

# Investigating Rural Readiness for Watershed Protection:

.....  
An Assessment of Community Capacity to Implement  
Natural Infrastructure Projects in the Quad Cities Region



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**NATIONAL  
WILDLIFE  
FEDERATION**







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CREP Wetland

## EXECUTIVE SUMMARY

Sand County Foundation (SCF) is a national non-profit with a mission to inspire and empower private landowners and land managers to responsibly care for natural resources. SCF's ongoing collaborations with landowners, farmers, watershed leaders, municipal stakeholders, and agricultural retailers have established SCF as a trusted partner within the agricultural community.

In line with its mission, SCF believes in partnering with landowners to identify barriers, opportunities, and leverage points that promote greater environmental sustainability in agricultural systems. In 2024, SCF was tasked by the National Wildlife Federation (NWF) to identify these opportunities with rural leaders upstream of the Quad Cities. The Quad Cities region in Iowa and Illinois presents significant opportunities for improving water quality and reducing flooding potential by collaborating with agricultural landowners upstream. These stakeholders include farmers and conservation professionals from the public, non-profit, and private sectors.

SCF conducted 15 interviews and one focus group discussion related to promoting natural infrastructure in the watersheds upstream of the Quad Cities. Natural infrastructure includes perennial conservation practices, often placed along the edge of an agricultural field. These practices include vegetated buffers, grassed waterways, prairie strips, constructed wetlands, saturated buffers, and two-stage ditches.

Insights gathered from these activities were evaluated to identify potential barriers and opportunities to **increase natural infrastructure** in rural areas upstream of the Quad Cities. Findings were grouped into three main categories:

1) Human Capacity, 2) Social Assets, and 3) Financial Resources.

Recommendations are provided to address water quality and quantity challenges in regions upstream of the Quad Cities. These recommendations arise from interviews and the focus group discussion, as analyzed by SCF. These recommendations include:

1) Address cultural norms, 2) Build local staffing capacity for conservation, and 3) Make it easy for farmers to take action.



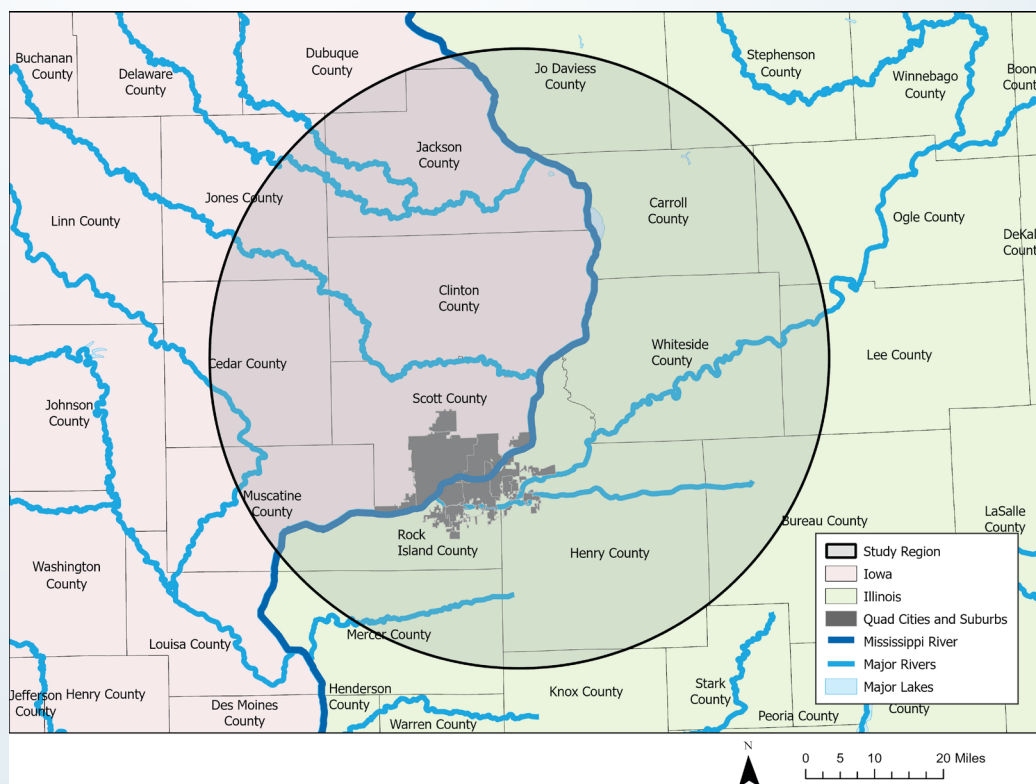
## PURPOSE

The Quad Cities metropolitan area (Davenport and Bettendorf in Southeastern Iowa, and Rock Island, Moline, and East Moline in Northwestern Illinois) straddles the Mississippi River among a predominantly agricultural landscape. Like many large urban centers built along a river, the area faces flooding risks from both the larger river basin upstream and smaller tributaries that pass through developed areas. Shifting precipitation patterns due to a changing climate add to flooding risk and uncertainty. These trends also impact water quality by accelerating sediment and nutrient losses from agricultural lands upstream.

Natural infrastructure offers potential long-term and low-cost solutions to these challenges. Generally speaking, natural infrastructure includes permanent vegetative and limited structural landscape modification that capture, filter, and/or infiltrate water that would otherwise flow into stormwater drains or waterways, thereby reducing peak flood flows and water quality impacts downstream. In agricultural areas, natural infrastructure can include vegetative buffers along field edges, constructed or restored wetlands, and treatment of tile drainage discharge, among other options. These practices are defined in detail in the [Edge of Field Roadmap](#), published by The Nature Conservancy (TNC), Soil and Water Conservation Society (SWCS), and Meridian Institute.

In April 2024, the National Wildlife Federation (NWF) completed an analysis of community capacity to implement natural infrastructure projects in and around the greater Quad Cities area (available [here](#)). Among the findings of this report is a desire among urban stakeholders to look upstream to rural and agricultural impacts and opportunities. NWF contracted Sand County Foundation (SCF) to gather local perspectives and assess community capacity to implement natural infrastructure practices beyond the urban area (**Figure 1**).

The following report summarizes the perspective of stakeholders engaged by SCF during 15 interviews in 2024 with farmers and conservation professionals from public, non-profit, and private sectors. SCF consulted with NWF and other partners to complement prior evaluations of urban and non-agricultural stakeholders. As a result of this inventory, SCF has developed this report to help accelerate progress in the project area, and inform similar efforts across the Midwest.



**Figure 1:** Geographical focus of conversations regarding natural infrastructure upstream of the Quad Cities.



# METHODS

SCF utilized a qualitative research design by identifying interview prospects via key informants, conducting 15 semi-structured remote interviews, and facilitating one in-person focus group meeting with eight participants. SCF staff analyzed and coded interview results to identify commonly expressed themes, which were further discussed with the focus group.

## Key informants:

SCF began by identifying 13 individuals through existing staff networks to approach as key informants. These individuals hold regional or statewide roles in non-profit, academic, public agency, and private industry sectors and have knowledge of local leaders and stakeholders near the Quad Cities area.

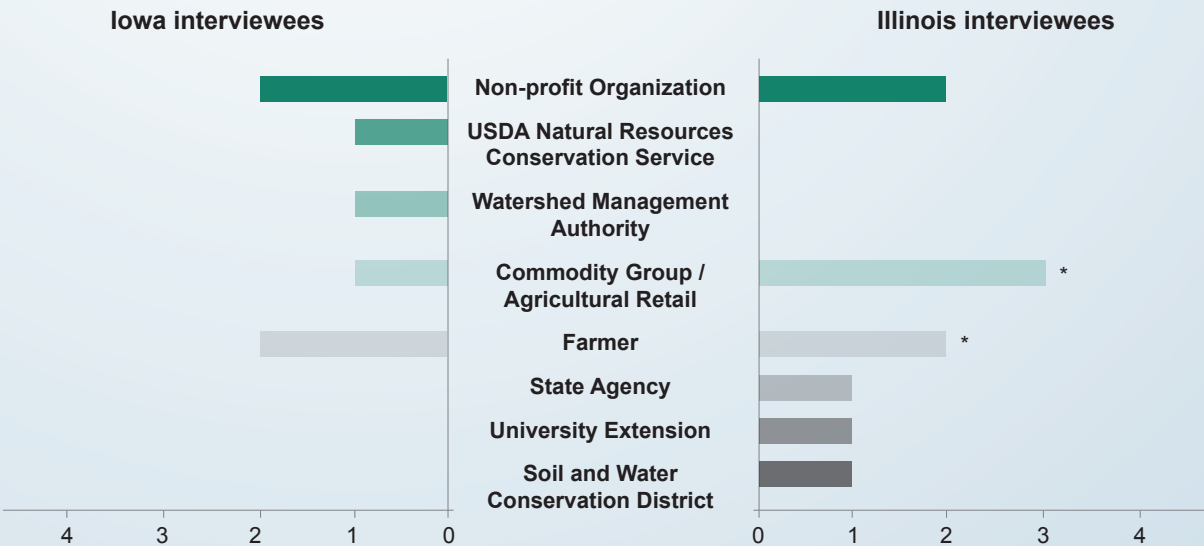
The SCF team used a snowball sampling approach by asking these key informants for referrals to colleagues or other local stakeholders they felt had relevant knowledge, interest, and experience with agriculture and rural green infrastructure practices in the study region. Through this approach, as well as recommendations by NWF staff, SCF built out a list of potential interviewees with a broad range of perspectives and expertise.

Staff or stakeholders from the following entities were represented in interviews and the focus group discussion:

- Farm owners/operators
- Illinois Corn Growers Association
- Illinois Department of Natural Resources
- Iowa Soybean Association
- Limestone Bluffs Resource Conservation & Development
- Maquoketa River Watershed Management Authority
- National Corn Growers Association
- The Nature Conservancy
- Partners of Scott County Watersheds
- Precision Conservation Management
- Rock Island County SWCD
- The Wetland Initiative
- University of Illinois Extension
- USDA Natural Resources Conservation Service

While successful in engaging a diverse range of perspectives, SCF was not able to reach other important stakeholders. This includes agricultural lenders, farmers of non-commodity crops, non-operator farmland owners, farmland management companies, and private contractors who install natural infrastructure practices.

## Individuals interviewed by Sand County Foundation



\*Two of the interviewees in Illinois are full time farmers and also commodity group representatives.

Figure 2





**Saturated buffer installation**

Future engagement of representatives from these and other sectors of the economy could further enhance the findings of this report.

SCF prioritized interview prospects to ensure a balance of representation by sector and state (see figure 2). Contacts were invited by email to sign up for an interview date and time among options on an online calendar. SCF staff sent at least one email or phone reminder to all non-respondents. Of the 27 individuals invited, 15 agreed to participate in one-on-one interviews via Zoom. These 15 individuals comprised farmers, nonprofit staff, employees of government agencies, and representatives from agribusiness (including crop associations and commodity groups), as well as academic researchers and university extension staff (**Figure 2**).

Interviews were conducted via Zoom, using audio-recording and transcription software from the Zoom platform. Consent was provided for recording prior to each interview. Interviews were scheduled for 60 minutes each. We provided consent statements and introductions at the beginning of each call, and used a semi-structured interview guide. This semi-structured approach allowed the team to ask consistent questions while providing flexibility for follow-up inquiries as applicable.

Early in the evaluation process, SCF met with NWF to jointly develop the interview schedule. Key questions were identified, highlighted, and prioritized. These questions include:

- Who are the movers and shakers in the region? Who are the ones getting things done, and how? Who is considered socially influential/powerful in the region in motivating / facilitating these actions? Are they at the table during conversations around water quality?
- Is there enough involvement to advance big projects? Who needs to be at the table for projects to advance?
- Whose influence is not present, but should be? Are there any voices that aren't part of this conversation that are being impacted, but are not necessarily being heard?
- What would speed up the adoption of natural infrastructure practices?
- If you could remove one barrier to adoption of natural infrastructure practices, what would it be?

All interviews were completed by the same SCF staff member. Immediately after each interview, the SCF staff member wrote 1-2 pages of reflexive notes summarizing the main points of the interview. These documents were shared with the rest of the SCF team for review. Due to the large volume of data in the interview transcripts, SCF elected to focus analysis the 1-2 page reflexive note summaries. A sample of these summaries were coded independently by three members of the SCF team using an inductive process.





The team then discussed their initial findings as part of the first iteration of coding. Cross-coding verification was done by multiple members of the SCF team on both the reflexive notes and original transcripts. An initial coding structure was agreed upon, and one SCF staff member with experience analyzing qualitative data coded every interview, expanding upon the coding structure and refining the codes in an iterative process that involved multiple engagements with the original and summarized data. The SCF team then developed the findings into an outline of the current successes, opportunities, and challenges in conservation agriculture activities in the region and identified 'leverage points'. These leverage points guided the focus group discussion and provide the basis of the recommendations detailed later in this report.

### Focus Group Discussion:

The SCF team conducted an in-person focus group, centrally located at a public library in the Quad Cities. Each interviewee was invited to participate, and eight (four each from Iowa and Illinois) joined the 90-minute in-person focus group meeting. Two days prior to the discussion, each participant received a summary of the leverage points developed through the interview coding process.

At the focus group meeting, one SCF team member facilitated the in-person conversation using the leverage points as a guide. In addition, two SCF team members participating remotely took detailed notes on the conversation and later compared them with the interview coding results to determine if any leverage points, new perspectives, or critical information were missing. The SCF team compiled a 3-page document of notes from the focus group which, along with the original coded interview findings, informs the findings section of this report.



## FINDINGS

### Human Capacity: Knowledge and Experience

#### Trusted Advisors

Installing natural infrastructure to address water quality and quantity on agricultural lands is strictly voluntary. Landowners and land managers have to “opt-in” to implement these practices, often sharing at least a portion of the financial cost, if not bearing the full cost. They rely on conservation and agricultural experts for technical expertise, advice, and guidance. Some natural infrastructure practices also require professional engineering for design and installation.

Interviewees spoke at length about the ecosystem of conservation support for farmers in the region. They identified a wide range of actors as “trusted advisors”, which include agronomists/certified crop advisors (CCAs), fertilizer/seed dealers and ag retailers, commodity organizations (e.g., corn, soy, dairy), Soil and Water Conservation District employees, and non-profit organizations like American Farmland Trust, as well as family members and other farmers. However, there was significant discussion regarding the loss of trusted advisors from the public (non-profit and government) sector.

#### Increased Staff Turnover and Limited Relationship-Building

Informants raised concerns about the lack of staff capacity in all organizations to adequately support farmers and landowners in their efforts to implement natural infrastructure and address water quality issues. Both Natural Resource Conservation Service (NRCS) and Soil and Water Conservation Districts (SWCDs) have seen significant turnover of staff in this region, which limits the ability of employees—and the agencies they represent—to build relationships and earn trust with farmers and landowners. Another interviewee said that funding for their watershed coordinator is grant-based and therefore short-term, lowering the likelihood of staffing continuity and continued progress.

“.....  
*When there is a new person every year,  
it is hard to build trust.*  
.....”

#### Limited Staff Capacity

The NRCS was often described as “stretched thin,” with overworked staff and a backlog of work, leading to a lack of follow-up with farmers regarding questions, program applications, and conservation practice implementation. Two interviewees highlighted problems related to state and local offices being understaffed and under-compensated, resulting in many positions remaining unfilled. In contrast, another interviewee noted that their local NRCS office had adequate staffing; however, a high proportion of the employees are recently hired, leaving a knowledge gap in certain topics and an ongoing need for employee training.

A further complicating factor is the time and expertise needed to meet design requirements for many natural infrastructure practices. Staffing limitations within the NRCS are especially prominent among engineers and technicians. One interviewee noted that in their area, there was only one technician to cover five counties, and often there were no technicians in their local NRCS office. The shortage of experienced technicians has been attributed to lower pay in the public and non-profit sectors compared to salaries offered in the private sector.

Implementing natural infrastructure practices requires not only technical expertise but also skills in communicating with farmers. One employee of an organization that works to design and install natural infrastructure shared that this work requires substantial focus on outreach and education, leaving fewer human resources for design and implementation. Another interviewee explained that in addition to her outreach and project responsibilities, she is tasked with fundraising for her position, which limits the time she can dedicate to other activities that could directly impact natural infrastructure projects and water quality.

#### Loss of Funding Sources

Efforts to address water quality in rural areas have also been hindered by the loss of funding at the federal and state levels. Resource Conservation & Development (RC&D) Councils had been based in NRCS offices with a NRCS-funded coordinator. They helped to fill gaps in outreach and could manage and administer watershed-level projects. Federal funding was cut for RC&D Councils in 2011, leaving RC&D Councils fully responsible for their own staffing. Some have continued to operate, while others have closed.





#### **Prairie strip**

Prior to 2017, the Iowa Department of Natural Resources provided grants for staff roles such as identifying needed practices, testing water quality, and developing a watershed management plan. This approach allowed for locally-tailored efforts to manage and improve water quality. The loss of such funding further limits the support for farmers to effectively implement natural watershed projects and address water quality issues for communities downstream.

In Illinois, state budgets for county-based SWCDs was cut in half in 2024, and these districts were already struggling financially prior to the budget cut.

#### **Shifting Emphasis towards Private Sector**

Overall, informants have observed a shift in farmer support and technical assistance, moving away from publicly funded entities like University Extension, Departments of Natural Resources, The NRCS, and RC&D Councils, and towards technical assistance provided by ag retailers, co-ops, and commodity associations. Interviewees cited limited public funding and the capacity of the private sector to adequately compensate technical assistance and salespeople as an opportunity to increase human capacity to facilitate natural infrastructure adoption.

One interviewee explained that chemical fertilizer companies were encouraging the split application of nitrogen fertilizer, which reduces excess nitrogen runoff. Another suggested that ag retailers can benefit from increased seed sales (such as cover crops), in lieu of increasing fertilizer sales. The Precision Conservation Management program in Illinois was held as a positive example of conservation assistance outside of the public sector. However, these efforts focus on in-field practices related to crop production and many interviewees indicated that the lack of staff capacity in the public sector remains a hindrance to meaningful conservation efforts, particularly with natural infrastructure practices.

#### **Social Assets**

##### **Role of Risk**

Farmers take on a great deal of risk inherent to agriculture due to weather, markets, and policies that are beyond the farmers' control. Informants indicated that farmers with a lower tolerance for risk are generally more hesitant to adopt conservation practices. Some informants suggested that acknowledging this risk aversion allows them to reframe conservation and soil health practices as opportunities for resilience in the face of unpredictable weather conditions.



When making decisions about implementing natural infrastructure and conservation practices to address water quality, farmers need to see examples elsewhere before adopting a new practice on their own farm. Farmers also benefit by first adopting a “gateway practice” (such as cover crops) with which they can experience success before taking on more permanent practices.

One interviewee suggested that risk also played a factor in whether a farmer sought federal funding. Because federal programs use sometimes obscure ranking systems to select applicants, it is difficult for farmers to predict if they will be selected for funding. Farmers prefer more certainty, especially before starting a new practice. Otherwise it is too much of a gamble when “farming is already such a gamble”. For this reason, current processes for awarding federal funding for conservation practices is often not an attractive option for farmers with low risk tolerance.

“.....  
*The reality for many farmers is that margins are slim and they need to farm. They cannot take on risk [...] Losing income can mean losing the farm which can mean squandering your family legacy and losing the potential of a way of life for future generations.*  
.....”

To address the fear of risk and increase the adoption of practices that will improve water quality, informants suggested increased data with concrete numbers to show “what works”; examples of other farmers who have succeeded; and financial incentives to help absorb the cost of natural infrastructure projects and buffer yield impacts during the transition to new conservation practices.

### Role of Neighbors

The influence and perceptions of neighbors also influence the behavior of farmers and their willingness to adopt conservation practices to address water resource issues. Interviewees suggested that farmers may adopt practices after seeing those practices successfully implemented by their peers, especially those who they perceive as influential. When asked about the qualities of an influential farmer, one informant stated that an influential farmer appears to “have it together” (even if they are secretly in debt), have well-kept equipment, demonstrate good time management, and be able to have engaging conversations. She confirmed that outward appearances are quite influential in a farmer’s social standing in the community.

In addition, some interviewees suggested that concern for neighbors could also help farmers consider how their land management affects others downstream.



Drill seeding of a prairie strip

## Aesthetics

The influence of neighbors can also inhibit adoption of new conservation practices. One interviewee commented that in striving to be viewed as successful by their neighbors, farmers may feel pressure to keep “clean” fields. Freshly tilled land in fall can suggest that a farmer is on top of things and ready for the coming season, while stubble, cover crops, and unmowed ditches can be perceived as “messy” and “weedy,” and may convey laziness.

Non-operator landowners also drive this sentiment. One informant described a neighboring farmer who tills rented land in the fall because the landowner wants the field to “look nice.” Other informants stated that some lease contracts even specify that they must maintain a ‘neat’ appearance, or risk losing the land leasing opportunity to another operator. Also older generations tend to be stuck in a “recreational tillage” mentality. These sentiments can inhibit not only no-till farming but also buffers and other natural infrastructure practices.

While aesthetics can perpetuate poor conservation practices, they can also be utilized to influence water quality improvement practices. One informant stated that grassed waterways were popular because cost-share was available, but also because farmers appreciated the ways that the grassed waterways prevented rills and gullies during heavy rain, which were visual indications of a problem on the landscape. Another farmer who implements several conservation practices talked about the gratifying feeling of seeing his fields after a large rain event as compared to his neighbors.

“.....  
*When you go out there it's very loose and good after a rain that the soil soaks up the water quicker. You don't see water standing in the field nearly as long as you do with people that are doing tillage. So it's gratifying to see if you drive around in the spring after a two inch rain and see the difference in the surface water from our fields to the neighbors that aren't no-tilling.*  
.....”

## A Yield Mindset

A reputation for producing high yields is a social currency for many farmers, as it can convey success to other farmers and landowners. A farmer who is perceived as successful may have additional opportunities to rent land or have greater local influence. However, one informant observed that high yield numbers often hide the cost of producing those yields, and leads farmers to be less than transparent about their finances and practices. One farmer suggested that, when considering in-field practices, many farmers were afraid to sacrifice yield in the short term, even if adopting a conservation practice might improve or stabilize yield in the long term.

## The Importance of Family

Several interviewees discussed the importance of family in engaging farmers. They encouraged field days and events that are family-focused and engage both children and adults. Several interviewees suggested that framing water quality issues in terms of well water and highlighting the direct impact on children and grandchildren could be effective. Providing context about how water quality affects the health and safety of family members can emphasize the importance of conservation practices that protect water quality.

## Farmer Peer Learning

Farmers rely heavily on each other for information, fostering a culture where peer-to-peer learning plays a crucial role in adopting new agricultural practices. Trust among farmers surpasses trust in government or university sources, making community-based knowledge exchange essential. In the regions studied, there was a range of peer-to-peer support available. Some areas had very active groups, such as the Partners of Scott County Watershed, where opportunities to join were readily available. In contrast, other areas appeared to have little such opportunity according to interviewees. Regions with low activity in these peer groups tended to be less densely populated rural areas.

## One-on-One Relationships

Interviewees consistently highlighted the significance of establishing one-on-one relationships with farmers and how these relationships influence the adoption of conservation practices that improve water quality. Service providers and technical assistance providers





**Bioreactor**

must grasp the local context and remain in the region long enough to build trust with farmers and landowners. This issue ties back to the challenges posed by high turnover rates in public and private support positions.

### Financial resources

#### **Common Conservation Practices**

When interviewees were asked about common conservation practices currently promoted or implemented in their region, most mentioned in-field practices such as cover crops and reduced tillage rather than natural infrastructure practices. These annual in-field practices are considered “gateway” practices for farmers who are just starting their conservation journey, as they are repeated annually, affordable, and can be tested on a small scale, which minimizes risk.

When specifically asked about natural infrastructure practices, tile drainage was highlighted as a practice being adopted at a rapid pace, primarily due to recent flooding issues in the region. However, little evidence was found of motivation to install tile drainage management practices to control when water leaves tile drain outlets.



**Bioreactor installation**

Farmers interviewed noted that despite the high cost of installing tile lines, many farmers are willing to make the investment because of the high likelihood of a financial payback over only a few years due to predictable increases in yield. One farmer suggested that the tiling would at least make it easier to measure and quantify the impact of tile water, as the tiled fields “go from non-point source to point source pollution” by directly channeling the flow of water that might otherwise slowly infiltrate.





**Saturated buffer excavator**

Conservation professionals in the area are enthusiastic about newer technologies related to natural infrastructure, such as bioreactors and saturated buffers. However, these technologies are often perceived as riskier because they are new, expensive to install, and require engineering to design. Additionally, implementing practices like saturated buffers can be challenging in areas with sloping terrain or heavy rainfall, which limits their effectiveness and appeal. Filter strips were reported as the most common natural infrastructure practice currently being installed.

### Cost

As confirmed by the informants participating in this study, natural infrastructure practices are among the more expensive conservation practices to install, requiring engineering and earth work. In addition, they can permanently take land out of production and require valuable time to manage. And in contrast with in-field practices such as cover crops and reduced tillage, natural infrastructure practices offer few if any direct financial benefits to the farm, making external payments crucial for their adoption. Farmers are generally reluctant to implement any practices unless they can see a clear economic benefit. For this reason, adoption of natural infrastructure is heavily tied to financial benefits.

“*A lot of people aren’t convinced that there’s a benefit to it, so they need to be paid to get it started.*”

### Poor Communication and Outreach

Many farmers are unaware of available programs due to inadequate advertising and outreach. Timing is also critical; farmers are less likely to engage during busy periods like harvest. The lack of a clear and concise explanation of program benefits, application steps, and timelines further contributes to disinterest.

“*So many farmers don’t know what programs are available. [...] We need to educate the farmers [...] and make those programs easier to apply for [and] more transparent, so they know what they’re [getting] into from the start.*”

### Administrative Burden

Despite the reliance of farmers on public financial assistance for natural infrastructure, a key barrier to the uptake of natural infrastructure practices is the lack of willingness to participate in programs as currently offered by the NRCS or FSA. Interviews revealed a range of barriers related to the administrative processes and “paperwork” tied to these conservation programs.

Many farmers perceive the process of implementing conservation practices through programs like the Conservation Reserve Program (CRP) as overly complicated and burdensome. One described the documentation required as “absurd,” discouraging participation. Farmers often find it easier, faster, and less costly to implement practices independently, avoiding the “headache” and the need to “jump through hoops” of administrative requirements.



“.....  
*it's been my experience that if you have the conservation service come out and design a structure for you, they overbuild it so much that it's cheaper for you to build it yourself than to build to their specifications and take their cost share money.*  
.....”

Programs like a \$5/acre insurance premium reduction for cover crops were raised as positive examples as they provide a direct, tangible benefit with minimal paperwork. However annual cover crops differ greatly from natural infrastructure practices that involve greater taxpayer cost, permanence, and consequences of failure.

### Lack of Transparency and Predictability

The process of applying for and implementing practices through agencies like the NRCS and FSA is slow and competitive. Information about available financial incentives is often delayed or unclear. Farmers go through long ranking and selection phases, with no guarantee of receiving funding. Some farmers have faced repeated rejections or delays in receiving funding from federal conservation programs, with some being denied for four to five consecutive years. One interviewed farmer described the enrollment process as a “lottery”. Others reported receiving no follow-up after initial enrollment. Additionally, CRP’s ranking system often disadvantages those who have already implemented conservation measures. This experience undermines farmers’ confidence in the reliability of these programs and makes them reluctant to apply again.

Many natural infrastructure practices require earthwork and structural components, triggering further delay in obtaining permits and engineering designs. The timeline from initial interest in a practice to full implementation can span years, involving permitting, design, contractor selection, and oversight. Many perceive natural infrastructure practices as overly complex, unnecessarily engineered, and excessively expensive.

### Conflicting Guidance

Another hindrance to addressing water quality is confusing, sometimes conflicting, local guidance

regarding practice definitions and design. For example, one informant reported confusion regarding how to differentiate between a prairie strip and a field border, with local conservation staff having different interpretations. Another interviewee mentioned that NRCS written guidance does not always match recommendations of staff on the ground, or is sometimes in conflict with guidance from the FSA. A lack of clarity in program guidelines often leads to confusion, and farmers unclear with how to proceed. Farmers often report that it feels “easier to do it myself” rather than follow increasing requirements.

### Preference for Local Partnerships

Farmers tend to trust locally-driven partnerships more than standardized state or federal programs. Local organizations are viewed as more accessible, less bureaucratic, and better attuned to the needs of farmers. Additionally, some farmers are uneasy about using taxpayer funds for conservation practices. Farmers in rural areas often see certain political and environmental groups as having antagonistic agendas toward agriculture, which leads to a “healthy distrust” of government and university-affiliated organizations that are perceived to align with these groups. This skepticism further discourages participation in federally funded initiatives.

### Lack of Practicality, Flexibility, and Regional Adaptation

Programs often fail to align with local agricultural and ecological conditions. For example, CRP’s prohibition on planting trees appeared to one interviewee as inappropriate to regions with previous woodland ecosystems. Similarly, seed mix requirements may appear to not match specific soil or weather conditions. Farmers prefer practices they understand to be tailored to their geography, operations, and available resources.

By addressing farmers’ distrust of government programs through local engagement, improved reliability, and peer-driven outreach, agencies can create a more welcoming environment for conservation practices. Building trust is key to fostering long-term participation and improving water quality outcomes.



## RECOMMENDATIONS FOR LEVERAGE POINTS

Installing natural infrastructure to address water quality and quantity on agricultural lands is strictly voluntary. Farmers play a crucial role in achieving water quality and conservation goals, and creating opportunities that align with their economic and operational realities is essential for success. In this section, we offer recommendations for leverage points that can advance water quality goals downstream by addressing barriers and building on opportunities identified by informant interviews and the focus group participants. These approaches will enhance adoption rates while fostering trust, collaboration, and the long-term sustainability of water quality and natural infrastructure projects.

### Leverage Point #1: Address Cultural Norms

#### **A. Bring farmers to the table and make them part of the solution**

To reach effective solutions to address water quality downstream, farmers need to be an integral part of decision-making. Bringing farmers into the conversation will create buy-in and will shift the water quality discussion from one focused on blame, to one focused on agency. Involving farmers in the design and implementation of programs can ensure their concerns are addressed, and their experience is incorporated and valued. Farmer-led advisory groups could help co-develop solutions that resonate with the agricultural community.

#### **B. Facilitate farmer-to-farmer learning**

Foster opportunities for farmers to learn from each other through on-farm demonstrations or farmer-to-farmer mentoring programs. Visible success stories and farmer-led initiatives create a ‘domino’ effect, encouraging others to participate and build confidence. Structured and unstructured in-person events, such as field days and peer group meetings, allow for open dialogue and networking, where influential farmers can share experiences and inspire their peers (especially when there is unstructured time). Facilitated discussions and social media groups also provide platforms for troubleshooting and support, reinforcing the sense of community and reducing the isolation that farmers may feel.

This collaborative environment could help shift perspectives to a focus on legacy and sustainable practices, ultimately boosting the adoption of natural infrastructure and in-field practices that can improve water quality downstream.

#### **C. Make water quality local and relevant**

To increase the willingness of farmers to adopt natural infrastructure practices for improved water quality, it is crucial to make water quality issues **local** and **personally relevant**. Frame water quality as a local issue, instead of a global issue. Farmers may not feel responsible for something as far away as the Gulf of Mexico, but they can connect to the stream they fished in as a kid, or flooding issues in their community. Focus impacts as locally as possible.

##### **a. Build a watershed identity.**

The concept of a watershed is abstract for most people. Using signage to draw attention to watershed boundaries and local bodies of water help make a watershed more visible. Awareness is the first step towards creating a sense of shared responsibility, and has been effecting change in places like the Chesapeake Bay watershed. Similar efforts can be used at the local and regional level to promote a watershed identity.

##### **b. Build understanding of the impact of farming practices on well water and local recreation.**

Water quality issues, like nitrate contamination, are often invisible and not immediately tangible. However, stories and experiences that draw explicit connections between farming practices and well water quality can build a sense of responsibility to the impacts of land use decisions and the health of family and neighbors. Highlighting personal legacies, such as making a local lake swimmable again, can inspire farmers to integrate sustainable practices and foster a sense of accountability and community pride.

#### **D. Prioritize visible practices and outcomes**

Make natural infrastructure visible through signage, and by prioritizing sites that can be seen and accessed by many people. Encourage farmers who have not implemented conservation practices to start with practices where the impact is easily visible



(ie. cover crops or grass waterways). For example, persistent wet spots on fields can be converted into conservation features, allowing farmers to see immediate returns while addressing challenging areas. Once farmers experience success with initial practices, they are often ready to adopt more advanced methods, creating a natural progression toward broader conservation efforts.

#### E. Utilize volunteers to do water monitoring

Volunteers collecting water samples represent a great asset, because they become invested water quality advocates, increasing outreach and community involvement while collecting data.

One interviewee illustrated an example for citizen science to create engaged vested volunteers, while also reducing the cost of water sampling. Collecting water samples is a large obstacle to monitoring water quality.

“.....  
*But you know, even if their data wasn't usable, you had created an interest. Those people were vested. Now, they were vested in that stream.*  
.....”

#### F. Reframe risk

Farmers are aware of extreme weather patterns (intense rain events, prolonged drought) and informants have had success framing conservation agriculture practices and natural infrastructure as ways to mitigate the impact of weather. Working with farmers, conservation professionals can help them shift ideas about what a good farmer looks like, adopting norms that frame farmers as the agent of clean well water and as protectors of community waterways.

### Leverage Point #2: Build Local Staffing Capacity for Conservation

#### A. Expand funding for non-profit and public conservation staffing, especially technical support

Additional funding for non-profit and public agencies would allow them to expand staffing to meet farmer and downstream neighbor needs. Programs should

prioritize hiring individuals who understand farming practices and are willing to “walk in farmers’ shoes” to better relate to their concerns. Developing mentorship and training opportunities for new hires, especially in technical roles, can bridge knowledge gaps and reduce the learning curve for employees stepping into conservation-related positions. Investments in engineers and technicians specializing in natural infrastructure practices will help address the technical backlog, enabling more farmers to access the support needed for complex projects like wetlands and saturated buffers.

#### B. Retain staff through increased salaries and benefits and manageable workloads

Increased funding for SWCDs, NRCS, and similar organizations will ensure stable staffing levels, competitive salaries, and improved retention. Having local staff who know the community well—including its environment, challenges, relationships, and culture—is crucial for building trust and encouraging adoption. Quality staff should be adequately compensated to ensure continuity, reduce turnover, and protect the agencies’ relationships with local farmers.

#### C. Expect and enable staff to:

##### a. Understand local context, landscape, and culture.

In addition to having technical expertise relevant to natural infrastructure and conservation practices, NRCS and SWCD staff need to have cultural competency skills to understand local culture and context. They need to be willing to understand the local landscape and farming practices.

##### b. Have enough time to follow up with farmers.

A consideration for staffing capacity at non-profits and public agencies should be the time requirements for building relationships and engaging farmers in person.

##### c. Engage in effective forms of communication.

Develop more effective marketing and informational materials that clearly communicate program benefits and processes. Communication methods and mediums should be flexible, and geared towards multiple generations of



farmers. Text messaging, printed mailers, regular newsletters, and phone calls were all suggested, depending on the local context.

**d. Build one-on-one relationships with farmers.**

The importance of one-on-one relationships was emphasized by all informants. Consistent and repeated engagement with farmers through one-on-one conversations remains a cornerstone of successful adoption. For middle adopters, this means offering extra guidance and follow-ups to ensure they feel supported throughout the decision-making process.

### Leverage Point #3: Make It Easy for Farmers to Take Action

#### **A. Offer sufficient financial incentives**

To enhance the adoption of natural infrastructure practices, offering robust and accessible financial incentives is key, particularly when practices may require removing land from production permanently. Economic sustainability for farmers can be achieved through creative and well-structured incentive programs that offset potential financial losses and make conservation a viable choice.

Large-scale incentives, such as a one-time \$500/acre payment for conserving land along streams, could further encourage participation by providing a significant upfront economic benefit. Programs like EQIP and CRP serve as valuable “on-ramps,” but expanding funding and reducing administrative hurdles would increase their appeal. Setting aside specific funding pools for practices could reduce competition and delays. Federal and state agencies need to demonstrate reliability by ensuring funding availability for interested farmers and reducing delays or repeated rejections.

By emphasizing simplicity, long-term economic benefits, and regionally appropriate solutions, these financial incentives can drive widespread adoption while ensuring economic sustainability for farmers.

“*So the environmental benefits have kind of been a secondary benefit. It all started out [...] to reduce our labor input and maximize profits by reducing our input costs. So all the environmental benefits have just been a bonus.*”

-farmer

#### **B. Ease the administrative burden of accessing an incentive**

Simplifying paperwork and minimizing bureaucratic requirements may make program participation more accessible. Programs should be designed to respect farmers’ time and operational preferences. Using digital tools or pre-filled forms could reduce the time and effort needed. Offering “set it and forget it” options with minimal maintenance requirements could boost adoption.

Provide clear timelines, funding amounts, and eligibility criteria to help farmers make informed decisions. Collaborate with local advisors and agronomists to ensure that conservation practices are practical and effective for the local ecotype.

#### **C. Facilitate practice implementation**

Facilitating the implementation of natural infrastructure practices presents numerous opportunities to increase adoption by tailoring solutions to farmers’ needs and building their confidence through positive experiences.

Using tools like GIS enables resource managers to apply a targeted approach and focus on farms that are a high-priority within a watershed, along rivers and creeks. Tailored strategies, such as using stream visual assessments to identify hotspots, and creating localized watershed management plans can provide customized solutions that resonate with farmers. Collaboration through



initiatives like Precision Conservation Management (PCM), which highlights the economic and environmental benefits of conservation practices, can further support adoption by providing clear, data-driven insights.

**a. Implement batch and build approaches.**

The “batch and build” approach is an innovative method for implementing natural infrastructure practices, scaling up adoption and improving efficiency. Developed in Iowa, this strategy uses GIS-based watershed planning tools to identify ideal locations. Outreach is targeted to farmers in those areas, and multiple projects are bundled together for simultaneous design and installation. This approach requires only one engineering team to evaluate and design all the practices at once, and awards a single contract for installation, significantly reducing costs and accelerating timelines.

*...it's sort of an alternative delivery model that has been pretty successful in Iowa. [...] to really meet our water quality goals we need a huge increase in both the pace and the scale at which we're able to work.*

By simplifying the process for farmers and reducing administrative hurdles, it encourages broader participation while ensuring cost-effectiveness.

**b. Utilize new technologies.**

With regard to natural infrastructure practices, advances in monitoring technology and the use of GIS are enabling targeted approaches to address watershed hotspots. Monitoring water quality and system performance has become more feasible with the use of wireless technology that can track water sample data, manage automated data collection, and spot-check systems. These tools reduce time and expertise requirements, making conservation practices less intimidating and more accessible.

Technologies like blind inlets can replace traditional tile risers with systems that filter nitrates through pits filled with rocks and wood chips, functioning as mini bioreactors. These innovations require minimal changes to in-field management, making them attractive to farmers who prefer not to disrupt their current operations.





Strip - Greg Olson and Ross Bishop



Photo source: SWCS Conservation Media Library

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