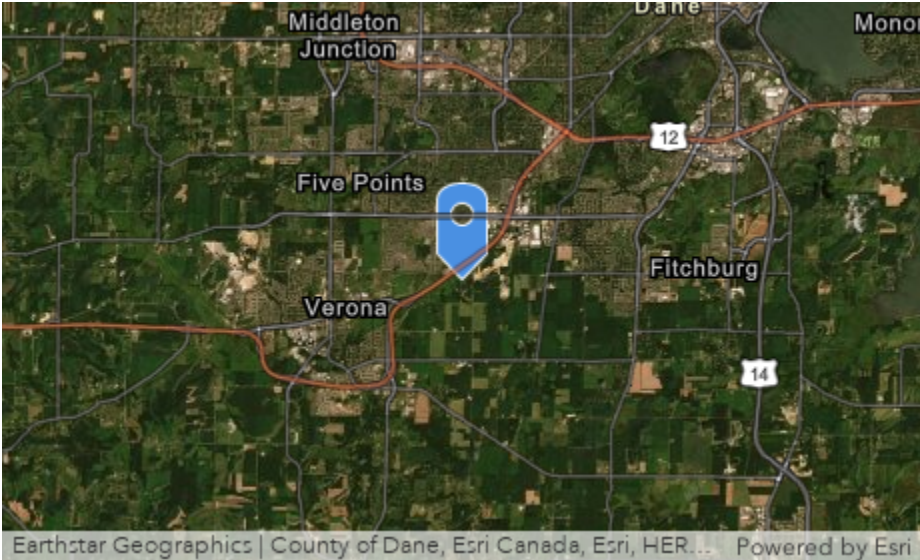
For the season the sump pump runs most, on average how often does it run?

Seldom

Comments

Helpful Photo

Location



Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: July 16, 2020 3:24 PM

Name

Daniel Lynam

Phone Number

608-206-1353

Email

danlynam@hotmail.com

How long have you lived in your current home?

0-5 Years

In which municipality do you reside?

City of Fitchburg

What is your address?

2705 Turnstone Circle, Fitchburg, WI 53719

When do you experience flooding on your property?

I Do Not Experience Flooding on my Property

How often does flooding occur on your property?

Never

Please describe what type of flooding you see on your property? Check all that apply.

I do not experience flooding on my property.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Better

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Fair

What is the main cause of flooding in your opinion?

Development in the Watershed

Do you have a sump pump?

Yes

In which seasons does your sump pump run? Check all that apply.

Summer

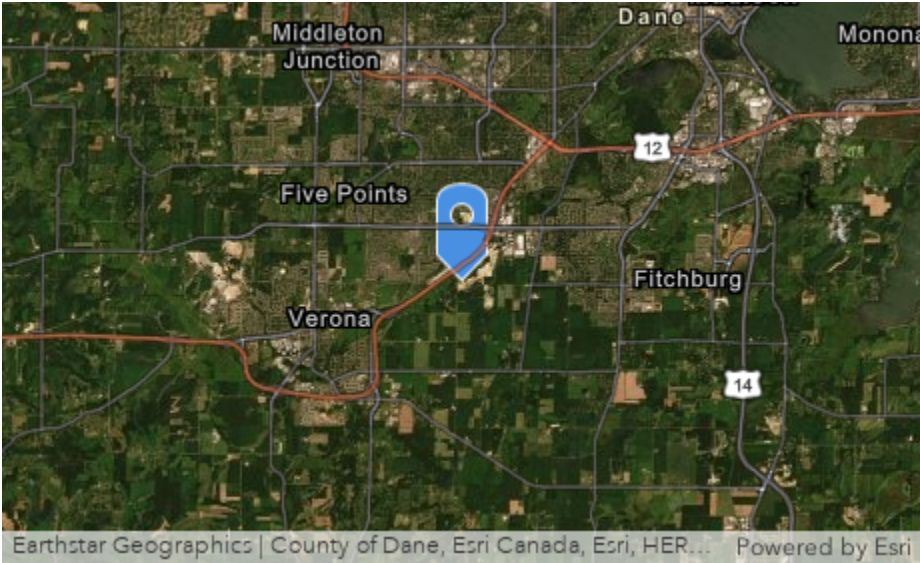
For the season the sump pump runs most, on average how often does it run?

Seldom

Comments

Helpful Photo

Location



Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: September 1, 2020 2:53 PM

Name

Jason Slaybaugh

Phone Number

608-345-7202

Email

slaybaugh2706@yahoo.com

How long have you lived in your current home?

0-5 Years

In which municipality do you reside?

City of Fitchburg

What is your address?

2706 fotchrona rd fitchburg wi 53719

When do you experience flooding on your property?

Flooding Occurs After Heavy Rain and After Snow Melt

How often does flooding occur on your property?

A Lot (4 or More Times per Year)

Please describe what type of flooding you see on your property? Check all that apply.

Water in my yard that recedes within two days., Flood waters have entered my home.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Don't Know

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Don't Know

What is the main cause of flooding in your opinion?

Don't Know

Do you have a sump pump?

Yes

In which seasons does your sump pump run? Check all that apply.

Spring, Summer, Fall, Winter

For the season the sump pump runs most, on average how often does it run?

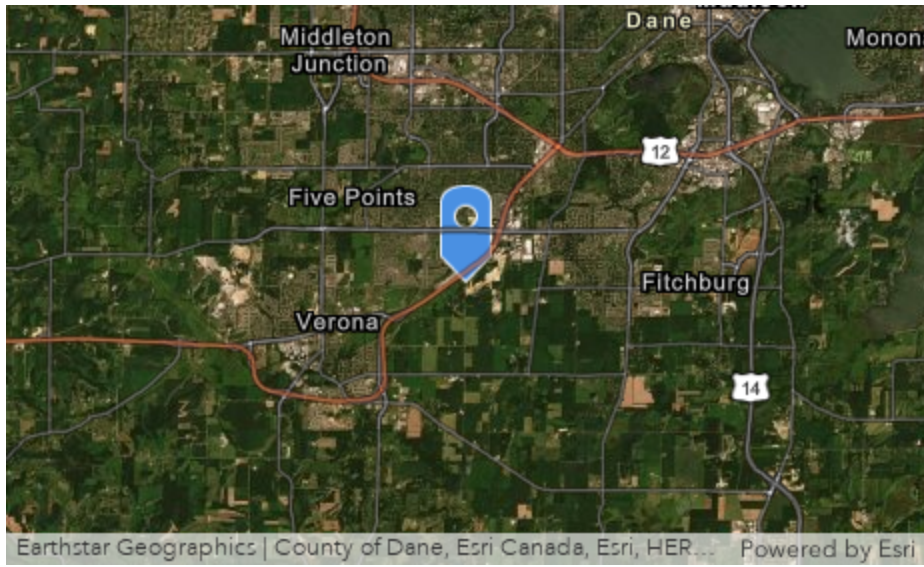
Daily

Comments

Helpful Photo



Location



Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: October 14, 2020 3:46 PM

Name

Bonnie Austin

Phone Number

6085131733

Email

bgorecki1@hotmail.com

How long have you lived in your current home?

5-15 Years

In which municipality do you reside?

Town of Verona

What is your address?

2568 Tonto Trail

When do you experience flooding on your property?

I Do Not Experience Flooding on my Property

How often does flooding occur on your property?

Never

Please describe what type of flooding you see on your property? Check all that apply.

I do not experience flooding on my property.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Worse

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Fair

What is the main cause of flooding in your opinion?

Inadequate Downstream Conveyance Causes Water to Back up into my Neighborhood

Do you have a sump pump?

Yes

In which seasons does your sump pump run? Check all that apply.

I have a sump pump, but it does not run.

For the season the sump pump runs most, on average how often does it run?

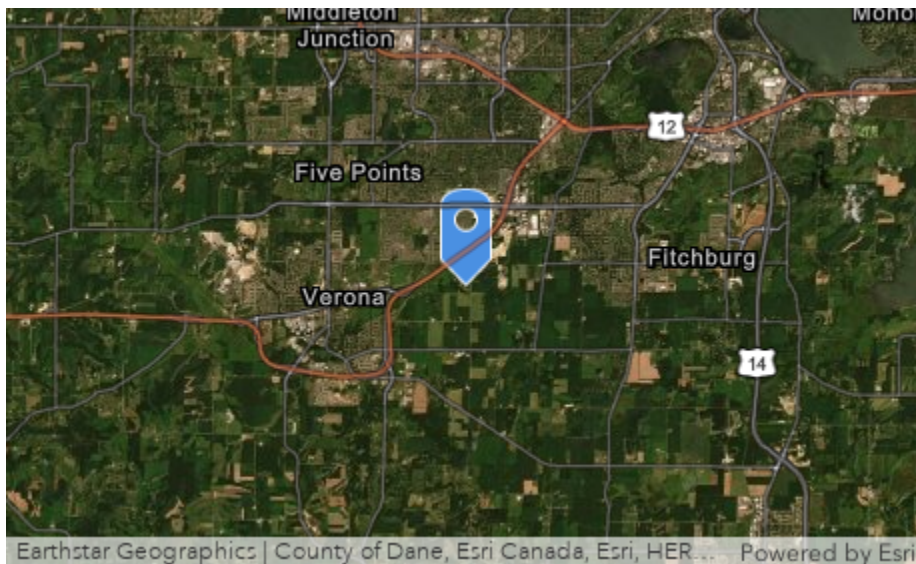
Never

Comments

Flooding seemed to occur after a field access was created, from the 18/151 bypass, across the swamp drainage. There is no culvert in the field access road, and no way for the water to move downstream. This caused many old oaks to die, as the overall water level increased. I'm very supportive of the idea of restoring the downstream movement of the waterway and eliminating the barriers to doing so, and lowering the overall level of the standing water.

Helpful Photo

Location



Town of Verona/City of Fitchburg Public Meeting Survey

Submitted By: Anonymous user

Submitted Time: October 24, 2020 10:39 AM

Name

Rob Slotten

Phone Number

Email

rslotten@litewire.net

How long have you lived in your current home?

15+ Years

In which municipality do you reside?

Town of Verona

What is your address?

6696 Grandview road

When do you experience flooding on your property?

Flooding Occurs After Heavy Rain and After Snow Melt

How often does flooding occur on your property?

Sometimes (1-3 Times per Year)

Please describe what type of flooding you see on your property? Check all that apply.

Water in my yard that recedes within two days.

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten years?

Worse

How good of a job do you feel the municipality you live in is at managing stormwater and drainage?

Poor

What is the main cause of flooding in your opinion?

Development in the Watershed

Do you have a sump pump?

No

In which seasons does your sump pump run? Check all that apply.

I do not have a sump pump.

For the season the sump pump runs most, on average how often does it run?

I do not have a sump pump.

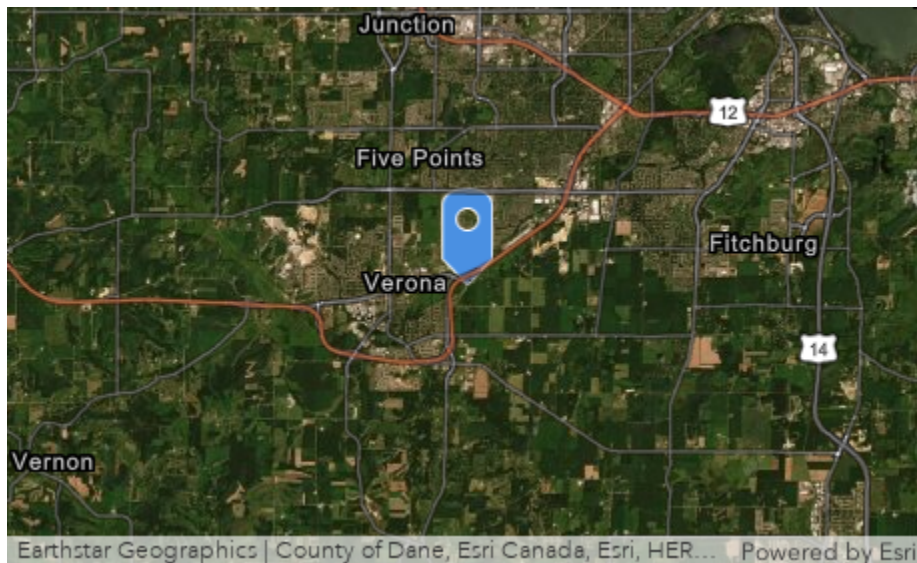
Comments

Water flow in the Badger Mill Creek increases in a constant progression every year. Fields we used to cultivate have been too wet to move machinery in

them for the past 3+ years. Rip-rap installed has been washed out along with shoreline. Property owners west of Old PB have standing water in their back yards most of the year. Observe from Old PB and Hwy 151. Now you want to add to the problem by draining 2 feet out of Goose Lake. If you increase the size of culverts up-stream, you should also increase the size of our culvert. and fix the drainage for the new culverts on Old PB. We did not create this problem. Debris in the Badger Mill creek & tributaries on County land adds to the problems. (reported to Town of Verona - no action) Dumping Goose Lake water into Bishoff Pond will flow directly into Slotten Property causing even more damage. Please do not dump Goose Lake problems on the next property owners down stream. You must make provisions down stream or leave it as is.

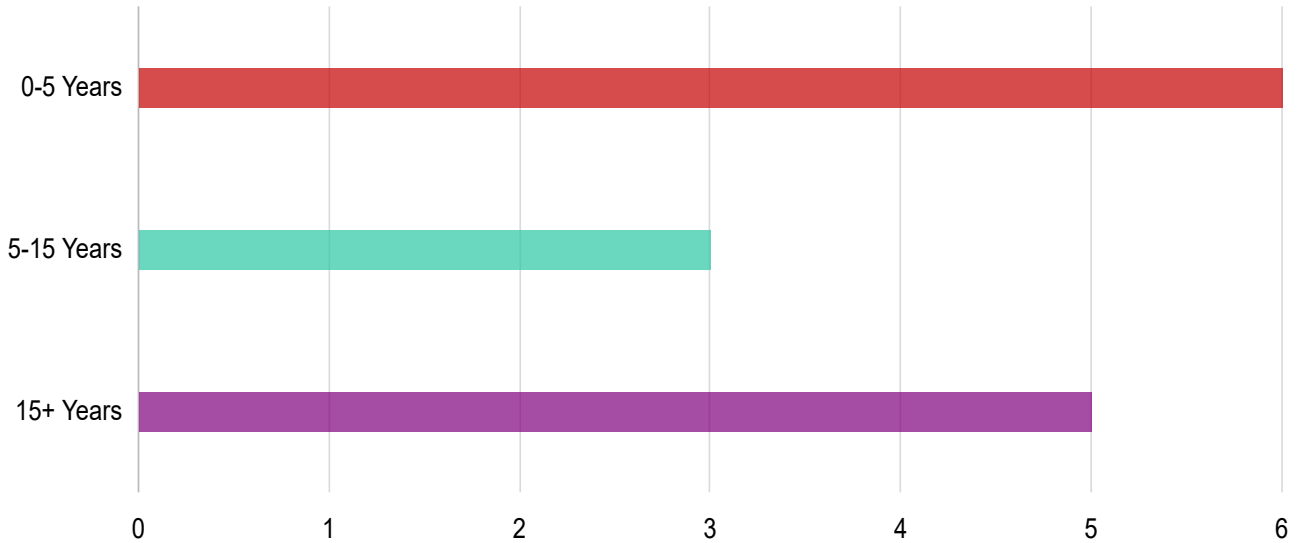
Helpful Photo

Location



Town of Verona/City of Fitchburg Public Meeting Survey

How long have you lived in your current home? *

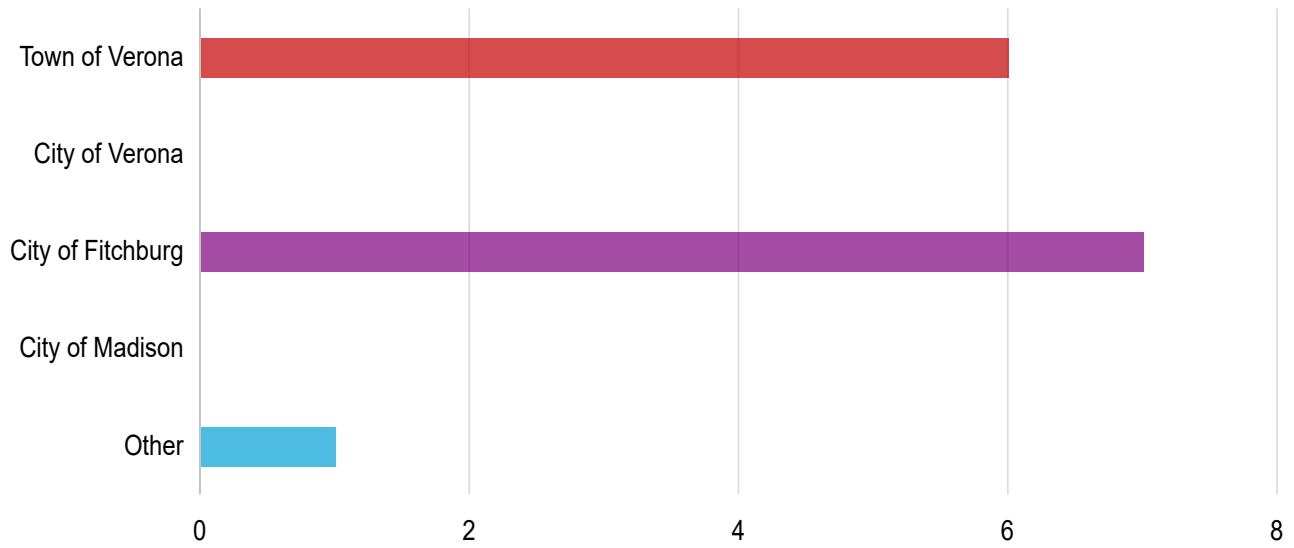


Answers **Count** **Percentage**

0-5 Years	6	42.86%
5-15 Years	3	21.43%
15+ Years	5	35.71%

Answered: 14 Skipped: 0

In which municipality do you reside? *

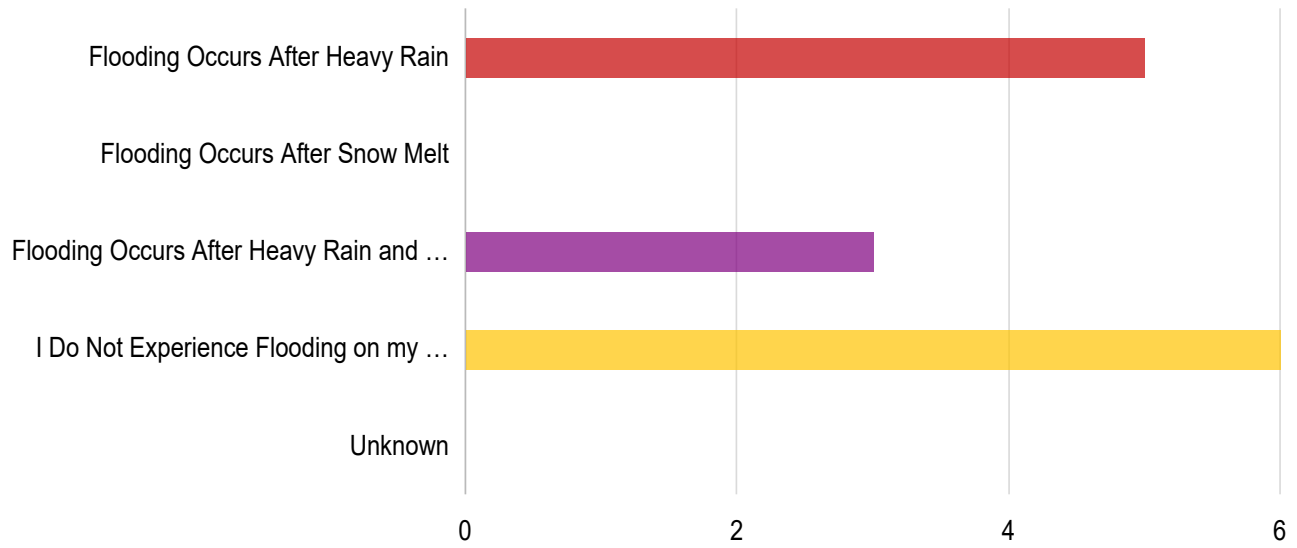


Answers **Count** **Percentage**

Answers	Count	Percentage
Town of Verona	6	42.86%
City of Verona	0	0%
City of Fitchburg	7	50%
City of Madison	0	0%
Other	1	7.14%

Answered: 14 Skipped: 0

When do you experience flooding on your property? *

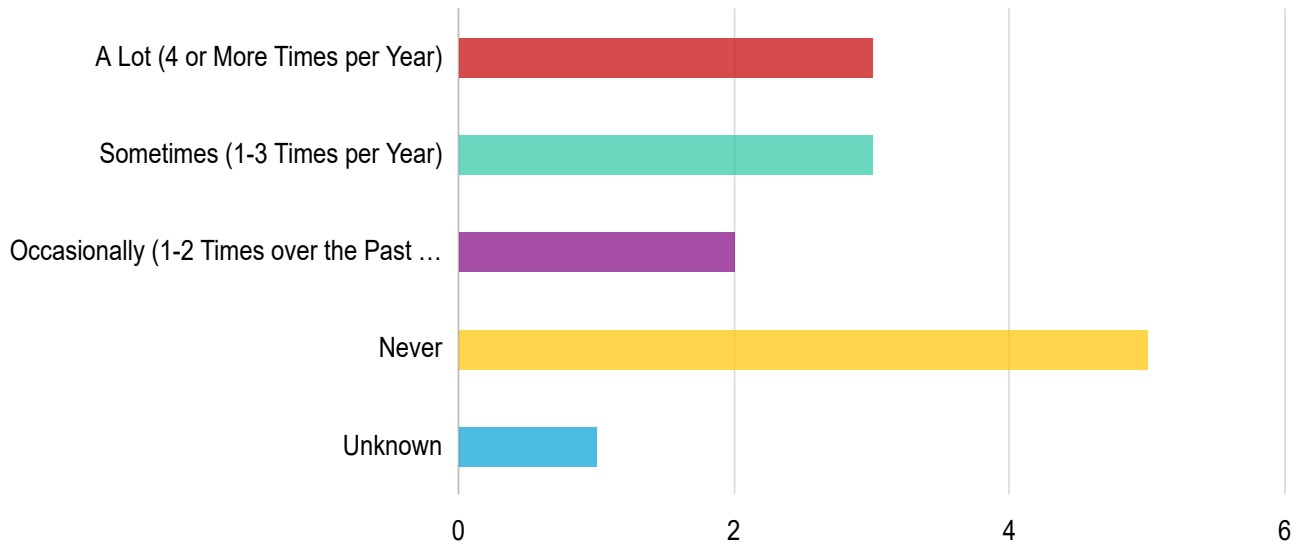


Answers **Count** **Percentage**

Answers	Count	Percentage
Flooding Occurs After Heavy Rain	5	35.71%
Flooding Occurs After Snow Melt	0	0%
Flooding Occurs After Heavy Rain and After Snow Melt	3	21.43%
I Do Not Experience Flooding on my Property	6	42.86%
Unknown	0	0%

Answered: 14 Skipped: 0

How often does flooding occur on your property? *

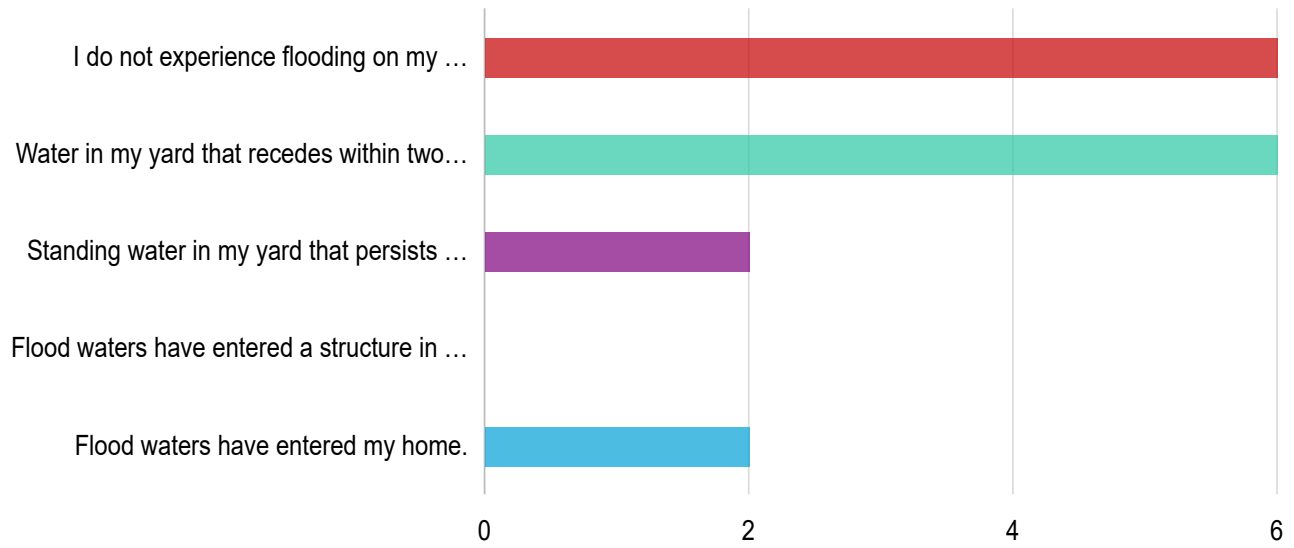


Answers **Count** **Percentage**

Answers	Count	Percentage
A Lot (4 or More Times per Year)	3	21.43%
Sometimes (1-3 Times per Year)	3	21.43%
Occasionally (1-2 Times over the Past Five Years)	2	14.29%
Never	5	35.71%
Unknown	1	7.14%

Answered: 14 Skipped: 0

Please describe what type of flooding you see on your property? Check all that apply. *

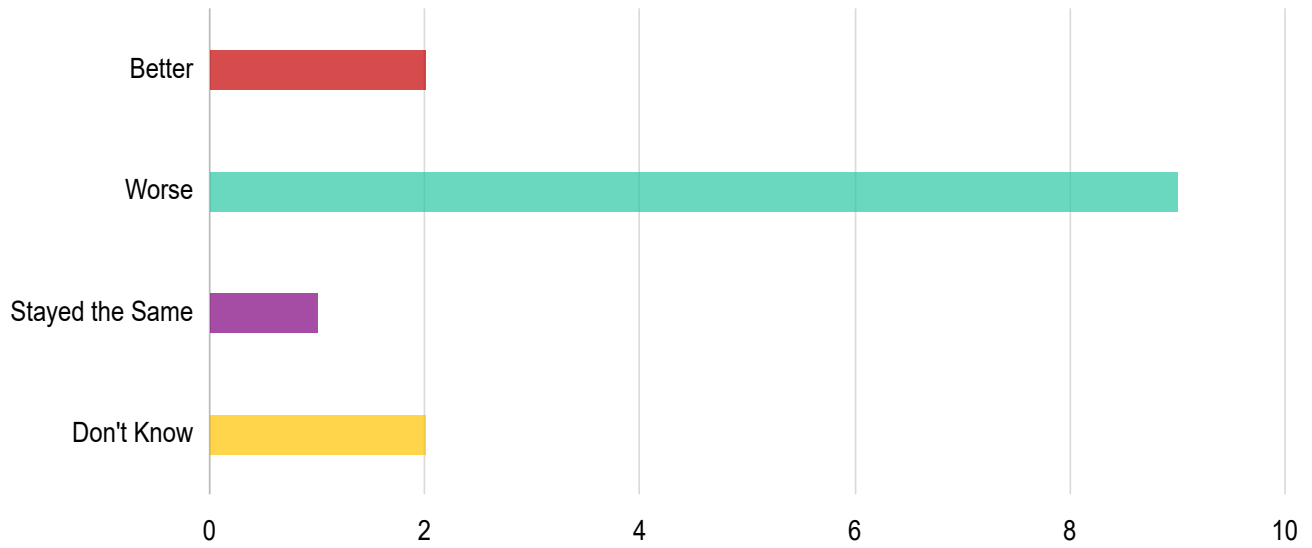


Answers **Count** **Percentage**

Answers	Count	Percentage
I do not experience flooding on my property.	6	42.86%
Water in my yard that recedes within two days.	6	42.86%
Standing water in my yard that persists for three or more days.	2	14.29%
Flood waters have entered a structure in my yard (such as a shed).	0	0%
Flood waters have entered my home.	2	14.29%

Answered: 14 Skipped: 0

Do you feel that drainage issues have gotten better, worse, or stayed the same in the last five to ten ye...

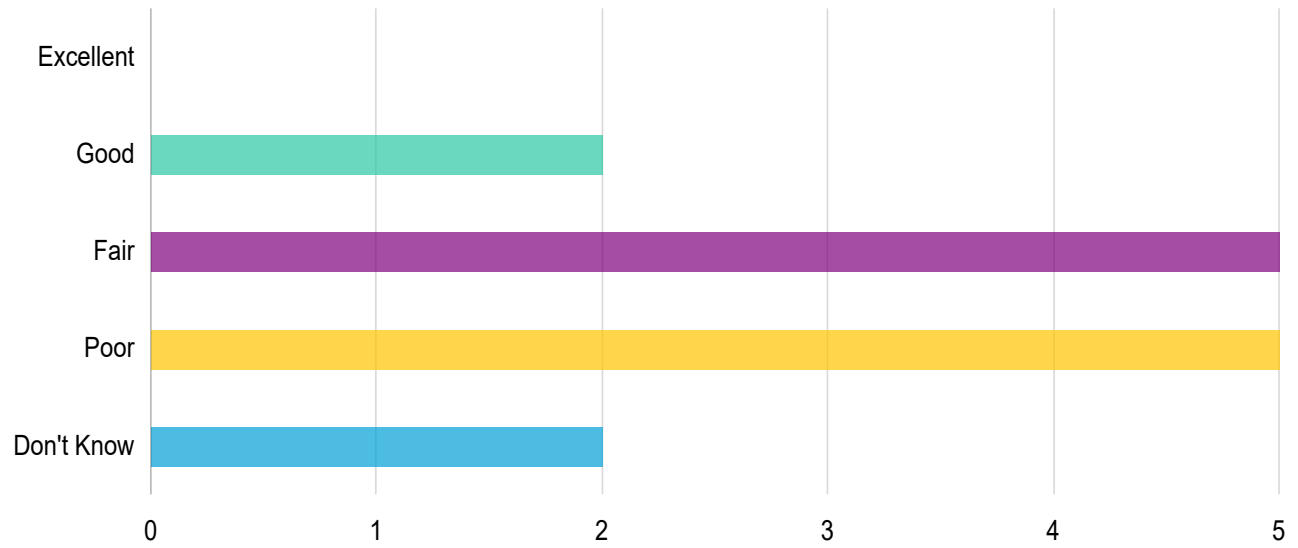


Answers	Count	Percentage
---------	-------	------------

Better	2	14.29%
Worse	9	64.29%
Stayed the Same	1	7.14%
Don't Know	2	14.29%

Answered: 14 Skipped: 0

How good of a job do you feel the municipality you live in is at managing stormwater and drainage? *

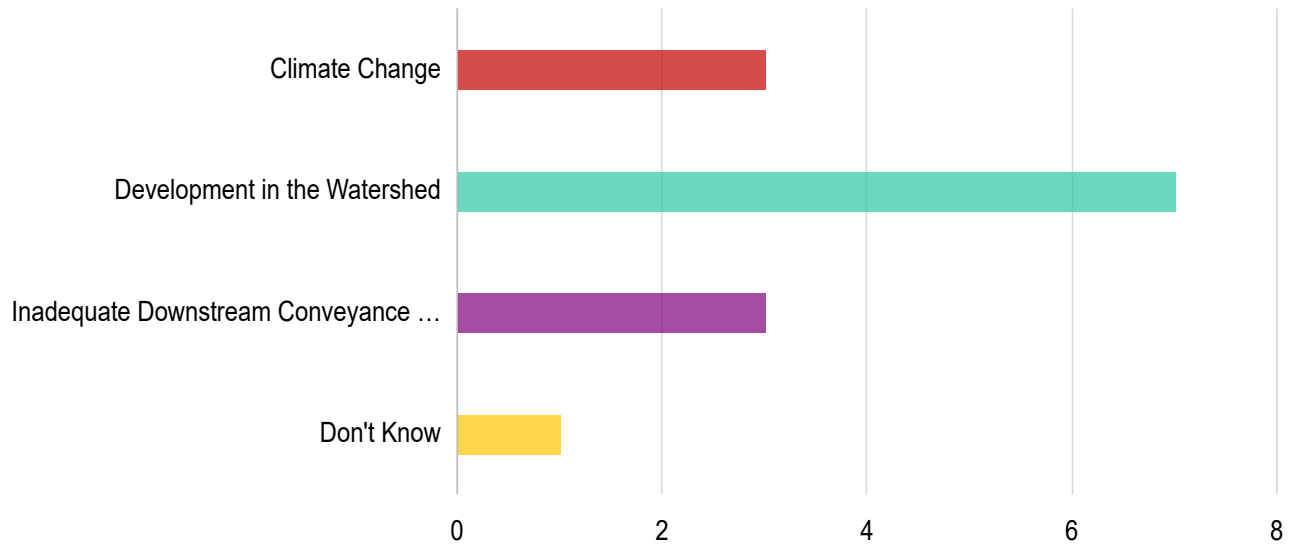


Answers **Count** **Percentage**

Excellent	0	0%
Good	2	14.29%
Fair	5	35.71%
Poor	5	35.71%
Don't Know	2	14.29%

Answered: 14 Skipped: 0

What is the main cause of flooding in your opinion? *

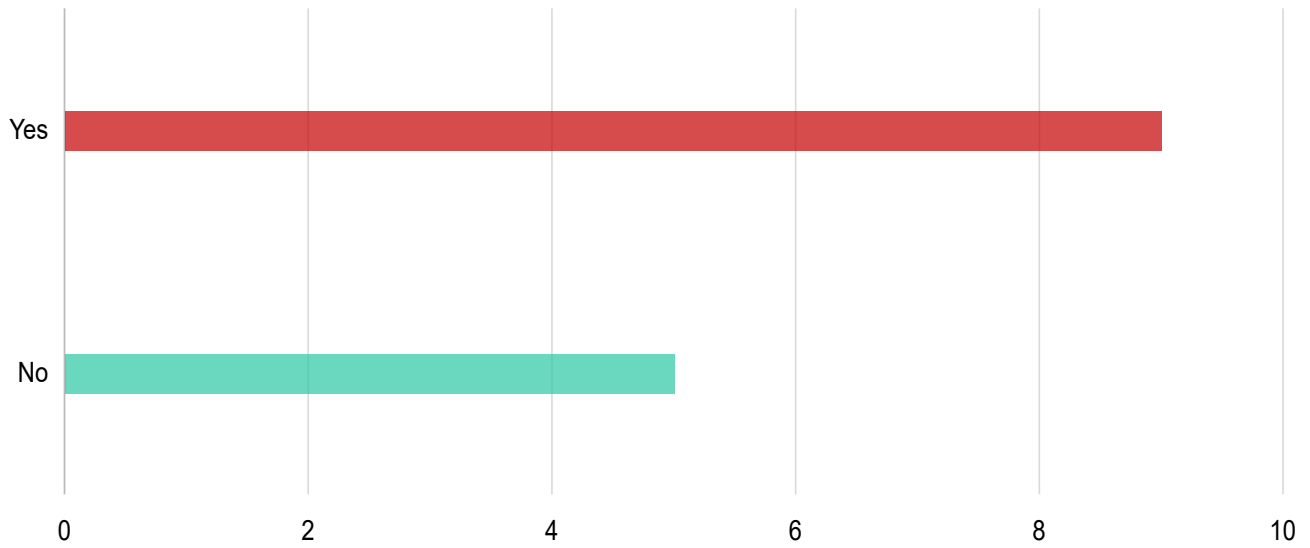


Answers	Count	Percentage
---------	-------	------------

Climate Change	3	21.43%
Development in the Watershed	7	50%
Inadequate Downstream Conveyance Causes Water to Back up into my Neighborhood	3	21.43%
Don't Know	1	7.14%

Answered: 14 Skipped: 0

Do you have a sump pump? *

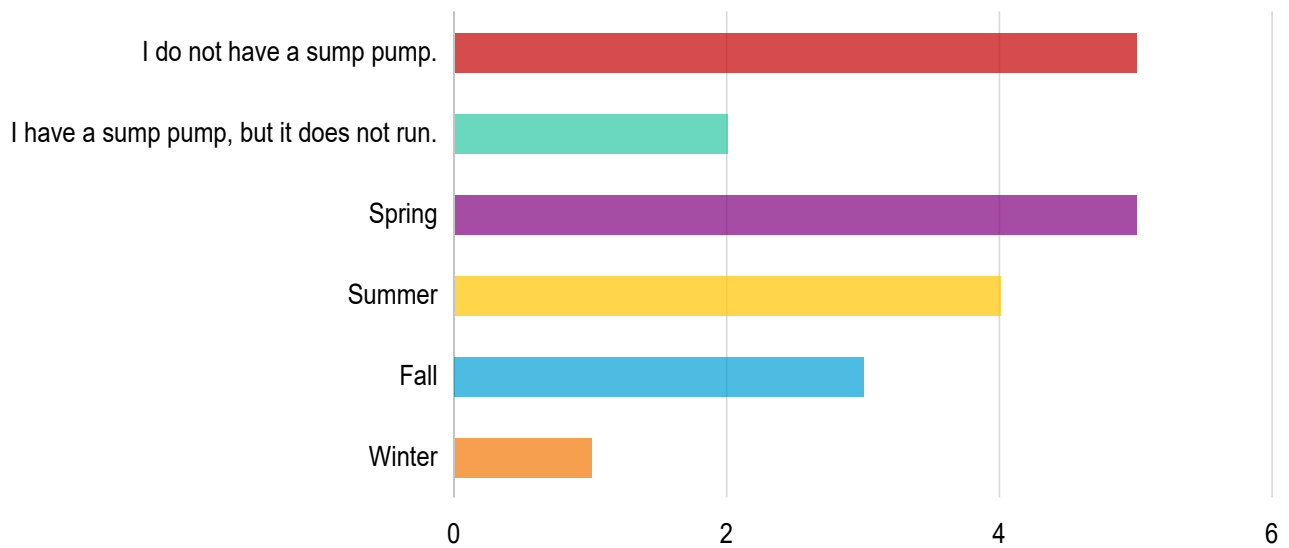


Answers **Count** **Percentage**

Yes	9	64.29%
No	5	35.71%

Answered: 14 Skipped: 0

In which seasons does your sump pump run? Check all that apply. *



Answers **Count** **Percentage**

Never

2

14.29%

Answered: 14 Skipped: 0

Helpful Photo



Images: 1