Shell Rock River WMC Meeting

March 16, 2023

JEO CONSULTING GROUP

SHELL ROCK RIVER WATERSHED MANAGEMENT COALITION

Presentation Overview

Introductions

Planning Process Updates

Flood Risks & Resiliency Strategies (IFC & JEO)

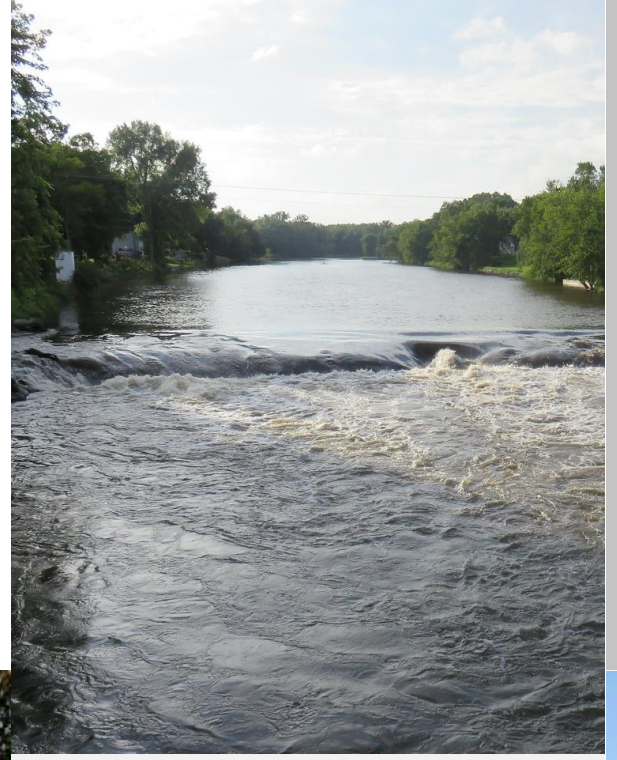
Water Quality Concerns and Needs (DNR & JEO)

Recreation Opportunities (JEO)

Questions, Next Steps, and Homework

Please Ask Questions and Discuss

Planning Process Update



Project Schedule

Overview of Recent Work

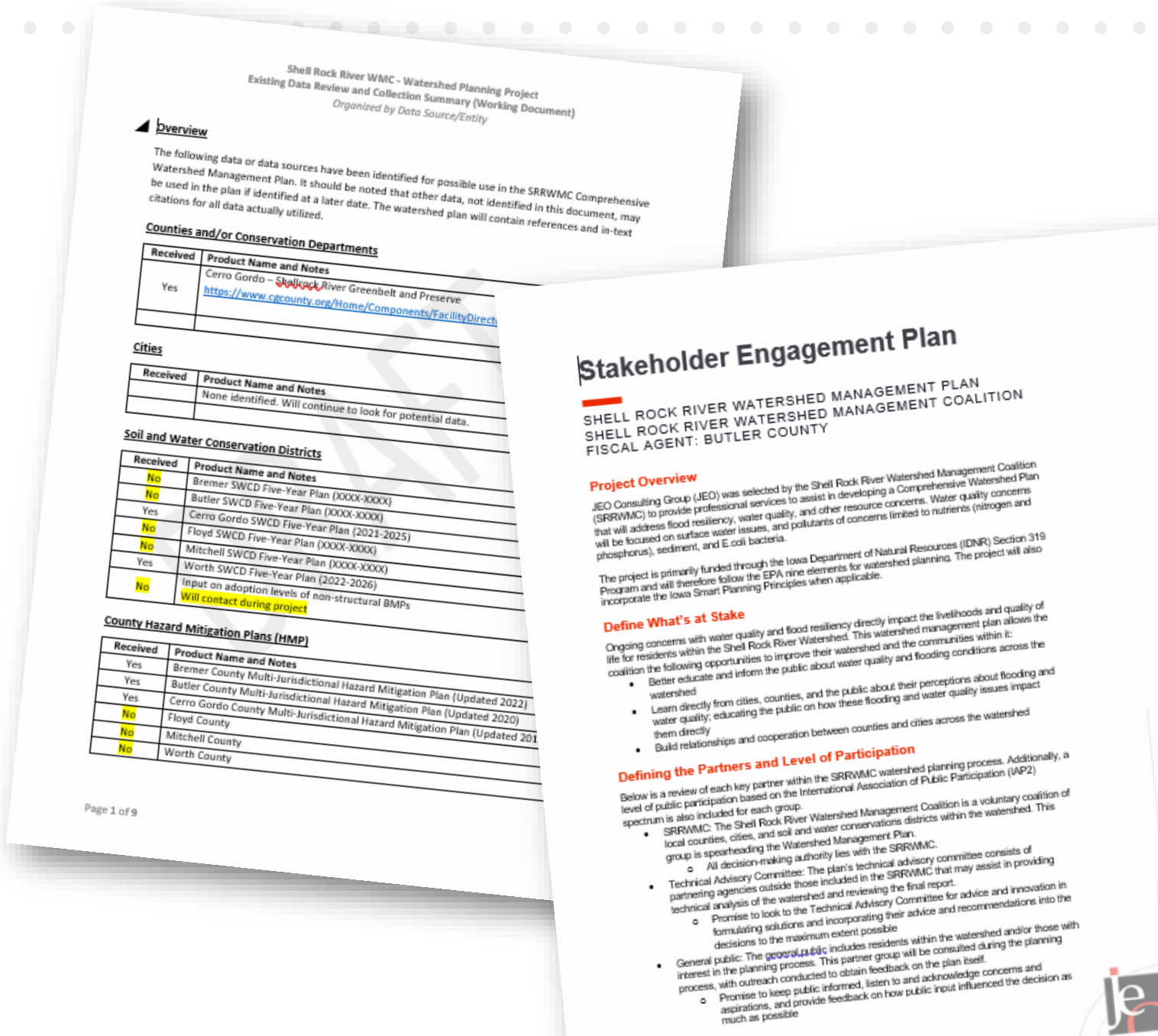
Compiling and analyzing data

Developed “stakeholder engagement plan” (living document)

Website created

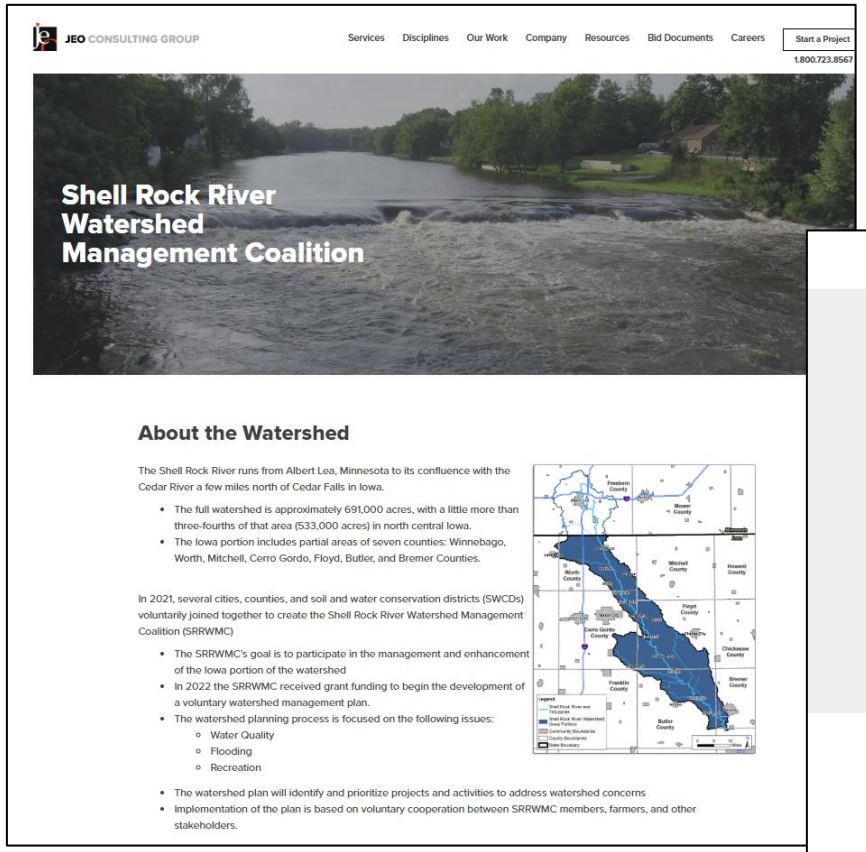
Prepping for today!

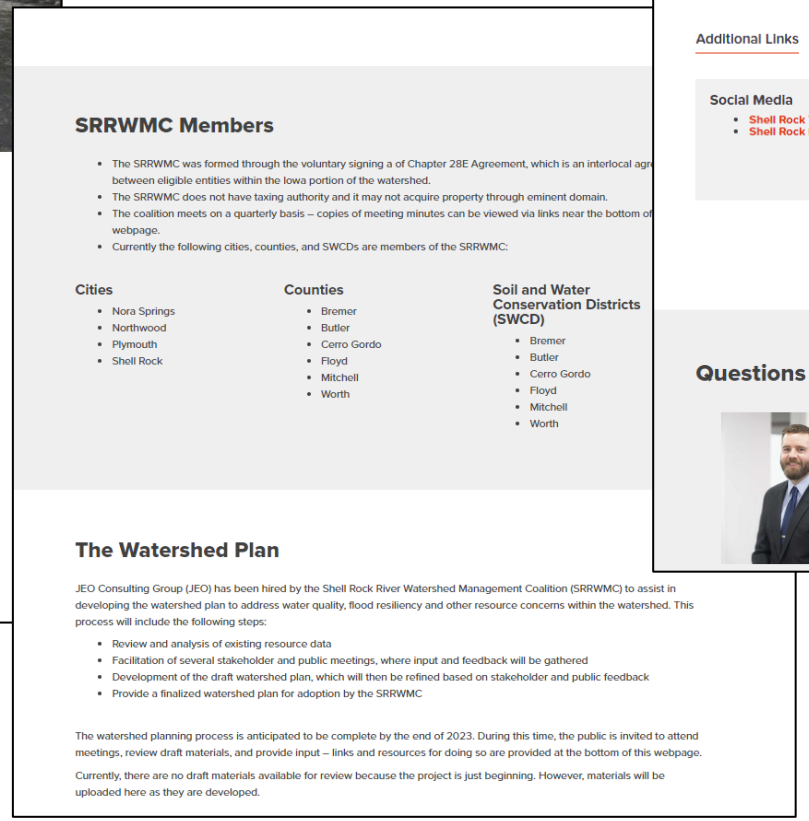
Thank you for your feedback to-date!

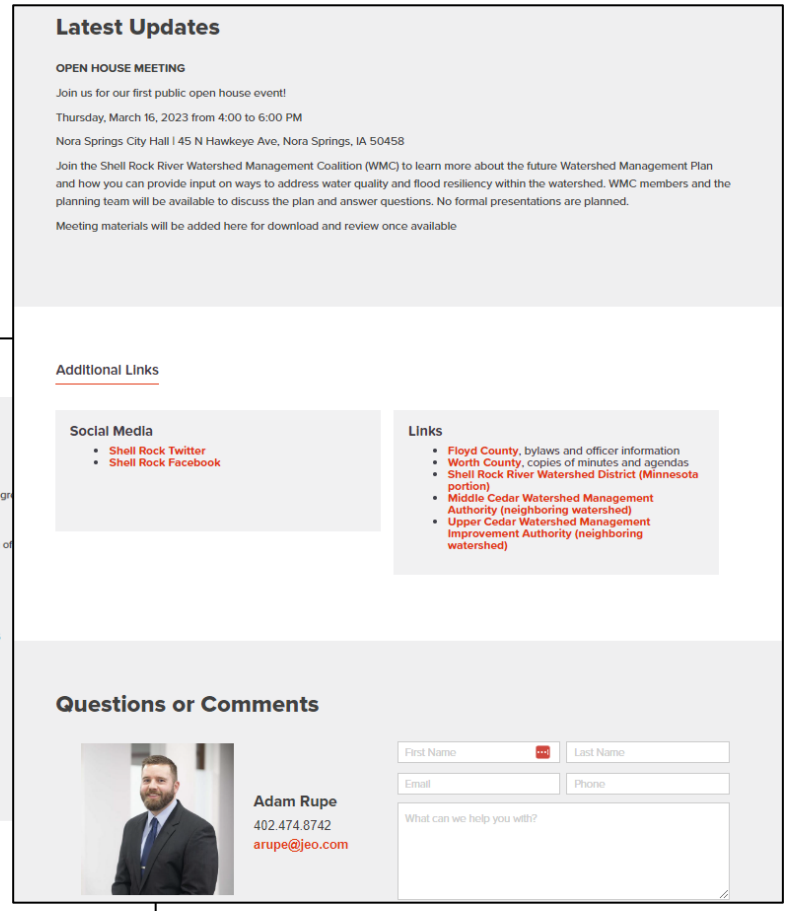


Project Website

https://www.jeo.com/shell-rock-river-wmc







Status of Watershed Plan Document

Chapter	Status
Executive Summary	Last item to be completed
Chapter 1 – Introduction	Drafting
Chapter 2 – Watershed Inventory	Drafting
Chapter 3 – Current Conditions	Drafting
Chapter 4 – Goals	Drafting
Chapter 5 – Implementation Strategy	TBD
Chapter 6 – Education Plan	TBD
Chapter 7 – Action Plan	TBD
Chapter 8 – Funding	TBD
Appendices	TBD

Today's Question

What should the focus (scope) of the watershed plan be?

- Flooding?
- Water Quality?
- Recreation?
- A mixture, or something else?

Worksheets

Feel free to:

- Take them home with you
- Get input from others

Complete them today, or send back before April 6th

Flood Risks and Resiliency Strategies

Overview and Resources

Serving Iowans

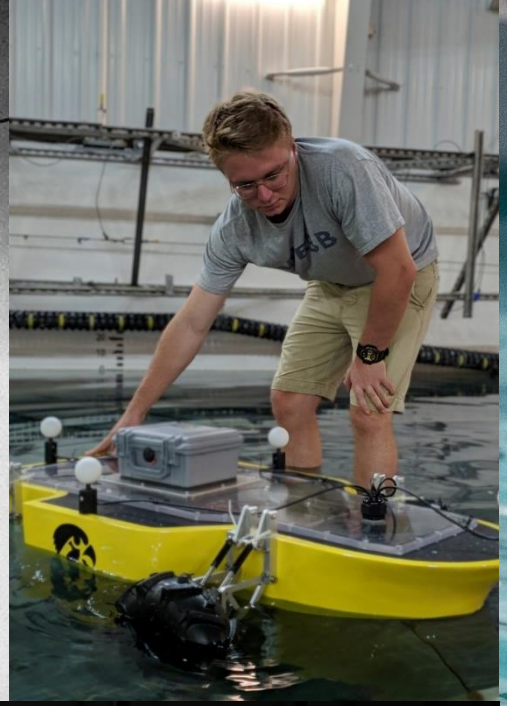
Kate Giannini
Program Manager, Iowa Flood Center
March 16, 2023

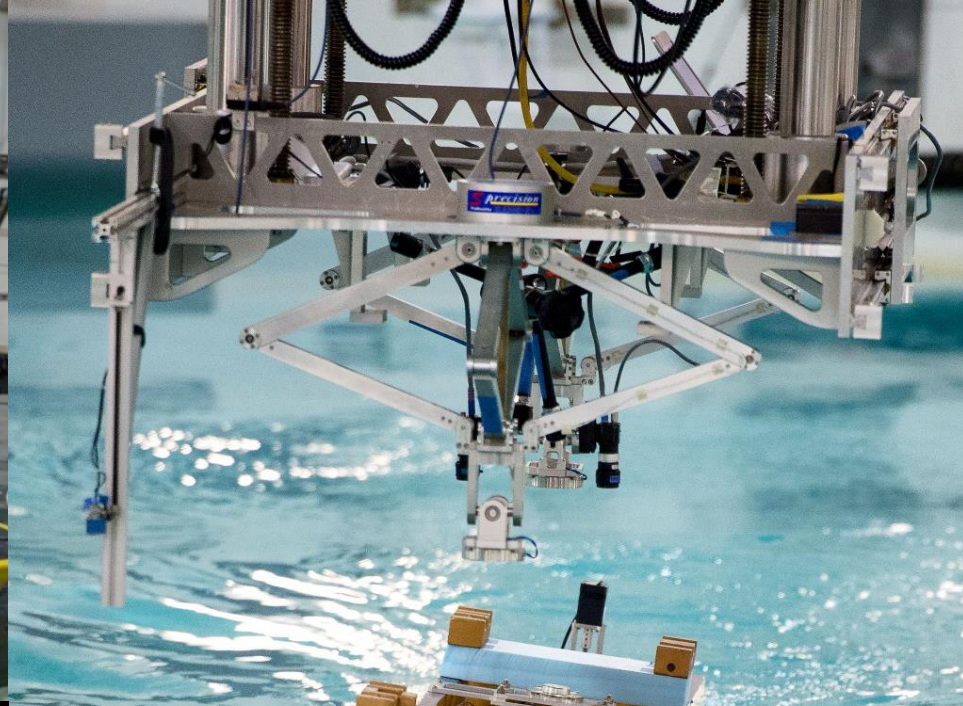
IOWA

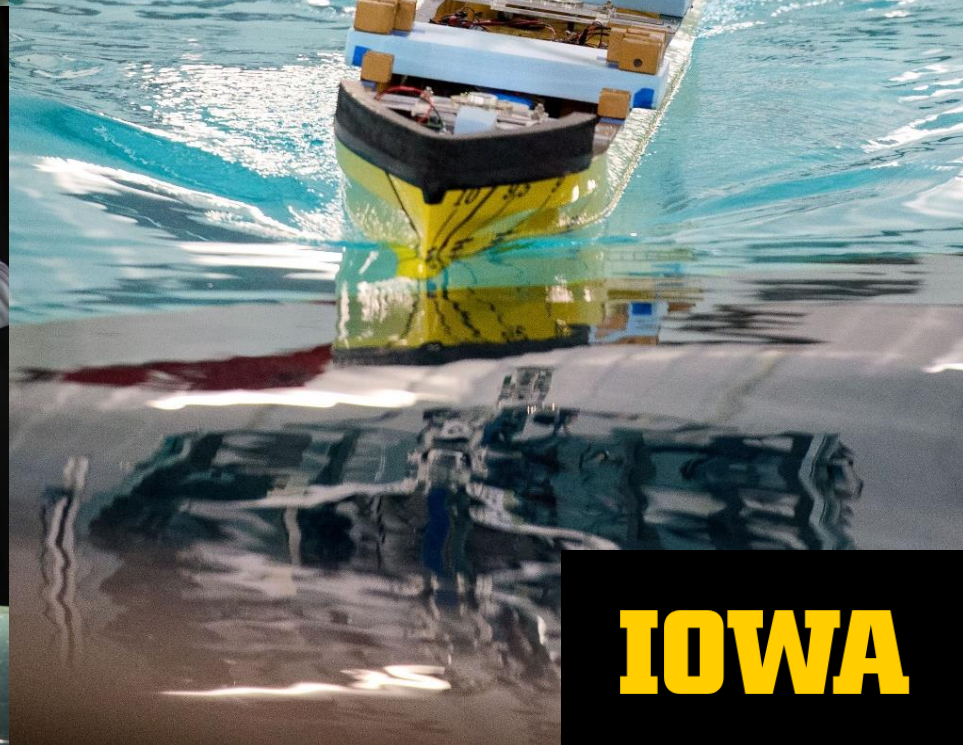
IIHR

1920 100 YEARS 2020

Hydroscience & Engineering







IOWA

2008 flood, Cedar Rapids

IOWA HOUSE FILE 822

Spring 2009

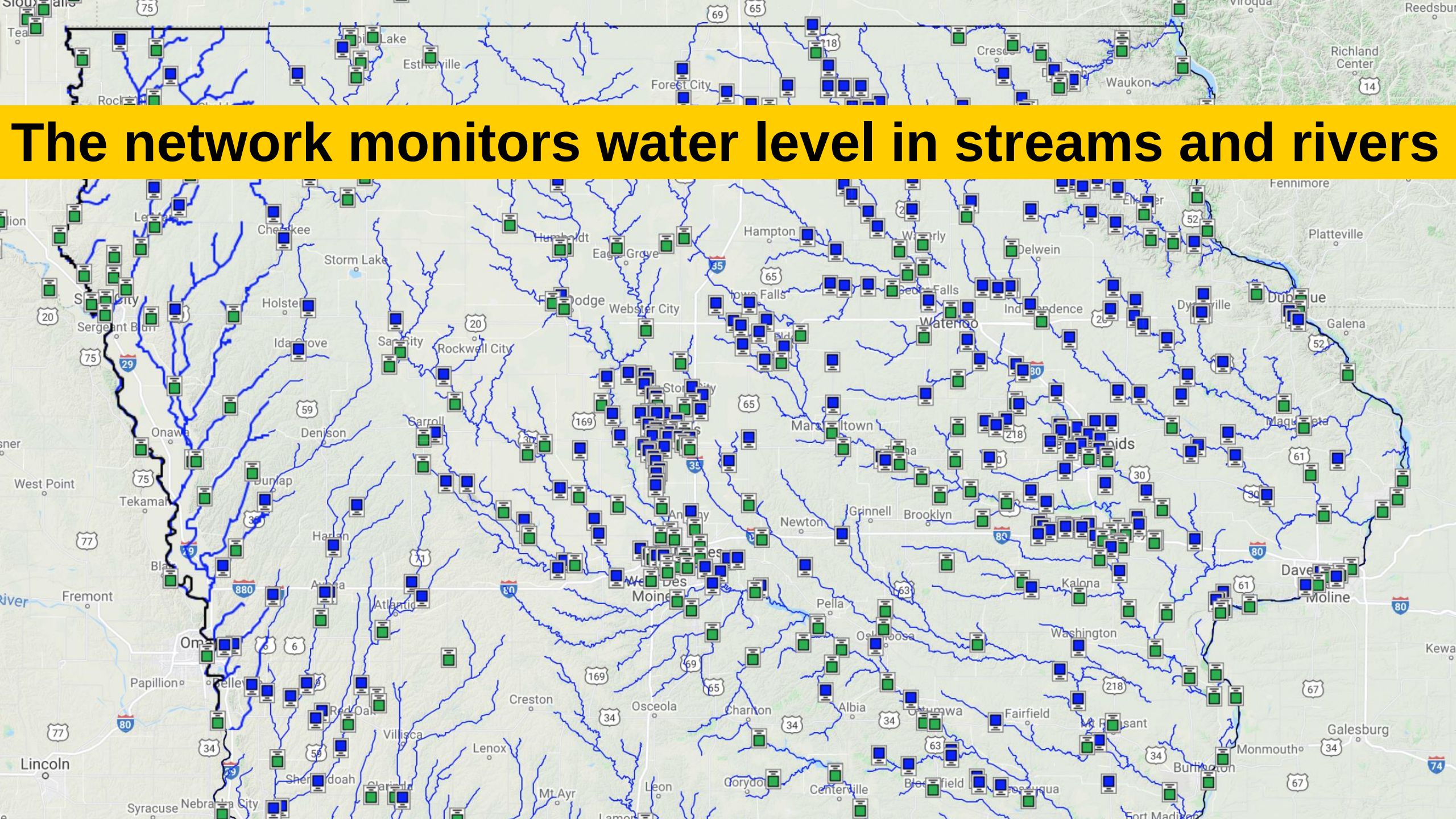
DIVISION VI

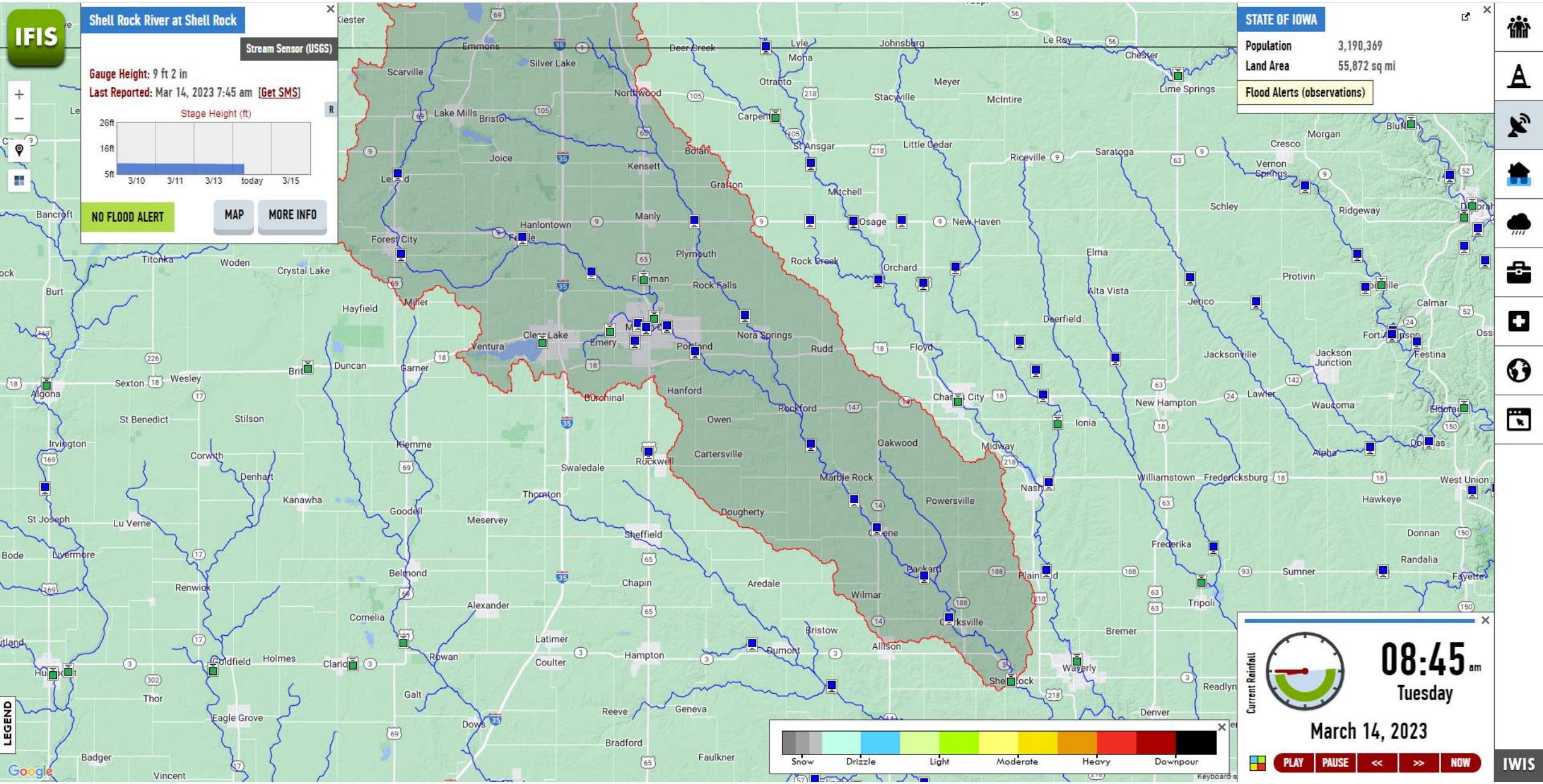
Sec. 15. NEW SECTION. 466C.1 IOWA FLOOD CENTER

1. The state board of regents shall establish and maintain in Iowa City as a part of the state university of Iowa an Iowa Flood Center. In conducting the activities of this chapter, the center shall work cooperatively with the department of natural resources, the department of agriculture and land stewardship, the water resources coordinating council, and other state and federal agencies.

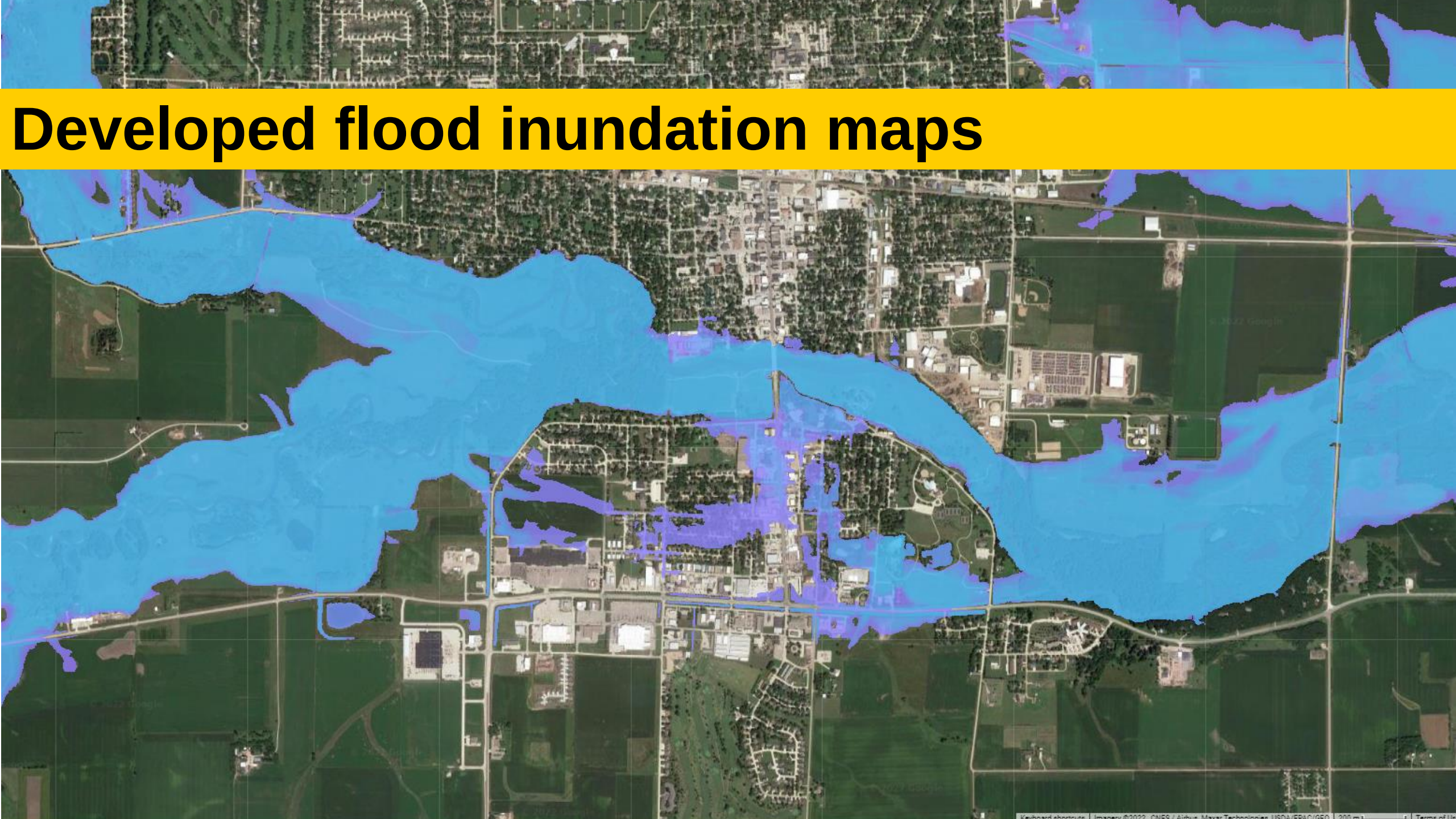
2. The Iowa flood center shall have all of the following purposes:
   a. To develop hydrologic models for physically based flood frequency estimation and real-time forecasting of floods, including hydraulic models of flood plain inundation mapping.
   b. To establish community-based programs to improve flood monitoring and prediction along Iowa's major waterways and to support ongoing flood research.
   c. To share resources and expertise of the Iowa flood center.
   d. To assist in the development of a workforce in the state, knowledgeable regarding flood research, prediction, and mitigation strategies.

IFC has deployed 300 real-time bridge sensors

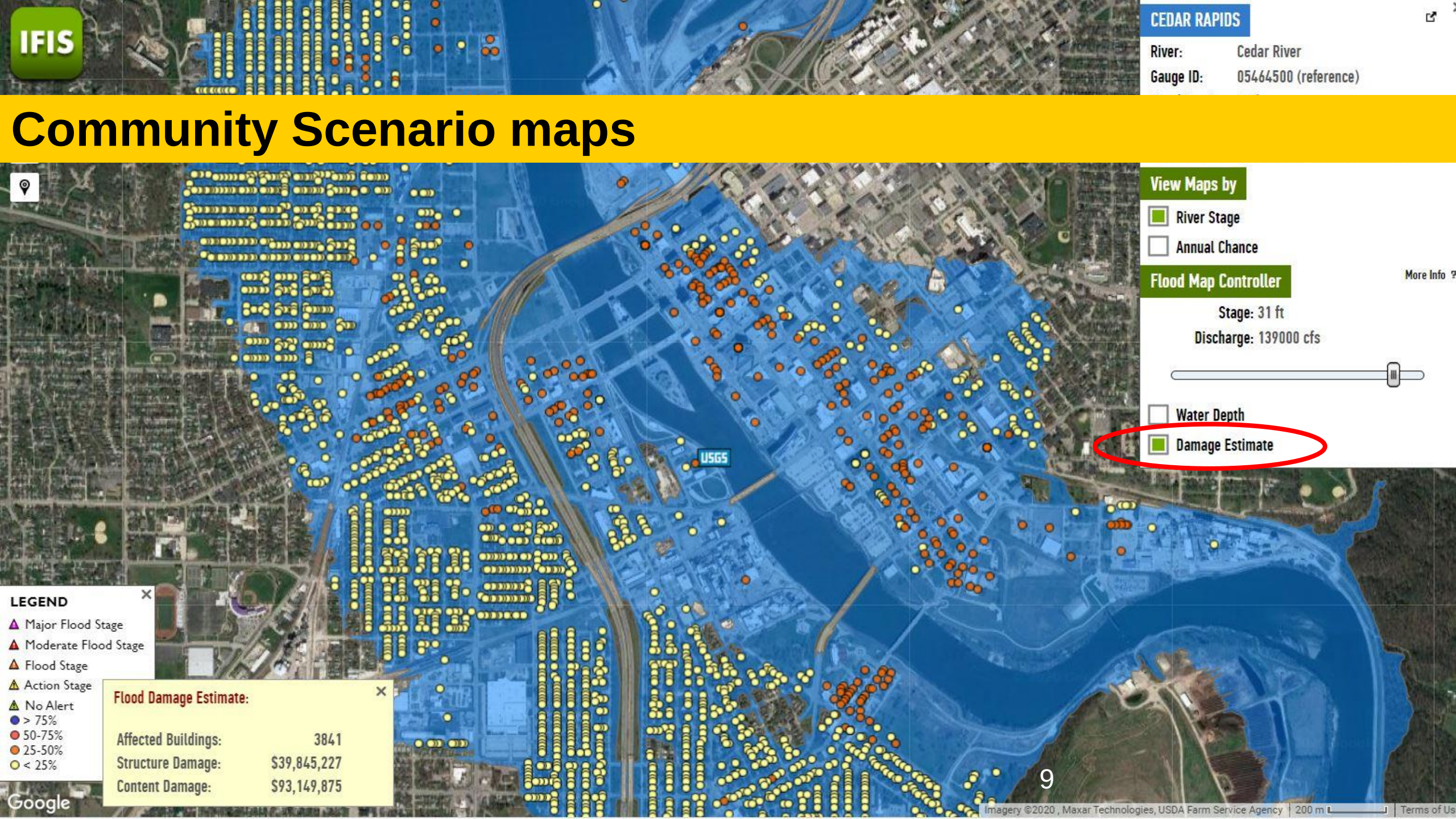

The network monitors water level in streams and rivers


IFIS
Shell Rock River at Shell Rock
Stream Sensor (USGS)
Gauge Height: 9 ft 2 in
Last Reported: Mar 14, 2023 7:45 am [Get SMS]
Stage Height (ft)
26ft
16ft
5ft
3/10
3/11
3/13
today
3/15
NO FLOOD ALERT
MAP
MORE INFO
STATE OF IOWA
Population 3,190,369
Land Area 55,872 sq mi
Flood Alerts (observations)
Snow
Drizzle
Light
Moderate
Heavy
Downpour
Current Rainfall
08:45 am
Tuesday
March 14, 2023
PLAY
PAUSE
<<
>>
NOW
LEGEND
IWIS
Google

Developed flood inundation maps



Community Scenario maps



ifis.iowafloodcenter.org/ifis/en/

IOWA FLOOD INFORMATION SYSTEM

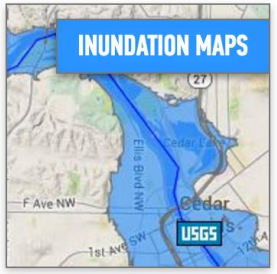
The Iowa Flood Information System (IFIS) is a one-stop web-platform to access community-based flood conditions, forecasts, visualizations, inundation maps and flood-related data, information, and applications

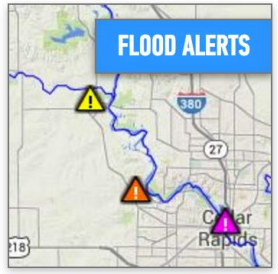
LAUNCH IFIS

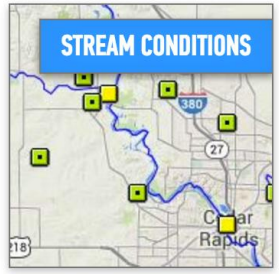
IFIS Widget

Video Tutorial

Twitter Flood Alerts







ABOUT IFIS

IFIS FEATURES

IFIS APPS

IFIS WEB SERVICE

IFIS MOBILE

CONTACT US

“Iowa really knows...They've modeled and mapped the state, they have great data visualization tools, and they have really effective outreach and communication. To really have a complete flood approach, you have to do all of those things.”

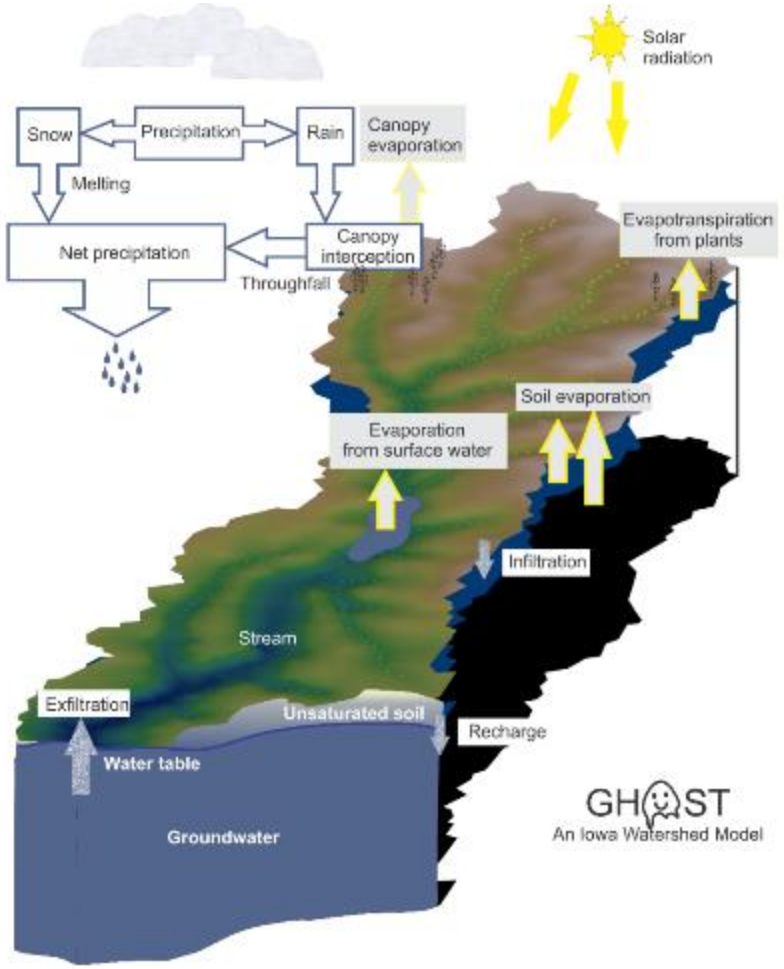
Sam Marie Hermite, Texas Water Development Board

The Iowa Watershed Approach

A voluntary program that brings Iowans together to build flood-resilient communities!

A vision for a more resilient Iowa

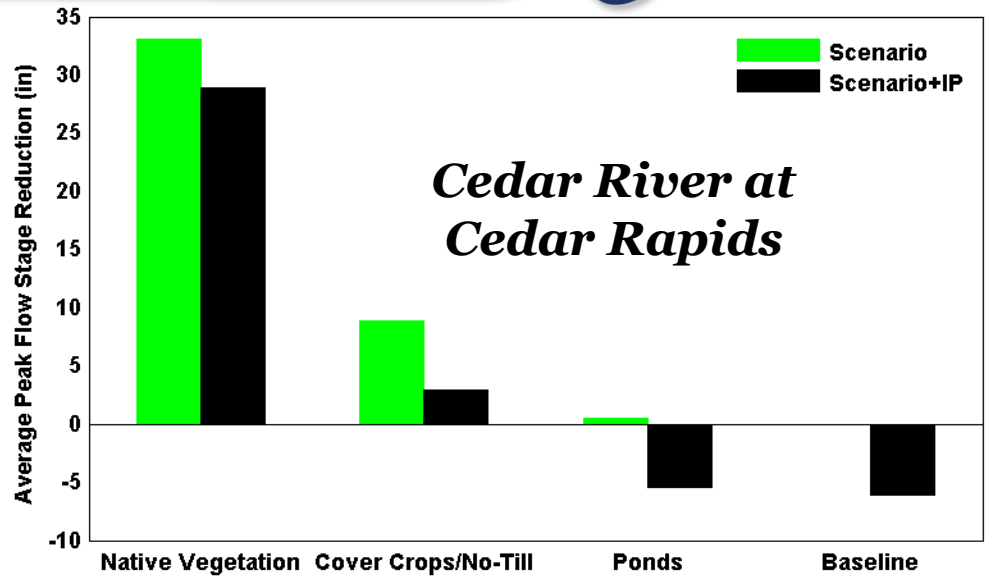
The Iowa Watershed Approach

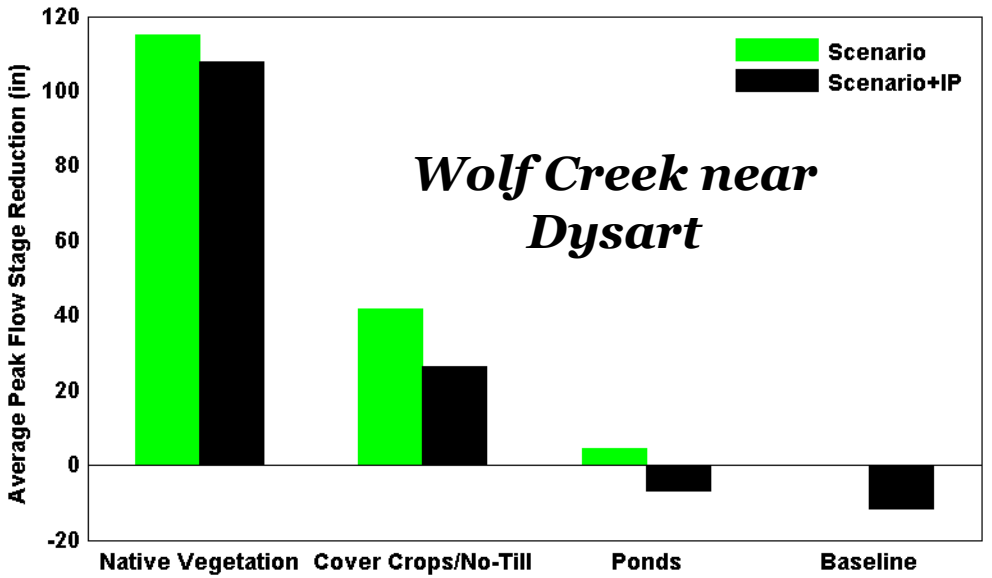


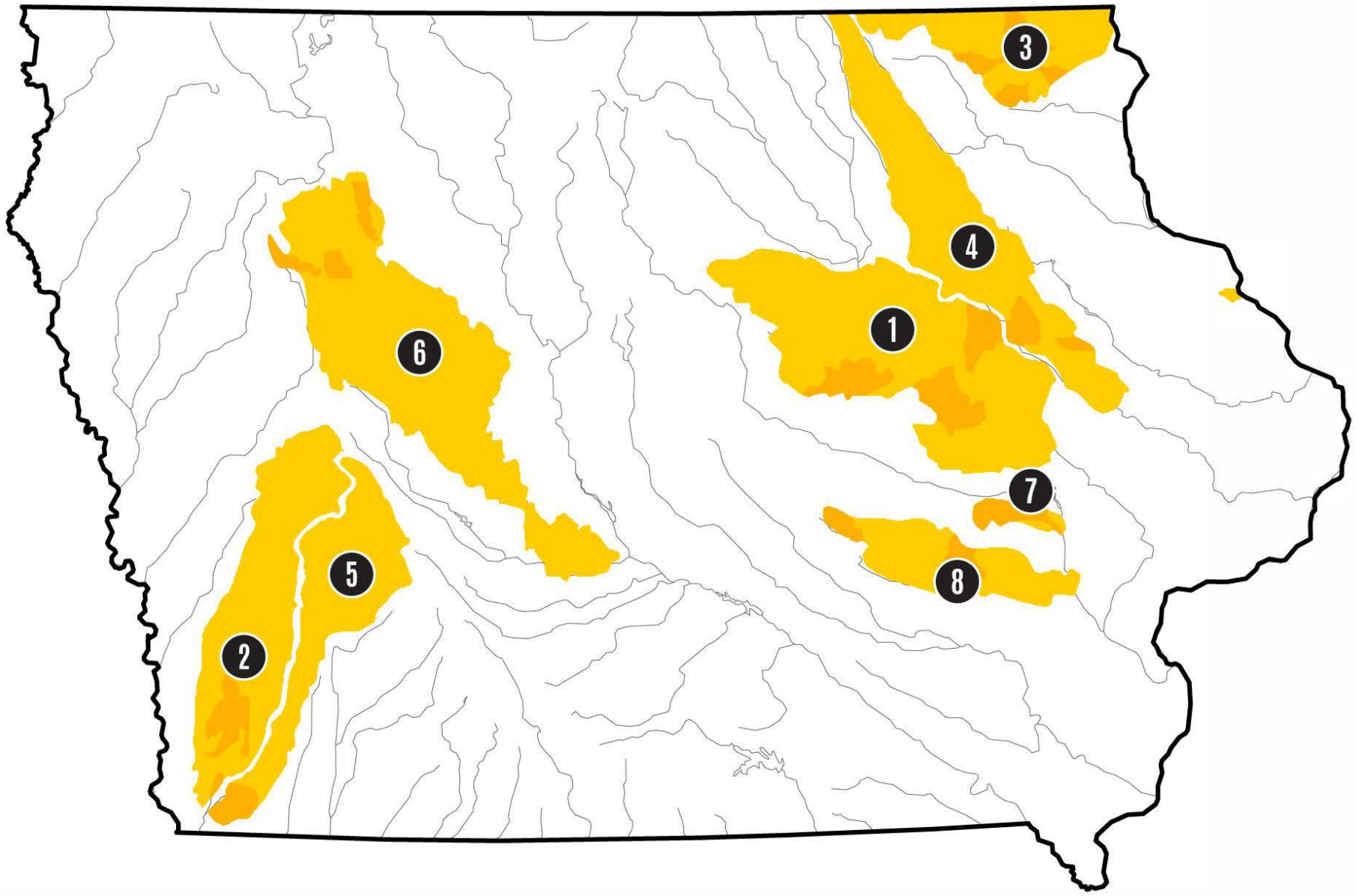
- Develop and run watershed-scale hydrologic models (GHOST) to estimate watershed responses to rainfall events
  - Modeler breaks the watershed down into manageable and representative user defined areas
  - Simulate hydrologic processes using a physically-based approach
  - Compare simulated results to observed hydrologic time series (e.g. streamflow) to assess model performance
  - Quantify the impact of existing and potential BMPs
- Watershed Scenarios

Middle Cedar Watershed Example Scenario Results/Summary

- Native Vegetation. 100% adoption.
- Cover Crops/Soil Health/No-Till scenario. 100% adoption.
- Distributed Storage. 684 ponds. 20 acre-ft. 12" outlet pipe.







1 Middle Cedar
88 Total Installations

2 West Nishnabotna
26 Total Installations

3 Upper Iowa
39 Total Installations

4 Upper Wapsi
28 Total Installations

5 East Nishnabotna
109 Total Installations

6 North Raccoon
4 Total Installations

7 Clear Creek
56 Total Installations

8 English
354 Total Installations

IMPLEMENTATION AREAS

WATERSHEDS

- **90% Cost-share**
- **700 projects constructed**
- **Nearly $30 million allocated for nature-based solutions to flood mitigation**

Jellison Wetland
Middle Cedar Watershed
Drainage Area: 1,336 acres
Pool Area: 13 Acres
Bid Cost: $633,845

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP


On-Road Structure
Upper Iowa Watershed
Drainage Area: 79 acres
Pool Area: 2 acres
Bid Cost: $200,413

North Carolina/Iowa Flood Resiliency Exchange

What is Flood Resilience?

Flood resilience is the ability of a community within a watershed to plan and act collectively, using local capacities to mitigate, prepare for, respond to, and recover from a flood.

FLOOD RESILIENT VINTON

www.floodresilientvinton.com

IVR&D
Iowa Valley Resource Conservation & Development

FLOOD RESILIENT CORALVILLE

ASTIG PLANNING

I pledge for a resilient future.

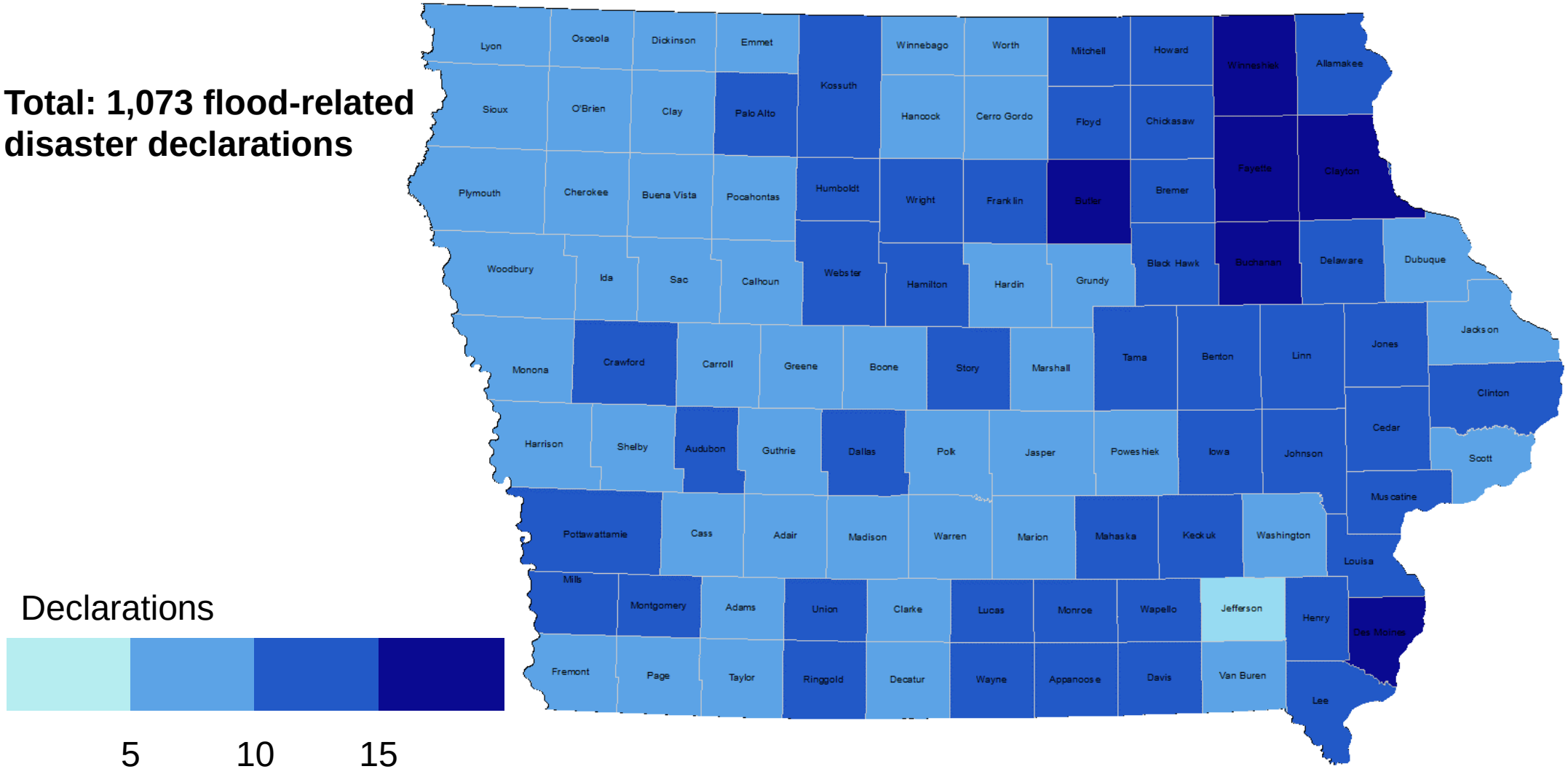
As a business, we commit to supporting our community during times of crisis.

FLOOD RESILIENT CORALVILLE

Learn more at:
www.floodresilientcoralville.com

Flood-related FEMA Disaster Declarations 1988-2022

Total: 1,073 flood-related disaster declarations



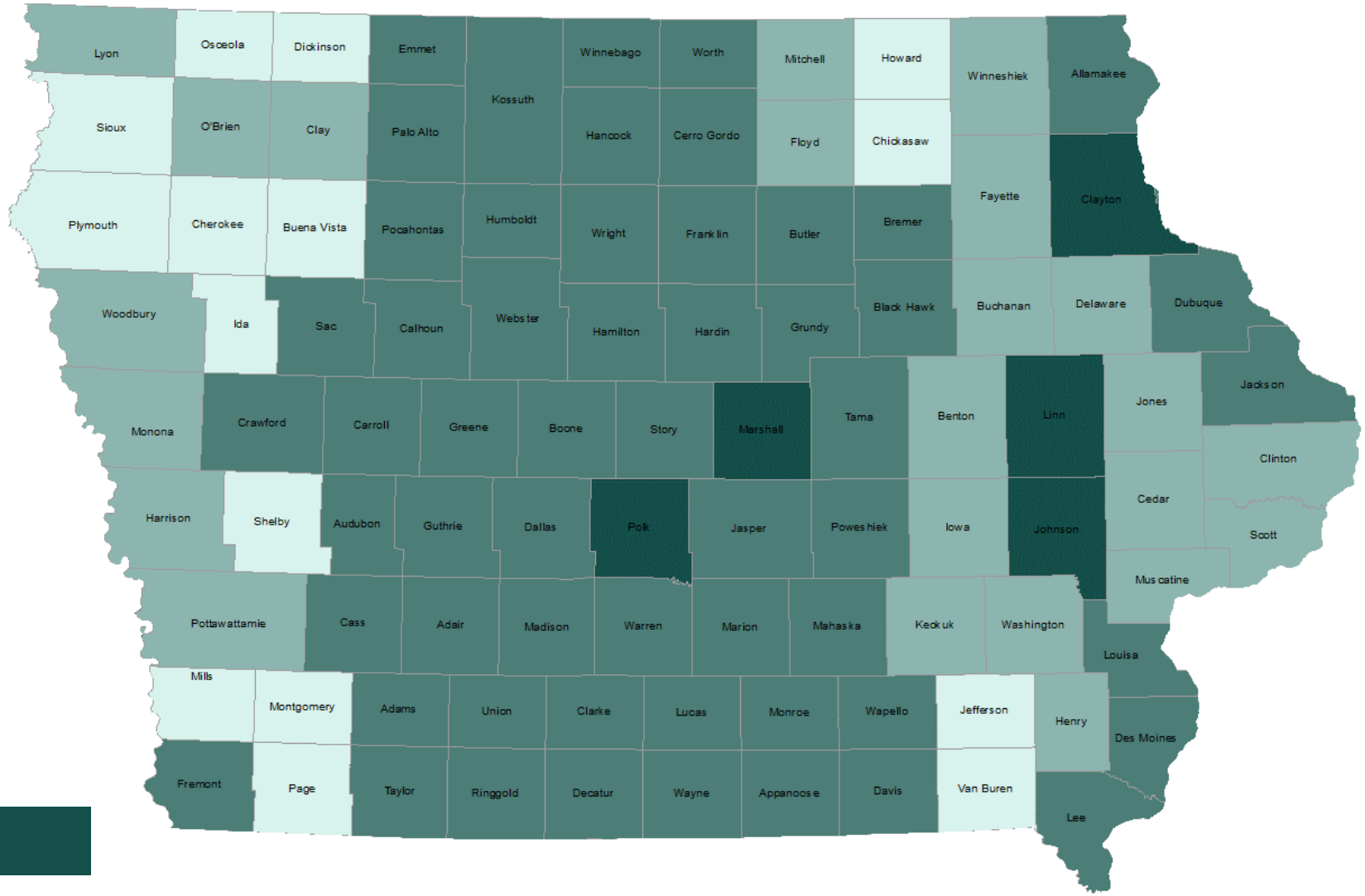
Declarations

5 10 15

Property and Crop Losses by County (1988-2022)

Total: Over $20 Billion in property and crop losses

“The cost of doing nothing, is not zero.” – Antonio Arenas, Associate Professor at ISU, and former IIHR Researcher



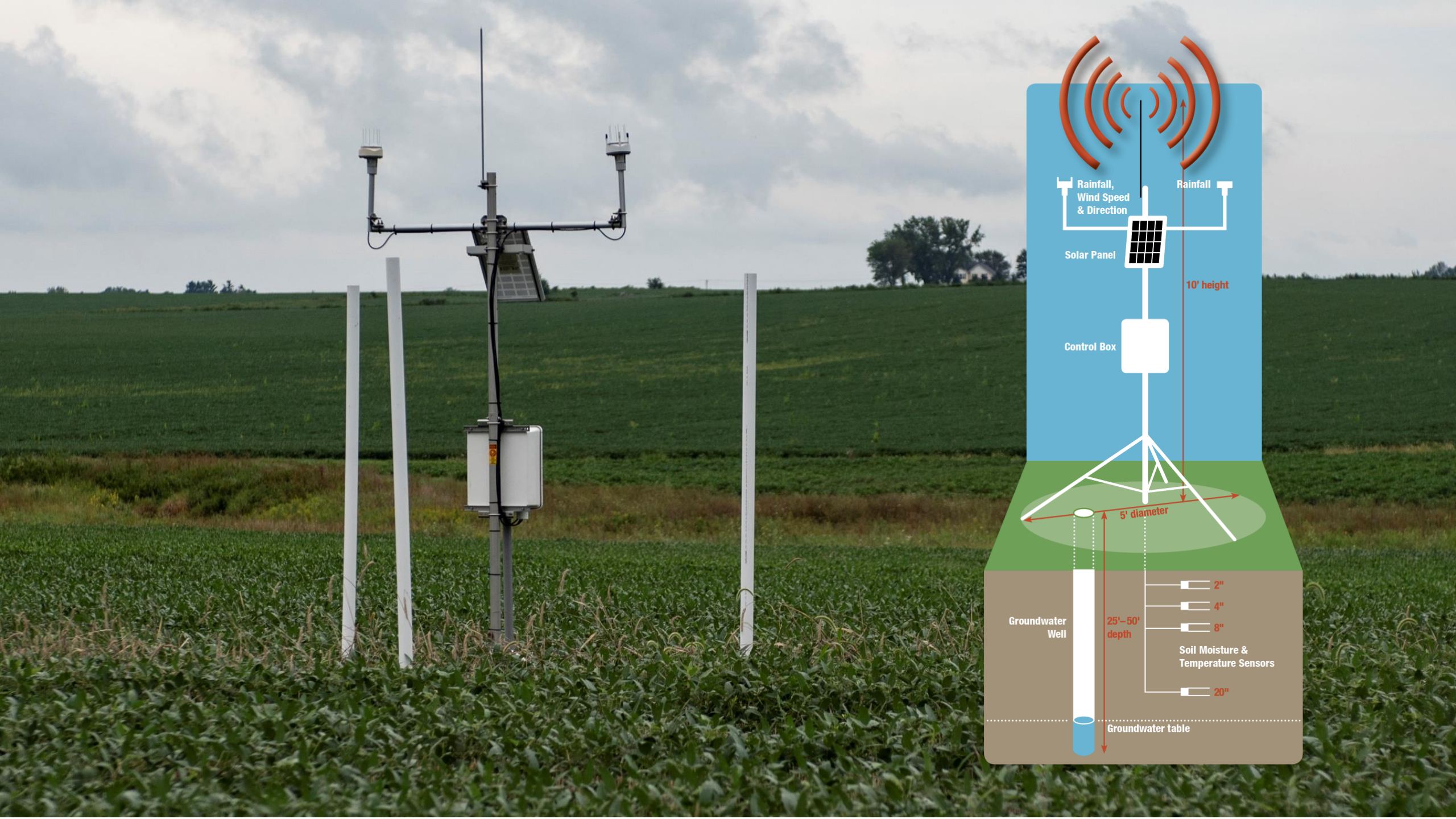
Million Dollars

20 50 150

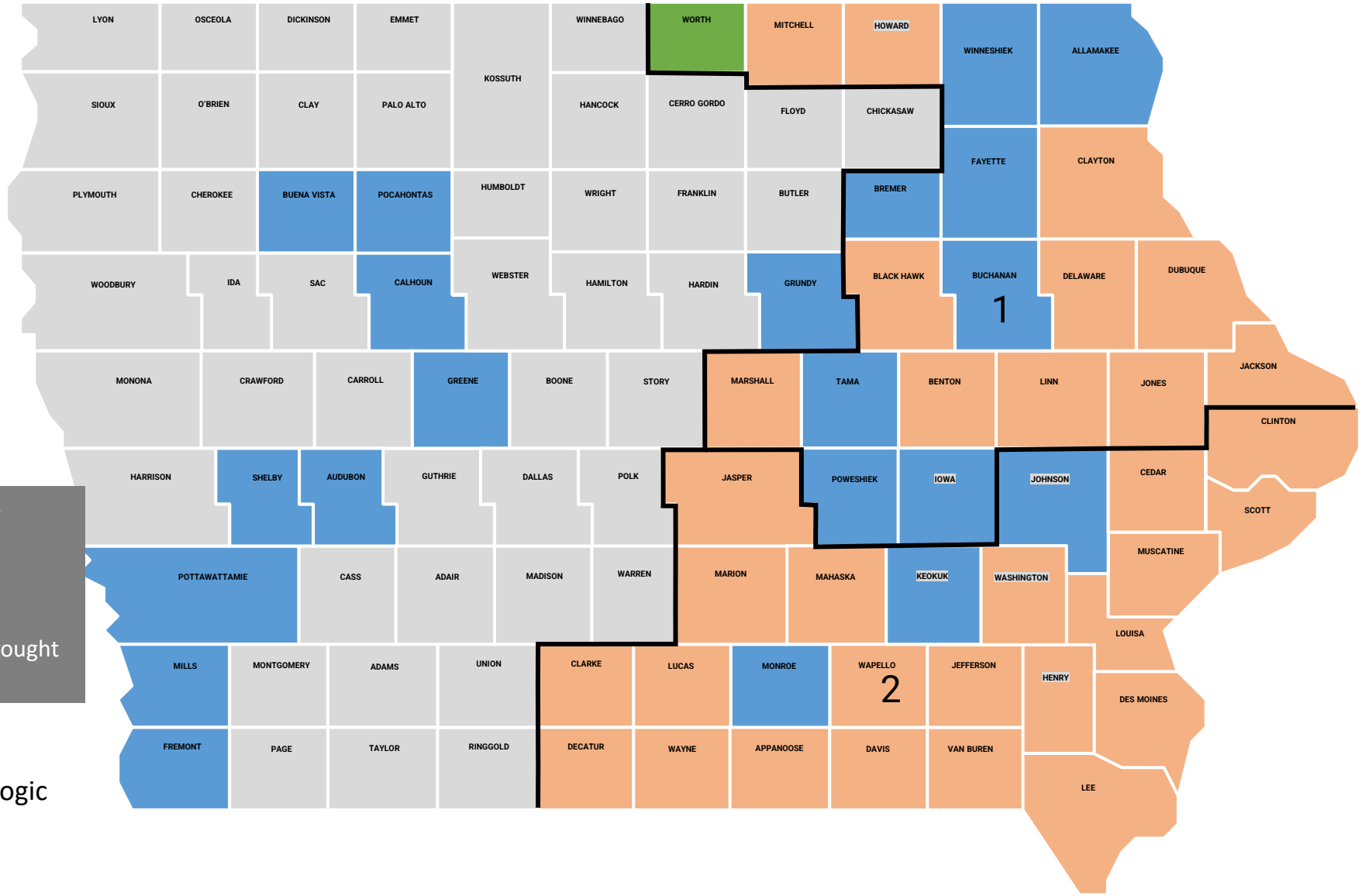

Iowa
Flood
Center
IOWA
WATER
TRAILS
Great
River
Rumble

Rep. Hinson and Miller-Meeks Community Project Funding $1M

- Expand Hydrostation Network to Congressional Districts 1 & 2
- Hydrologic modeling for Maquoketa River and Lower Cedar WMAs
- Modeling
  - HEC-HMS modeling framework
  - Investigate the effects of BMPs on flooding in the MR watershed under both current and future climate conditions
  - Results supplement the MR Watershed Plans (IISC 2021a, 2021b) to help guide watershed planning and management decisions
- Future Communications


Rainfall,
Wind Speed
& Direction
Rainfall
Solar Panel
10' height
Control Box
5' diameter
2"
4"
8"
Soil Moisture &
Temperature Sensors
20"
Groundwater
Well
25'–50'
depth
Groundwater table

Iowa will have Congressional District 1 and 2 covered!



Rep. Hinson and Rep. Miller-Meeks Community Project Funding:

$1M to advance monitoring, assessment, and flood and drought forecasting in Eastern Iowa.

*Blue indicates a hydrologic station exists

Iowa Flood Center
The University of Iowa
100 C. Maxwell Stanley Hydraulics Laboratory
Iowa City, IA 52242

P: 319-384-1729
Website: www.iowafloodcenter.org

Flooding Data Resources

Existing Data Sources

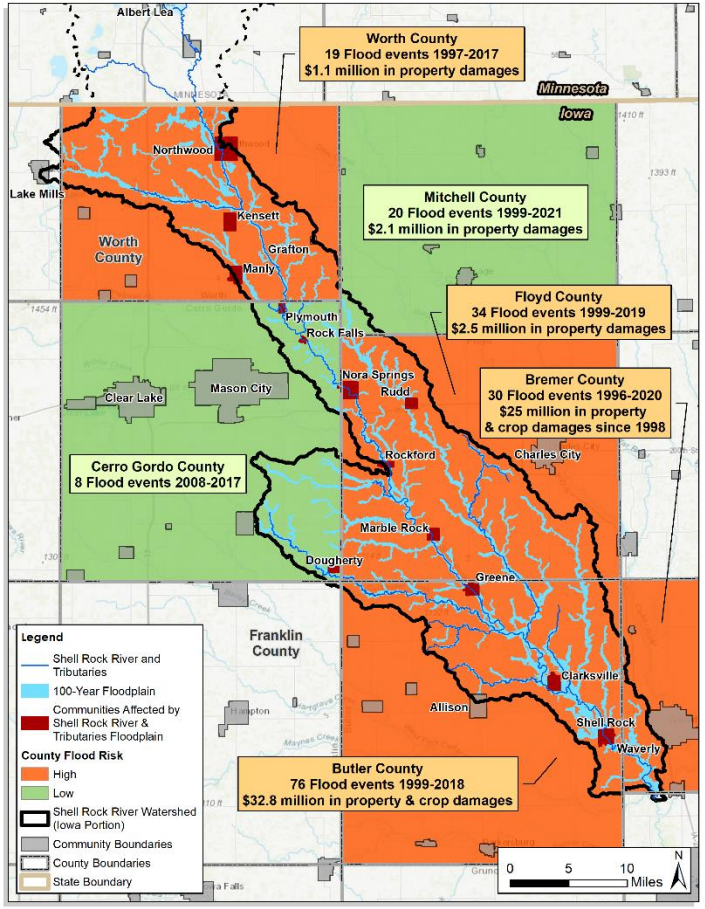
- County-level hazard mitigation plans
- Stream gaging (@ Shell Rock, IA)
  - IFC
  - USGS
  - NWS flood forecasting
- Mapping
  - IFC – Flood risk/depth maps
  - FEMA – Insurance/regulatory maps

Flooding Risk Assessment

DRAFT

Ongoing Work

- County-level data



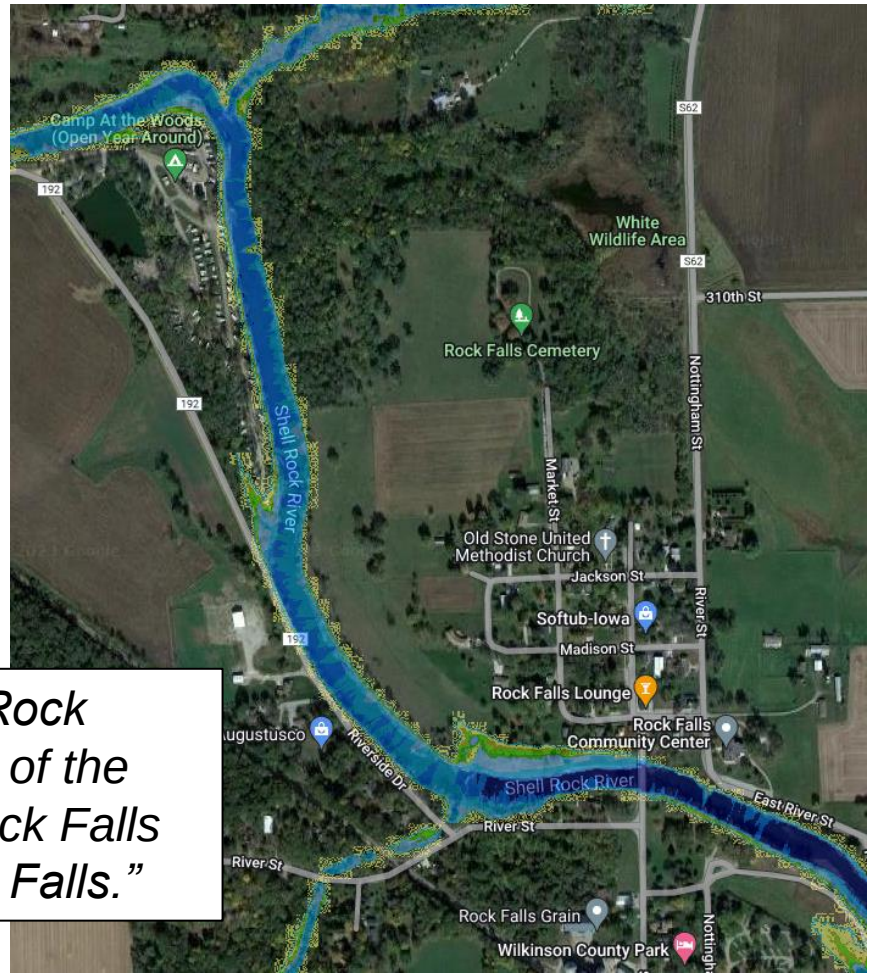
Flooding Risk Assessment

DRAFT

Ongoing Work

- County-level data
- City-level risk review

In 2012, "Flash flooding of the Shell Rock River led to the evacuations of Camp of the Woods Campground northwest of Rock Falls and Wilkinson Campgrounds in Rock Falls."



Cities

- Northwood
- Manly
- Kensett
- Plymouth
- **Rock Falls**
- Dougherty
- Clarksville
- Greene
- Shell Rock
- Marble Rock
- Nora Springs
- Rudd

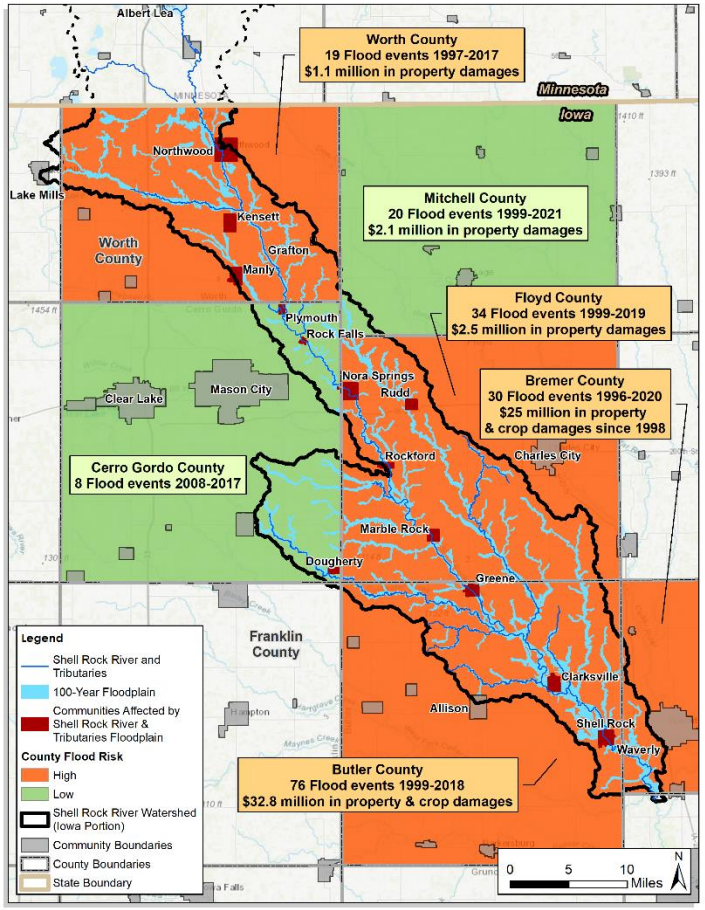
Flooding Risk Assessment

Ongoing Work

- County-level data
- City-level data

Next Steps

- Summarize data/study needs
- Review projects in HMPs
- Identify potential new watershed-level projects
- Integrate into watershed plan
- Integrate into HMPs



Cities

- Northwood
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- Shell Rock
- Marble Rock
- Nora Springs
- Rudd

Questions and Discussion

Flood Risks and Resiliency Strategies

- Have you experienced flooding from the Shell Rock River (or its tributaries)? Where? What were the impacts?
- What resources does your community or jurisdiction need to mitigate flood risks?
- Is your community/jurisdiction willing to work with others to solve flooding at the watershed scale (work across city and county lines)?

Watershed = We are all in it together

Pause for a Break?

Water Quality Concerns & Needs

Background

SHELL ROCK WMC MEETING

Miranda Haes, Northeast Iowa Basin Coordinator

DNR Water Quality Improvement Section

clean water starts with you.
IOWA DNR WATERSHED IMPROVEMENT

What we'll go through today:

- Overview of DNR's role in WMC
- WMA's across the state
- History of Iowa's Water Quality Planning
- Overview of the Nutrient Reduction Strategy
- NRS goals and objectives
- How Shell Rock WMC fits into the statewide efforts
- New funding opportunity
- Questions?

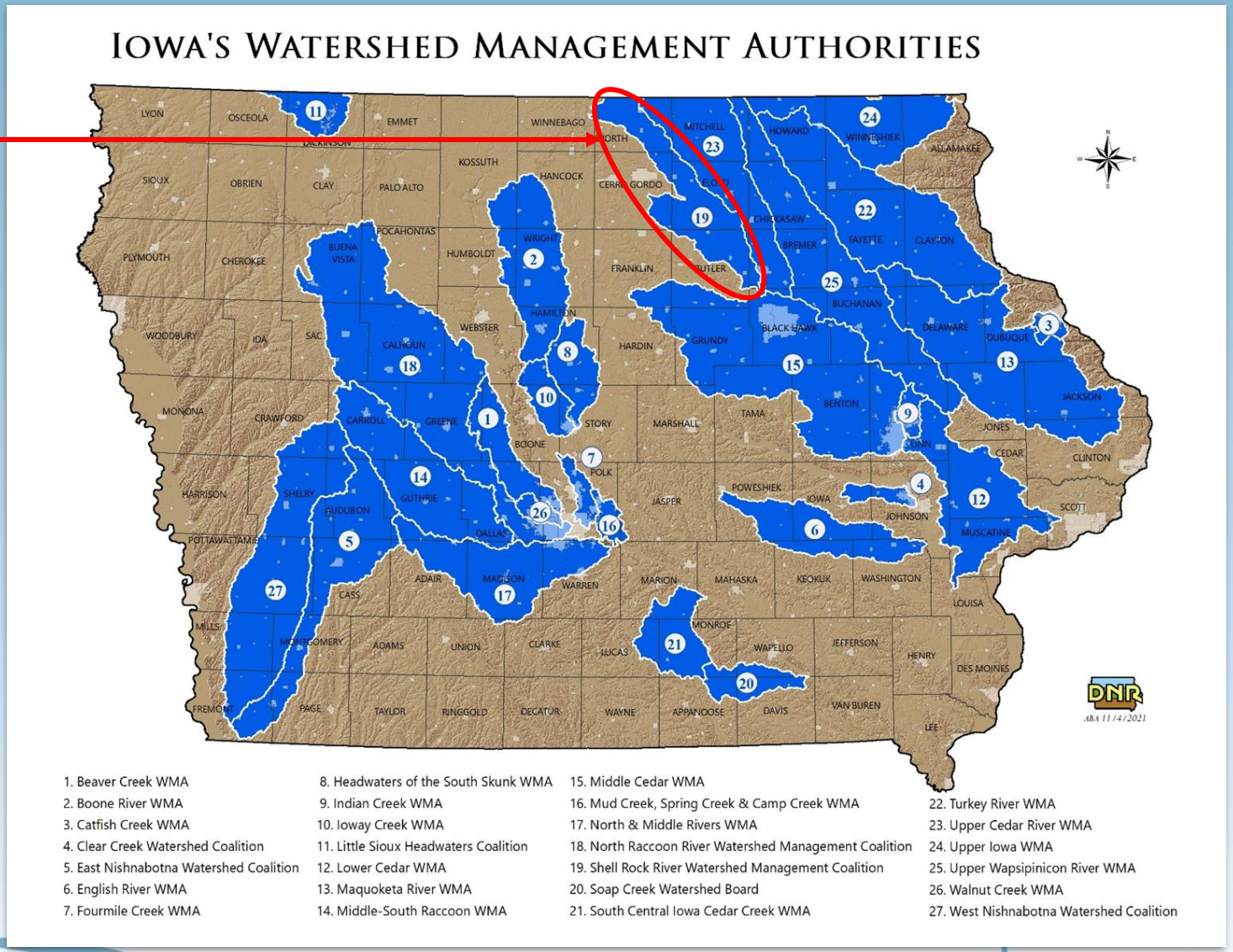
Watershed Management Authorities (WMAs)

Shell Rock WMC

27 WMAs in Iowa have formed since 2012

Neighboring WMA's

- Upper Cedar River WMA
- Middle Cedar WMA



History of Iowa's Water Quality Planning

1985
- *Department of Natural Resources was created*

1996
- *The Iowa State Water Plan was published by Iowa State University*

1999
- *Iowa Legislature creates Watershed Protection Program*

2006
- *Iowa Legislature calls for creation of Watershed Quality Planning Task Force*

2008
- *DNR develops recommended nutrient criteria for Iowa's recreational lakes. June brought record flooding in Cedar Rapids*

https://www.cfra.org/sites/default/files/publications/a-look-at-iowas-water-history.pdf

History of Iowa's Water Quality Planning Continued

2011

- *Environmental Protection Agency publishes memo urging Hypoxia Task Force states to make greater efforts in their nutrient reduction strategies*

2012

- *Federal Disaster Declaration funds from 2008 floods allocated toward WMA formation and planning.*

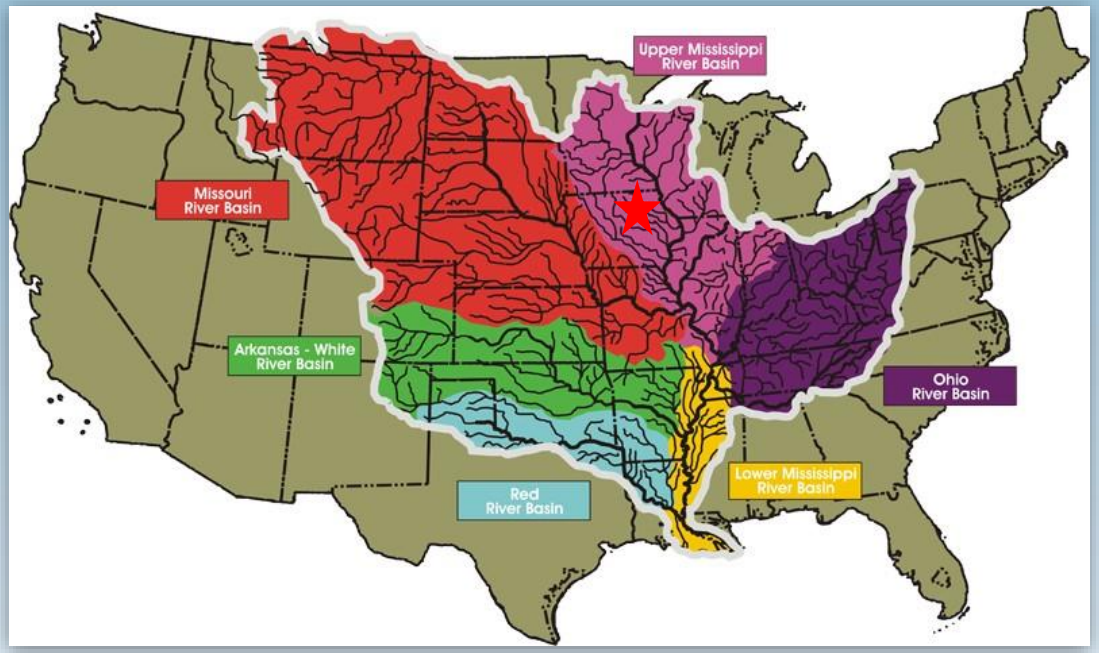
2013

- *Iowa Releases the Nutrient Reduction Strategy for the first time and first round of watershed planning grant funds awarded through IDNR.*

2021

- *Shell Rock WMC awarded planning grant*

"The Iowa Nutrient Reduction Strategy is a science and technology-based framework to assess and reduce nutrients to Iowa waters and the Gulf of Mexico. It is designed to direct efforts to reduce nutrients in surface water from both point and nonpoint sources in a scientific, reasonable and cost effective manner.



https://mississippiriverdelta.org/learning/explaining-the-gulf-of-mexico-dead-zone/

The Iowa strategy outlines a pragmatic approach for reducing nutrient loads discharged from the state's largest wastewater treatment plants, in combination with targeted practices designed to reduce loads from nonpoint sources such as farm fields. This is the first time such an integrated approach involving both point sources and nonpoint sources has been attempted."

https://www.nutrientstrategy.iastate.edu/

IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP

IOWA DEPARTMENT OF NATURAL RESOURCES

IOWA STATE UNIVERSITY

clean water starts with you.
IOWA DNR WATERSHED IMPROVEMENT

IOWA NUTRIENT REDUCTION STRATEGY

- **Focused on Nitrogen and Phosphorus to the Mississippi River**
  - Finalized in May 2013
  - Total TN & TP Reduction Goal: 45% for Non-Point Source (NPS) and Point Source (PS)
- **Integrated Strategy**
  - NPS: Science Assessment for NPS agricultural producers with voluntary implementation of conservation practices
  - PS: Technology Assessment for major wastewater treatment facilities
- **Estimated Cost**
  - NPS: Initial Investment Costs range from $1.2 to $4 billion
  - PS: Capital and operation costs over 20 years of approximately $1.5 billion
- **Source Water Protection Efforts added to the NRS in 2014**

Table 1. Estimated percent load contributions from point and non-point sources.

Estimated % of Loads and Load Reduction	Nitrogen	Phosphorus
% of Total Load from Point Sources	7	21
% of Total Load from Non-point Sources	93	79
% of Overall Load Reduction from Point Sources to meet 45% Total Load Reduction Goal	4	16
% of Overall Load Reduction from Nonpoint Sources to meet 45% Total Load Reduction Goal	41	29

HOW DO WE ACHIEVE THESE GOALS?

NITROGEN PRACTICES

Nitrogen Management:
- ➔ Timing
- ➔ Source
- ➔ Nitrogen Application Rate
- ➔ Nitrification Inhibitor
- ➔ Cover Crops
- ➔ Living Mulches

Land Use:
- ➔ CRP (Land Retirement)
- ➔ Extended Rotations
- ➔ Grazed Pastures

Edge-of-Field:
- ➔ Wetlands
- ➔ Bioreactors
- ➔ Buffers
- ➔ Saturated Buffers
- ➔ Multi-purpose Oxbow

Iowa Strategy to Reduce Nutrient Loss: Nitrogen Practices

This table lists practices with the largest potential impact on nitrate-N concentration reduction (except where noted). Corn yield impacts associated with each practice also are shown as some practices may be detrimental to corn production. If using a combination of practices, the reductions are not additive. Reductions are field level results that may be expected where practice is applicable and implemented.

	Practice	Comments	% Nitrate-N Reduction* Average (SD†)	% Corn Yield Change** Average (SD†)
Nitrogen Management‡	Timing	Moving from fall to spring pre-plant application	6 (25)	4 (16)
		Spring pre-plant/sidedress 40-60 split Compared to fall-applied	5 (28)	10 (7)
		Sidedress – Compared to pre-plant application	7 (37)	0 (3)
		Sidedress – Soil test based compared to pre-plant	4 (20)	13 (22)††
	Source	Liquid swine manure compared to spring-applied fertilizer	4 (11)	0 (13)
		Poultry manure compared to spring-applied fertilizer	-3 (20)	-2 (14)
	Nitrogen Application Rate	Nitrogen rate at the MRTN (0.10 N:corn price ratio) compared to current estimated application rate. (ISU Corn Nitrogen Rate Calculator – **http://cnrc.agron.iastate.edu** can be used to estimate MRTN but this would change Nitrate-N concentration reduction)	10	-1
	Nitrification Inhibitor	Nitrapyrin in fall – Compared to fall-applied without Nitrapyrin	9 (19)	6 (22)
	Cover Crops	Rye	31 (29)	-6 (7)
		Oat	28 (2)	-5 (1)
	Living Mulches	e.g. Kura clover – Nitrate-N reduction from one site	41 (16)	-9 (32)
Land Use	Perennial	Energy Crops – Compared to spring-applied fertilizer	72 (23)	
		Land Retirement (CRP) – Compared to spring-applied fertilizer	85 (9)	
	Extended Rotations	At least 2 years of alfalfa in a 4 or 5 year rotation	42 (12)	7 (7)
	Grazed Pastures	No pertinent information from Iowa – assume similar to CRP	85	
Edge-of-Field	Drainage Water Mgmt.	No impact on concentration	33 (32)	
	Shallow Drainage	No impact on concentration	32 (15)	
	Wetlands	Targeted water quality	52	
	Bioreactors		43 (21)	
	Buffers	Only for water that interacts with the active zone below the buffer. This would only be a fraction of all water that makes it to a stream.	91 (20)	
	Saturated Buffers	Divert fraction of tile drainage into riparian buffer to remove Nitrate-N by denitrification.	50 (13)	
	Multi-purpose Oxbow	Targeted water quality	42 (6)	

* A positive number is nitrate concentration or load reduction and a negative number is an increase.

** A positive corn yield change is increased yield and a negative number is decreased yield. Practices are not expected to affect soybean yield.

† SD = standard deviation. Large SD relative to the average indicates highly variable results.

†† This increase in crop yield should be viewed with caution as the sidedress treatment from one of the main studies had 95 pounds-N/acre for the pre-plant treatment but 110 pounds-N/acre to 200 pounds-N/acre for the sidedress with soil test treatment so the corn yield impact may be due to nitrogen application rate differences.

‡ See Standard Practices (blue box) on page 2 of this publication.

Iowa Strategy to Reduce Nutrient Loss: Phosphorus Practices

Practices below have the largest potential impact on phosphorus load reduction. Corn yield impacts associated with each practice also are shown, since some practices may increase or decrease corn production. If using a combination of practices, the reductions are not additive. Reductions are field level results that may be expected where practice is applicable and implemented.

	Practice	Comments	% P Load Reduction[a]	% Corn Yield Change[b]
			Average (SD[c])	Average (SD[c])
Phosphorus Management‡	Phosphorus Application	Applying P based on crop removal – Assuming optimal STP level and P incorporation	0.6[d]	0
		Soil-Test P – No P applied until STP drops to optimum or, when manure is applied, to levels indicated by the P Index[f]	17[e]	0
	Source of Phosphorus	Liquid swine, dairy, and poultry manure compared to commercial fertilizer – Runoff shortly after application‡	46 (45)	-1 (13)
		Beef manure compared to commercial fertilizer – Runoff shortly after application‡	46 (96)	
	Placement of Phosphorus	Broadcast incorporated within 1 week compared to no incorporation, same tillage	36 (27)	0
		With seed or knifed bands compared to surface application, no incorporation	24 (46)	0
	Cover Crops	Winter rye	29 (37)	-6 (7)
	Tillage	Conservation till – chisel plowing compared to moldboard plowing	33 (49)	0 (6)
		No till compared to chisel plowing	90 (17)	-6 (8)
Land Use Change	Perennial Vegetation	Energy Crops	34 (34)	
		Land Retirement (CRP)	75	
		Grazed pastures	59 (42)	
Erosion Control and Edge-of-Field	Terraces		77 (19)	
	Buffers		58 (32)	
	Control	Sedimentation basins or ponds	85	
	Blind Inlet	Sediment control	50	

[a] A positive number is P load reduction and a negative number is increased P load.

[b] A positive corn yield change is increased yield and a negative number is decreased yield. Practices are not expected to affect soybean yield.

[c] SD = standard deviation. Large SD relative to the average indicates highly variable results.

[d] Maximum and average estimated by comparing application of 200 and 125 kilogram P_2O_5/hectare, respectively, to 58 kilogram P_2O_5/hectare (corn-soybean rotation requirements) (Mallarino et al., 2002).

[e] Maximum and average estimates based on reducing the average STP (Bray-1) of the two highest counties in Iowa and the statewide average STP (Mallarino et al., 2011a), respectively, to an optimum level of 20 ppm (Mallarino et al., 2002). Minimum value assumes soil is at the optimum level.

[f] ISU Extension and Outreach publication (PM 1688).

‡ See Standard Practices (blue box) on page 2 of this publication.

SP 435 A Revised October 2019

IOWA STATE UNIVERSITY
Extension and Outreach

PHOSPHORUS PRACTICES

Phosphorus Management:

- ➔ Application
- ➔ Source
- ➔ Placement
- ➔ Cover Crops
- ➔ Tillage Practices

Land Use:

- ➔ Energy Crops
- ➔ Land Retirement (CRP)
- ➔ Grazed Pastures

Erosion Control and Edge-of-Field:

- ➔ Terraces
- ➔ Buffers
- ➔ Sedimentation basins or ponds
- ➔ Blind inlet

DNR

clean water starts with you.
IOWA DNR WATERSHED IMPROVEMENT

HOW DOES SHELL ROCK WMC FIT?

Let’s have a conversation…

NEW FUNDING OPPORTUNITY
$3M Underserved Farmer to Farmer Grant 2023-2027

- Goal: $75,000 - 250,000 projects with water quality or quantity focus
  - No match requirements; must target “underserved” farmers or farm communities by USDA or Executive Order definitions
  - Flood resilience, nutrient reduction, and source water protection as main focus for Iowa

- Eligible entities include: state or local government entities, including SWCDs and 28E entities (like Watershed Management Authorities); NGOs/Nonprofits; beginning or US Military Veteran farm groups; others

- Applications will be two-phase similar to IDALS Urban WQI:
  - Pre application phase, brief narrative and simple budget for competitive selection
  - Full application developed with DNR technical assistance to meet grant requirements

More details available starting March 1 on DNR website / press release

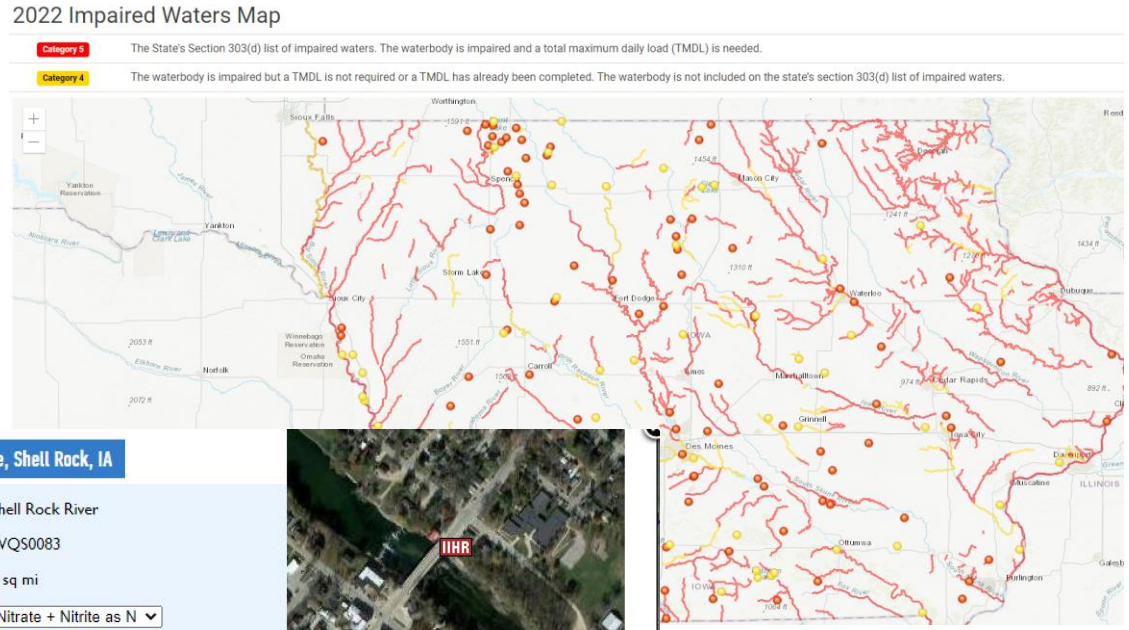
Thank you! Questions?

Miranda Haes, Northeast Iowa Basin Coordinator

515-204-3485; miranda.haes@dnr.iowa.gov

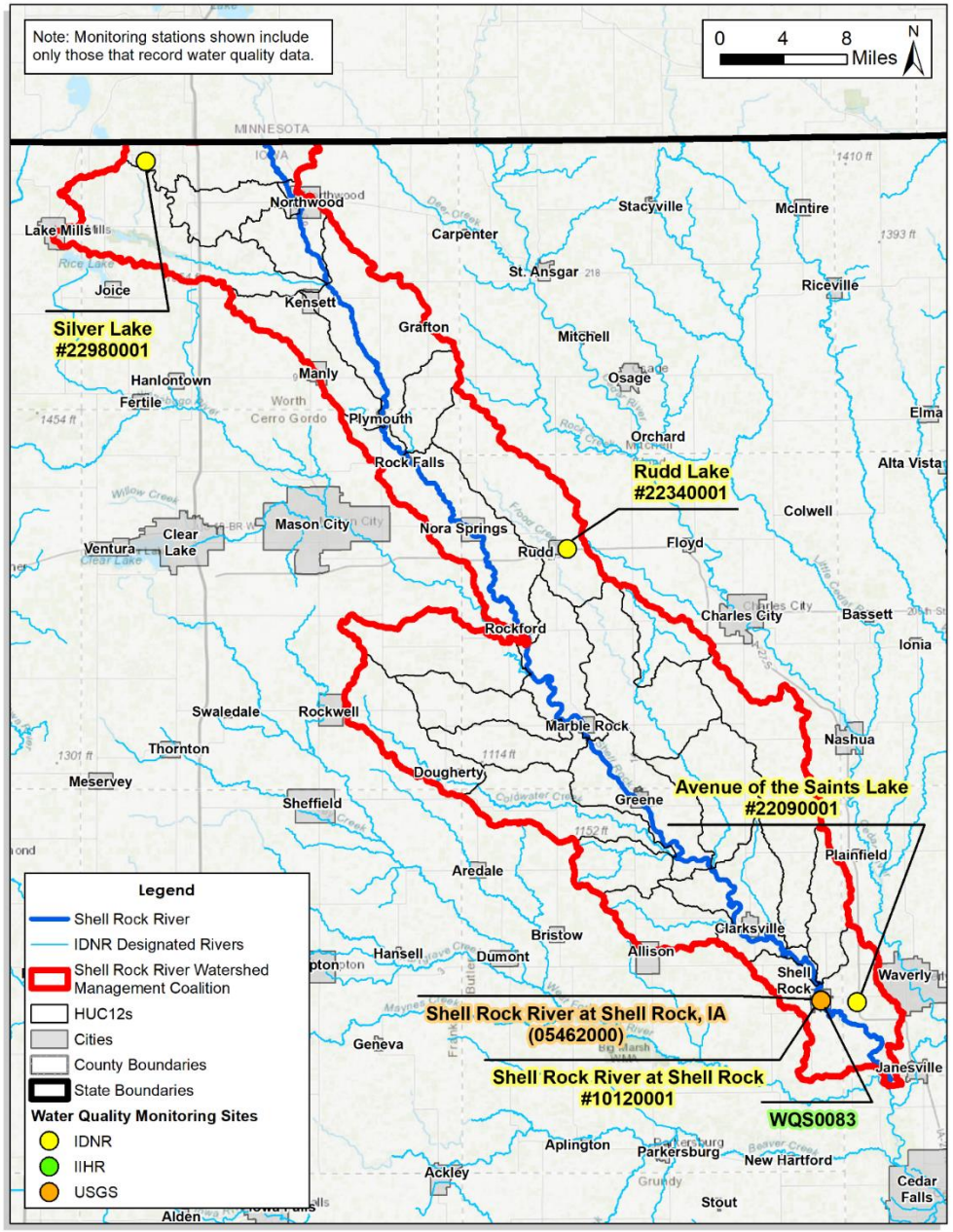
Water Quality Data Sources

- DNR
  - Ambient Stream Monitoring
  - Monthly measurements (1999-2022)
  - Integrated Report (Impaired Waters)
  - AQuIA & ADBNet Websites
  - TMDL studies
- IFC Stream Sensors
  - Includes USGS data
  - Daily measurements (2018-2022)



Monitoring Sites

- Long-term stream data only available at Shell Rock, IA
- Pollutants of concern:
  - Nutrients
  - Sediment
  - Bacteria (*E. coli*)



Water Quality Standards

Pollutant	Iowa Standard	Other Benchmarks (no regulatory significance)
Nitrogen	No ambient WQ standard for Iowa streams **Drinking WQ standard = 10 mg/L**	*EPA recommendation = 2.18 mg/L
Phosphorus	No ambient WQ standard for Iowa streams	*EPA recommendation = 0.7625 mg/L
Sediment	No ambient WQ standard for Iowa streams	**TSS = 50 mg/L
Bacteria (*E. coli*)	**126 colonies/100 mL (chronic/long-term)** **235 colonies/100 mL (acute/short-term)**	n/a

**EPA recommended criteria, based on ecological health (EPA, 2001)*
*** TSS used as surrogate for sediment sampling, based on stream support for a rich diversity of aquatic life (KDHE, 2020)*

Nitrogen – Long Term Trends

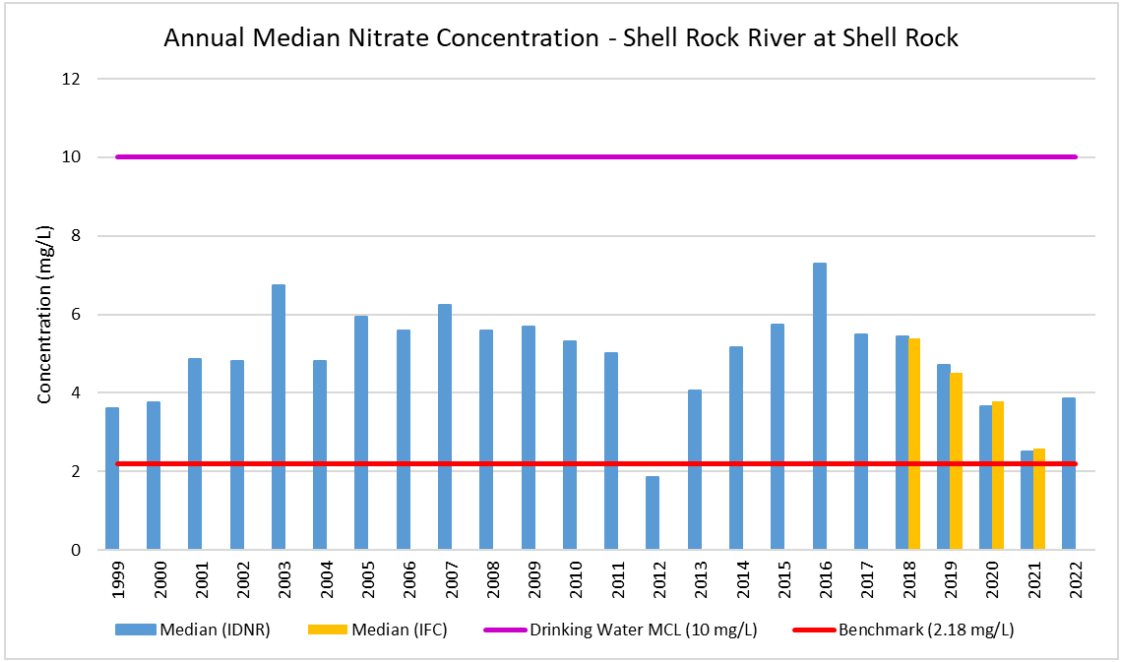
DRAFT

Long-term concentrations are well below drinking water standards

Benchmark is consistently being exceeded

2012 = year of drought

DNR and IFC data appear to be consistent

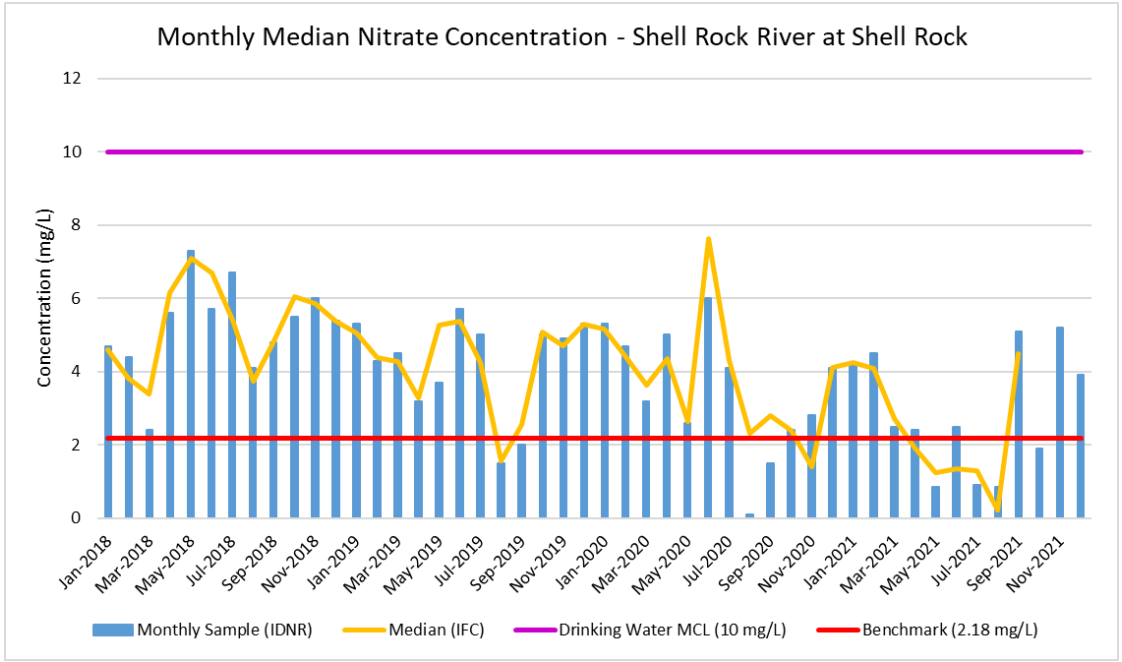


Nitrogen – Short Term Trends

DRAFT

Seems to be a recent trend of decreasing nitrate levels

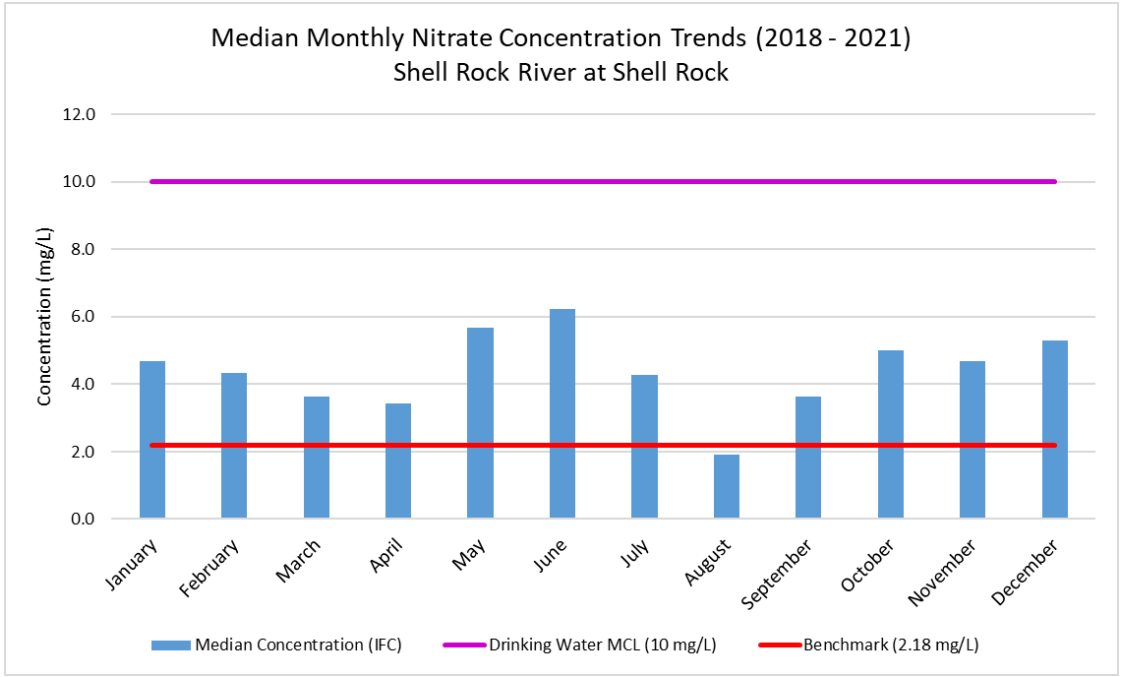
WQ modeling and/or a flow weighted analysis would be helpful next steps



Nitrogen – Seasonal Trends

DRAFT

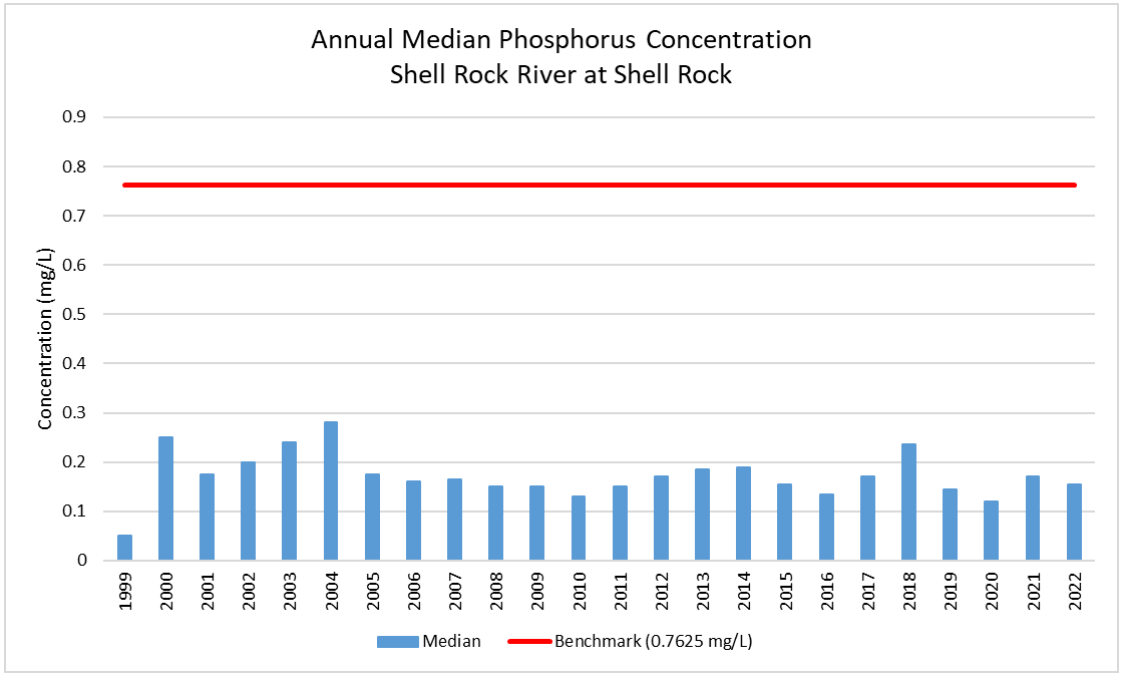
- Concentrations increase:
  - Spring/early summer
  - Fall
- Direct relationship with precipitation, run-off, and plant cover



Phosphorus – Long Term Trends

DRAFT

- Long term trend is relatively steady
- Monthly grab samples likely underrepresents true total phosphorus loads
  - Phosphorus attached to sediment is missed
  - Statewide, 3%-38% of total phosphorus loads are from streambank erosion (Schilling, 2019)
  - A lot of sediment is transported during storm events



Erosion/Sediment – Long Term Trends

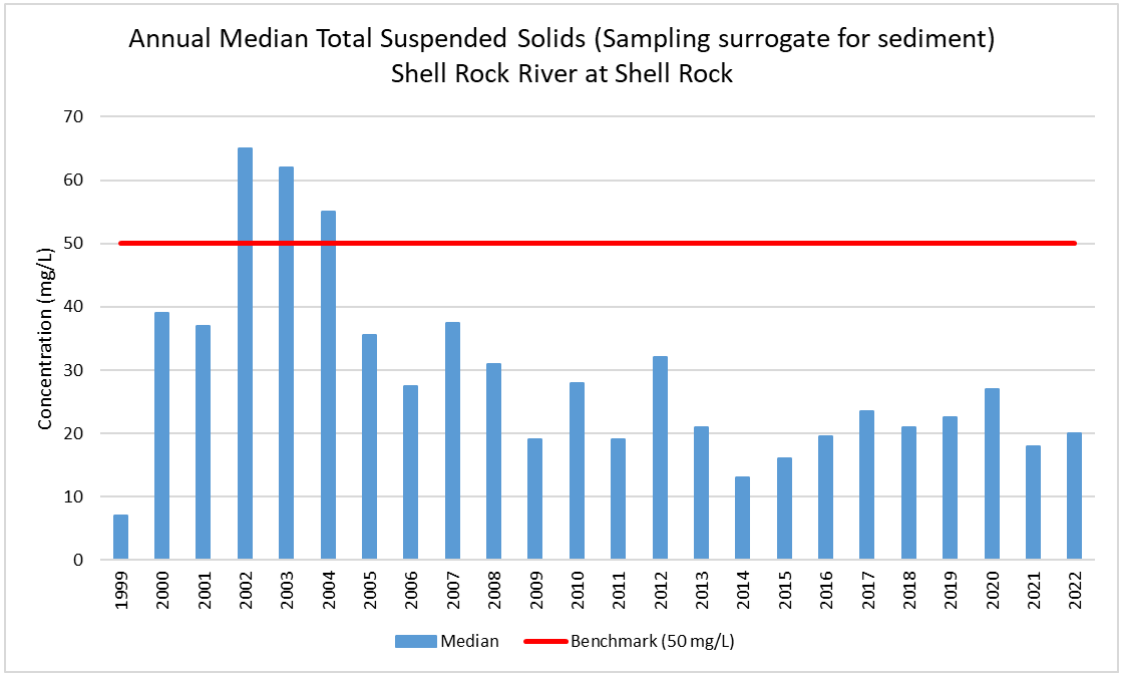
DRAFT

TSS used as surrogate

More recent trend looks relatively steady

Monthly grab samples likely underrepresents true sediment load

Additional erosion estimates will be developed



E. coli Bacteria – Long Term Trends

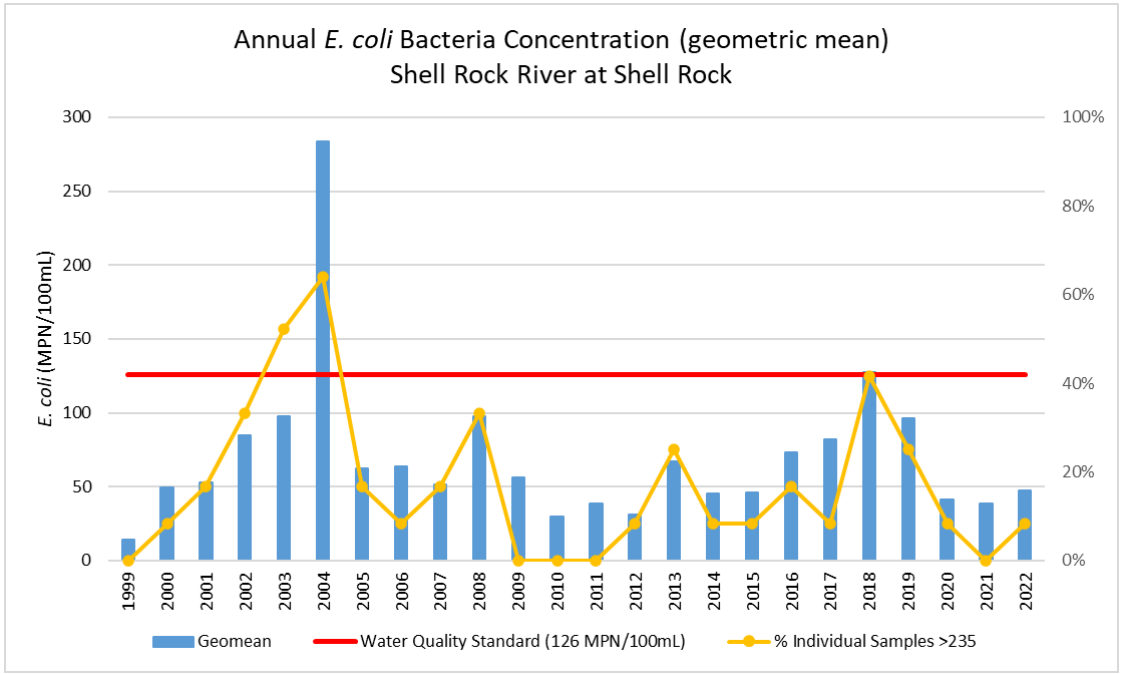
DRAFT

Mixed trends

2004 & 2018 – exceed chronic standard

Acute standard (individual samples) has been exceeded regularly

More detailed review of DNR assessments needed



Impaired Waters

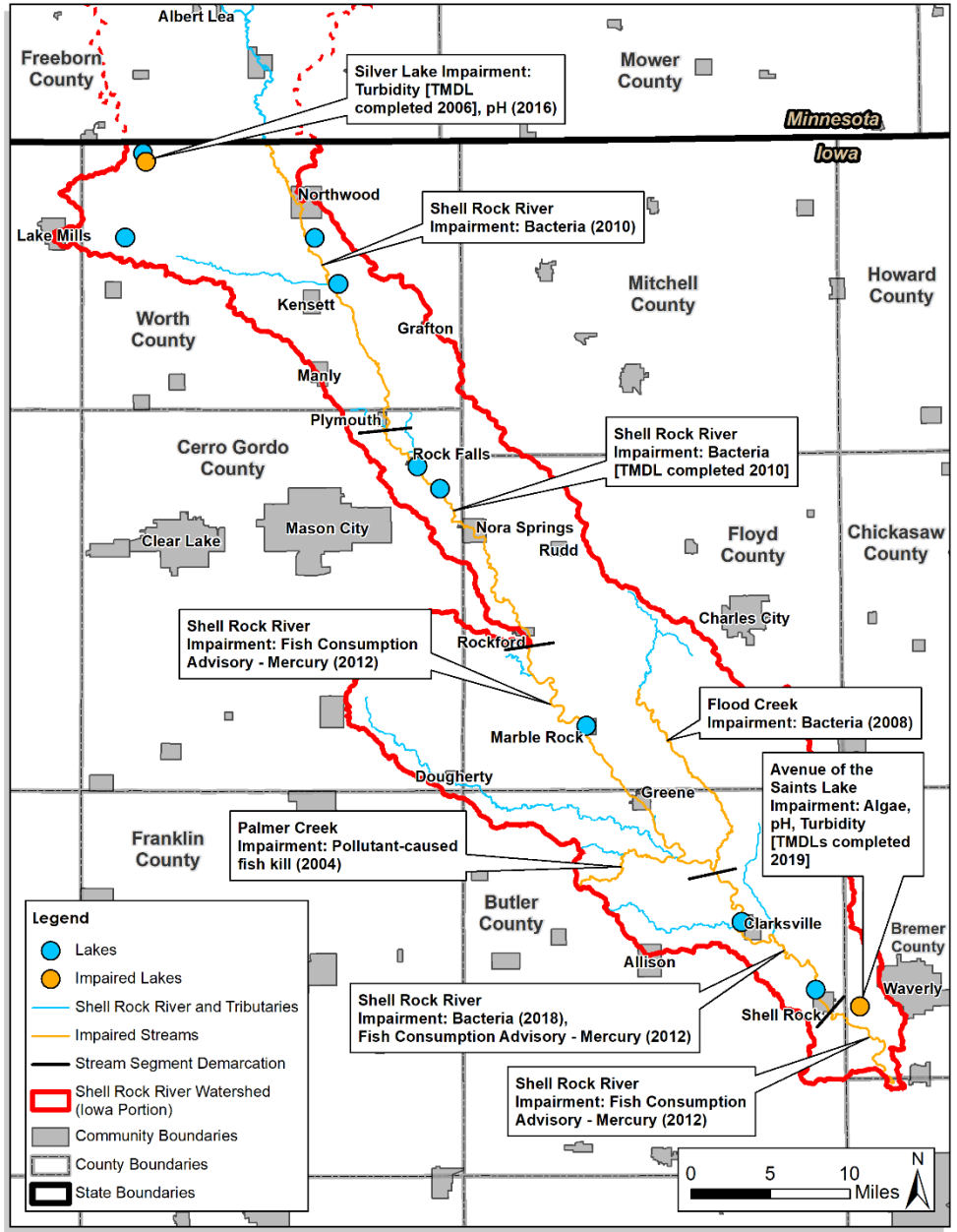
Do not meet state water quality standards

Several stream segments impaired due *to E. coli* bacteria

2 lakes are impaired, related to nutrients and sediment

TMDL completed in 2010

Other impairments (mercury, fish consumption advisory, fish kill) likely not related to watershed management



Bacteria Sources

From 2010 TMDL

1. Open Feedlot Runoff
2. Manure Spread on Cropground

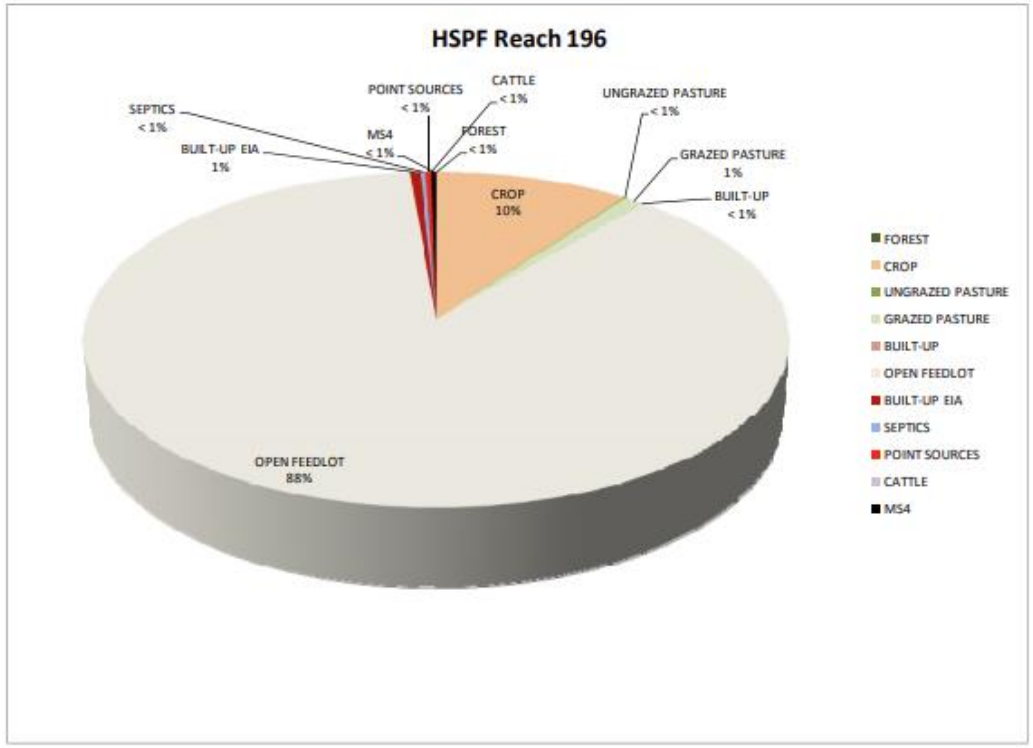


Figure 6-6. HSPF Source Allocation for Shell Rock River Segment IA 02-SHL-0020_1.

Summary of Water Quality

DRAFT

Overall WQ is not horrible

However, there are still some issues

Detailed sampling and modeling may help increase our understanding

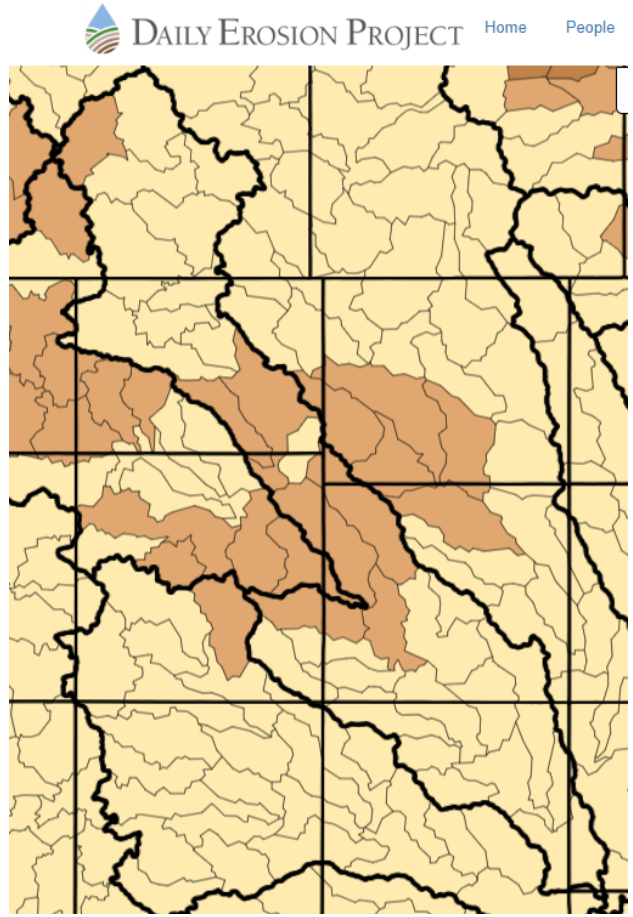
Water Quality Assessment

Ongoing Work

- Continue analyzing existing data
- Trend analysis for each pollutant

Next Steps

- Review loads vs concentrations
- Integrate into watershed plan
- Develop goals
- Summarize data/study needs



Questions and Discussion

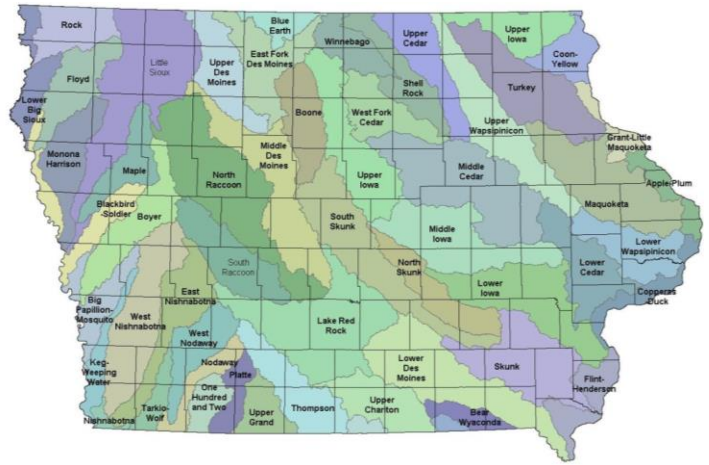
Water Quality Concerns and Needs

Is information on water quality in the River easy to obtain? Are you aware of current water quality conditions?

Is good water quality important to you, others in the watershed, or to economic viability of your community/jurisdiction? Why? In what way?

What activities do you think harm water quality the most?

What resources do cities, counties, farmers, or others need to help improve water quality across the watershed?



Everyone lives in a watershed

Recreation Opportunities

Existing Facilities

Wildlife areas

Camping

Picnicking

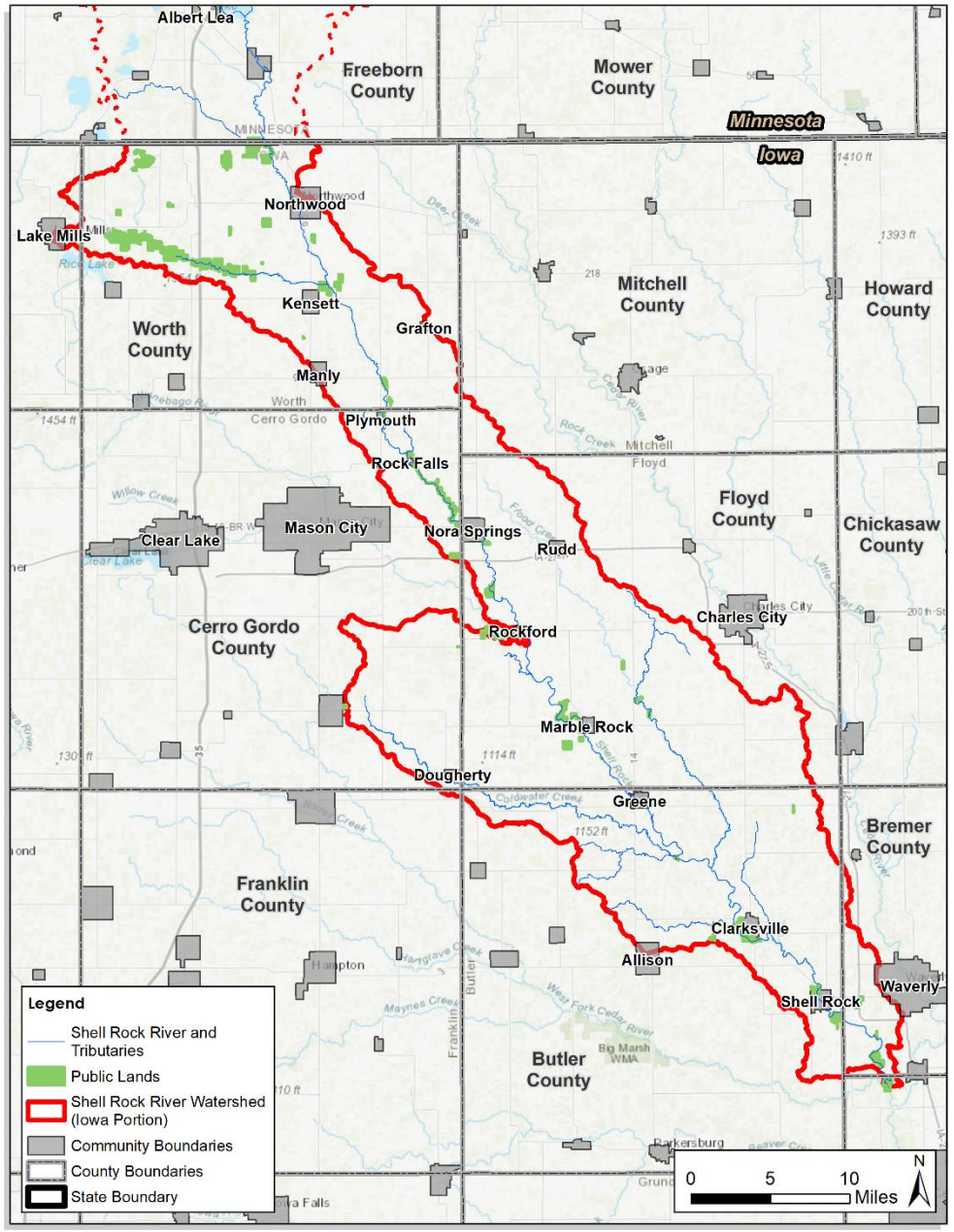
Hiking

Horse riding

Skiing

Hunting Fishing Boating

Canoeing / Kayaking



Questions and Discussion

Recreation Opportunities

- Is recreation important in the watershed?
- Are there any under served areas of the watershed?
- What new or additional types of recreation are needed?
- Would a designated water trail be beneficial?

Recreation areas can also provide benefits of reduced flooding, improved water quality, enhanced wildlife habitat, and education opportunities.

Next Steps

Next Steps

Next meeting agenda (tentative)

- Review public feedback
- Review updated data analysis
- **Working session:** Develop draft goals for the plan
- **Learning moment:** Mary Beth Stevenson, Watersheds & Source Water Coordinator, Cedar Rapids

Homework

- Complete and return your worksheets by April 5th
- Get input from others on your worksheets
- Newspaper clippings requested
- Watershed pictures requested

Thank You!!

Future Project Idea for the Shell Rock River??

Adam Rupe

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