



Sustainable Rivers Program

Watershed Resilience and Nutrient Reduction Workshop

U.S. Army Corps of Engineers &
Natural Resources Conservation Service
2023

Neal Smith National Wildlife Refuge

Prairie City, Iowa

March 30, 2022

Des Moines River - Sustainable Rivers Program
Watershed Resilience and Nutrient Reduction Workshop

Final Report

Project Scope Statement

Saylorville Lake and Lake Red Rock are reservoirs on the Des Moines River, a tributary of the Mississippi River. Saylorville is located directly upstream from the City of Des Moines. Lake Red Rock is approximately 70 miles downstream. Saylorville is operated in tandem with Lake Red Rock. Both projects influence flood risk and provide opportunities for implementation of environmental pools and flows from their dams to the confluence with the Mississippi River, roughly 143 river miles below Lake Red Rock. Saylorville and Red Rock have progressed through the distinct phases of the Sustainable Rivers Program that include Advance, Implement, and Incorporate. Work has included a regulated/unregulated flows analysis, scientific literature review, environmental flows workshop, defined environmental flows, and adoption of SRP measures within the Water Control Plan. Authorized purposes for the dams include flood risk management, recreation, low flow augmentation, water supply, and fish and wildlife management.

The Des Moines River has been active in the SRP since 2015 and accomplished several projects that advance environmental water management principles within the Saylorville Lake and Lake Red Rock watersheds. Previous work to identify nutrient issues within the Des Moines River watershed culminated in the creation of a series of Story Map tools. These tools are intended to educate the user regarding Des Moines River watershed resource concerns, the role of soil health in preserving natural resources, and integration of Agricultural Conservation Planning Framework (ACPF). See [How Can I Help Build Watershed Resilience? \(arcgis.com\)](https://arcgis.com). These were developed in partnership with the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS).

To promote utilization of tools created and to demonstrate the effectiveness of those tools and the practices that they recommend, the Des Moines River SRP hosted a meeting to bring together the federal, state, and county officials who are responsible for the management of federal lands associated with the Saylorville Lake and Lake Red Rock Projects. The purpose of the meeting was to introduce the Watershed Resilience Tool (WRT) and utilize it to identify, prioritize, and implement nonstructural and structural approaches to improve watershed contributions to Saylorville and Red Rock Lakes. Experts in both structural and nonstructural approaches to water quality improvement helped facilitate these meetings, including from local NRCS, non-profits, county governments, and watershed experts.

Workshop Planning Team

Hugh Howe, USACE, Lake Red Rock
Perry Thostenson, USACE, Lake Red Rock
Tyler Hill, USACE, Saylorville Lake

Justin Edwards, USACE, Saylorville Lake
Mike Dougherty, USACE, Geographer
Alden Ross, USACE, Geographer
Holly Giombi, NRCS
Marty Adkins, NRCS (Retired)
Nichole Baxter, NRCS
Matt McDonald, Iowa Department of Agriculture and Land Stewardship (IDALS)

Watershed Resilience and Nutrient Reduction Workshop

The workshop was originally planned for the fall of 2020, but the Covid pandemic and subsequent agency restrictions for in-person meetings caused the postponement until March 2022. The workshop planning team members changed as agency personnel moved to other locations or other positions within their local organizations. By the time the workshop was held, the planning team consisted of staff from USACE and NRCS. The Neal Smith National Wildlife Refuge Visitor Center was selected as host facility. Personnel there helped with workshop facility logistics. Twenty-six people representing eleven agencies attended or participated in the workshop (Photos 1 and 2). Please see the attached Appendix 1, Workshop Agenda, and Appendix 2, Workshop Attendance.



Photo 1. USACE Natural Resource Specialist Perry Thostenson kicked off the workshop with a presentation “Sustainable Rivers Program Overview and Nutrient Reduction Nexus” (USACE photo).



Photo 2. Jonathan Swanson, Polk County Watershed Authority Coordinator with Polk County, presents about how they are constructing and implementing BMPs on the Polk and Story County landscapes (USACE photo).

The Iowa Nutrient Reduction Strategy is an effort developed by Iowa State University, the Iowa Department of Agriculture and Land Stewardship (IDALS) and the Iowa Department of Natural Resources (IDNR) to work with landowners to reduce nutrient inputs into Iowa's waterways. It is largely a voluntary initiative with a goal to reduce phosphorus and nitrogen loads into the system by 45 percent. Matt McDonald (IDALS) gave a presentation about the Nutrient Reduction Strategy and IDALS involvement. While any land use practice that reduces nutrient loads to the river system is laudable, the Iowa Environmental Council is critical that the progress achieved after ten years of the Nutrient Reduction Strategy is woefully inadequate.

One pivotal aspect of the Watershed Resilience & Nutrient Reduction Workshop was an introduction to "Soil Health." Soil health is not new technology or understanding of organic soils; rather, it is a renewed emphasis on management and conservation to build healthy soils that are rich in water-holding organic matter that is naturally rich in vital nutrients. Repeated annual cultivation, which depletes natural soil health, is not part of the equation (Photo 3). A link in the Watershed Resilience website offers an introduction to those principles <https://storymaps.arcgis.com/collections/314cc43943f94732ab1fa5ad7cecd40?item=1> Iowa NRCS soil conservationists and producers Jason Steele and J.D. Hollingsworth offered an overview of soil health and a demonstration of the differences and water-holding capacity of typical annually row-cropped soils to those with a healthy, microscopic and visible life forms interacting in their subterranean community.

The elementary basics of soil health are presented here

<https://storymaps.arcgis.com/collections/314cc43943f94732ab1fa5ad7cecd40?item=3>

NRCS prescribes five principles of soil health: (1) Maximize soil cover, (2) Minimize disturbance, (3) Maximize plant diversity, (4) Maximize continual living roots, and (5) Integrate livestock diversity.



Photo 3. Jason Steele and J.D. Hollingsworth demonstrate the water and nutrient holding capacity of soils with well-developed soil health, with those in typical annual crop production. They later assisted with the presentation and discussion “Practical Approaches to Structural and Non-Structural Best Management Practices (BMPs; USACE photo).

When USACE hosted the SRP Adaptive Management & Monitoring Plan workshop an overriding theme throughout stakeholder discussion was that sustainable rivers are dependent on sustainable watersheds. It became a priority for the Des Moines River team to identify and evaluate the watershed that would improve water quality and restore the ecological needs of aquatic-dependent species. A Rapid Watershed Threat Assessment was conducted on watersheds of Lake Red Rock and Saylorville lake to help identify where BMPs could be implemented. The Des Moines River SRP website that presents that information is located here [Des Moines River Sustainable Rivers Program \(arcgis.com\)](https://www.usace.army.mil/Portals/0/documents/desmoinesriver/DesMoinesRiverSustainableRiversProgram/arcgis.com)

The workshop then included an overview of the Agricultural Conservation Planning Framework (ACPF) by Dave James, NRCS (retired). He was one of the ACPF developers and how it can be utilized for soil conservation planning. ACPF is a free ArcGIS toolbox that uses high resolution geo-spatial data to help farmers assess and address their soil and water conservation needs. See <https://acpf4watersheds.org/>. ArcGIS is a product and trademark of the Environmental Systems Research Institute, Inc. (ESRI).

The next step was an interactive activity with the Watershed Resilience Tool. The “tool” is a modified by-product of the ACPF. This tool allows land managers to identify conservation

practices across within watersheds. Facilitated by Mike Dougherty, participants used their laptops to locate locations where Best Management Practices could be employed to reduce nutrient loss from the landscape. In addition, they gained familiarity with the tool by perusing the Watershed Resilience website [How Can I Help Build Watershed Resilience? \(arcgis.com\)](https://www.arcgis.com/home/webpage/index.html?appid=39111111111111111111111111111111) and especially Explore Restoration Features (Figure 1).

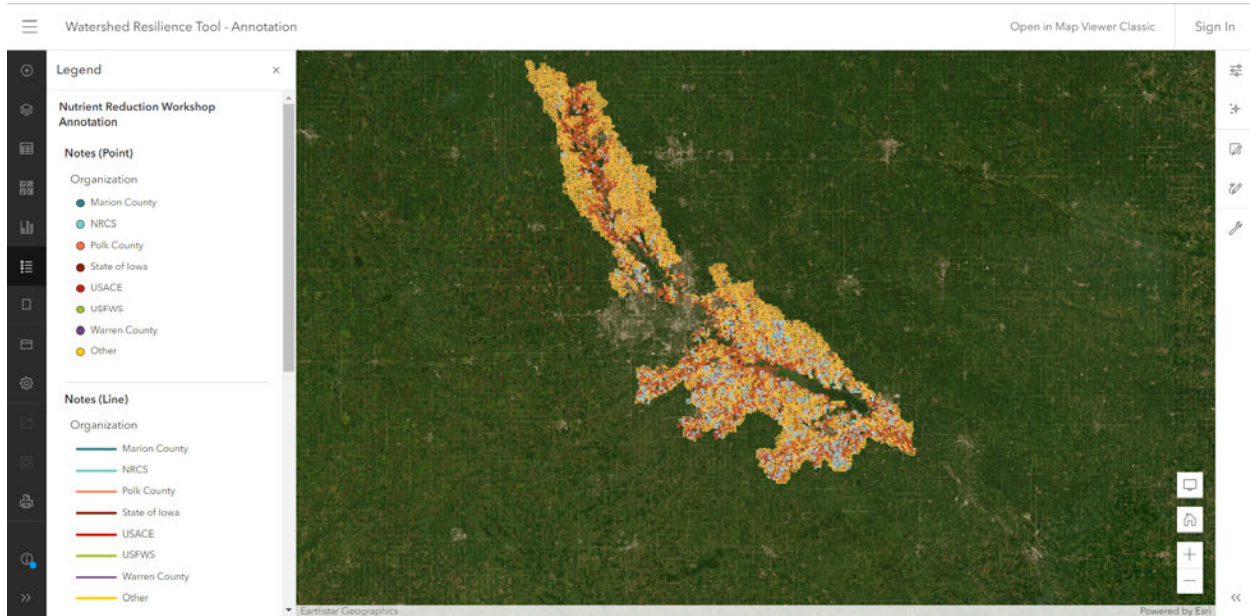


Figure 1. A screen shot of the Watershed Resilience Tool, an interactive ArcGIS application that utilizes the Agricultural Conservation Planning Framework (ACPF), a tool for recommending specific agricultural watershed management practices. Nearly all watersheds of Saylorville and Red Rock were mapped.

The last two sessions were facilitated by Rock Island District geographer and (ArcGIS expert) Mike Dougherty. He demonstrated how the watershed resilience tool could be utilized to identify opportunities to implement structural or non-structural soil conservation practices on federally owned land, with a goal to reduce soil erosion or nutrient losses to the reservoir. Groups broke into teams to utilize the tools themselves and discuss possible practices. At the conclusion the group discussed various BMPs, their advantages and disadvantages. Land managers were able to see how the Watershed Resilience Tool could be used in real life circumstances of natural resource management.

Discussion, Conclusion and Future

The Watershed Resilience and Nutrient Reduction Workshop provided an opportunity for participants to learn more about the water quality challenges present in the Des Moines River that can largely be attributed to the land management practices on publicly and privately owned land. In the last 30 years best management practices to reduce soil erosion and nutrient loss have primarily focused on structural and non-structural practices. The advantages of working to improve soil health has been gaining traction to achieve the same end yet build the organic and biotic character to achieve environmental benefits. Land managers at Lake Red

Rock have used a combination of their own staff or private leases to manage land that have been in crop production. Government management goals on production acres has focused on wildlife food plots and their benefits, while private leasees have been motivated to maximize crop yields and profitability. Agricultural policy and agricultural program funding often drives the actual implementation of soil and water conservation practices, or the lack thereof in the farming community. The success of soil health principles being incorporated into farming practices may well hinge upon the realities of future agricultural policy and funding priorities.

At Lake Red Rock, to be good stewards and demonstration sites for watershed resilience, nutrient reduction and soil health, we are planning to convert some fields that have been in annual crop production to permanent native vegetative cover and implement additional soil health principles on federal land.

Appendix 1

Watershed Resilience & Nutrient Reduction Workshop Agenda

March 30, 2022

MEETING AGENDA

- 8:30-8:40 a.m. **Welcome and Basic Logistics**
-Scott Gilje, Manager, Neal Smith National Wildlife Refuge
-Perry Thostenson, Natural Resource Specialist & District SRP Lead, USACE
- 8:40-8:55 a.m. **Roundtable Introductions**
- 8:55-9:05 a.m. **Sustainable Rivers Program Overview and Nutrient Reduction Nexus**
SRP and nutrient reduction as a priority for Des Moines River Team
-Perry Thostenson, Natural Resource Specialist & District SRP Lead, USACE
- 9:05-9:30 a.m. **Status of Iowa's Nutrient Dilemma**
-Matt McDonald, Iowa Dept of Ag and Land Stewardship and the Nutrient Reduction Strategy
- 9:30-10:30 a.m. **Soil Health Demonstration**
-Jason Steele & J.D. Hollingsworth, Soil Scientist, USDA Iowa NRCS
- 10:30 – 10:45 a.m. **Break**
- 10:45-12:00 p.m. **Practical Approaches to Structural and Non-Structural BMP's**
-John Swanson, WMA Coordinator, Polk County
-Jason Steele & J.D. Hollingsworth, Soil Scientist, USDA Iowa NRCS
- 12:00-1:00 p.m. **Lunch** *BYOL or order from Jimmy Johns. Tyler to compile orders and pick up*
- 1:00-1:30 p.m. **NRCS Agricultural Conservation Planning Framework**
-Dave James, NRCS retired, ACPF developer. Overview
- 1:30-2:30 p.m. **Focus Session: USACE Watershed Resilience Tool and Conservation Practices**
-Overview and Interactive group exercise facilitated by Mike Dougherty, USACE

1. Identify opportunities **potential** and current **implementation** per organization.
2. What opportunities are underrepresented and feasible?
3. What are the limitations to implementation?

2:30-3:45p.m.

Focus Session: Prioritization of Conservation Practices

-Mike Dougherty. Land managing agencies will utilize the Watershed Resilience Tool and prioritize candidate conservation practices within their managing areas.

3:45-4:00 p.m.

Reports from Teams

Teams or individuals will report to the group on identified opportunities and candidate projects. Actionable ideas will be highlighted.

4:00-4:15 p.m.

Review Workshop Meeting Concept

Review overall agenda and revisit key components to discuss effectiveness and generate ideas for future meetings. Ideas about meeting goals, construct, and potential is welcome.

4:15-4:30 p.m.

Closing Remarks & Wrap Up

Appendix 2

Watershed Resilience & Nutrient Reduction Workshop Attendance

Watershed Resilience & Nutrient Reduction Workshop
 U.S. Army Corps of Engineers
 Des Moines River Projects
 Location: Neal Smith National Wildlife Refuge

30 March 2022

NAME	AGENCY	EMAIL
Noelia M. Carrasquillo	NRCS	Email addresses redacted
Matt McDonald	IDALS	
Hayes Durbin	NRCS	
John Swanson	Polk County	
David James	Iowa State	
Josh Gense	Iowa DNR	
Coty Thompson	USACE	
Matt McDowell	Friends of Carrollville Lake	
Corey Gifford	IDALS	
Hugh Howe	USACE	
Todd Gosselink	DNR	
Cassie Corke	PCCB	
Amanda Brown	PCCB	
Nathan Rabe	NRCS	
Adam Schombast	NRCS	
Rebecca Krogman	Iowa DNR	
Rick Cause	ISU - Iowa Water Center	
Doug Sheeley	Polk Co Cons.	
Nicole	USACE	
Perry	USACE	
Tyler	USACE	
Michelle	USACE	
Amanda Mike D.	USACE	