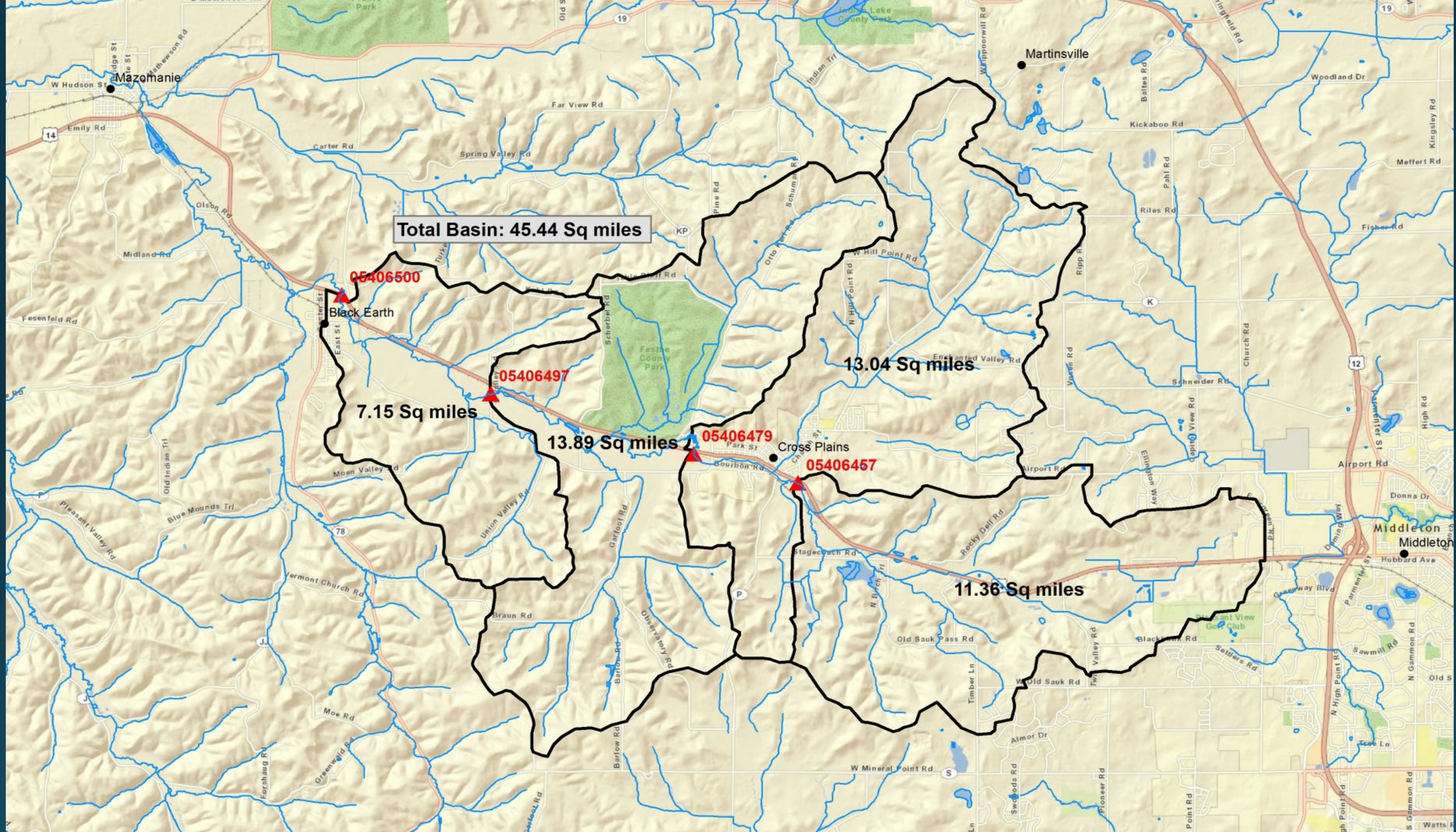
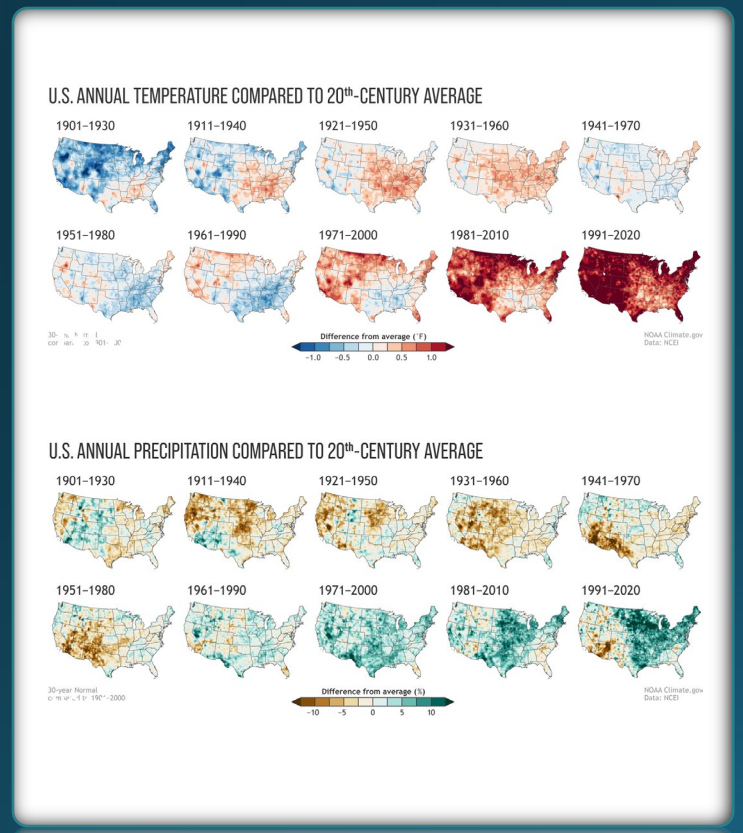
Black Earth Creek Watershed Monitoring

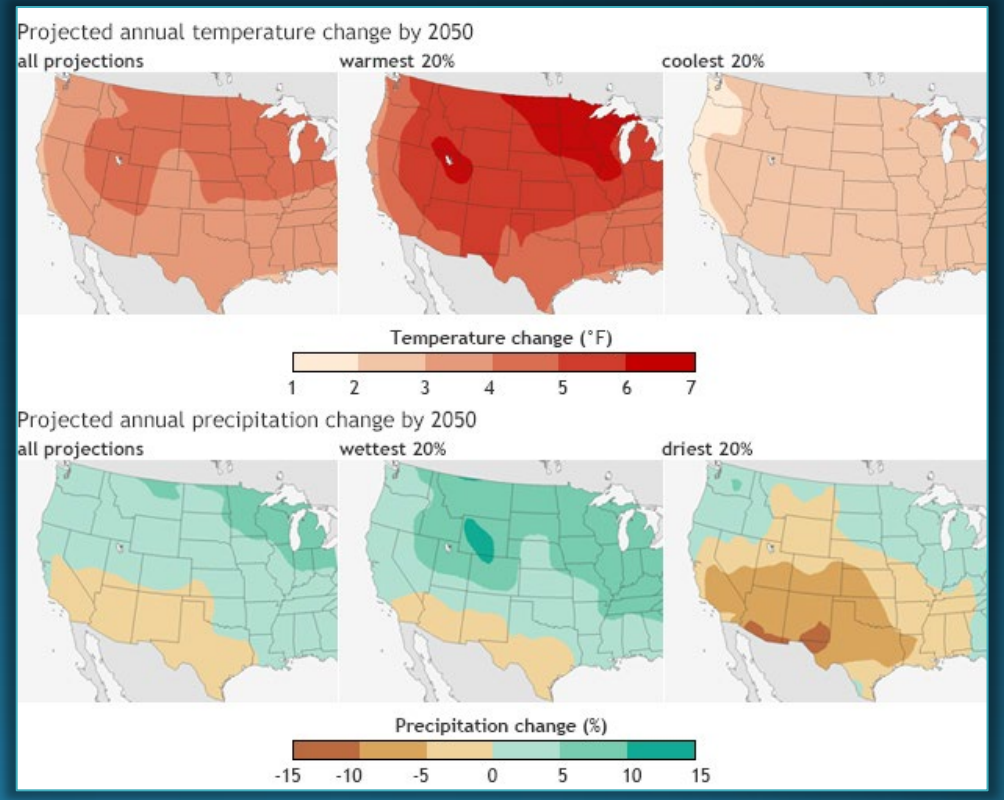

Total Basin: 45.44 Sq miles
05406500
Black Earth
7.15 Sq miles
05406497
13.89 Sq miles
05406479
Cross Plains
05406457
13.04 Sq miles
11.36 Sq miles
Mazomanie
Martinsville
Middleton

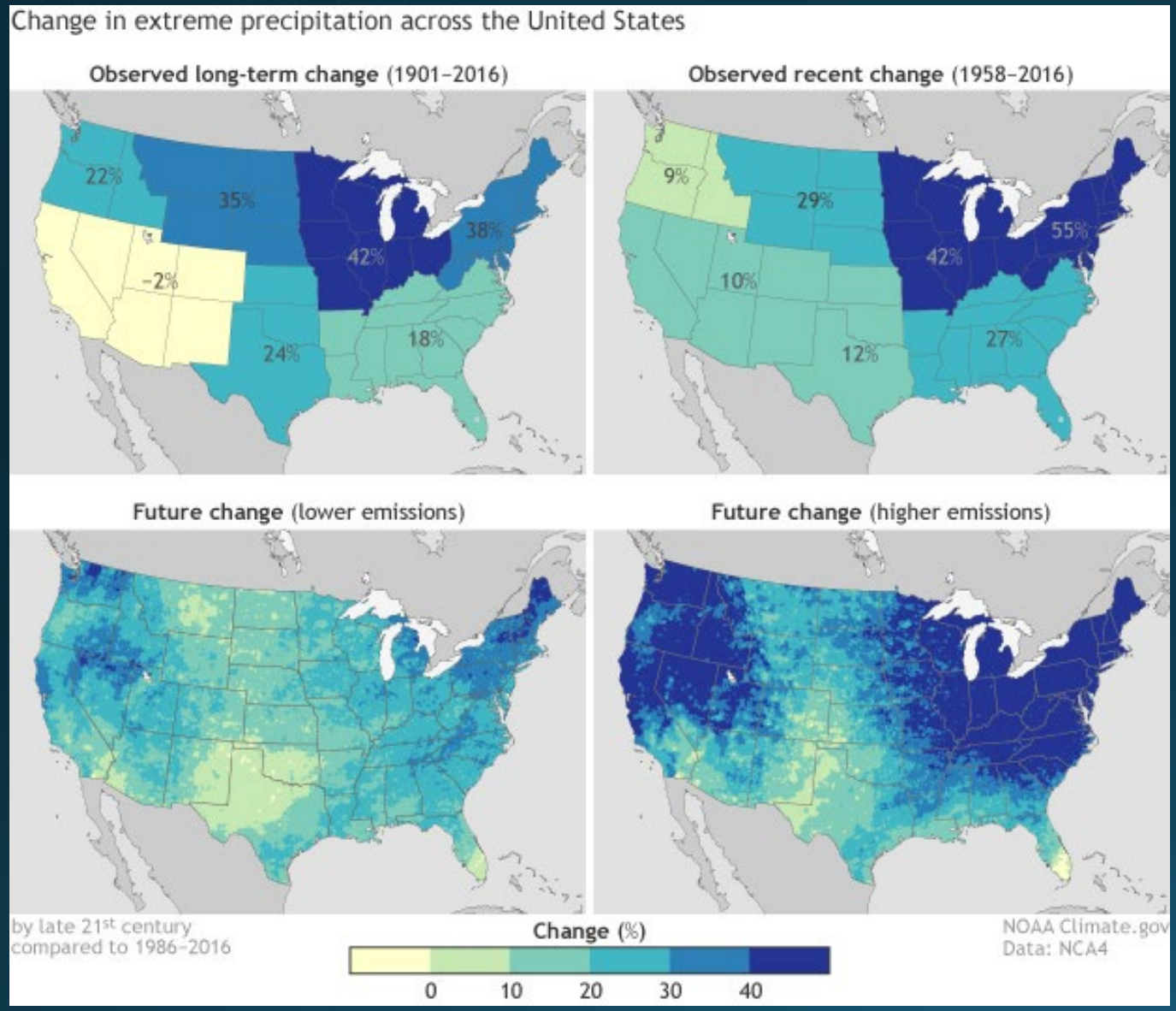
Challenges for the Black Earth Creek Watershed



Changing Weather Patterns

- Increased average precipitation and temperature over the last 100 years
- Average precipitation and temperature predicted to continue to increase



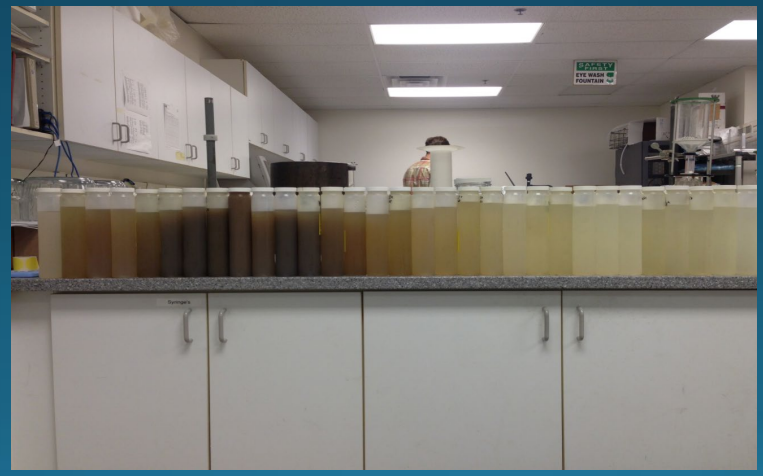


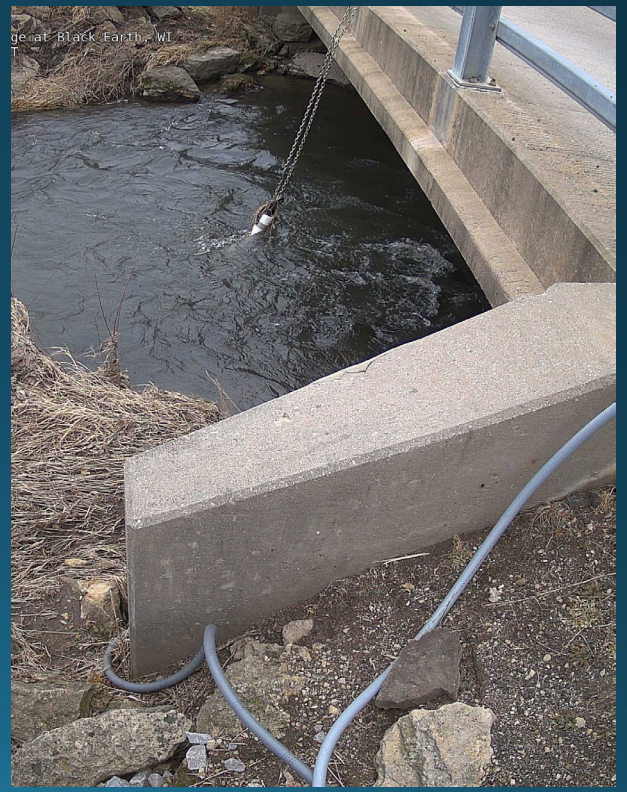
Changing Weather Patterns

- Predicted increases in extreme precipitation

Data Collection

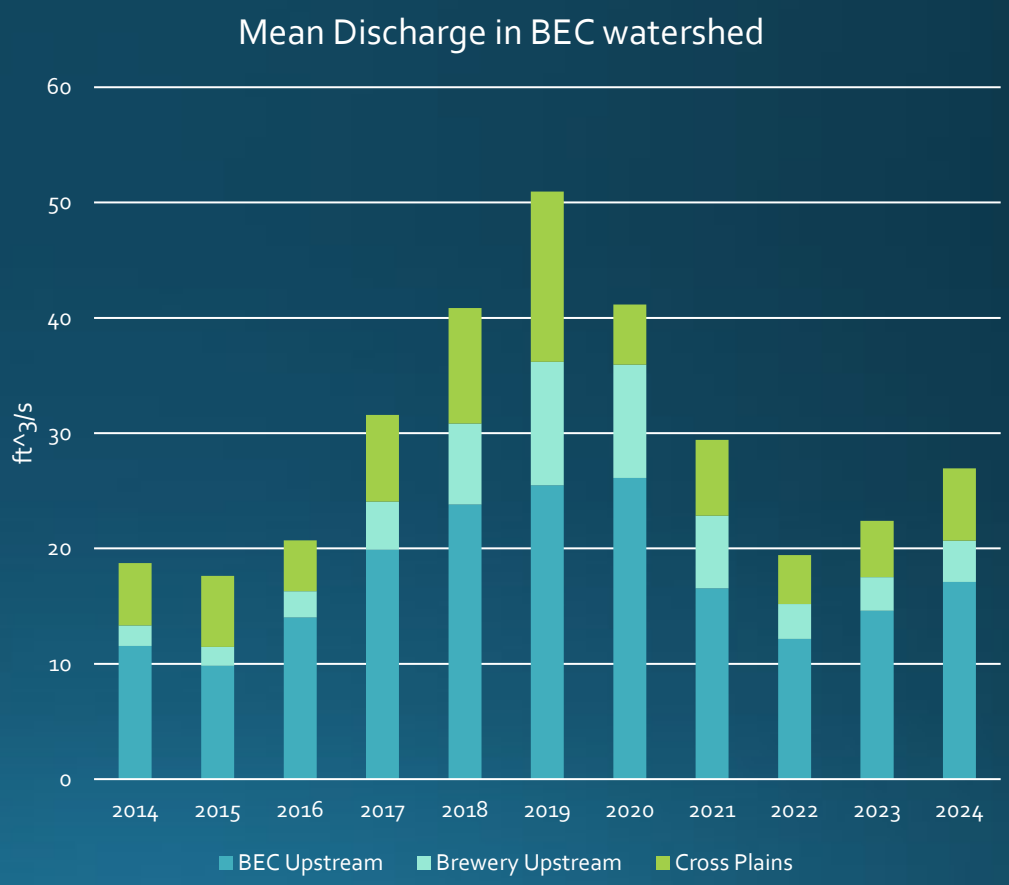
- Water Quality
- Sediment
- Nutrients
- Discharge
- Rainfall

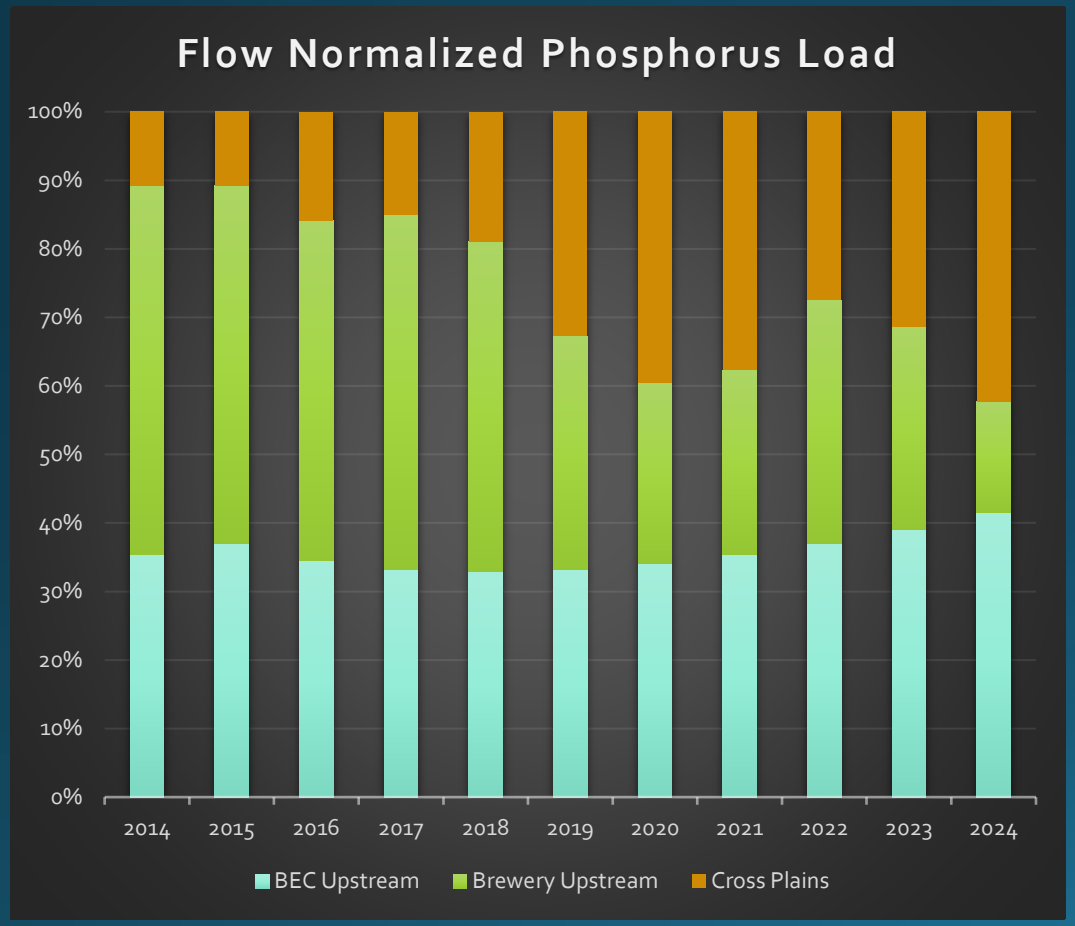


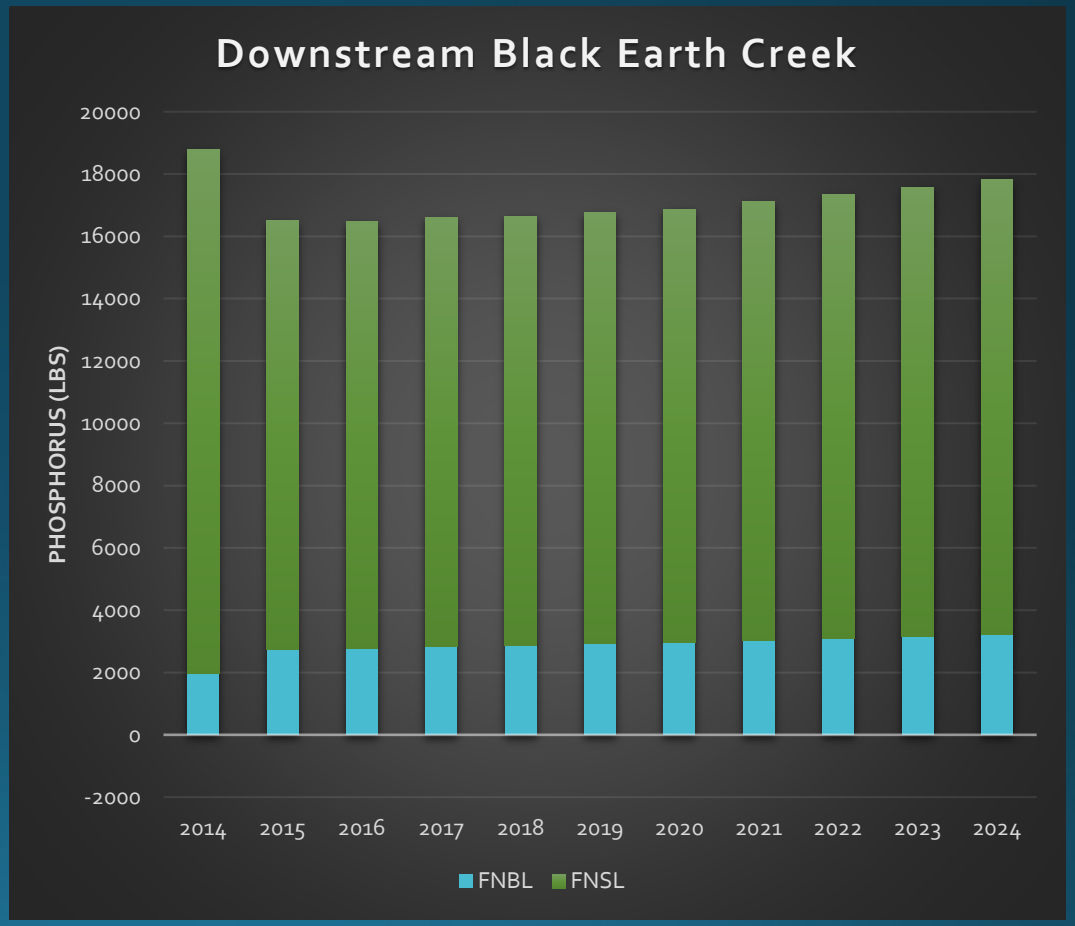


Data uses

- Publicly available
- Fishery Management
- Flood Protection
- Watershed trends
  - Changes over time in discharge, nutrient loading, and water quality
  - Drivers of changes
  - Modeling future water quality trends

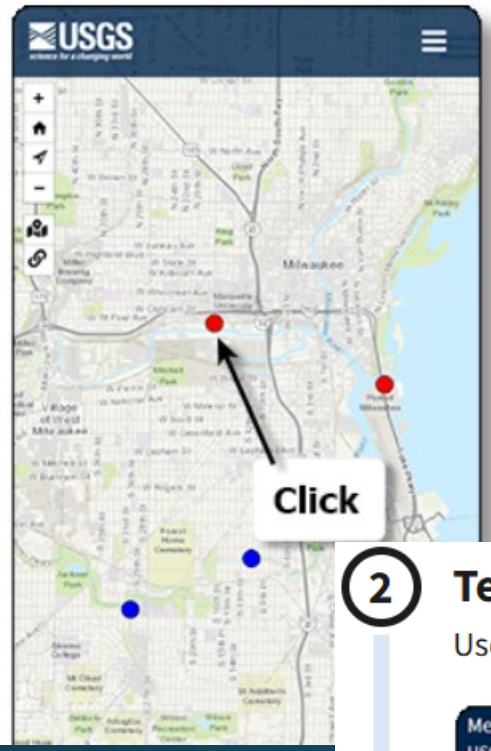






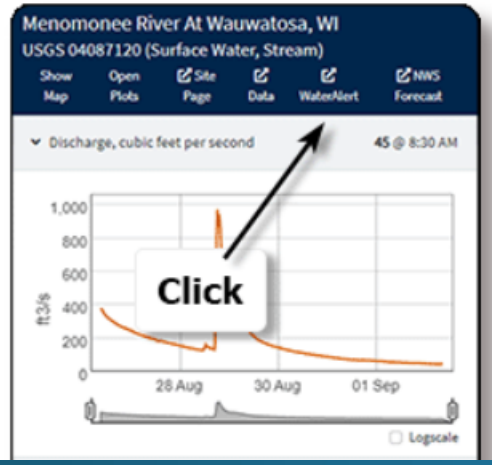
1 Find a monitoring location.

Use National Water Dashboard.



2 Tell WaterAlert which monitoring location.

Use National Water Dashboard to connect with WaterAlert.



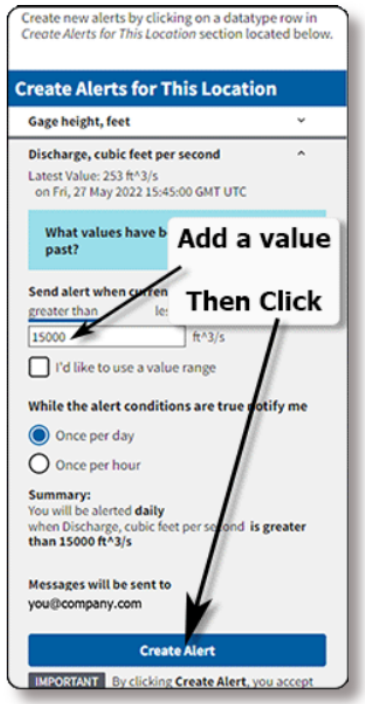
3 Select a water condition in which you have an interest.

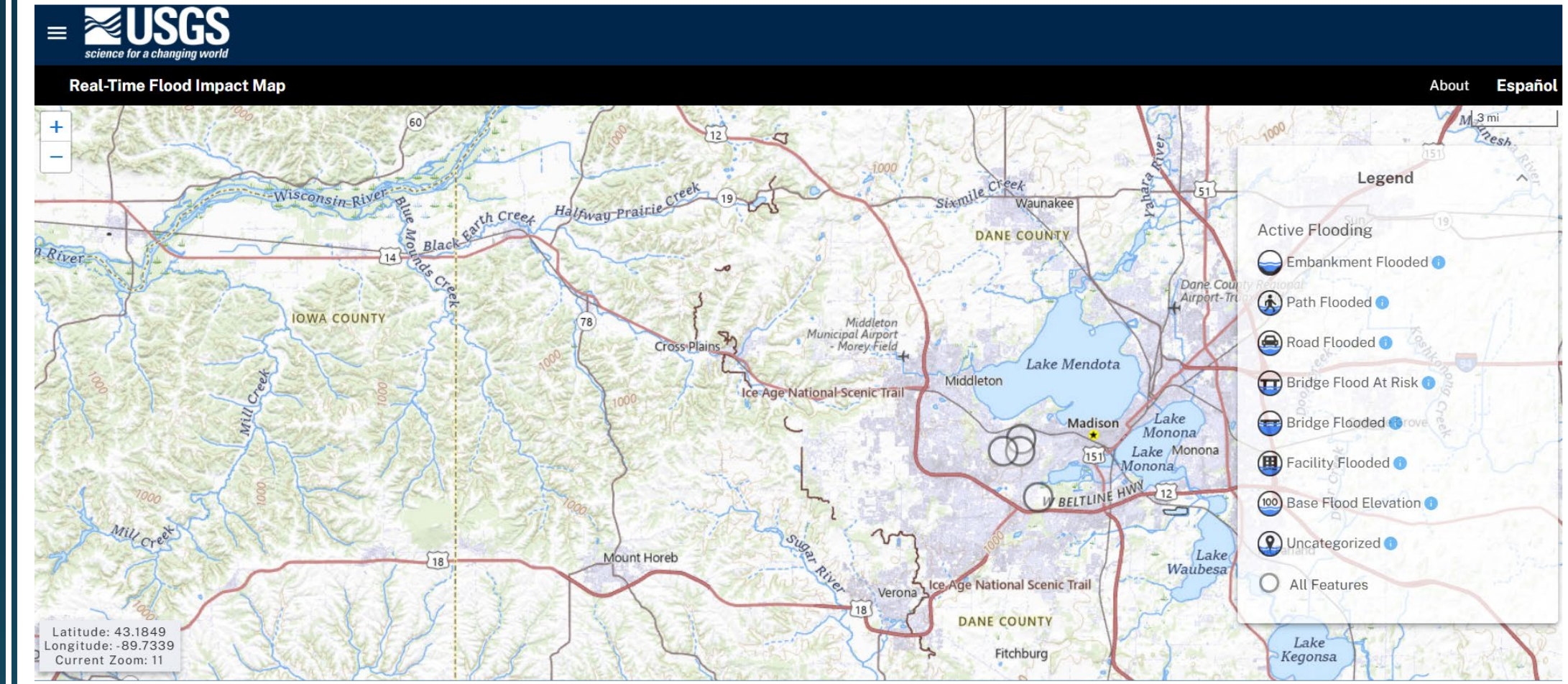
In WaterAlert, sign in then click one of the water conditions rows - which water conditions are available is dependent on the sensors at the selected monitoring location.

https://accounts.waterdata.usgs.gov/wateralert/

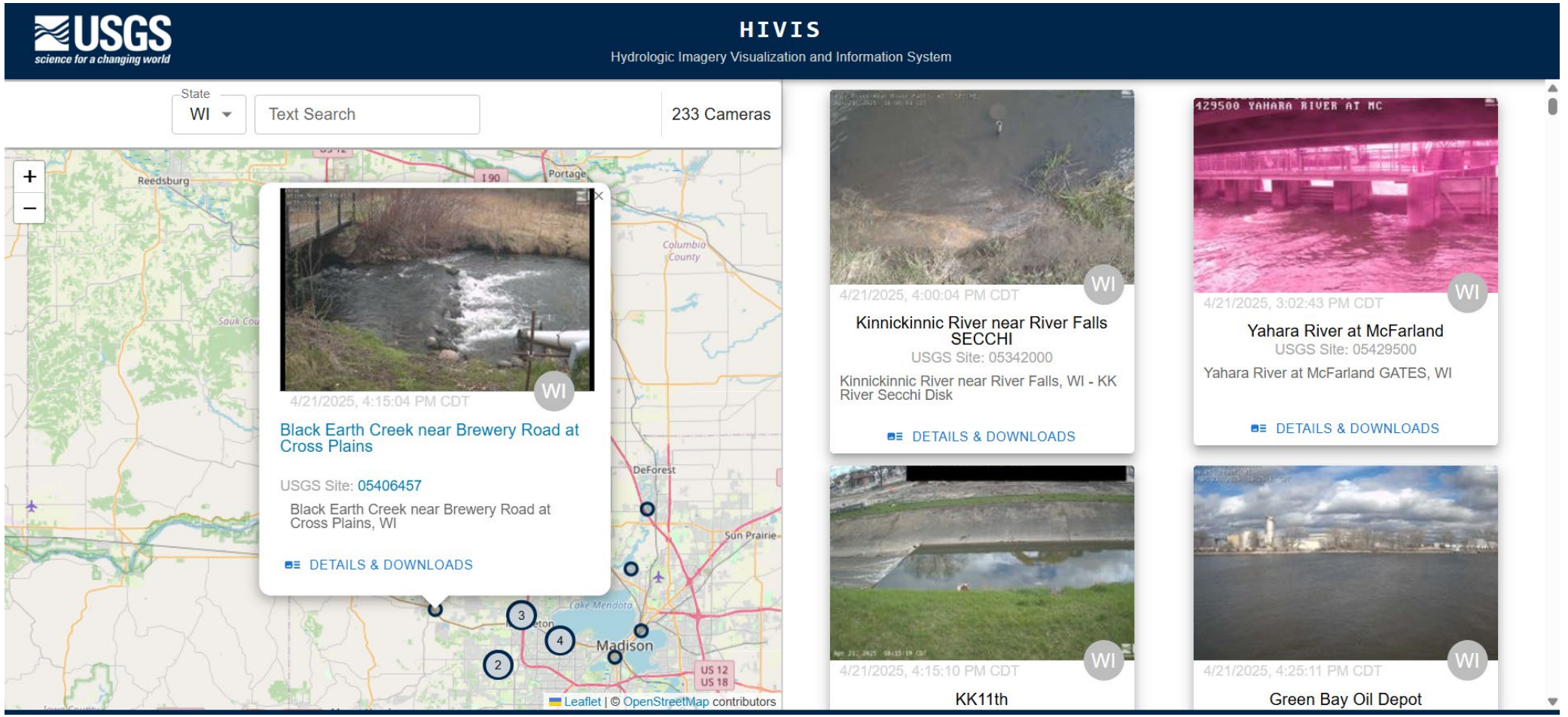
4 Set your thresholds.

Enter a threshold value, click *Create alert* and you're done! WaterAlert will send you a notification when water conditions match your thresholds. In the meantime, check out the User Guide.

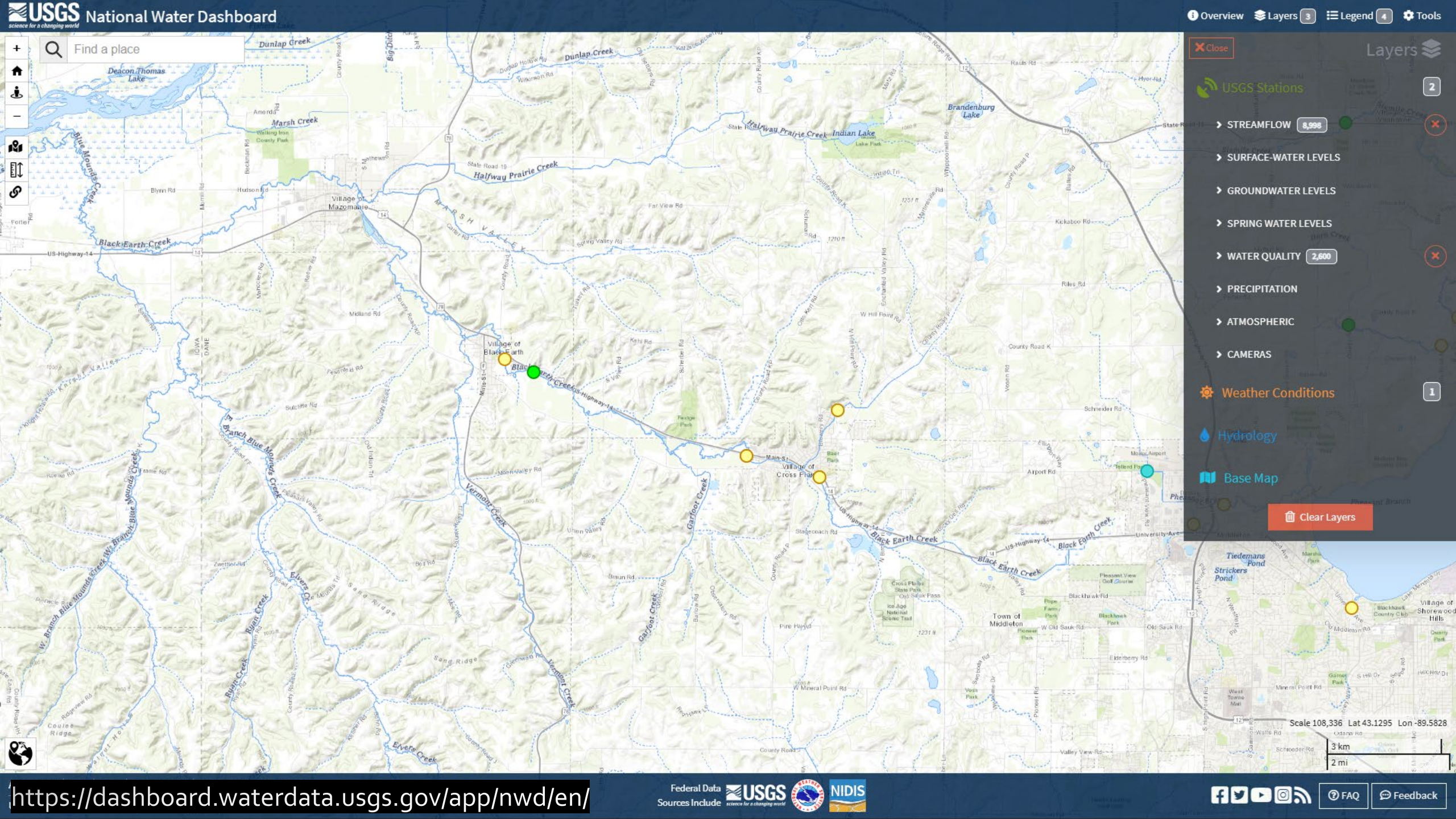




Wim.usgs.gov/rtfi-map/



apps.usgs.gov/hivis/


USGS National Water Dashboard
Overview
Layers 3
Legend 4
Tools
Find a place
Close
Layers
USGS Stations 2
STREAMFLOW 8,998
SURFACE-WATER LEVELS
GROUNDWATER LEVELS
SPRING WATER LEVELS
WATER QUALITY 2,600
PRECIPITATION
ATMOSPHERIC
CAMERAS
Weather Conditions 1
Hydrology
Base Map
Clear Layers
Dunlap Creek
Deacon Thomas Lake
Marsh Creek
Blue Mounds Creek
Halfway Prairie Creek
Indian Lake
Brandenburg Lake
Village of Mazomanie
Black Earth Creek
US-Highway-14
Village of Black Earth
Village of Cross Plains
Vermont Creek
Garfoot Creek
Ryan Creek
Elvers Creek
Town of Middleton
Tiedemans Pond
Strickers Pond
Scale 108,336 Lat 43.1295 Lon -89.5828
3 km
2 mi
https://dashboard.waterdata.usgs.gov/app/nwd/en/
Federal Data Sources Include USGS NIDIS
FAQ
Feedback

Questions?

Green Infrastructure & Flood Management

BLACK EARTH CREEK WATERSHED

Nick Bower – Sr. Environmental Engineer
Capital Area Regional Planning Commission

CAPITAL AREA rpc

PRESENTATION CONTENTS

1. Defining Green Infrastructure
2. Benefits of Green Infrastructure
3. What CARPC is Doing

01

Defining Green Infrastructure

Mimicking nature to handle stormwater at its source

DEFINING GREEN INFRASTRUCTURE

Definition

The range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters. *[Federal Water Pollution Control Act]*

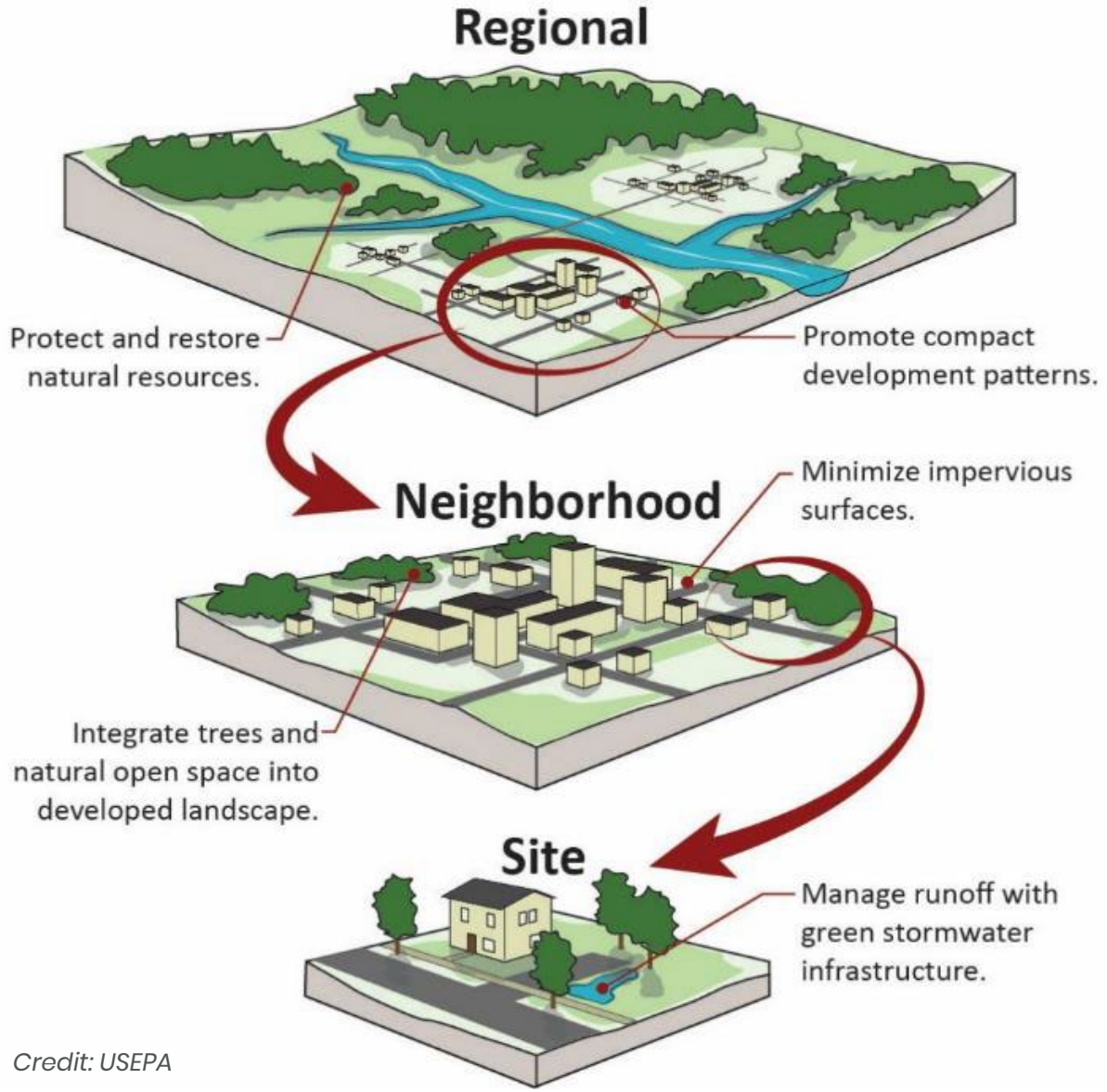
Use of soils and plants to treat, infiltrate, and evapotranspirate rainwater where it falls.

DEFINING GREEN INFRASTRUCTURE

Multiple Scales

Green infrastructure can be implemented at multiple scales, thereby maximizing the benefits

- Regional
- Neighborhood
- Site



Credit: USEPA

DEFINING GREEN INFRASTRUCTURE

Grey Infrastructure Examples

Concrete Swales

Curb & Gutter

Storm Sewer

DEFINING GREEN INFRASTRUCTURE

Small-Scale Examples

Rainfall Harvesting

Rain Gardens

Bioretention Areas

Native Landscaping

Green Walls

Porous Pavers

Planter Boxes

Stormwater Trees

DEFINING GREEN INFRASTRUCTURE

Large-Scale Examples

Green Roofs

Street Sweeping

Wetland Restoration

Canopy Cover

Green Streets

Infiltration Basins

Urban Floodways

Prairie Restoration

02

Benefits of Green Infrastructure

Turning stormwater challenges into opportunities

BENEFITS OF GREEN INFRASTRUCTURE

Costs of Poorly Managed Stormwater

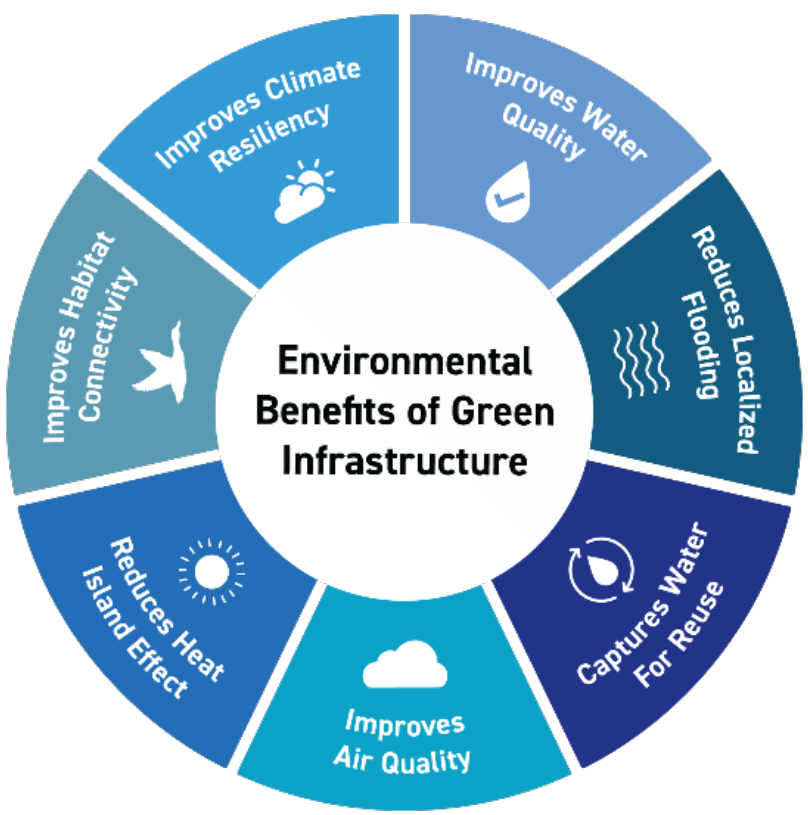
- Polluted surface waters
- Contaminated groundwater
- Increased flooding
- Infrastructure and property damage
- Loss of biodiversity
- Permit non-compliance

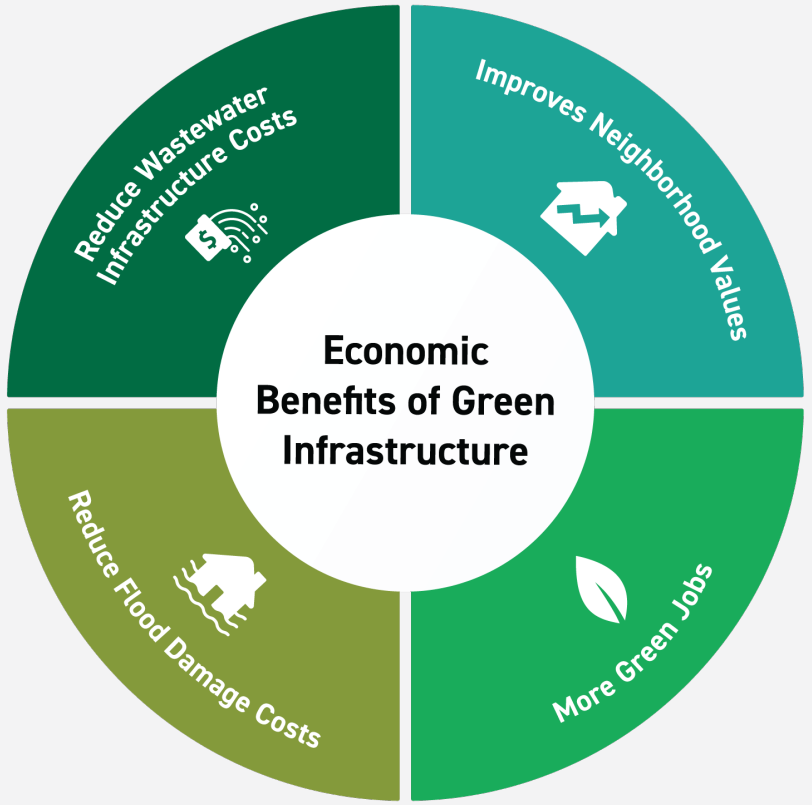
“An ounce of prevention is worth a pound of cure”

-Benjamin Franklin

BENEFITS OF GREEN INFRASTRUCTURE

Triple Bottom Line Benefits





Credit: USEPA

03

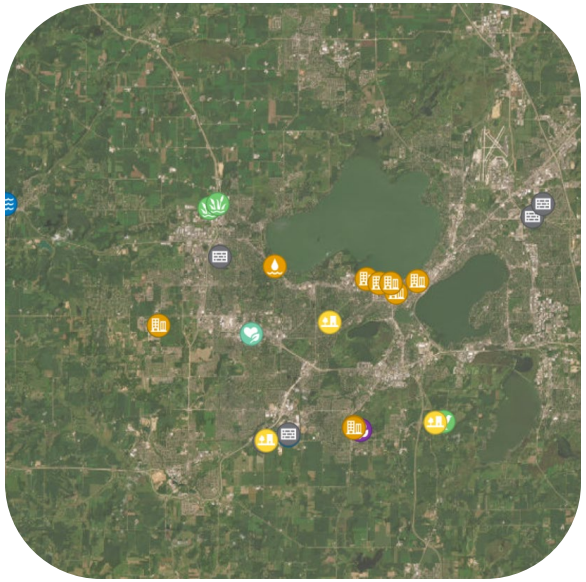
What CARPC is Doing

Promoting Green Infrastructure & Flood Management

WHAT CARPC IS DOING

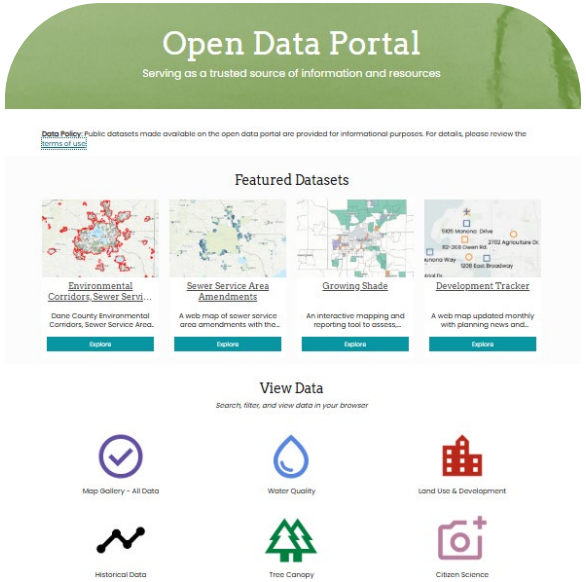
Data & Information Sharing

Urban GI Viewer



Interactive web-based map showcasing real green infrastructure examples in the region

Open Data Portal



Collection of data and mapping resources open to the public and available for download

Tree Canopy

Tools and mapping to assess, preserve, and expand tree canopy in Dane County

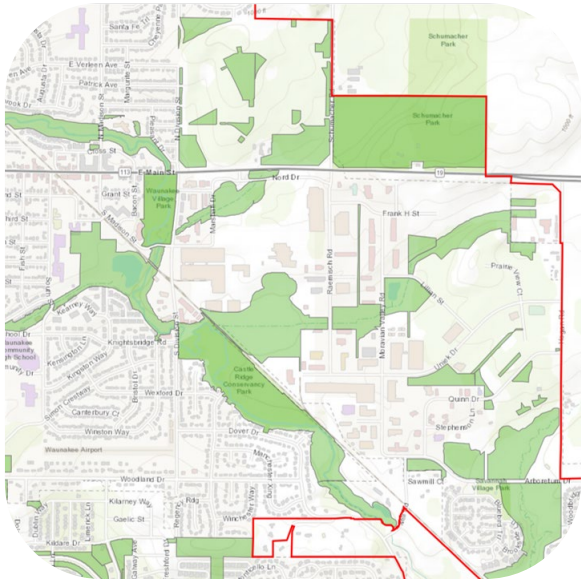
WHAT CARPC IS DOING

Regulatory Role

Dane Co Water Quality Plan

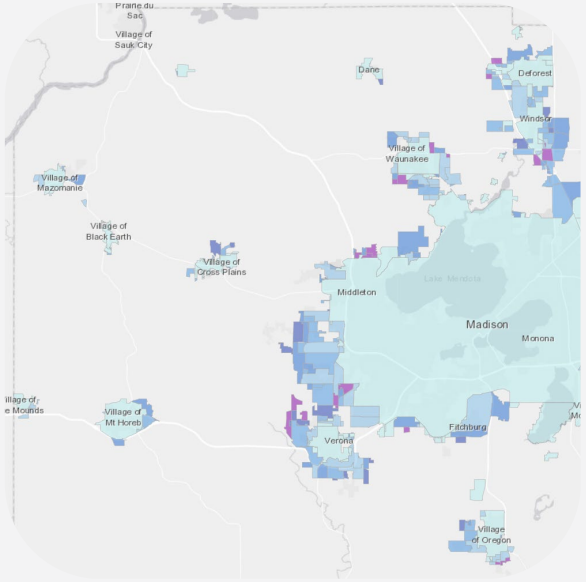
Managing water resources while considering the relationship of water quality and land uses

Environmental Corridors



Protecting sensitive environmental resources; Environmental Corridors Report updated Feb 2025

Sewer Service Area Planning



Identifying lands most suitable for development; protecting against adverse water quality impacts

WHAT CARPC IS DOING

Projects

Stream Crossing Inventory

Assessing and prioritizing critical infrastructure upgrades to improve flood resiliency

Green Infrastructure Design Guide

A guide for choosing and implementing best practices using green infrastructure in an urban corridor

Black Earth Creek GI Plan

A Plan for flood protection and water quality, recreational, economic, and ecological benefits

Questions?

Nick Bower
SENIOR ENVIRONMENTAL ENGINEER
NickB@CapitalAreaRPC.org

Green Infrastructure Implementation

2025 BECWA Earth Day Forum

James Brodzeller, Watershed Coordinator

February 25, 2025

Reference Reach

- Intact riffle pool sequences
- Coarse substrate
- Robust riparian vegetation
- Well-connected floodplain
- In-stream habitat variety

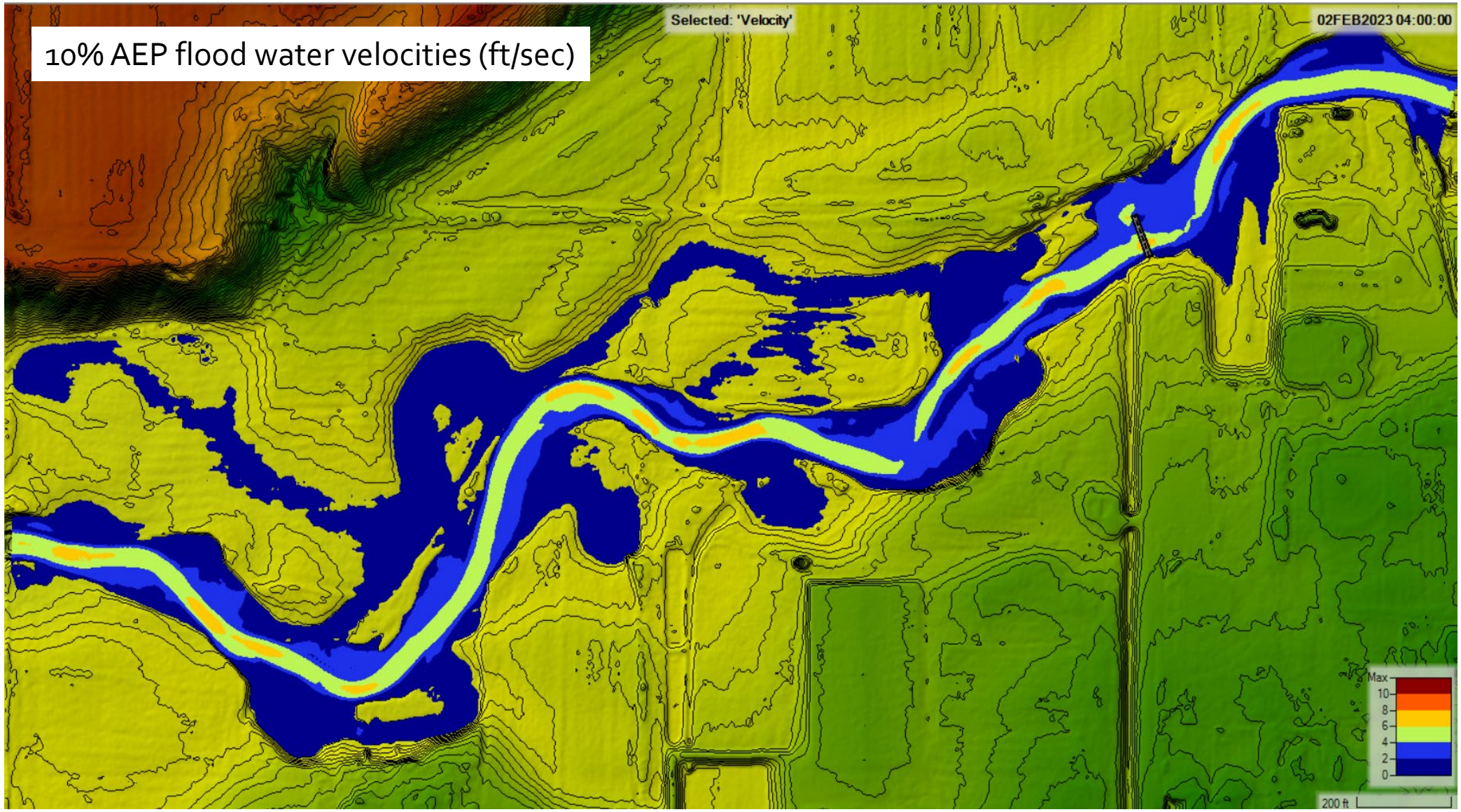
DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Walking Iron Project Reach

- High banks
- Uniform depth, flow
- Homogenous bedform
- Aggradation & widening
- No large wood/habitat features
- Limited riparian buffer
- Channelized

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Flood Flows

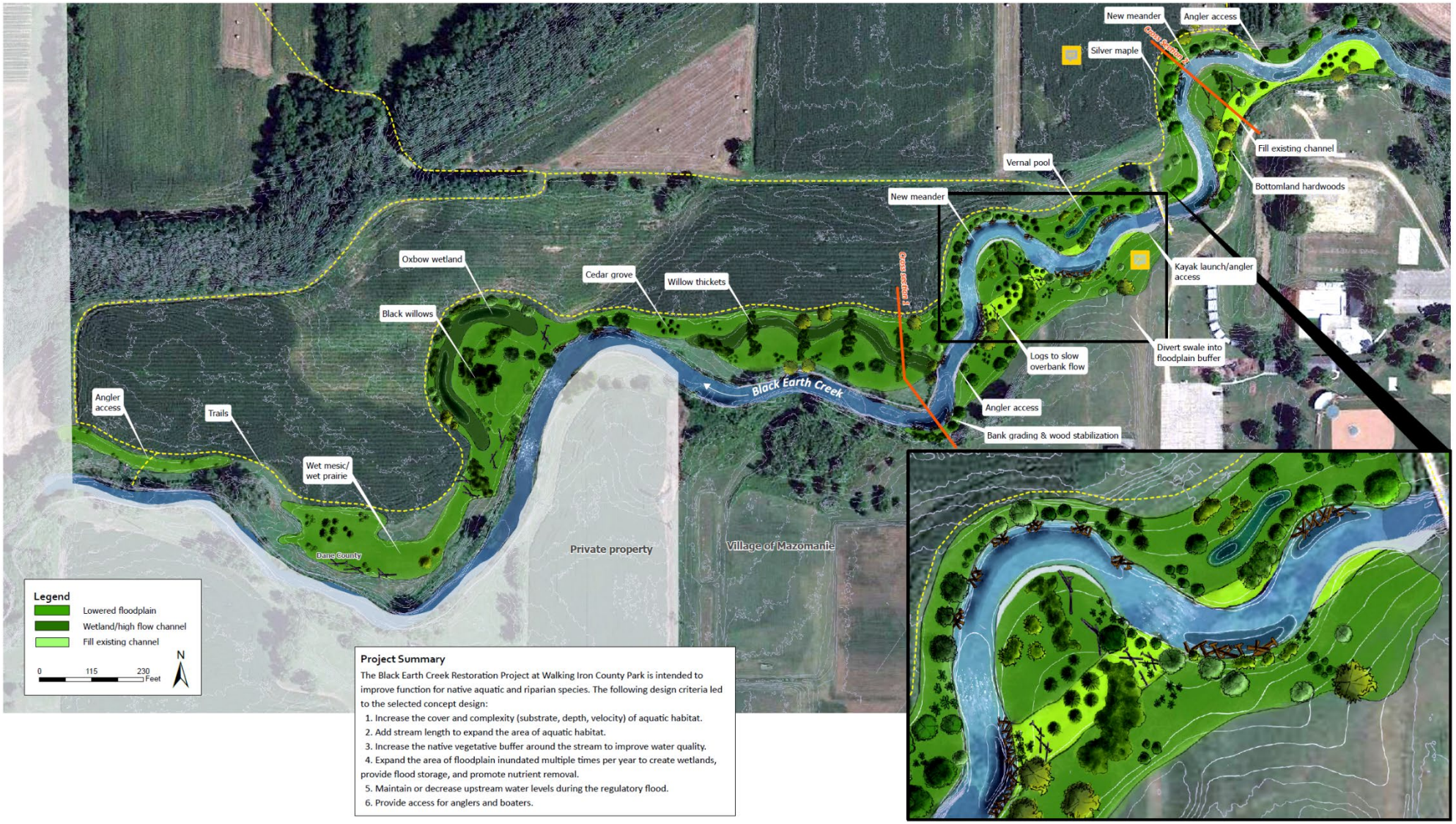


Credit: Fish Creek Restoration

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Concept Plan

Black Earth Creek Restoration at Walking Iron County Park - Concept Design



Project Summary

The Black Earth Creek Restoration Project at Walking Iron County Park is intended to improve function for native aquatic and riparian species. The following design criteria led to the selected concept design:

1. Increase the cover and complexity (substrate, depth, velocity) of aquatic habitat.
2. Add stream length to expand the area of aquatic habitat.
3. Increase the native vegetative buffer around the stream to improve water quality.
4. Expand the area of floodplain inundated multiple times per year to create wetlands, provide flood storage, and promote nutrient removal.
5. Maintain or decrease upstream water levels during the regulatory flood.
6. Provide access for anglers and boaters.

Timber Harvest

- Winter 2024
- Remove black locust to restore oak savanna
- Pre-project harvest to prevent resprouts

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Floodplain Excavation

- Remove post-settlement alluvium
- Depth of cut 1-6’
- Spoils disposed in crop field to be restored to prairie

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Floodplain Wood

- Slow and spread flood flows
- Increase infiltration
- Trap sediment and debris
- 32 trees, 64 log piles

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Channel Realignment & Angler Access

- 4 meanders
- Pool development
- Gravel bars

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Large Wood

- 530 pieces
- Multiple tiers
- Pack with slash
- Boulder accents

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Riffles

- 7 sections
- Keyed in to banks

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Fabric Encapsulated Soil Lifts

- High energy bends
- Assure stabilization
- Counter buoyant forces of bank wood

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Overflow Channel

- Invert near bankfull
- Activate multiple times per year
- Disperse high flows

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Before & After

- Upstream/east of pedestrian bridge
- Channel realigned north

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Before & After

- Downstream/west of pedestrian bridge
- Channel realigned south and north

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Before & After

- Upstream reach

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Before & After

- Central reach

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Before & After

- Downstream reach

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

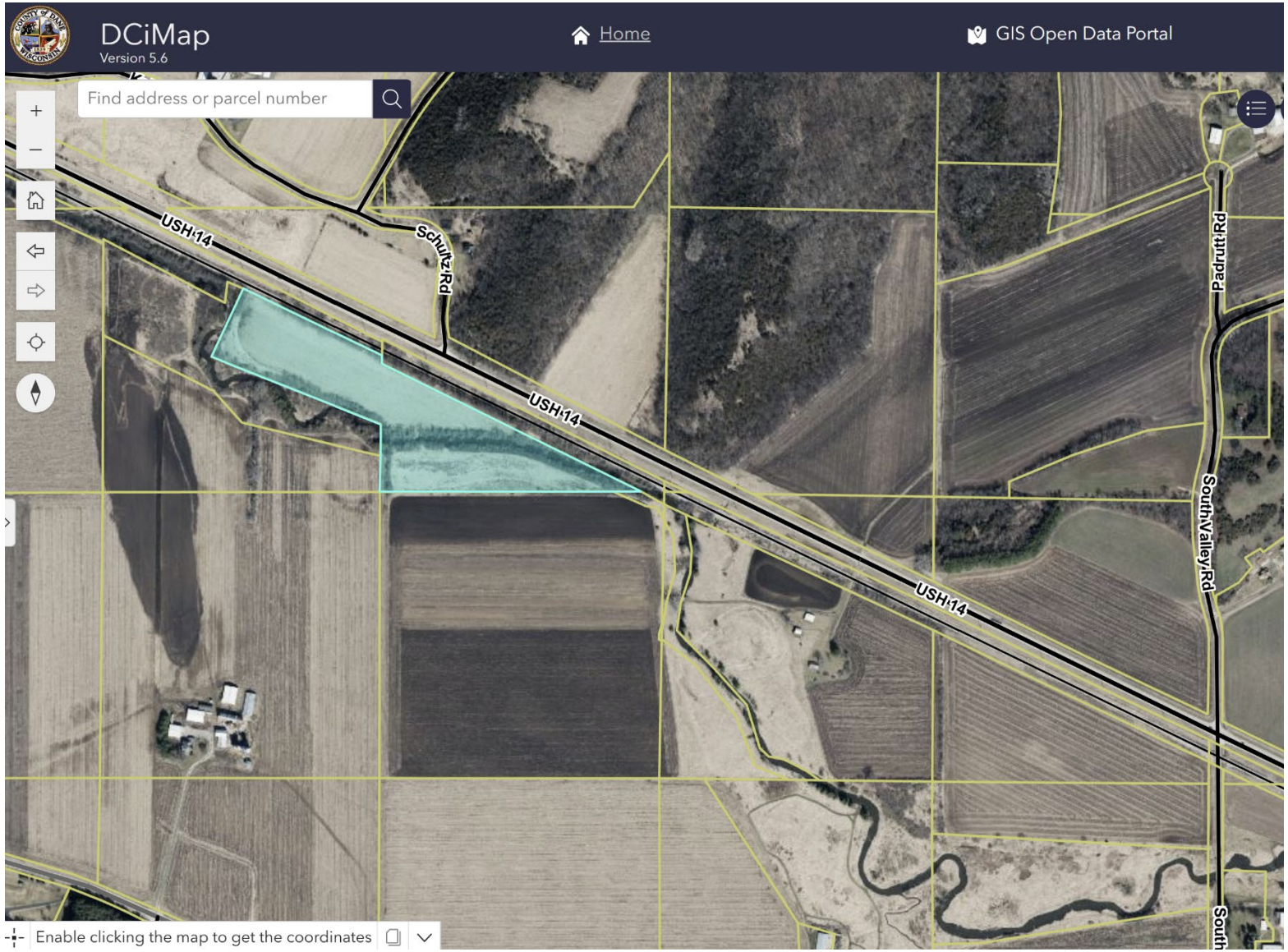
More Than Just Fish

Credit: Marty Melchior

- Water trail enhancement
- Equitable access
- Flood abatement
- Water quality protection
- Pollinator, wetland habitat

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

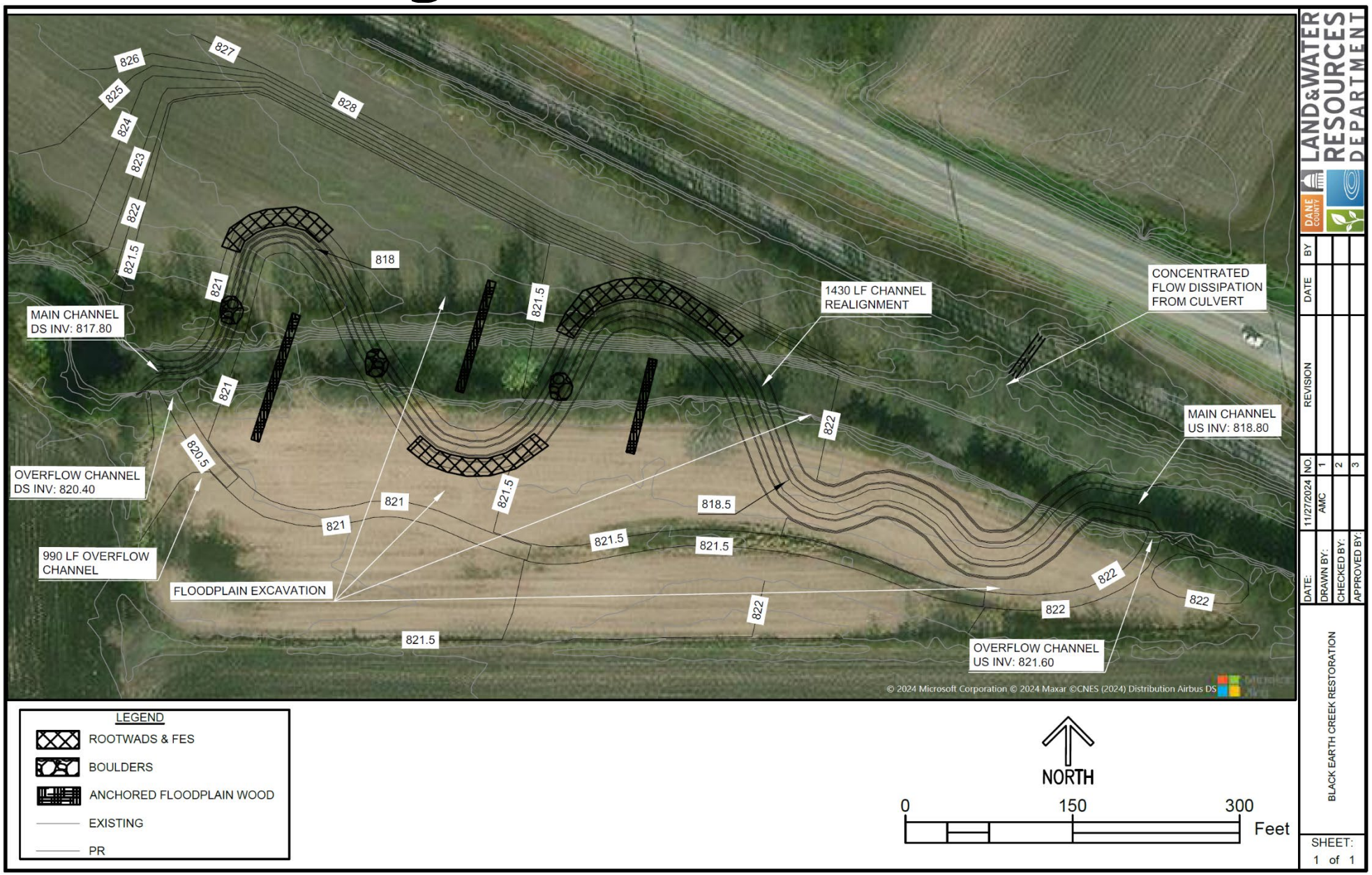
Constructing in 2026



- Former SRR Properties
- 14 acres
- 1050’ reach
- Channelized during construction of USH 14
- Adjacent to Pine Quarry Farm and DNR land

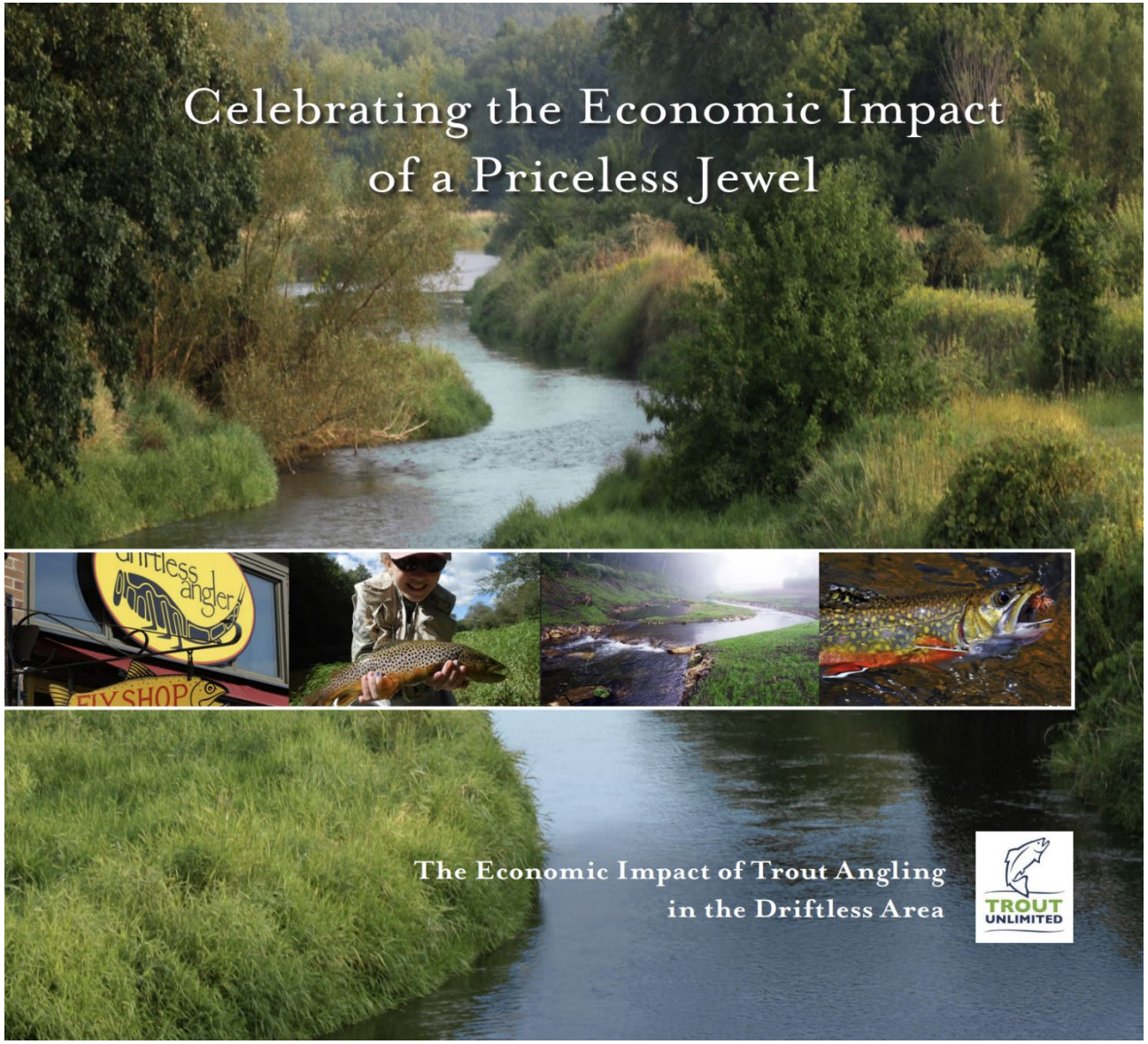
DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

Constructing in 2026



LAND&WATER RESOURCES DEPARTMENT

Funding & Cost Benefit



Credit: Trout Unlimited

Pre-Disaster Flood Resilience Grant
Implementation Grant Scoring
Wis. Stats. 323.63

- $250,000 grant awarded for next project on Black Earth Creek
- Utilized TU economic impact report
- Ecosystem services valued at $593,175 per year, just in terms of infrastructure protection (FEMA)

DANE COUNTY LAND&WATER RESOURCES DEPARTMENT

DANE COUNTY
LAND&WATER RESOURCES DEPARTMENT

Contact Information

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Watershed Coordinator

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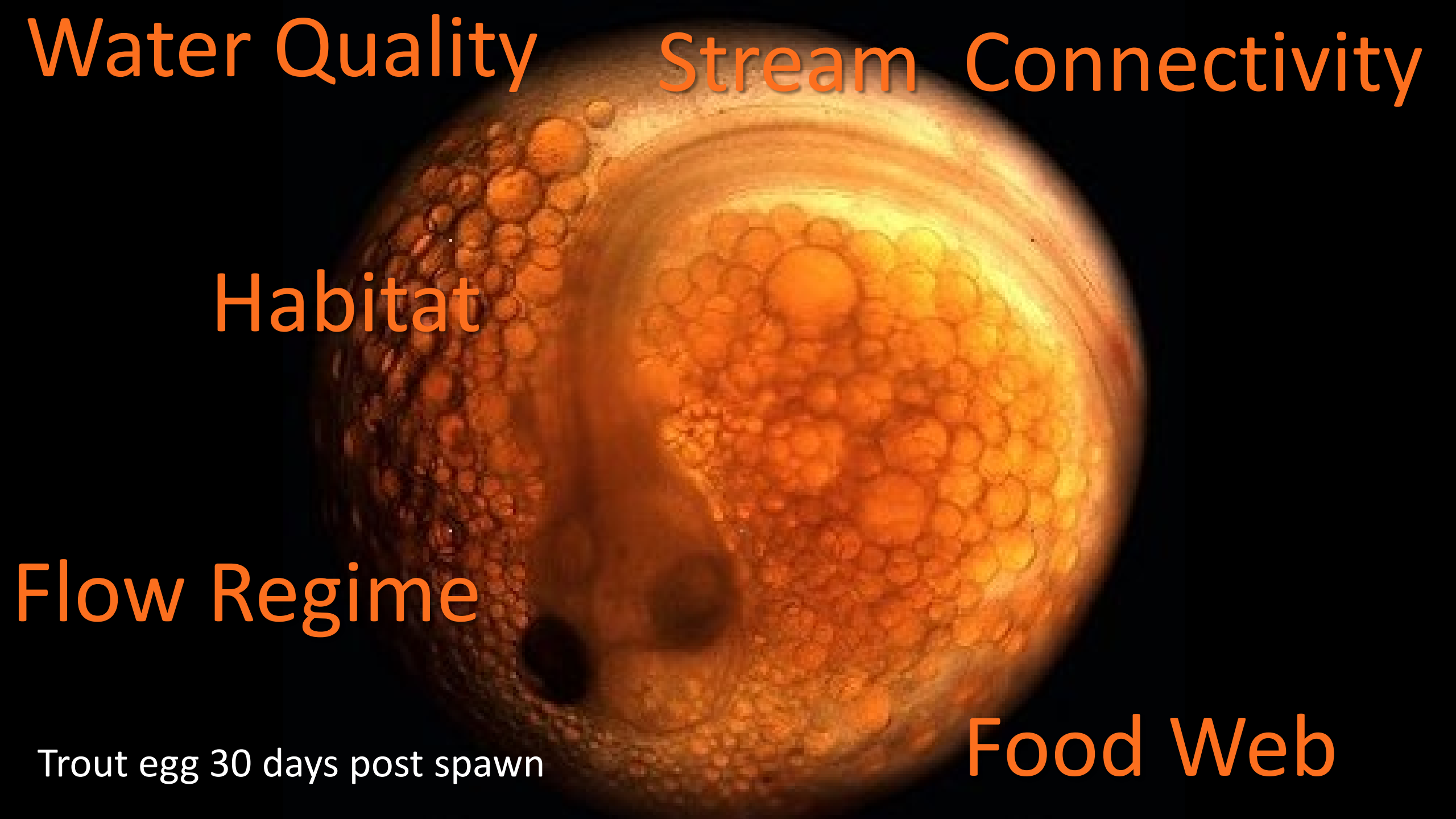
EMAIL:
Brodzeller.James@danecounty.gov

WEBSITE:
www.lwrd.danecounty.gov

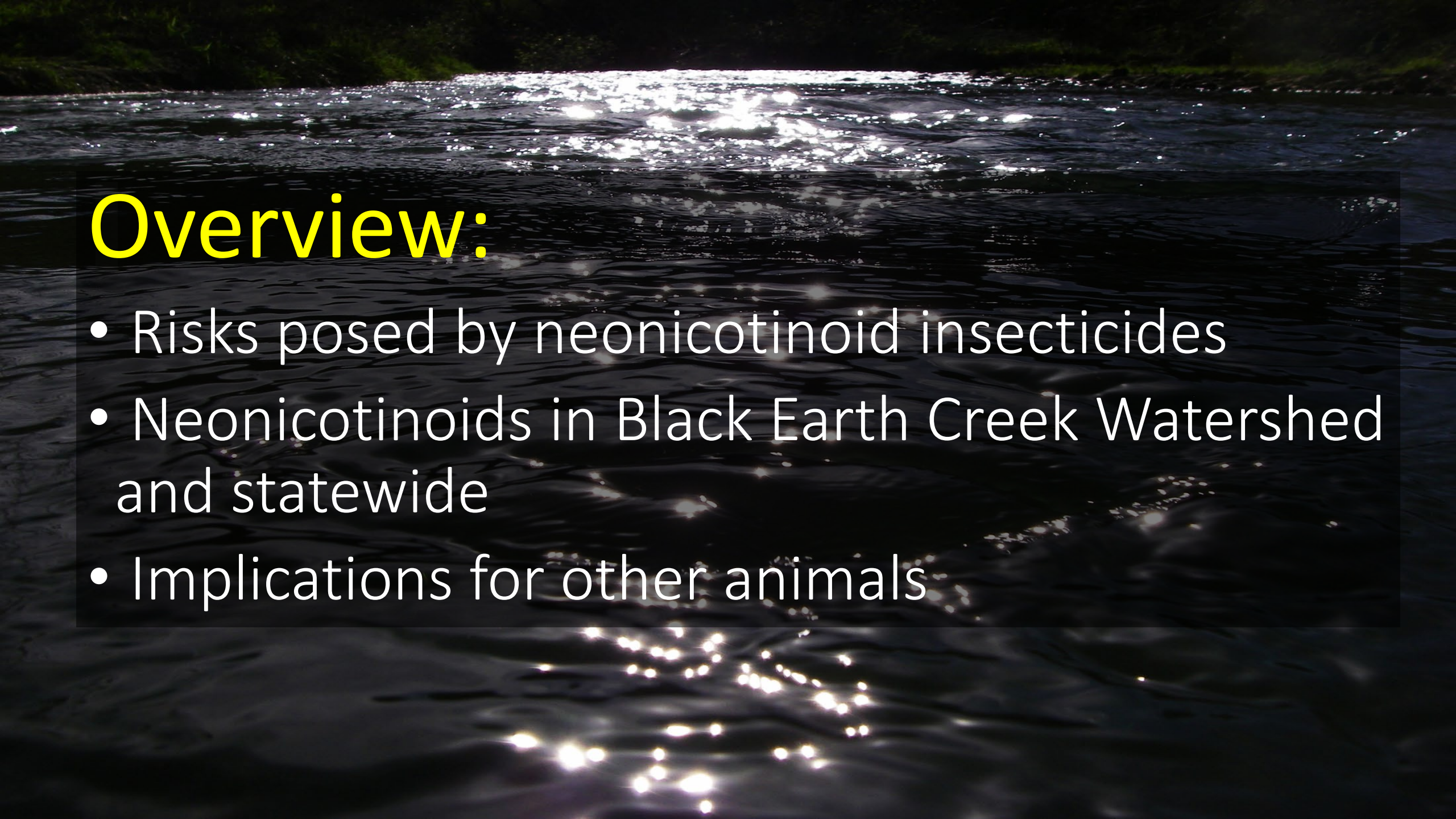
Join us!

flickr YouTube


Water Quality
Stream Connectivity
Habitat
Flow Regime
Food Web
Trout egg 30 days post spawn

Risks Neonicotinoids Pose to the Black Earth Creek Watershed

Mike Miller
Wisconsin's Department of Natural Resources

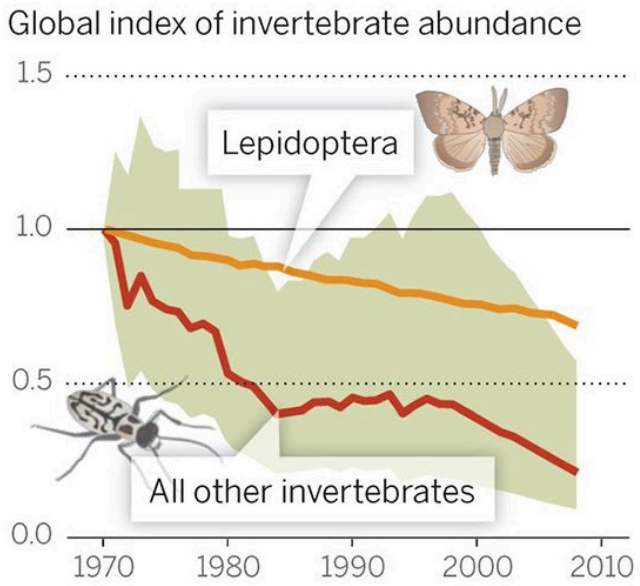


Overview:

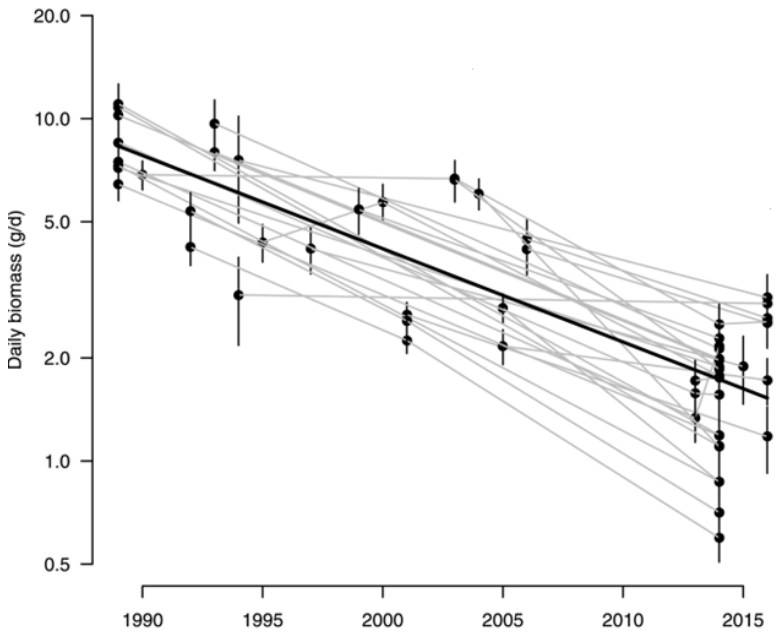
- Risks posed by neonicotinoid insecticides
- Neonicotinoids in Black Earth Creek Watershed and statewide
- Implications for other animals

The Problem:

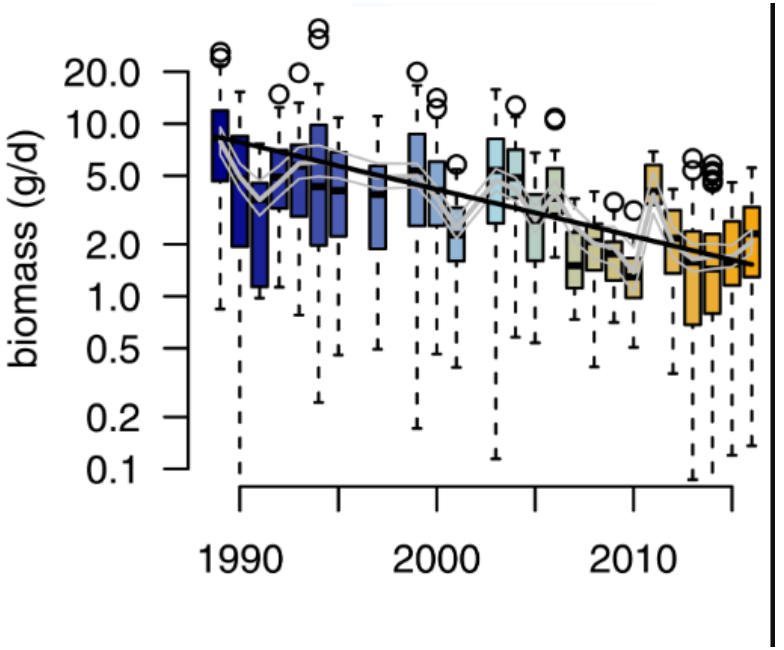
GLOBAL INSECT POPULATIONS ARE IN DECLINE! …AND THEY ARE <u>REALLY</u> IMPORTANT FOR THE HEALTH OF OUR PLANET!!



45% decline in invert populations
Past 40 years (452 species)
Dirzo 2014



5% annual decline in flying insect biomass in Germany
Hallman et al. 2017

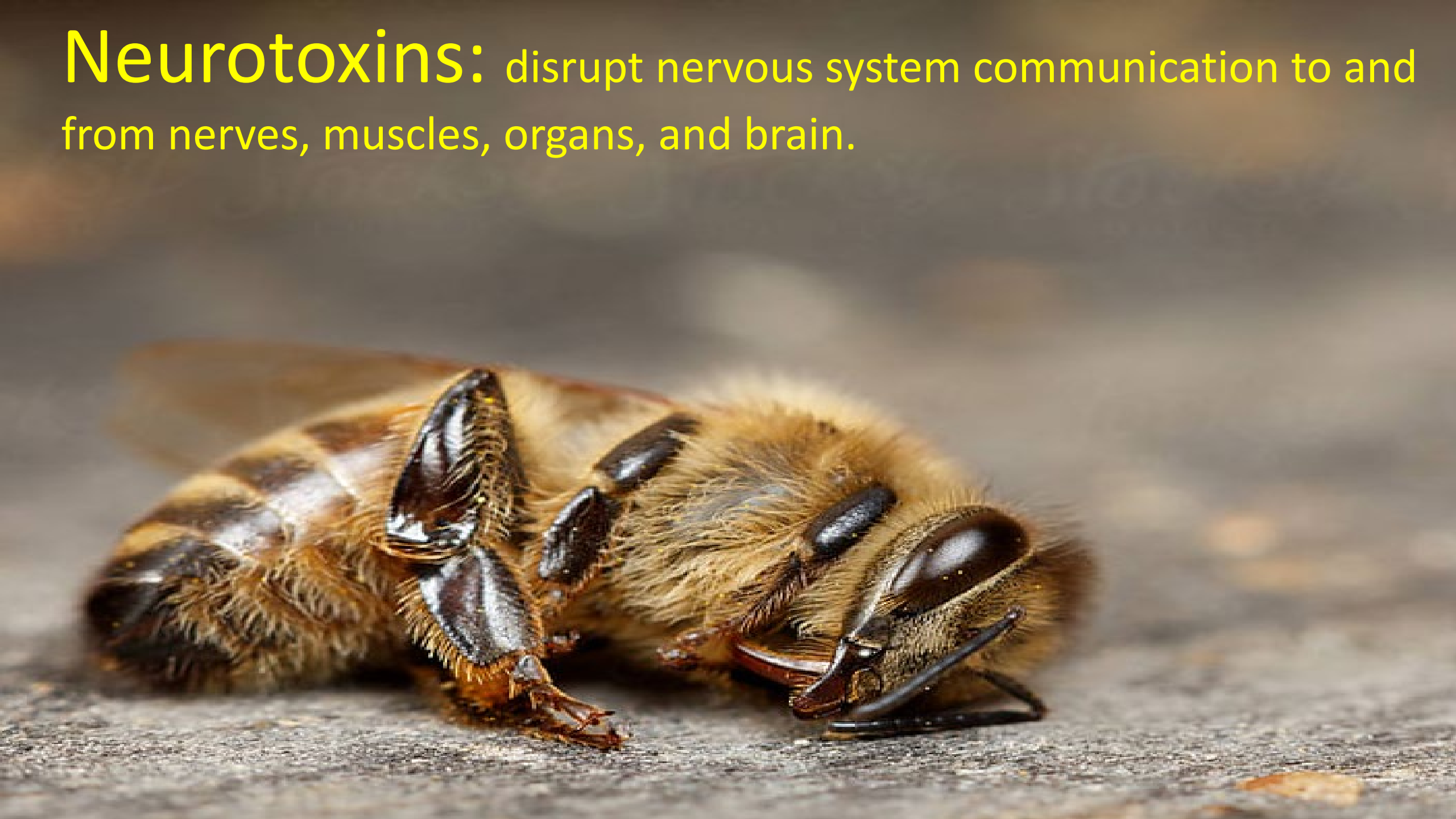


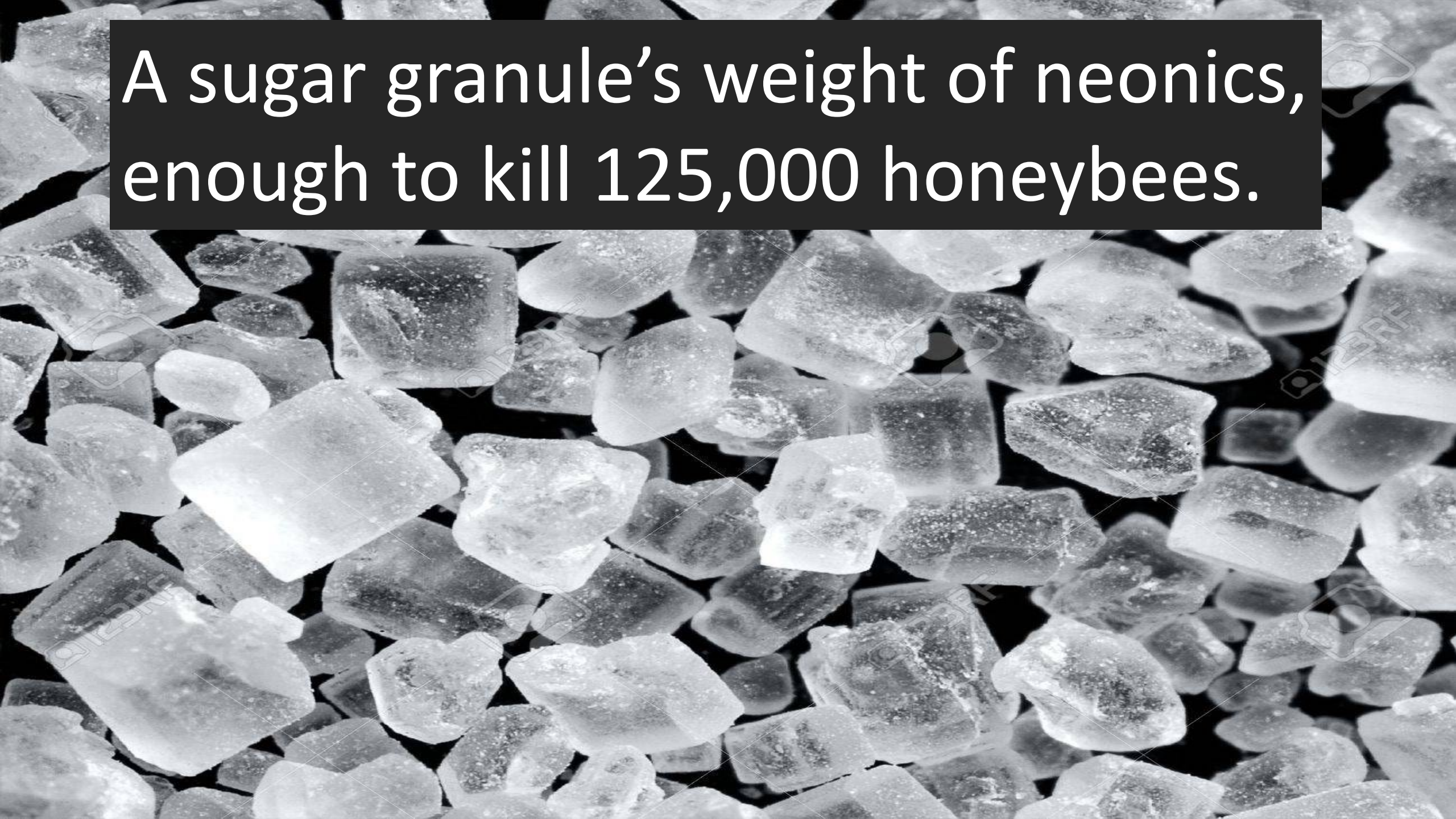
Summarization of multiple global studies
Sanchez-Bayo and Wyckhuys 2019

Neonicotinoid insecticides: synthetic versions of nicotine compounds produced by Solanaceae plants (e.g. tobacco, tomatoes, potatoes) to kill insect pests.

Aphids feeding

Neurotoxins: disrupt nervous system communication to and from nerves, muscles, organs, and brain.




A sugar granule’s weight of neonics, enough to kill 125,000 honeybees.

Neonicotinoids are the most widely used insecticide in Midwest, U.S., and globally

Primary Applications:

- Seed dressing (~ 90% of use in Midwest)
- Foliar sprays
- Granulated
- Root drenches
- Baits
- Topical

500+ different products containing neonics labeled for use in Wisconsin

Neonic Properties:

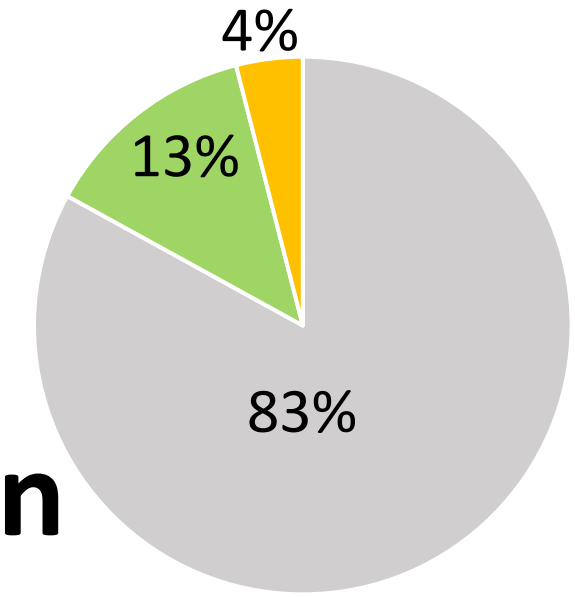
- Water soluble
- Mobile in environment
- Long - lived (7 – 6000 day ½ lives)
- > 90% washes off crop seeds and not taken up by the crop plants

Benefits of Neonic Use to Grain Producers*

Comparisons of **crop yields** when using neonic-treated versus untreated seeds

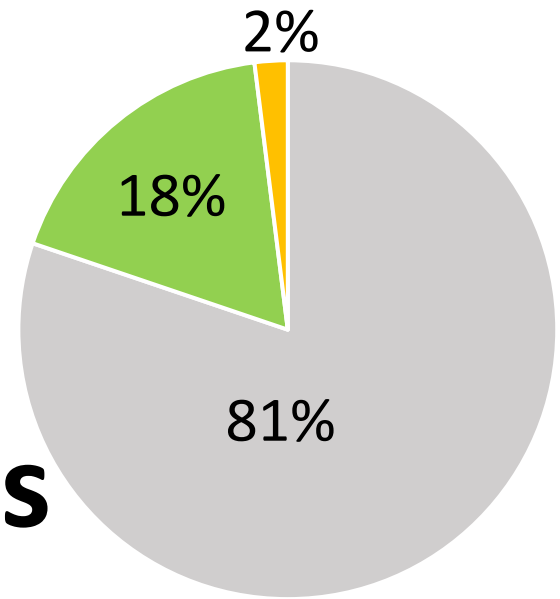
- Yield Increase
- Yield Decrease
- No Change

Corn



331 Field Trials:
15 States, 2 Provinces

Soybeans

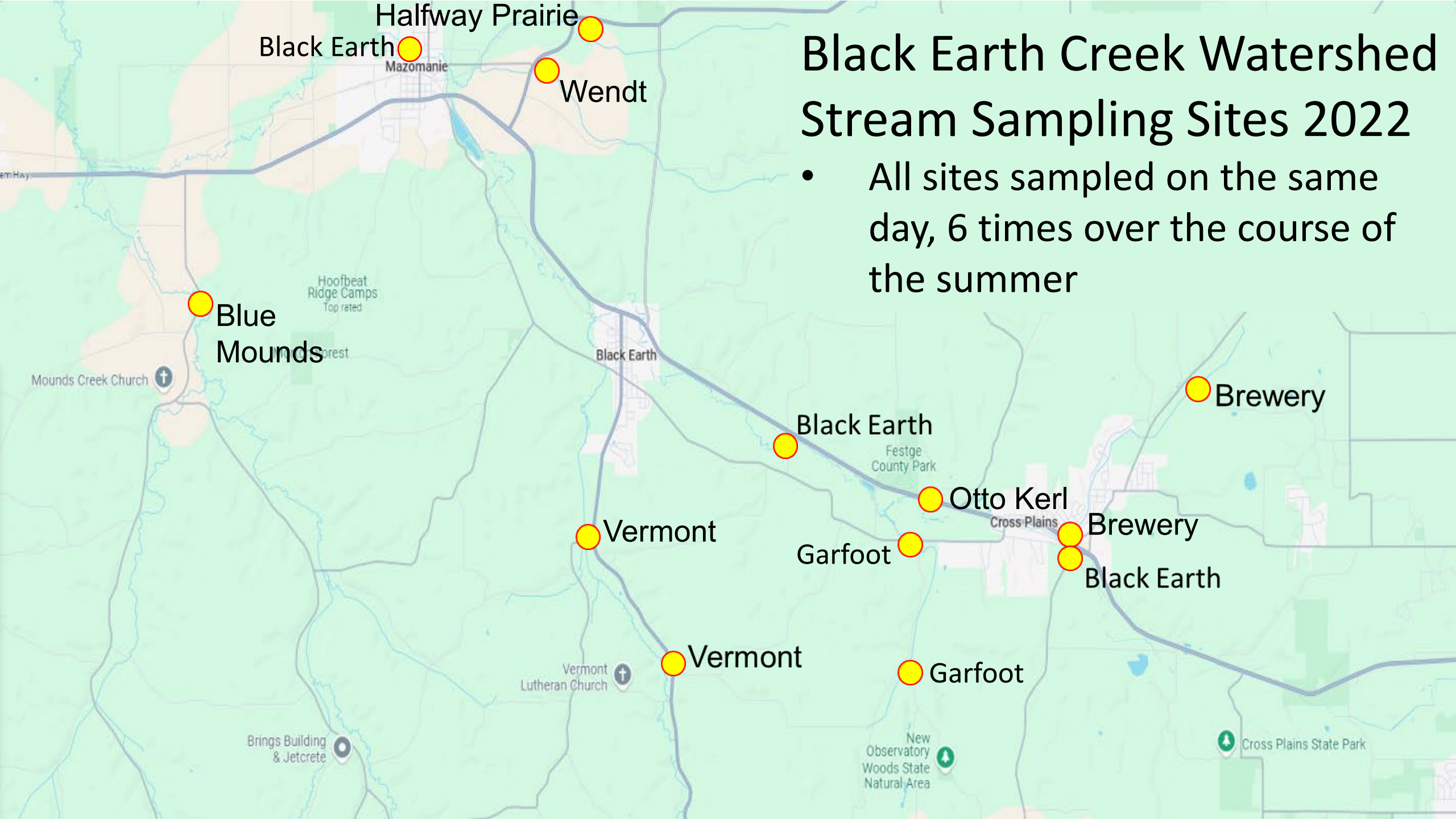


347 Field Trials:
22 States, 2 Provinces

*UW-Madison, Mourtzinis et al. 2019
*Cornell Univ., Grout et al. 2020

Overview:

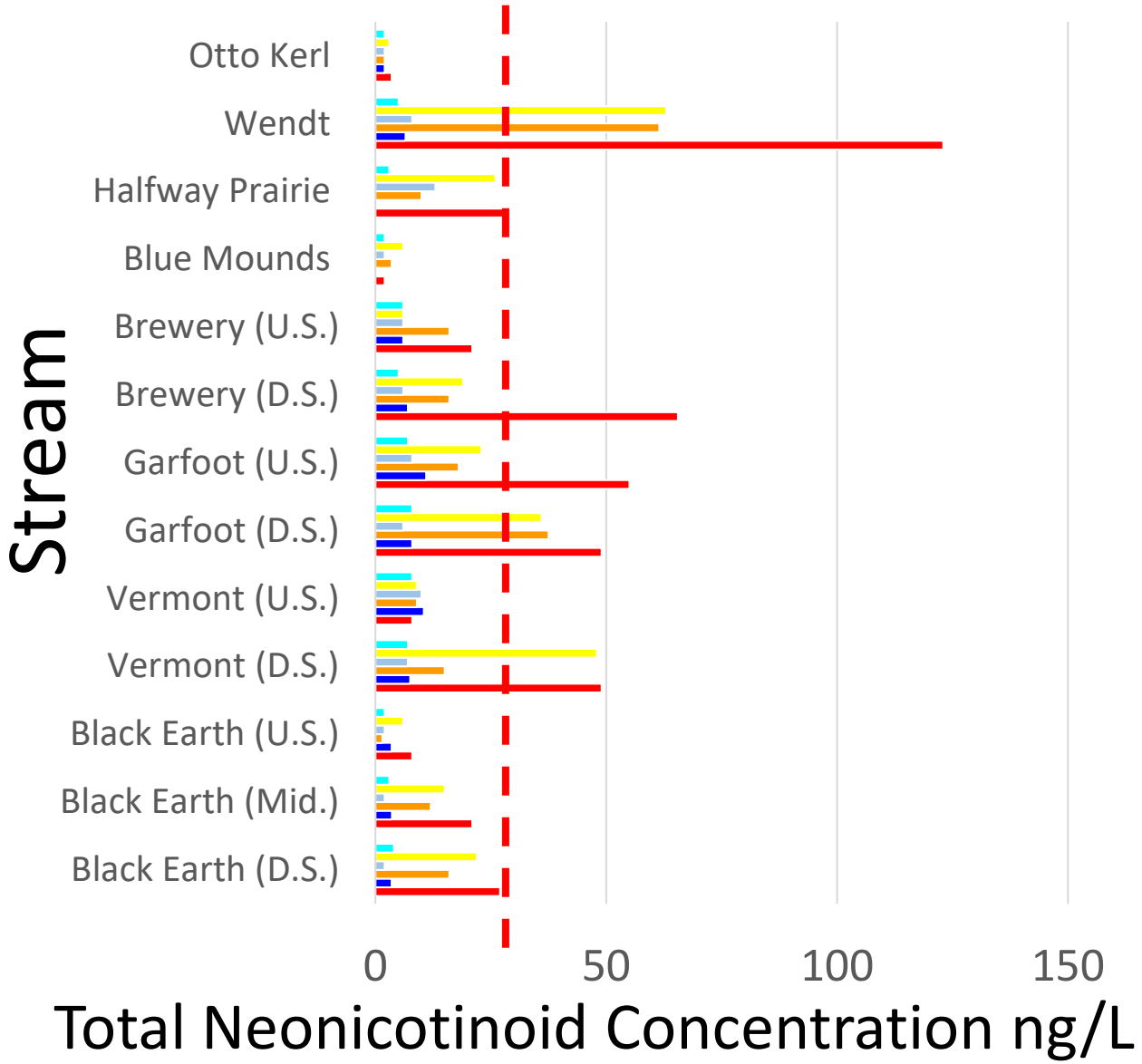
- Risks Neonicotinoids Pose
- Neonics in Black Earth Creek Watershed
- Statewide Stream Survey Findings



Black Earth Creek Watershed Stream Sampling Sites 2022

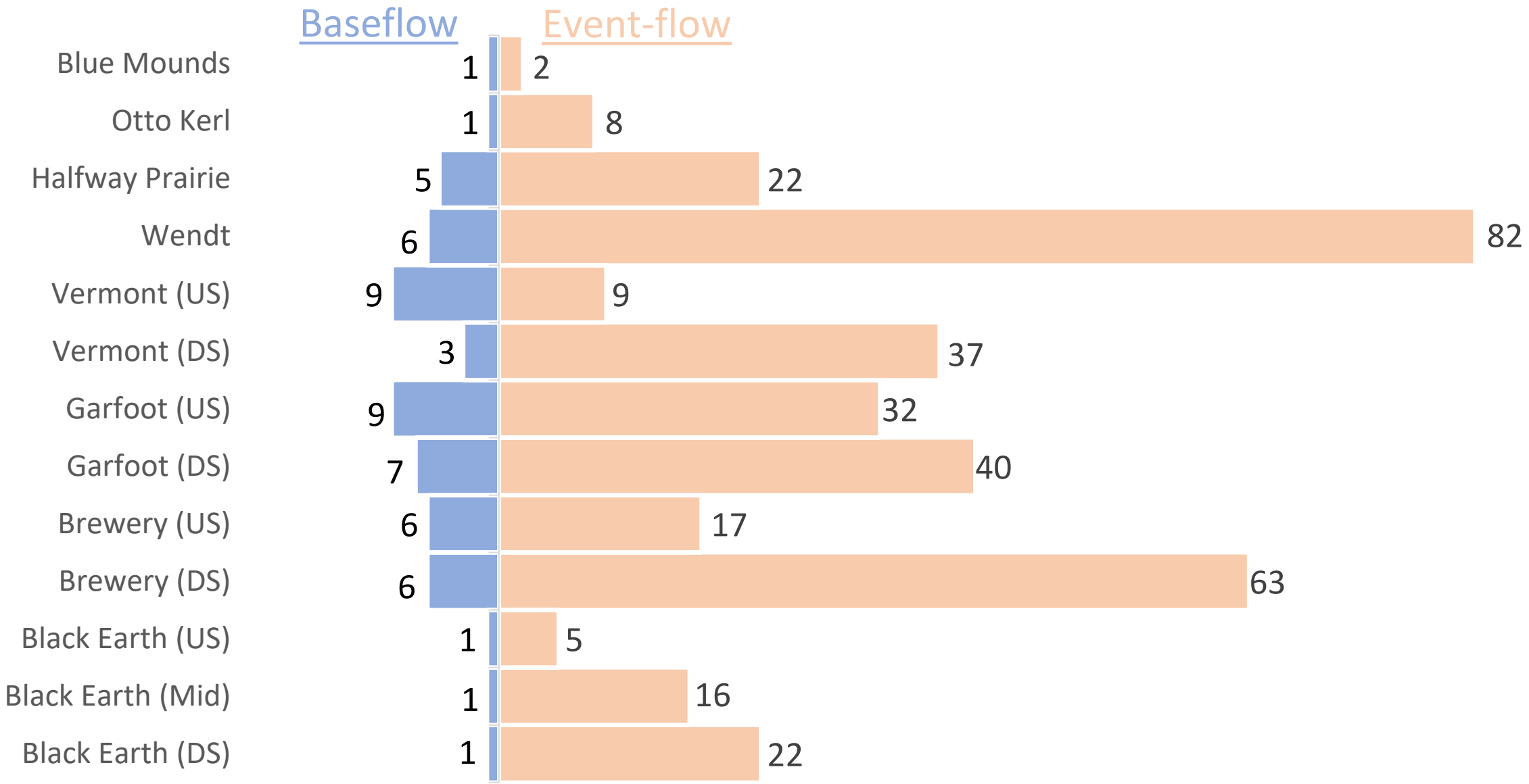
- All sites sampled on the same day, 6 times over the course of the summer

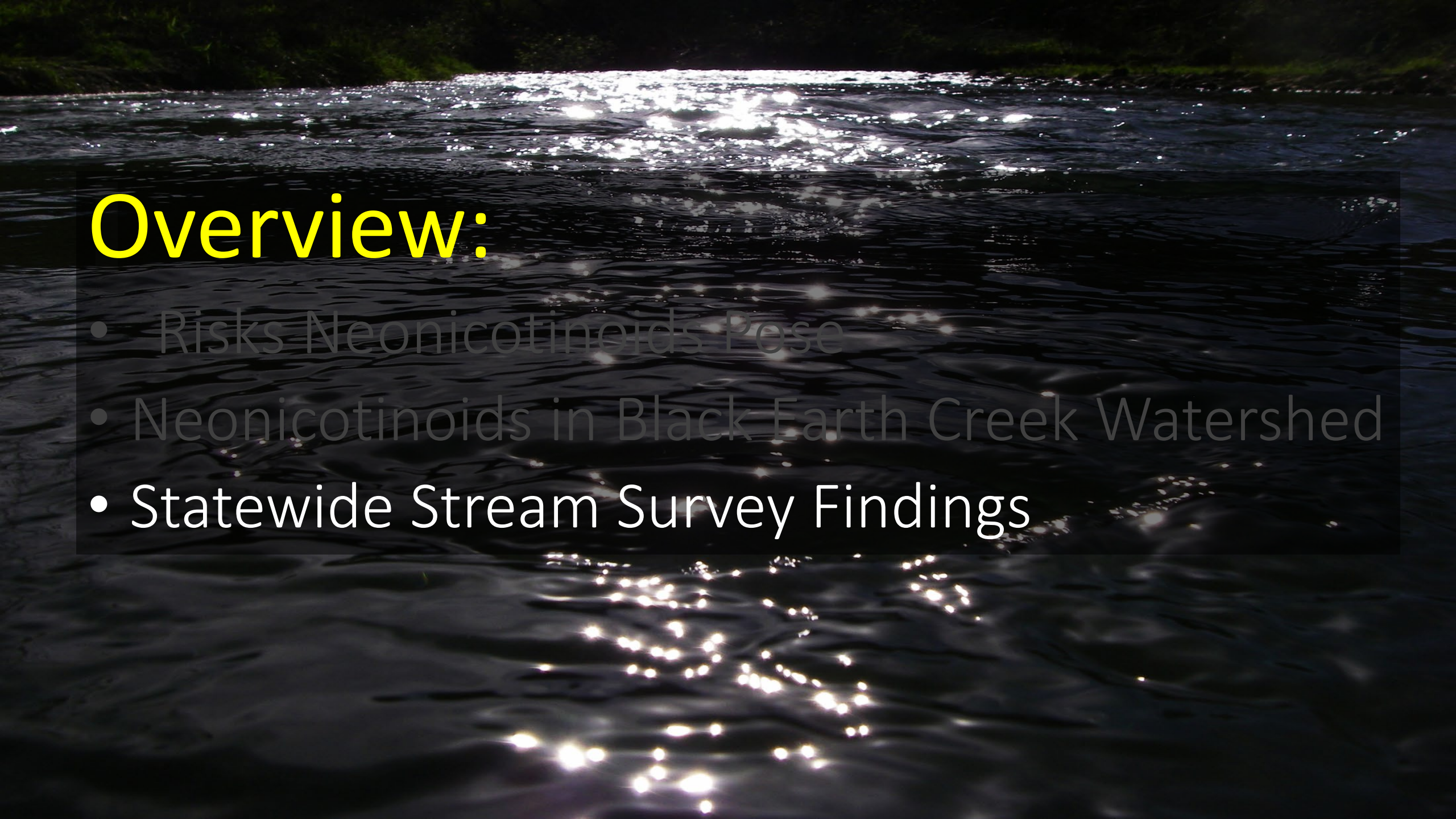
Total neonic concentrations at each site visited bi-weekly May – August 2022 (n = 6)



Threshold for chronic toxicity
35 ng/L (Morrissey et al. 2015)

Average Total Neonicotinoid Concentrations (ng/L) in Black Earth Creek Watershed Streams During Baseflow and Event-flow Conditions





Overview:

- Risks Neonicotinoids Pose
- Neonicotinoids in Black Earth Creek Watershed
- Statewide Stream Survey Findings

Pesticides and Transformation Compounds Found in Wisconsin Streams and Rivers 2022

Neonicotinoids

Found at every sample site in state

Acetachlor
Alachlor
Metolachlor
Metalaxyl
Tetrhydrophthalimide
Aldrin
Dimethachlor
Atrazine
Propachlor
Procymidone
Clothianidin
Diphenylamine

Azoxystrobin
Biphenyl
Sulfentrazone
Aldicarb sulfoximide
Bifenthrin
Chlorantraniliprole
Terbutylazine
Meviphos
Imidacloprid
Flutolanil
Terbutryn
Thiabendazole
Transfluthrin
Propiconazole
Boscalid
Prothioconazole
Promenton

Flutriafol
Halofenozide
Metribuzin
Fenarimol
Flusilazole
Penconazole
Mesotrione
Tebuconazole
Thiamethoxam
BHC, delta-
Tetraconazole
Cyromazine
Paclobutrazol
Aminacarb
Cyproconazole
Pymetrozine
Linuron
Tetrachloroanaline
2,3,5,6-Ethiprole
Thiofanox
Tricyclozole
Dicrotophos
Etaconazole
Flonicamid
Mycloburtanil
Propamocarb
Metconazole
Picoxystrobin

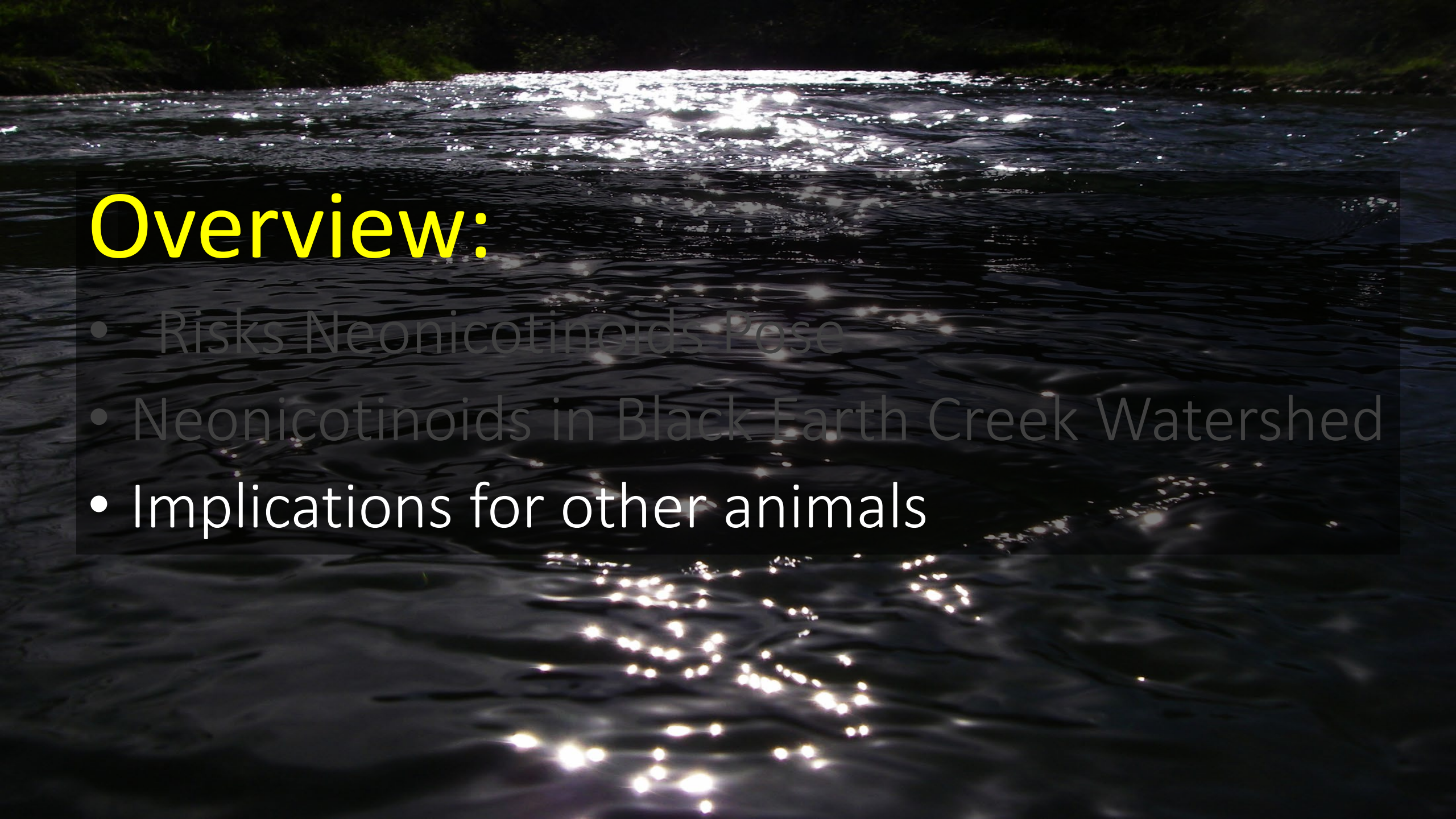
Norflurazon
Fluoxastrobin
Dimethomorph
Fenhexamid
Methooxyfenozide
Bromuconazole
Nuarimol
Tebufenozide
Triadimefon
Terbacil
Benalaxyl
Diclobutrazol
Dimoxystrobin
Epoxiconazole
Flufenacet
Hexaconazole
Mepronil
Pirimicarb
Tebuthiuron
Mandipropamid
Mefenacet
Triticonazole
Prometryne
Propoxur
Pentachlorobenzene
Acephate
Mepanipyrim
Methiocarb
Methomyl

Methoprotryne
Siduron
Monocrotophos
Cymoxanil
Iprovalicarb
Simetryn
Difenoconazole
Chloroxuron
Cycluron
Forchlorfenuron
Furalaxyl
Isoproturon
Fenuron
Metobromuron
Oxadixyl
Piperonyl butoxide
Trifloxystrobin
Acetamiprid
Clofentezine
Ethirimol

Phenmediphama
Zoximide
Carfentrazone ethyl
Aldicarb sulfone
Bifenazate
Bitertanol
Carbofuran
Chlorotoluron
Clethodim
Diethofencarb
Dimethoate
Diuron
Fluometuron
Fuberidazole

Methabenzthiazuron
Methamidophos
Monolinuron
Nitenpyram
Propham
Spirotetramat
Teflubenzuron
Thiobencarb

- Pesticides found in at all sites including forested north
- 9 – 84 compounds per site
- Median number of 21 compounds per site



Overview:

- Risks Neonicotinoids Pose
- Neonicotinoids in Black Earth Creek Watershed
- Implications for other animals

Aquatic Insects, food for:

- Fish
- Frogs,
- Birds,
- Bats,
- Turtles
- Snakes
- Salamanders,
- Other insects,
- Other invertebrates,
- Mammals (large and small),
- List goes on…

Jeninga et al. 2023. (Fathead Minnow Larvae)

- 160 ng/L Exposure to Clothianidin resulted in 10% Mortality

U.S. Bird Population Declines

- Estimated 25% decline (3 billion birds) since 1970
- 304 species where insects are essential
- 64 species where insects are not essential

800,000 Private Wells in WI

40% (of 380 tested) had detectable concentrations of pesticides

½ of compounds detected not regulated in groundwater by State or Federal government

Neonic Effects on Deer Berheim et al. 2019

- Decreased jawbone length
- Decreased body and organ weights: (liver, spleen, genitals)
- Increased fawn mortality (still births)
- Decreased thyroxine levels
- Lethargy

Human Health

- Half of Americans exposed to neonics on any given day. (CDC, 2019)

Study of 171 pregnant women across U.S., >95%, had neonics in their bodies (Buckley 2022)

Exposure linked to potential:

- Birth defects in heart and brain
- Autism-like symptoms
- Cognitive impairment

Review:

- Extensive use, toxicity, mobility, and persistence of neonics pose significant environmental risks.
- Cursory 2022 assessment of neonics in Black Earth Creek Watershed and streams and rivers statewide suggest impacts to aquatic life.
- Pesticide risks are not limited to aquatic life.


Questions?
Michaela.miller@wisconsin.gov

Black Earth Creek – Fish Surveys

- All trout streams in BEC watershed monitored every 6 years
- Trout trend sites on BEC
  - Sample annually at the same locations
    - Analyze size structure, catch rates, reproduction, year class strength, and body condition
  - Locations:
    - Zander Park
    - South Valley Road
    - Park Street

Photo Credit: Roberta Herschleb, Groundswell Conservancy

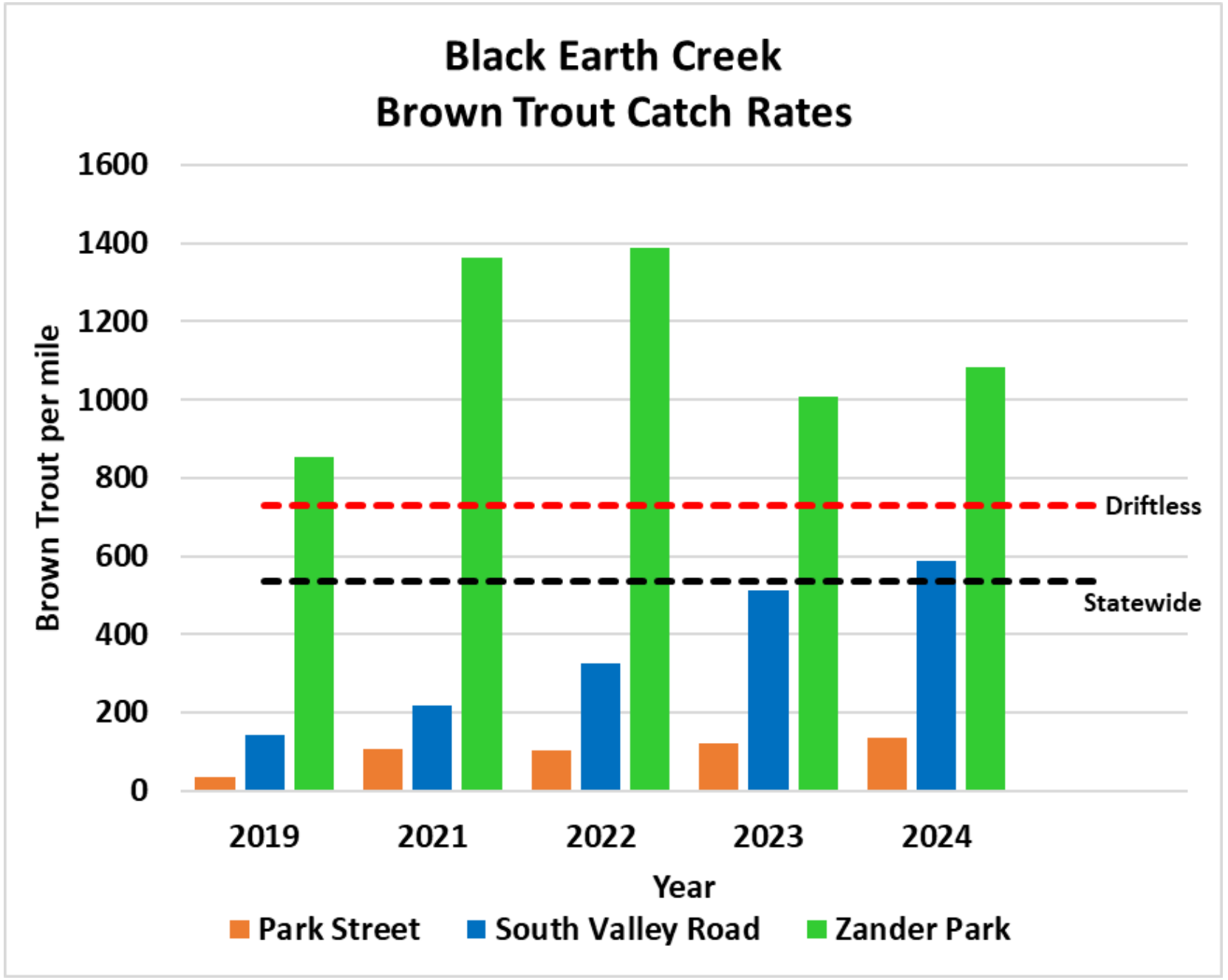
Black Earth Creek – Trout Abundances

5-year average catch rates (2019-2024)

- **Zander Park:** 1140 trout per mile
- **South Valley Road:** 357 trout per mile
- **Park Street:** 101 trout per mile

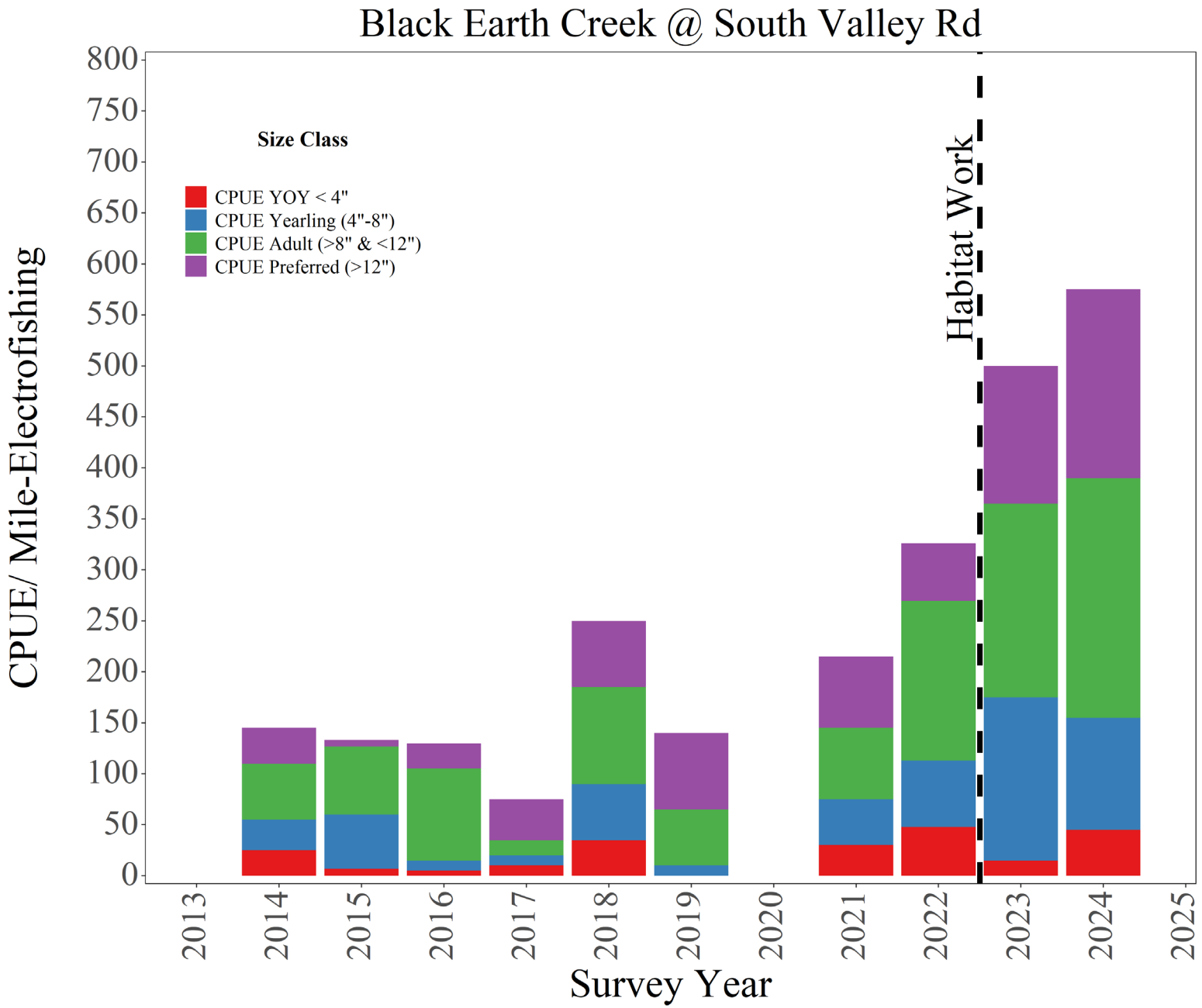
Driftless area (730 trout per mile)

Statewide (537 trout per mile)

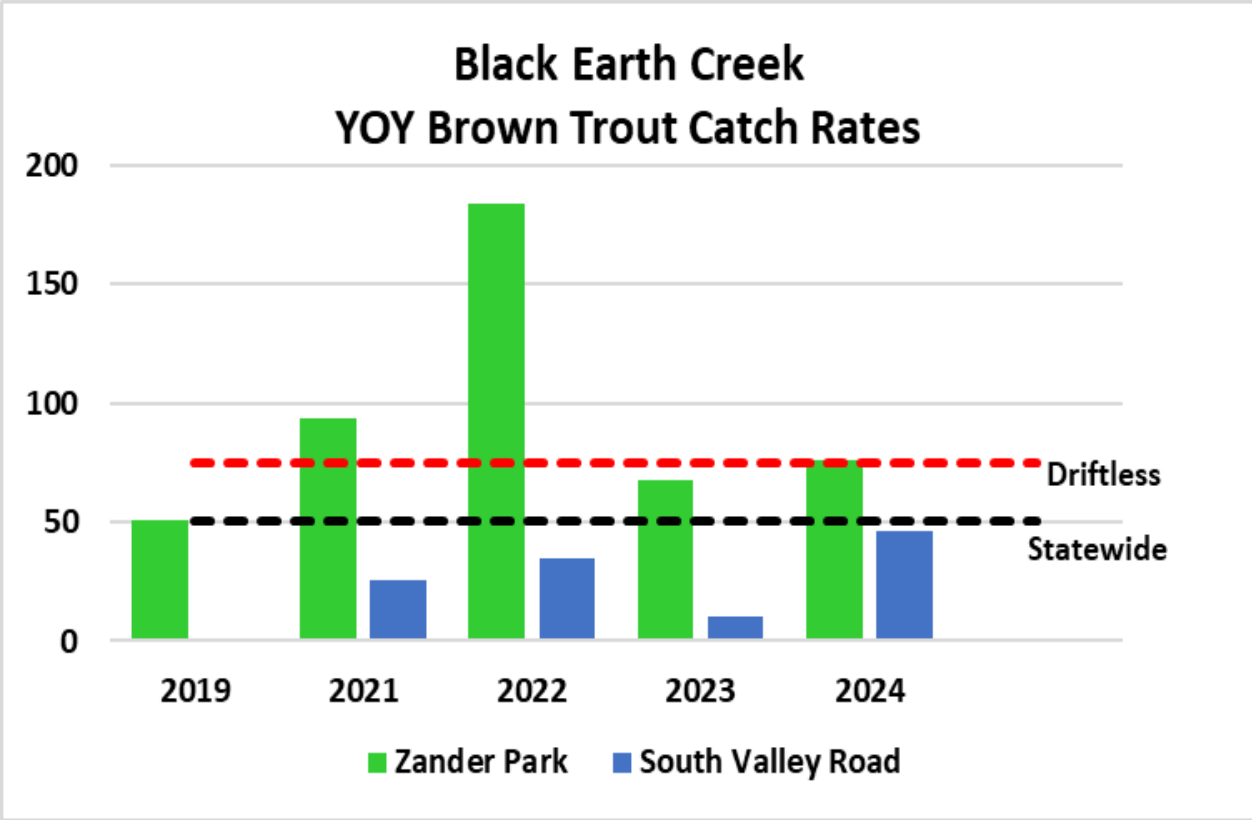

Black Earth Creek
Brown Trout Catch Rates
Brown Trout per mile
1600
1400
1200
1000
800
600
400
200
0
Driftless
Statewide
2019
2021
2022
2023
2024
Year
Park Street
South Valley Road
Zander Park

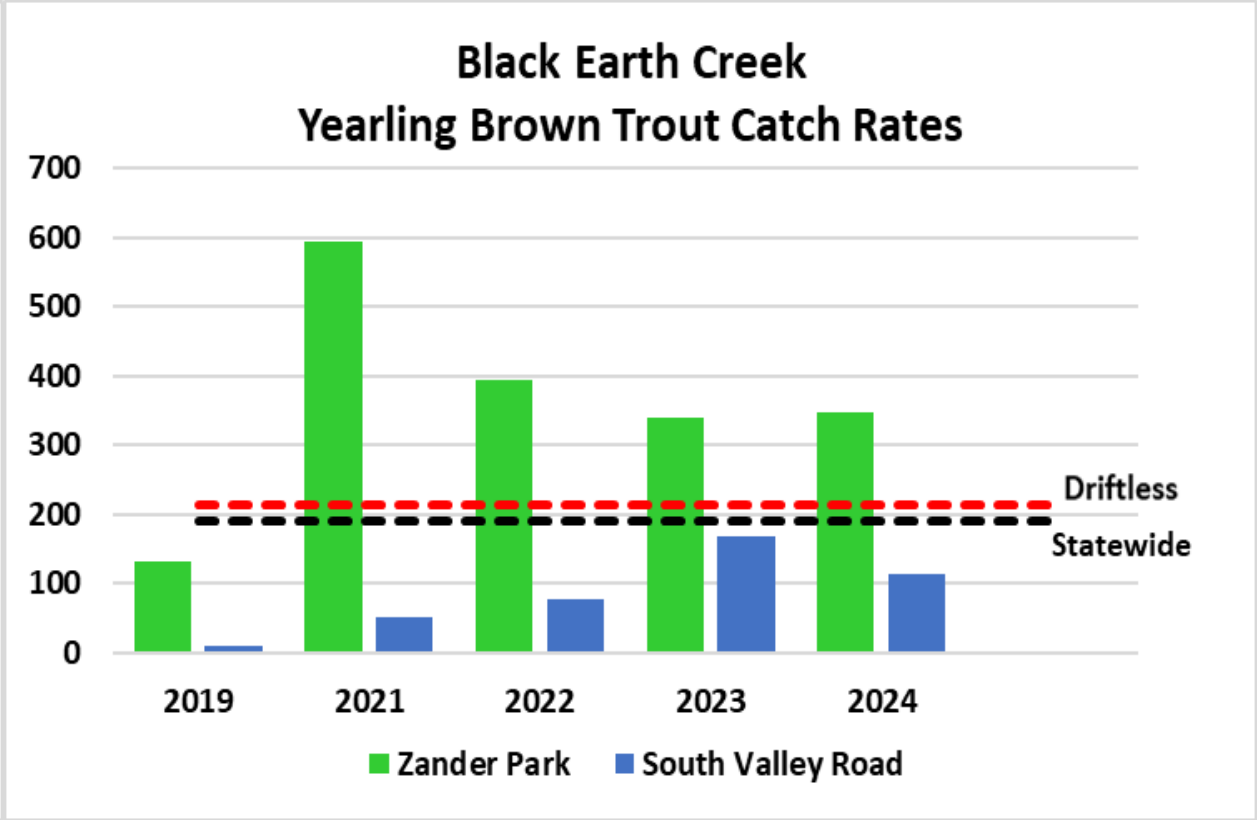
Black Earth Creek - South Valley Road

- Habitat project completed in spring 2023
- Pre-habitat project catch rate: 229 trout per mile
- Post-habitat project catch rate: 549 trout per mile
- 2024 catch rate was highest on record at 587 trout per mile
- Increased numbers for all year classes including YOY and yearlings

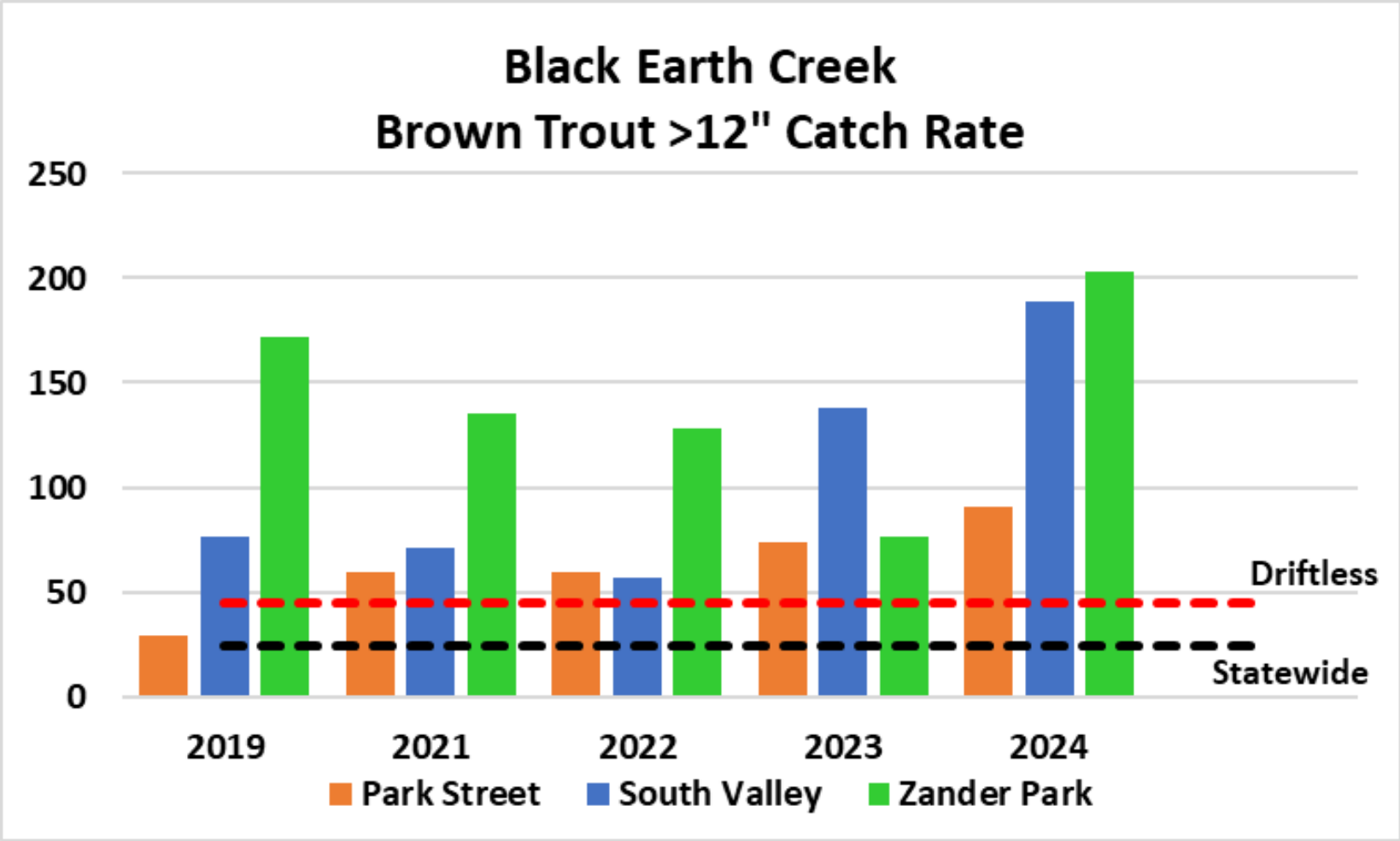

Black Earth Creek @ South Valley Rd
CPUE/ Mile-Electrofishing
Survey Year
Size Class
CPUE YOY < 4"
CPUE Yearling (4"-8")
CPUE Adult (>8" & <12")
CPUE Preferred (>12")
Habitat Work
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025

Black Earth Creek – Reproduction & Recruitment





Black Earth Creek – Trout Size Structure



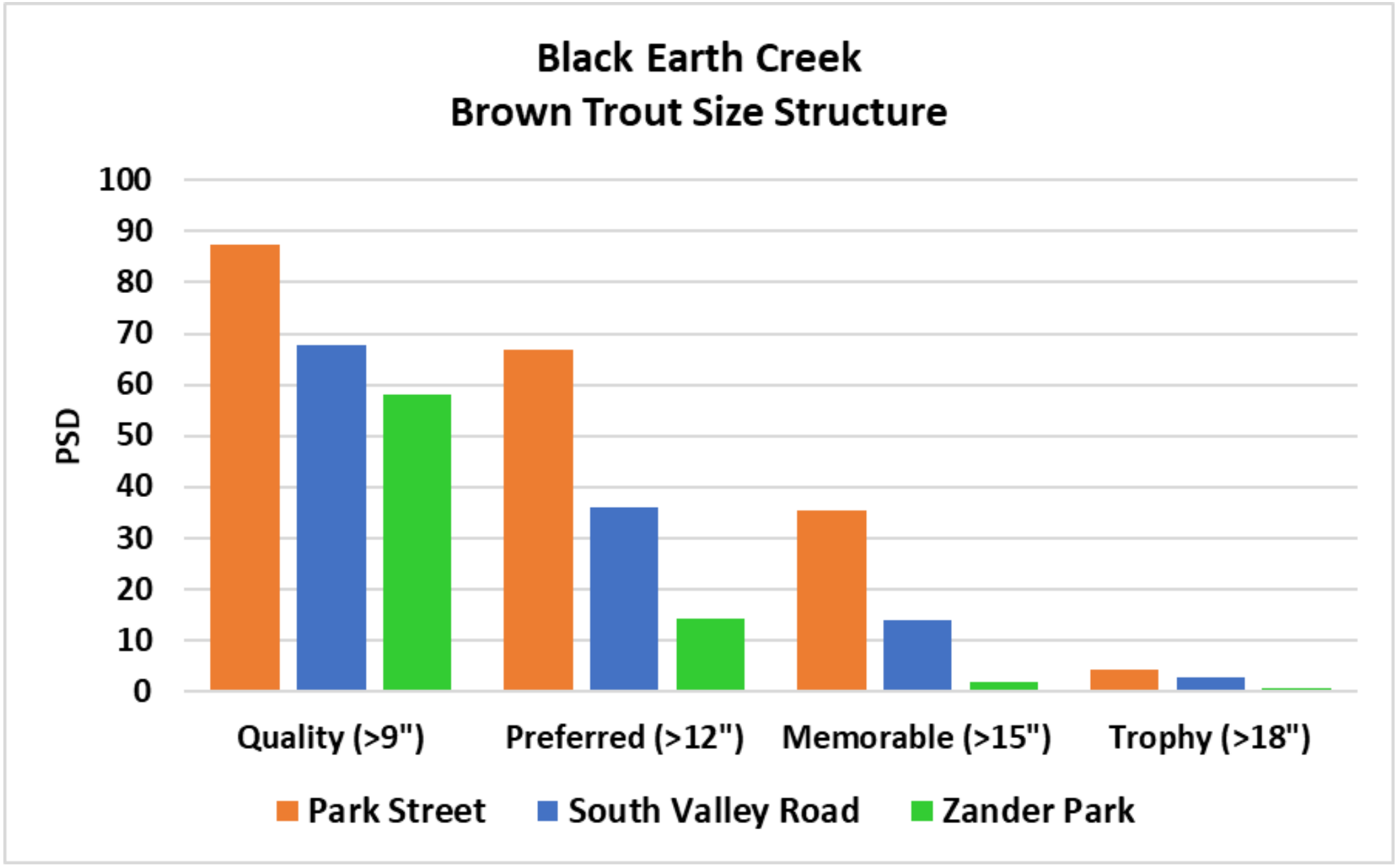
Proportional Size Distribution

South Valley Road

- Memorable Trout (>15”) – 13.8
- Trophy Trout (>18”) – 2.7

Park Street

- Memorable Trout (>15”) – 35.5
- Trophy Trout (>18”) – 4.3


Black Earth Creek
Brown Trout Size Structure
PSD
100
90
80
70
60
50
40
30
20
10
0
Quality (>9")
Preferred (>12")
Memorable (>15")
Trophy (>18")
Park Street
South Valley Road
Zander Park

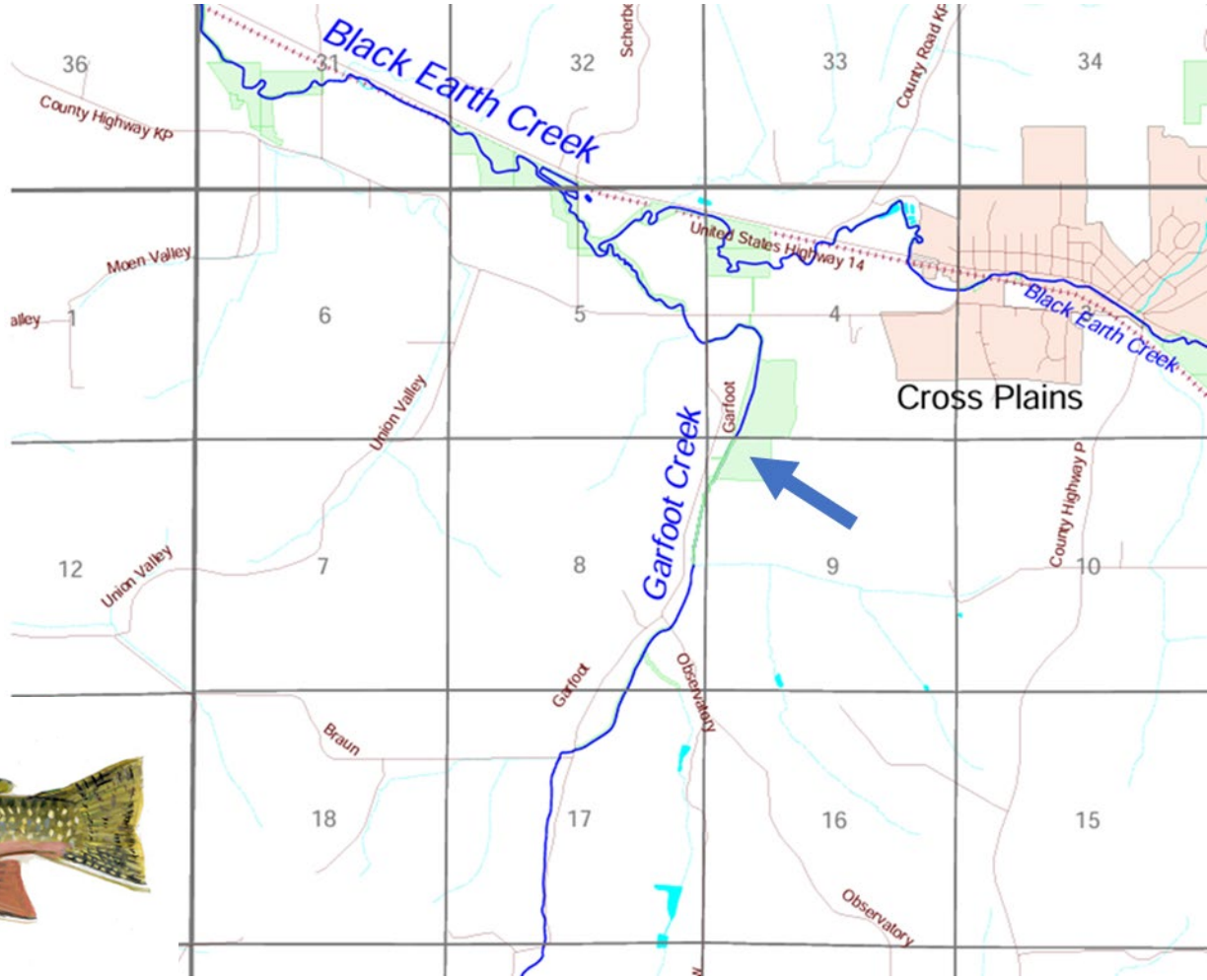
What's Next For BEC Watershed?

Black Earth Creek watershed rotation 2025

- Assess trout populations using electrofishing on streams in the BEC watershed
  - Size structure, abundances, year class strength, reproduction, habitat, water quality
- Sampling Locations
  - Black Earth Creek (11 sites)
  - Garfoot Creek (3 sites)
  - Vermont Creek (3 sites)
  - Brewery Creek (3 sites)
  - Wendt Creek (1 site)
  - Halfway Prairie Creek (1 site)

What's Next For BEC Watershed?

- Streambank easement outreach in winter 2025-2026
- DNR habitat project on Garfoot Creek in 2026/2027
  - 2,700 feet of stream
  - Add habitat features that favor Brook Trout over Brown Trout



CONNECT WITH US

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@WIDNR

@WI_DNR

/WIDNRTV

"WILD WISCONSIN:
OFF THE RECORD"

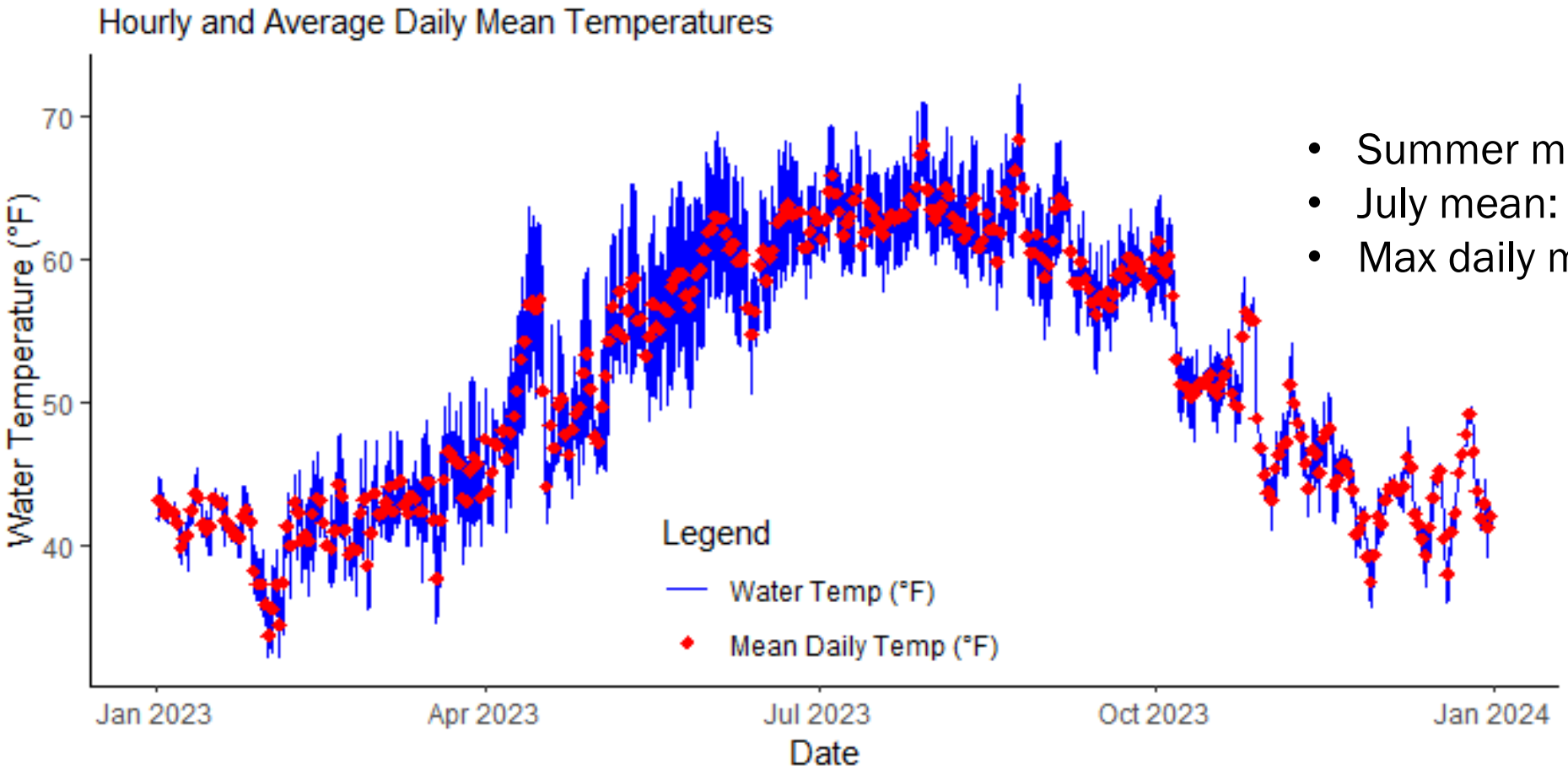
Black Earth Creek Watershed

Kimberly Kuber- WDNR Water Quality Biologist

4/22/2025


How do we assess stream health?

Continuous stream temperature: Black Earth Creek at South Valley Rd



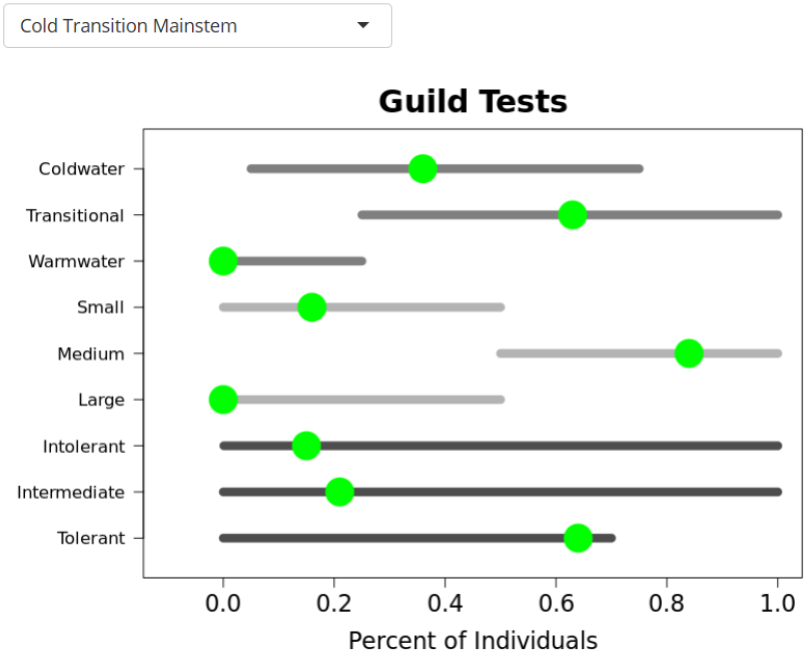
- Summer mean (June-August): 62.5 ^{0}F
- July mean: 63.6 ^{0}F
- Max daily mean: 68.3 ^{0}F

Credit: Marco Scarasso

Fish Index of Biotic Integrity:

BEC at South Valley Road

Species	Count	Thermal Guild	Stream Size Guild	Tolerance Guild
BLUNTNOSE MINNOW	2	Warmwater	Medium	Tolerant
BROWN TROUT	115	Coldwater	Medium	Intermediate
CREEK CHUB	5	Transitional	Small	Tolerant
MOTTLED SCULPIN	92	Coldwater	Small	Intolerant
RAINBOW TROUT	16	Coldwater	Medium	Intermediate
WHITE SUCKER	385	Transitional	Medium	Tolerant



	Metric Value	Metric Score
Number of intolerant fish species	1	10
Number of darter, madtom and sculpin species	1	20
Number of coolwater species	2	10
% tolerant species (% of individuals as tolerant species)	64	10
% as generalist feeding individuals	1	20
	Total Score	70
	Overall Rating	Excellent

Macroinvertebrate Sampling

What are we hoping to learn?

- How macroinvertebrate assemblages change over time
- mIBI and HBI scores

Where have we sampled?

- Samples have been collected throughout the watershed
- Recent samples collected at South Valley

Macroinvertebrate sample results: Black Earth Creek at South Valley Road

Wadeable Macroinvertebrate Index of Biological Integrity (IBI)		
Year	Result	Rating
2021	1.20868	Poor
2022	2.83615	Fair
2023	1.95932	Poor

New Zealand Mud Snails

Characteristics:

- Habitat generalists
- Parthenogenic
- Can survive out of water almost a month
- Anthropogenic methods of spread by river users including fishermen, paddling enthusiasts, etc.

When did they get here?

- First discovered in the US in the 1980's
- Detected in Black Earth Creek at S. Valley Road in 2011
- Currently documented in 16 Wisconsin streams

Potential impacts:

- Detrimental to macroinvertebrate communities in streams in the Western US
- Poor diet item for fish and other wildlife

How do we get rid of them?

- No treatment for NZMS that would be appropriate for natural settings
- Prevention is key! Disinfect gear to prevent the spread

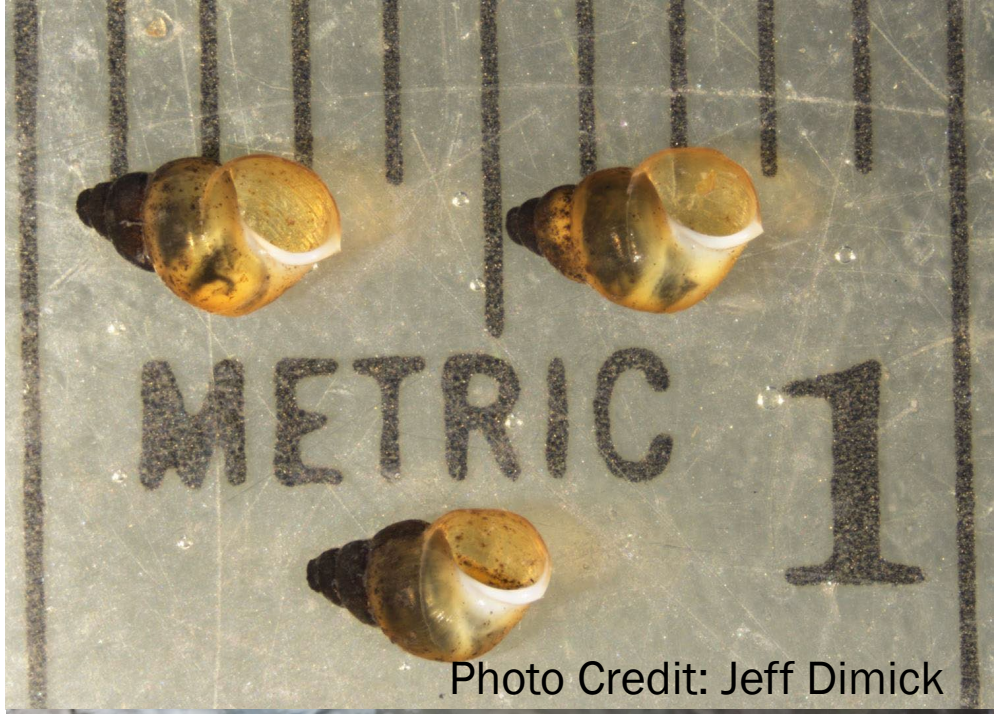
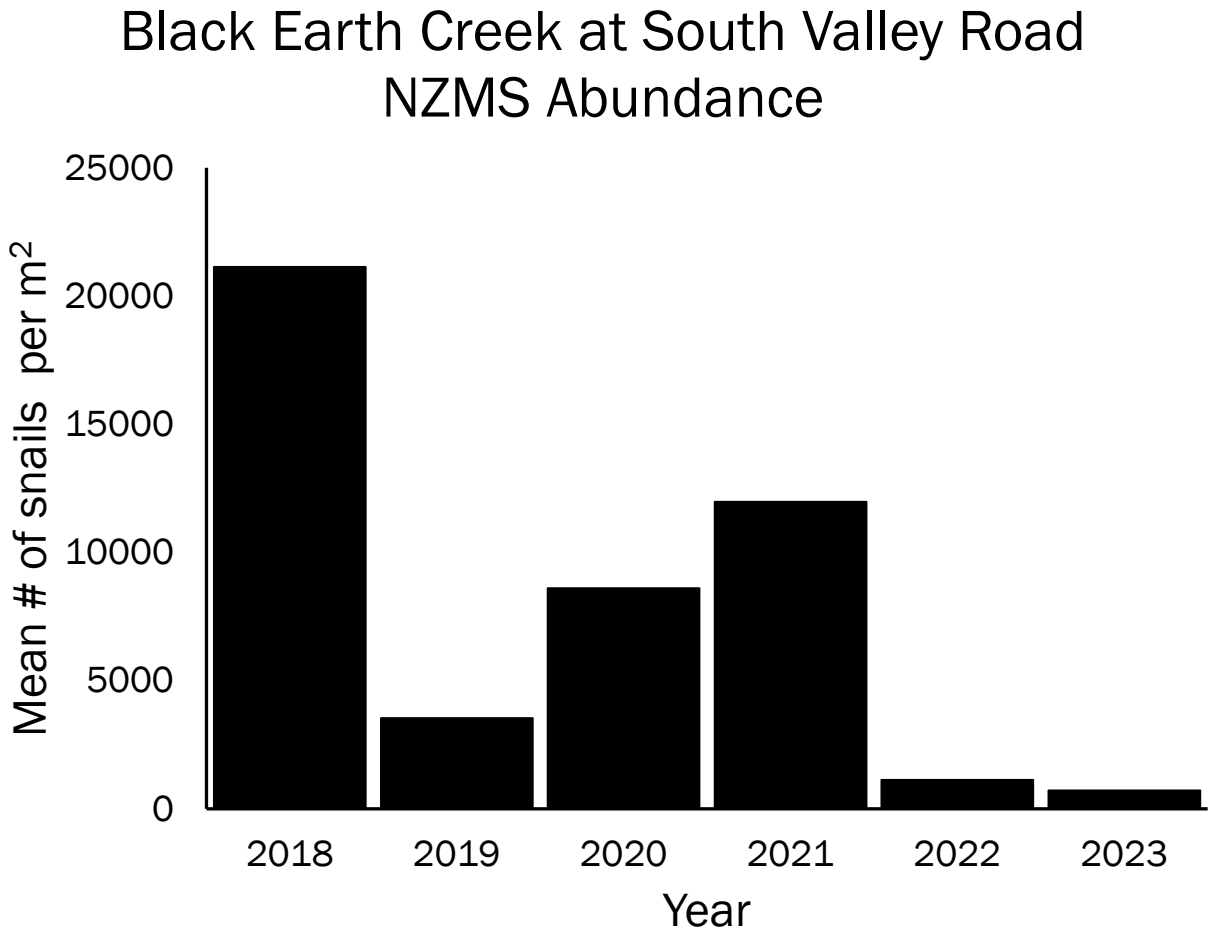
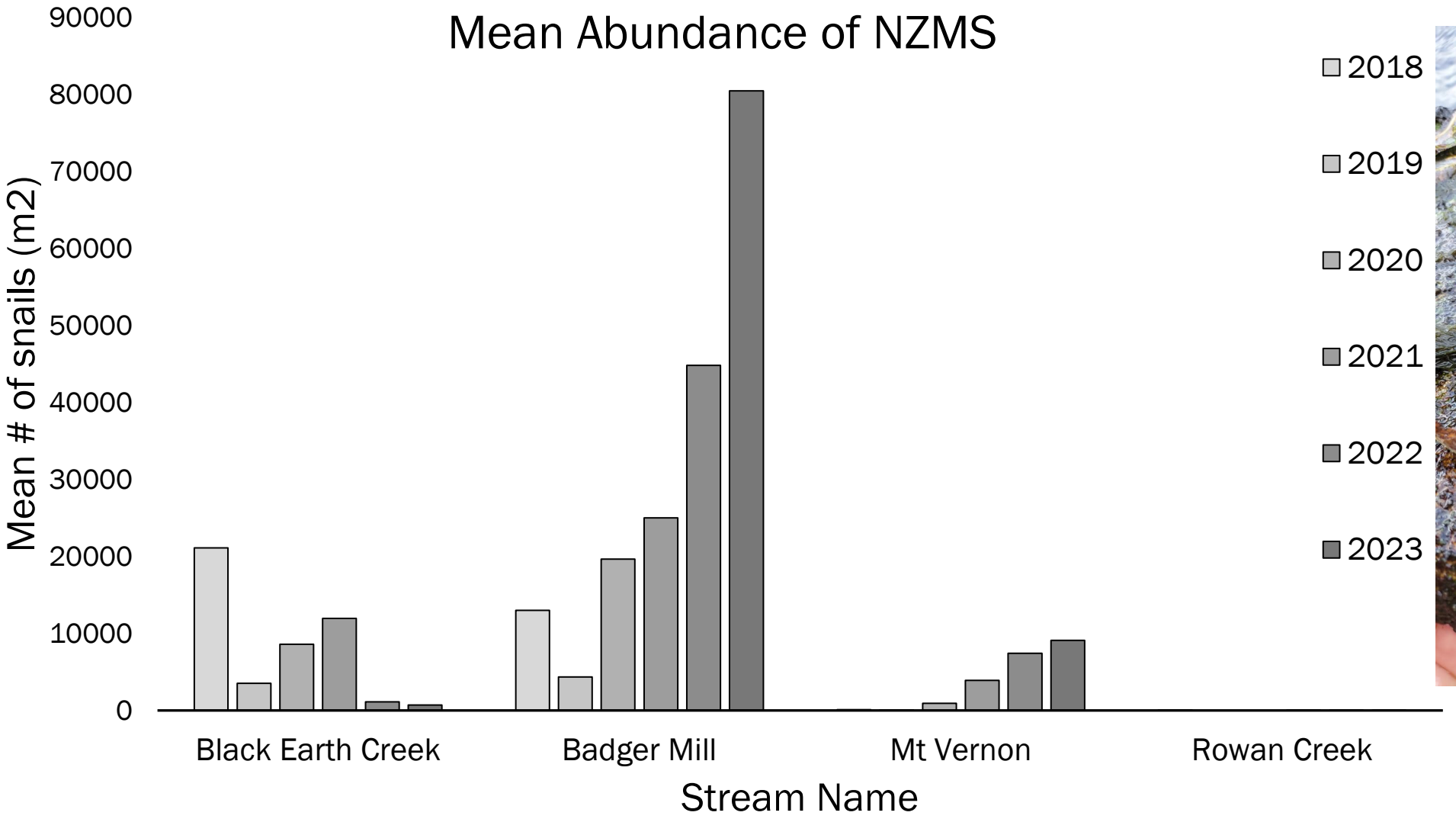


Photo Credit: Jeff Dimick

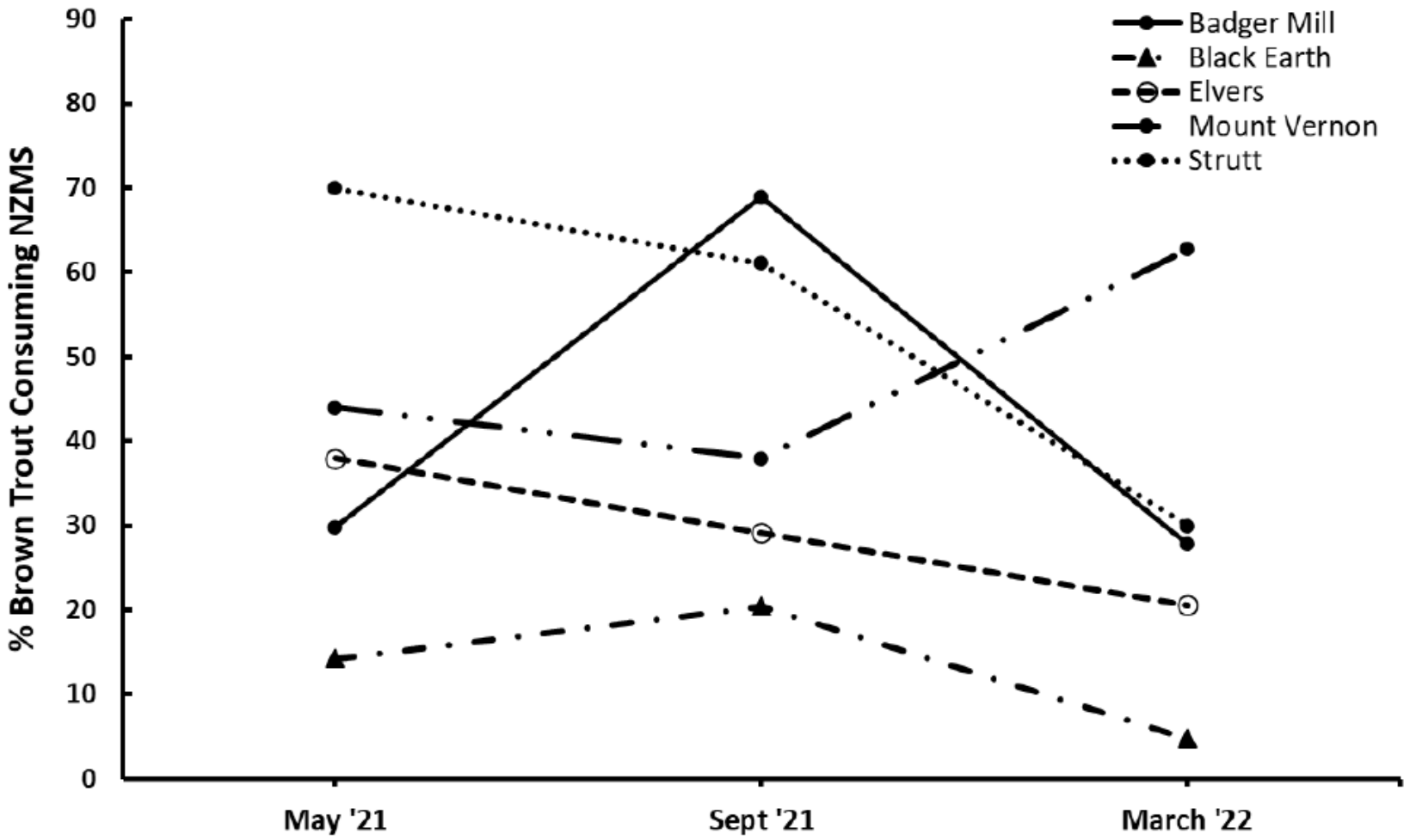
DNR New Zealand Mud Snail Monitoring



DNR New Zealand Mud Snail Monitoring



Additional NZMS Research



Summary

There are many ways to evaluate streams:

- Living organisms
  - Fish
  - Bugs
  - Plants
- Stream temperature
- Water samples

Additional monitoring is often necessary to learn more about invasive species and potential emerging contaminants

Monitoring can be used to identify challenges and opportunities for improvement in streams like BEC

CONNECT WITH US

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/WIDNRTV

"WILD WISCONSIN:
OFF THE RECORD"

Land Protection
in the Black Earth Creek Watershed

GROUNDSWELL CONSERVANCY

Photo credit: Jason Sromovsky

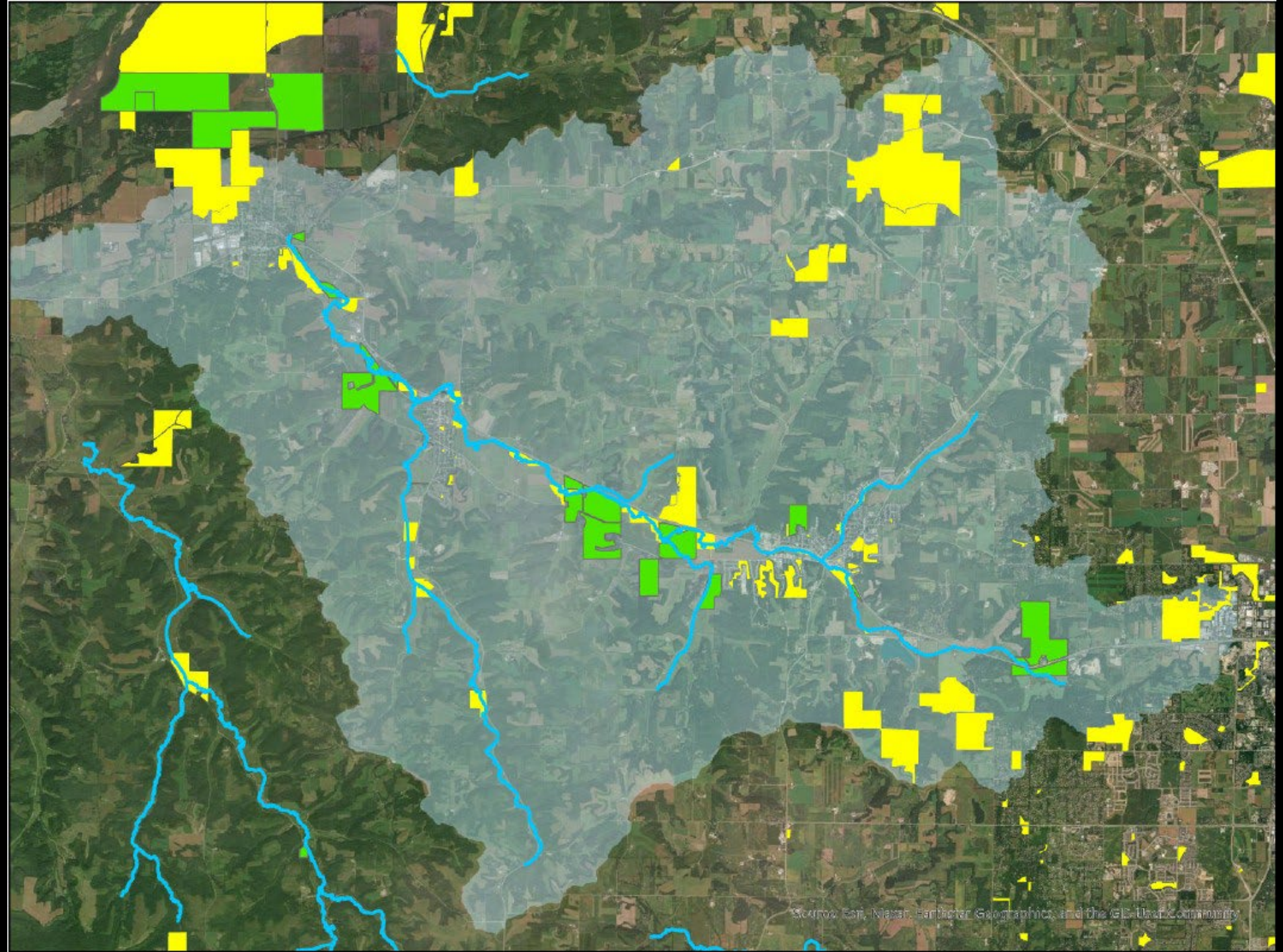
Photo credit: Mario Quintana

Who is Groundswell Conservancy?

- 42-year-old nonprofit (1983)
- Accredited land trust
- +14,000 acres in 9 counties
- +1,200 acres in BEC valley since 2001
- 18 projects in BEC valley since 2001
- 4 more in our pipeline

ACCREDITED LAND TRUST ACCREDITATION COMMISSION

GROUNDSWELL CONSERVANCY


Sources: Esri, Maxar, Earthstar Geographics, and the GIS User Community

How does Groundswell protect land?

Buy land – Fee acquisition	Buy rights – Conservation easement
Original owner disposes property interest	Original owner maintains property interest
Groundswell owns all rights to the land	Groundswell restricts some rights
Groundswell usually transfers ownership to another entity	Groundswell maintains stewardship responsibility

Largely dependent on local appetite for conservation!

GROUNDSWELL CONSERVANCY

Sources of acquisition funding

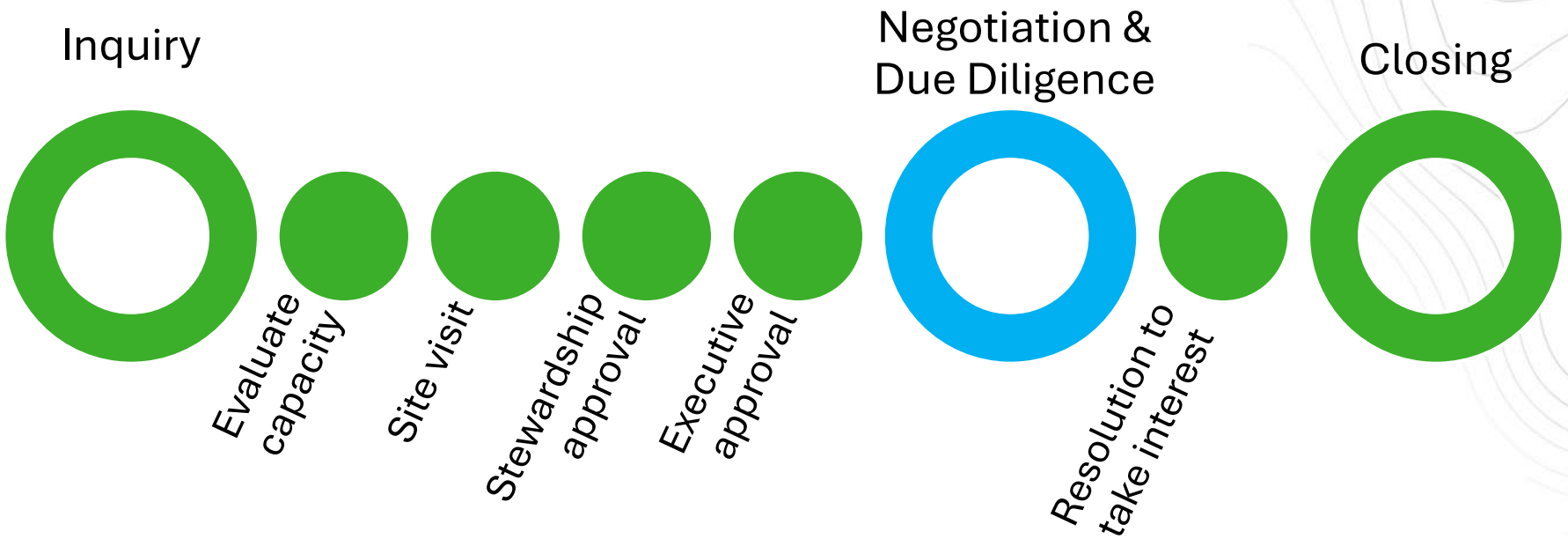
Federal

State

County

Local

Groundswell staff salaries are almost entirely funded by individual donations!



GROUNDSWELL CONSERVANCY

Photo credit: Jason Sromovsky

Dennis Franke

Watershed Health Report and Forum Themes

6:00 Welcome/Introduction/Overview

6:30 Presentations
Black Earth Creek Water Quality Monitoring - Nic Buer USGS
Green Infrastructure/Flooding - Nick Bower CARPC/James Brodzeller Dane Cty
Neonic Pesticides and Impacts to Black Earth Creek - Mike Miller WDNR
Trout Fishery and Stream Health - Kim Kuber/Mitch Trow WDNR
Black Earth Creek Valley Project - Tony Abate Groundswell Conservancy

7:50 Questions/Discussion/Next Steps

8:15 Open House with Watershed Organizations present

9:00 End of Event

A HEALTH REPORT

Black Earth Creek Watershed

2024

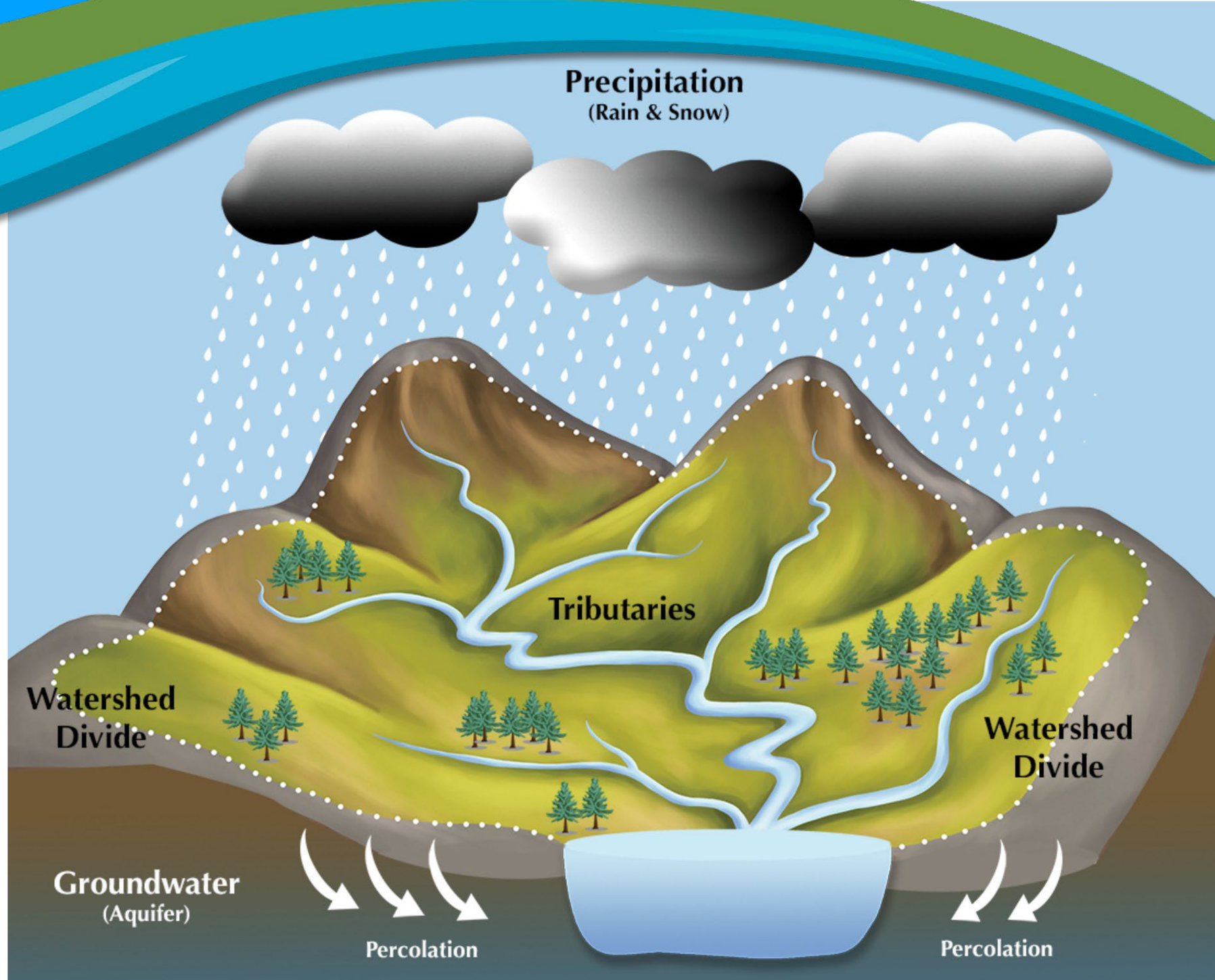
produced by the
Black Earth Creek Watershed Association

A HEALTH REPORT
Black Earth Creek Watershed

What is a Watershed?

"A watershed is the area of land from which water drains into a river, stream, or other waterbody."

source: Hudson River Watershed Alliance
https://hudsonwatershed.org/



A HEALTH REPORT
Black Earth Creek Watershed

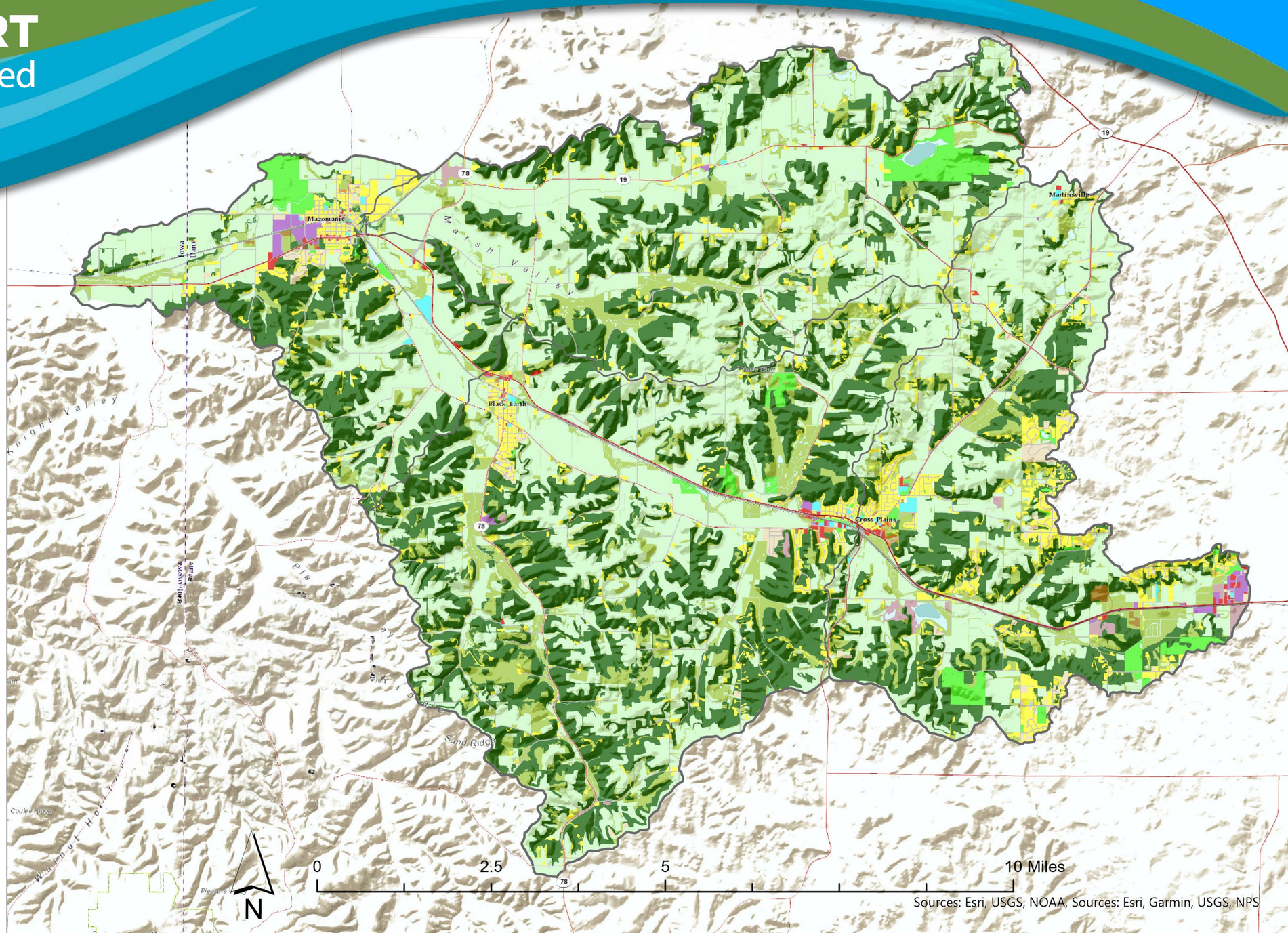
Black Earth Creek Watershed
2020 Land Use Map

105 square miles

Mix of:

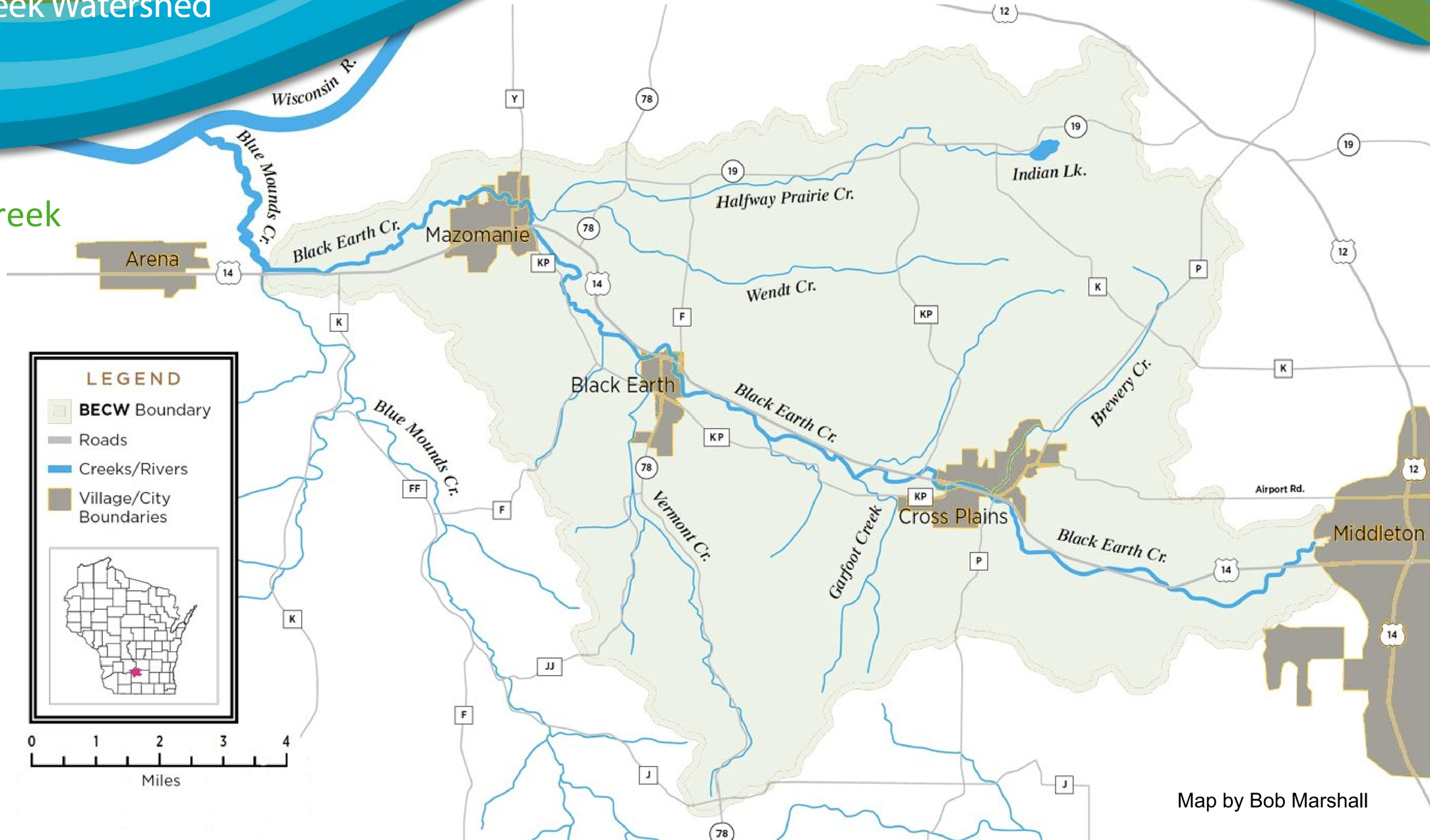
- Forests 37%
- Agriculture 37%
- Grassland 16%

Black Earth Creek is watershed focal point



A HEALTH REPORT
Black Earth Creek Watershed

Black Earth Creek Watershed



Map by Bob Marshall

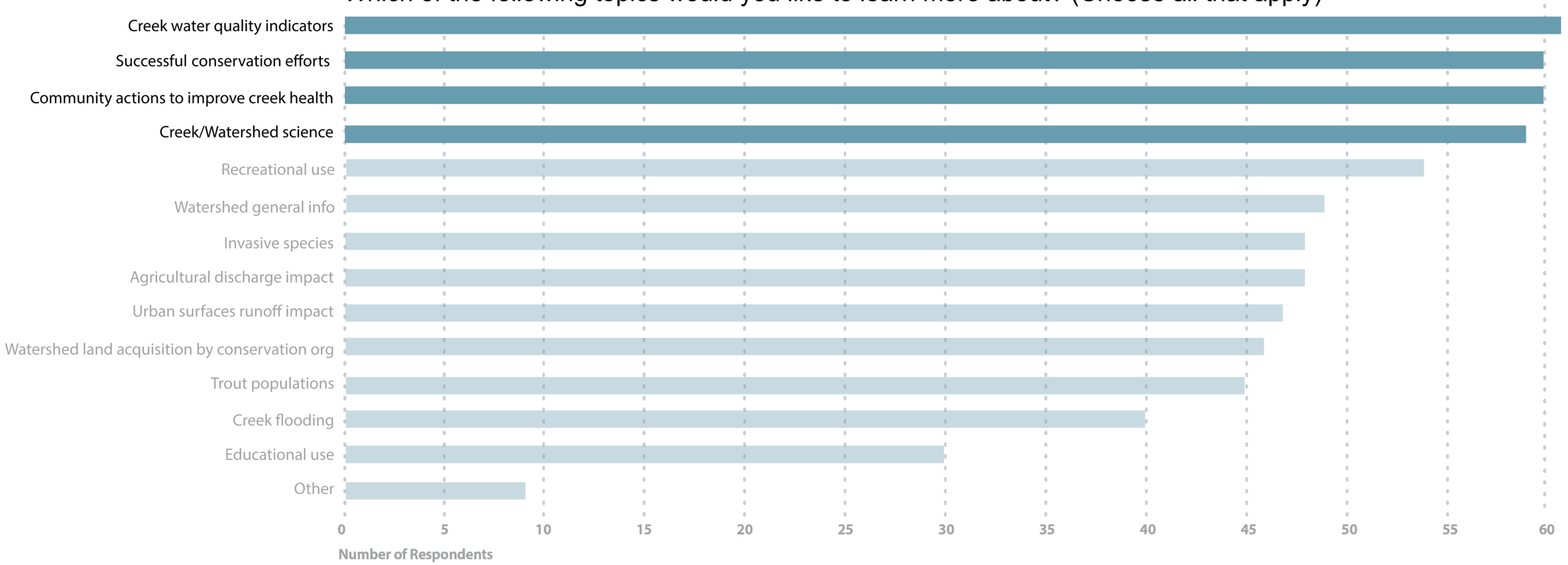
A HEALTH REPORT
Black Earth Creek Watershed

2023 Community Survey

- 103 respondents
  (51% homeowners/residents, 15% anglers, 34% other groups)

- People want to know more about creek science/health, conservations efforts, and what they can do to help.

Question 2:
Which of the following topics would you like to learn more about? (Choose all that apply)



Dennis Franke

Watershed Health Report and Forum Themes

- Watershed health indicators
- Issues of concern
- Successful efforts
- How we can improve watershed health


Dennis Franke

WATERSHED HEALTH ISSUES:

Keep Cold Springs Flowing

Cold springs are the life blood of Black Earth Creek and its tributaries.

Best if water soaks into the soil—and then enters streams as springs.
Installing “Green Infrastructure” accomplishes this.
Examples in the watershed include:

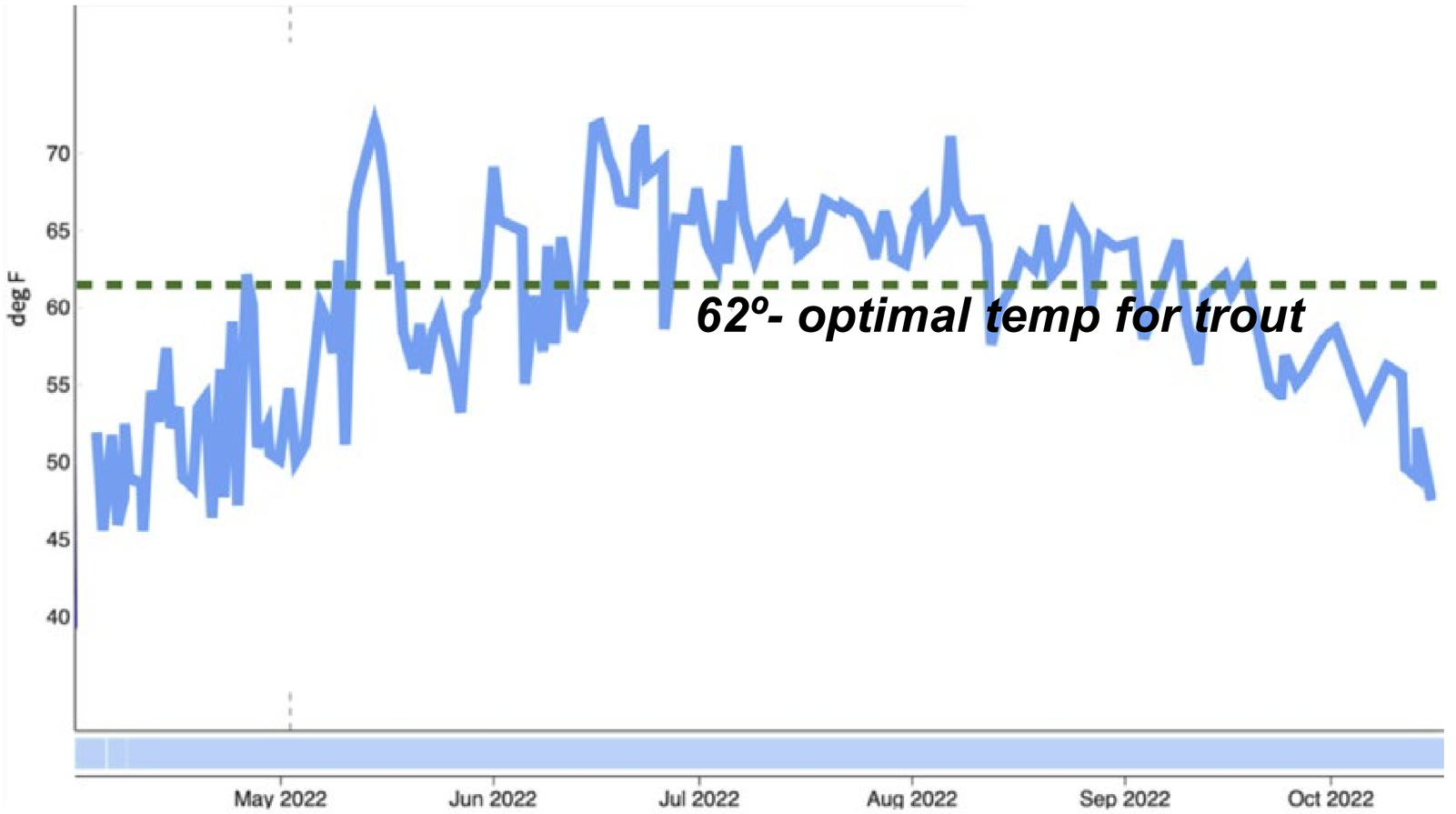
- *Stormwater basins*
- *Rain gardens*
- *Conservation tillage*
- *Wetlands*

A HEALTH REPORT
Black Earth Creek Watershed

WATERSHED HEALTH ISSUES:

A Cold Creek is a Healthy Creek

Water temperatures can go above the optimal level for trout (62°F)



Summer Temperatures 2022

USGS - Provisional

A HEALTH REPORT
Black Earth Creek Watershed

WATERSHED HEALTH ISSUES:

Polluted Urban and Farm Runoff Can Hurt Watershed Streams

Fertilizer & nutrient runoff cause excess plant & microorganism growth – consuming oxygen required by fish and other organisms.

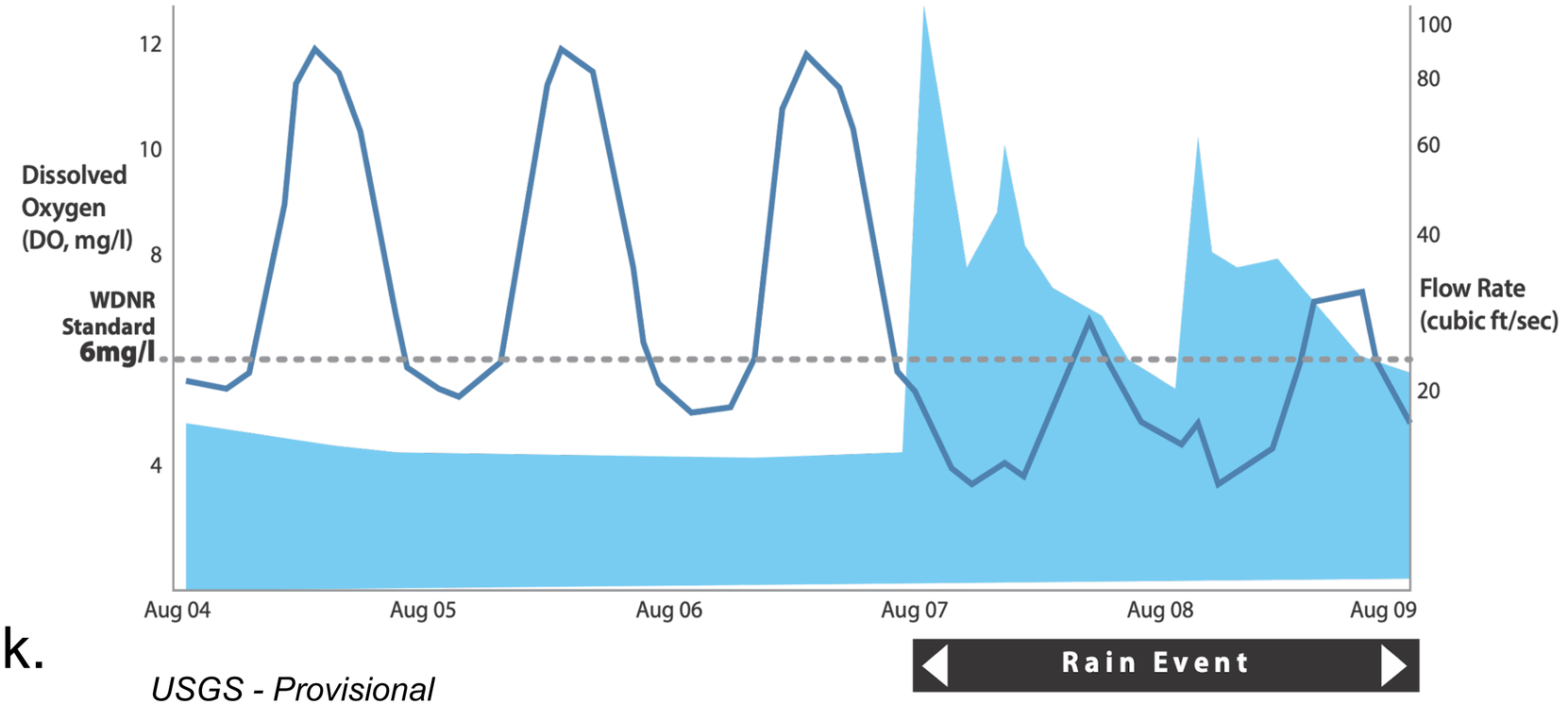
A HEALTH REPORT
Black Earth Creek Watershed

WATERSHED HEALTH ISSUES:

Dissolved Oxygen is Critical to Creek Life

USGS is monitoring Dissolved Oxygen (DO) and other parameters in Black Earth Creek.

During a rainstorm, DO can drop to levels harmful to fish and macroinvertebrates.



USGS - Provisional

WATERSHED HEALTH ISSUES:

Macroinvertebrates Indicate Creek Health

Macroinvertebrates (aquatic insects and crustaceans) are important part of the food web for fish.

Some aquatic insects have declined (*Ephemerella* and *Hexagenia*) — likely caused by toxics and polluted runoff.

Andy Morton

A HEALTH REPORT
Black Earth Creek Watershed

WATERSHED HEALTH ISSUES:

Trout Fishery Outstanding But Vulnerable

Outstanding wild trout fishery, good access/public lands, good size structure

Concerns — continued spring flow, low DO, polluted runoff, pesticides (neonics), high temperatures, maintaining natural reproduction


Dennis Franke

A HEALTH REPORT
Black Earth Creek Watershed

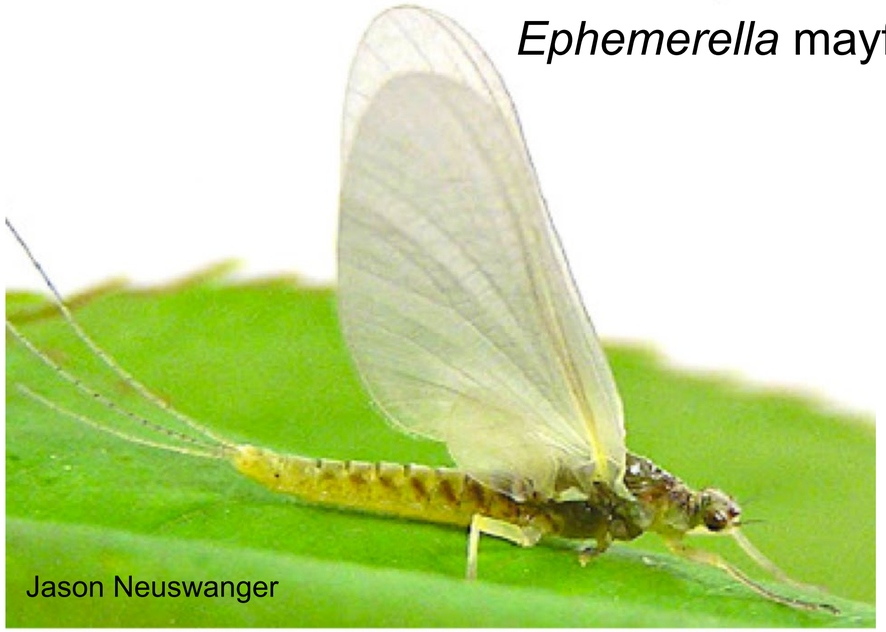
WATERSHED HEALTH ISSUES:

Toxic Chemicals Are In Our Watershed

Neonicotinoid pesticides (Neonics) may reduce abundance of aquatic insects such as *Ephemerella* and *Hexagenia*.

Lower PFAS (forever chemicals) levels allowed the lifting of fish consumption advisory for BEC.

Ephemerella mayfly



WATERSHED HEALTH ISSUES:

New Zealand Mudsnails

Invasive New Zealand Mudsnails (NZMs) are in Black Earth Creek and watershed streams.

Anglers can prevent spreading NZMs to other streams by:

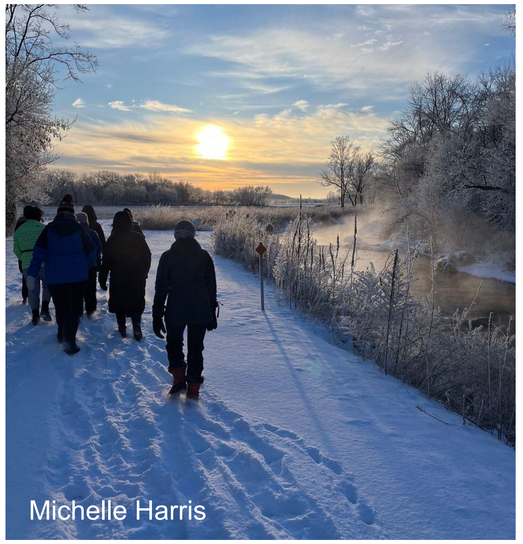
- disinfecting gear
- using separate gear for infested streams

Zander Park, Cross Plains 2024

A HEALTH REPORT
Black Earth Creek Watershed


Aaron Jaglio


Mindy Habecker


Michelle Harris


Michelle Harris

SUCCESSFUL CONSERVATION EFFORTS

- USGS monitoring stations
- BEC re-meandering & stormwater controls:
  Village of Cross Plains & WDNR
- WDNR streambank habitat restoration & easement purchases
- Paddler, angler, & hiker access points
- BECWA interpretive signs
- Groundswell Conservancy land acquisition
- Village of Black Earth stream access & park development
- Lake Marion: dam removal, creek re-meandering, & creation of Wolf Run Trail
- Dane County: Streambank acquisition & Walking Iron Park streambank improvement
- CARPC Green Infrastructure Project

A HEALTH REPORT
Black Earth Creek Watershed

BEC is a quality-of-life indicator for me. A healthy creek means we're trying to do our best to be good stewards of our corner of the world.

Survey respondent

What Can You Do to Help Protect Watershed Health?

Encourage local policy makers to:

- Pursue funding & partner with other organizations to support watershed improvement projects
- Establish policies that support watershed health

You can also:

- Landscape to reduce creek warming (rain gardens, tree planting, etc.)
- Minimize/halt pesticide & herbicide use
- Prevent New Zealand Mud Snail spread
- Request landowner permission to enter creek
- Volunteer with Watershed non-profit organizations

Dennis Franke

Dennis Franke

Watershed Health Report and Forum Themes

6:00 Welcome/Introduction/Overview

6:30 Presentations
Black Earth Creek Water Quality Monitoring - Nic Buer USGS
Green Infrastructure/Flooding - Nick Bower CARPC/James Brodzeller Dane Cty
Neonic Pesticides and Impacts to Black Earth Creek - Mike Miller WDNR
Trout Fishery and Stream Health - Kim Kuber/Mitch Trow WDNR
Black Earth Creek Valley Project - Tony Abate Groundswell Conservancy

7:50 Questions/Discussion/Next Steps

8:15 Open House with Watershed Organizations present

9:00 End of Event

Feedback Survey: Black Earth Creek Watershed Health Forum 4/22/25

Thank you for attending the April 22, 2025 Forum on the Health of the Black Earth Creek (BEC) Watershed. Please take a few minutes to answer the questions below. We will use your feedback to plan for future events.

1. How did you hear about the Forum?
    - Social Media (Facebook, Instagram, etc.)
    - Email (from BECWA, Trout Unlimited, etc.)
    - Local newspaper
    - Invitation from friend/acquaintance
    - Other

2. Do you live in the Black Earth Creek Watershed?
    - Yes
    - No

3. What was useful or informative about this Forum on the Health of the Black Earth Creek Watershed?

4. How might we improve future Black Earth Creek Watershed events?

5. What remaining questions/concerns/comments do you have?

Thank you for your feedback!

(Alternatively, you can fill out this survey online by clicking on this link or pointing your phone camera at the QR code shown here.)