A vision for a more resilient Iowa

The Iowa Watershed Approach

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The Iowa Watershed Approach

Existing BMPs

Digitized at Iowa State University GIS Facility, in cooperation with IA DNR GIS personnel

October 13, 2016
Existing BMPs
Agricultural Conservation Planning Framework: Staff Creek Watershed

Conservation Practices:
- Drainage Water Management
- Grassed Waterways
- Buffer Strips
- Water and Sediment Control Basins (WASCOBs)
- Nutrient Removal Wetlands
- Saturated Buffers

Further Information:
http://northcentralwater.org/acpf/
Monitoring
A vision for a more resilient Iowa

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

319-384-1729
www.iowafloodcenter.org

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Craig Just – Flood Resilience Team
Assistant Professor, IIHR—Hydroscience & Engineering
craig-just@uiowa.edu
The IWA Flood Resilience Team is ready to serve

Staff
- Ashlee Johannes
  - Flood Resilience Communications
- Valerie Decker
  - Center for Evaluation & Assessment
- Julie Kearney
  - Center for Evaluation & Assessment

Faculty
- Eric Tate
  - Geographical & Sustainability Sciences
- Craig Just
  - Environmental Engineering & Science
- Ibrahim Demir
  - Iowa Flood Center

Students
- Christina Muñoz
  - Geographical & Sustainability Sciences
- Becca Mattson
  - Environmental Engineering & Science
- Kendra Miner
  - Environmental Engineering & Science
The IWA Resilience Team is partnering with many groups
The IWA Resilience Team timeline is staggered

The IWA Flood Resilience Team will engage stakeholders in nine watersheds for 3 to 5 years.

- Year 1: Clear Creek, Upper Iowa, English River
- Year 2: Middle Cedar, Upper Wapsipinicon, Dubuque
- Year 3: Ongoing Assessment
- Year 4: North Raccoon, East Nishnabotna, West Nishnabotna
- Year 5: Ongoing Assessment
Many Iowans know what it means to be personally resilient.
Iowans also know what it means to lack resilience
Iowa communities help decide who is flood resilient
Iowa communities help decide who is flood resilient

Increasing flood resilience requires actions and resources.

Mitigation deals with the future, and long-term, actions that increase flood resilience.
Increasing flood resilience requires actions and resources

Preparedness

deals with the pre-disaster actions that enable an effective flood response
Increasing flood resilience requires actions and resources deals with the immediate and short-term actions in the state of emergency prior to, during, or right after a flood
Increasing flood resilience requires actions and resources.

Deals with the short-term and long-term actions that help communities regain economic and social functions.
Increasing flood resilience requires actions and resources
Increasing flood resilience requires actions and resources

Social Resources are *community* characteristics that facilitate collective action. The ability to trust, build partnerships, form social networks, and pursue collective learning are examples.
Increasing flood resilience requires actions and resources
The IWA Flood Resilience Team can help you improve hazard mitigation and disaster recovery plans.
The IWA Flood Resilience Team can help you improve hazard mitigation and disaster recovery plans.

A thoughtful & detailed hazard mitigation plan is critical to compete for Hazard Mitigation Grant Program dollars.
The Iowa Flood Center will provide a hydrologic assessment of your watershed.
The hydrologic assessment will inform the built practices prioritized in your watershed plan.
A dynamic Flood Resilience Action Plan can make hazard mitigation and watershed planning more valuable.
The IWA features a customizable watershed information visualization system.
Flood inundation visualizations from previous versions of the Iowa Flood Information System are available.
Flood resilience resources can be visualized spatially as combinations of “low”, “medium” and “high” scores.

<table>
<thead>
<tr>
<th>Resources</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
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</thead>
<tbody>
<tr>
<td>Social</td>
<td></td>
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<tr>
<td>Median income</td>
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<td></td>
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<tr>
<td>% high school diploma</td>
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<td>% employment</td>
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<td>Human</td>
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<td>Institutional</td>
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<td>Natural</td>
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<td>Economic</td>
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<tr>
<td>Physical</td>
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</table>
The IWA online information system will also be equipped with socio-economic indicators.
Flood resilience can be visualized at the intersections of various resource indicators and flood risk.
The IWA Flood Resilience Team is ready to work with YOU to create value for your watershed community.

The IWA Flood Resilience Team seeks to provide value to Iowa’s watershed communities through partnerships to develop the tools to measure and visualize flood resilience in ways that make future mitigation, preparedness, response, and recovery planning actions more meaningful and useful.

_We can make our watershed communities more flood resilient, together._
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Iowa Flood Center
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The Iowa Watershed Approach
How Can We Become More Flood Resilient?

Many Iowans know what it means to be personally resilient. We have jumper cables and spare blankets in our vehicles for when a winter driving mishap that leaves us, or a loved one, in a roadside ditch. We have cell phones to keep us in touch with family, friends, and neighbors in times of need. We overstock our personal food pantries, buy flashlights and weather radios, and we build shelters to prepare for tornados and thunderstorms. When a grain farmer is injured, 10 combines and as many semi-trucks are known to almost magically appear and complete the harvest within hours. Family helping family; friends helping friends; neighbors helping neighbors – an Iowa tradition that improves our resilience.

Iowans also know what it means to lack resilience. The recently laid-off manufacturing worker with a family of four lacks resilience. The elderly woman, with no family, who lives in her childhood home, surrounded by neighbors she no longer knows – she lacks resilience. People in small Iowa towns with aging water and wastewater infrastructure and a shrinking tax base – they might not feel resilient. And, after a September rain of over 12 inches in Greene, after 22 feet of Cedar River elevation in Cedar Rapids in 2016 and 31 feet in 2008, and after countless other local and regional floods in Iowa - many Iowans are feeling less and less flood resilient.
Iowa communities help decide who is flood resilient

Community flood resilience is the ability of people living in a common watershed to plan and act collectively, using local capacities, to mitigate, prepare for, respond to, and recover from a flood. Flood resilient communities also learn from previous floods that they, or others near them, have experienced. Flood resilient communities understand that actions can reduce flood risk through mitigation, preparedness, response, and recovery. Flood resilient communities also know how to utilize local and regional resources that make collective action successful. Because the Iowa Watershed Approach invites communities to think “flood first”, it is important to identify community resources that can be leveraged to increase flood resilience.

Increasing flood resilience requires actions and resources

**Mitigation** deals with the future and long-term actions that increase flood resilience. Mitigation is more effective when it is incorporated into recovery plans and into the general development plans of a community. Examples of mitigation include building levees, preventing further development in floodplains, and raising the elevation of existing homes.

**Preparedness** deals with the pre-disaster actions that enable an effective flood response. These actions are primarily plans and resources that are prepared in case of an emergency. For flood preparedness, this may include having an agreement with friends or family members about where you would sleep in case of an evacuation, and having extra stored food in case of being trapped in your house.

**Response** deals with the immediate and short-term actions in the state of emergency prior to, during, or right after a flood. Flood response includes moving supplies from the basement to a higher level, evacuating, sandbagging, and search and rescue.

**Recovery** deals with short-term and long-term actions that help communities regain economic and social functions. An example of short-term flood recovery includes repairing damaged buildings. A long-term recovery can include regaining a similar, or even stronger, economic activity the community has prior to a flood.
Social Resources are community characteristics that facilitate collective action. The ability to trust, build partnerships, form social networks, and pursue collective learning are examples.

Human Resources are population characteristics of individuals, such as doctors, builders, trained responders, business owners, and community leaders.

Institutional Resources are provided by private, public, or government entities and include things such as insurance, health care, emergency plans, and recovery grants.

Natural Resources are natural features such as marshes, undeveloped flood plains, and protected grasslands that increase flood resilience for a watershed community.

Economic Resources are the finances needed to improve flood resilience.

Physical Resources are built resources such as housing, roads, hospitals, levees, and floodwalls.

The IWA Flood Resilience Team can help you improve hazard mitigation and disaster recovery plans. Many Iowa towns and counties have hazard mitigation and disaster recovery plans that enable the allocation of federal disaster assistance funding when sought. No plans, no funding. We understand that many community mitigation plans are not thoughtfully prepared and are lacking in detail. A lack of planning leads to a lack of effective action – especially when it comes to flood resilience. We want to work with watershed communities to lower the barriers to effective hazard mitigation planning, particularly for floods, so your community is eligible and ready for action when funds from sources like the Hazard Mitigation Grant Program are available.

A dynamic Flood Resilience Action Plan can make hazard mitigation and watershed planning more valuable. Let’s face it, hazard mitigation and disaster recovery plans are planning tools that most Iowans will not enjoy reading and discussing while sipping a good cup of coffee with friends. The format of these plans are prescriptive and not all that user friendly. Thankfully, the Flood Resilience Action Plan can take on a different form which can include plain language and helpful maps and graphics. Some watershed communities may choose to embed all or part of the Flood Resilience Action Plan into their watershed plan.

The Iowa Watershed Approach is backed by the Iowa Flood Center. Have you seen those great Iowa Flood Center flood maps online? Those maps are made possible by a powerful team of scientists and engineers that do watershed scale hydrologic assessments. The Iowa Flood Center will make similar maps available online for your Flood Resilience Action Planning needs.
The Iowa Watershed Approach – Flood Resilience Team

The IWA features a customizable watershed information visualization system

The map on the left shows the 9 watershed communities across the state of Iowa that are the focus of the Iowa Watershed Approach project. The map on the right zooms in on Cedar Rapids, at the southeastern border of the Middle Cedar watershed, to visualize the Cedar River during normal flow as it flows through this urban center. These maps represent the hydrologic assessment and visualization capabilities that have helped make the Iowa Flood Center well-known to, and valued by, many Iowans.

Flood resilience can be visualized at the intersections of various resource indicators and flood risk

The map on the left overlays a relatively simple representation of social resource indicators, such as education level, median income, and unemployment rate, onto the Iowa Flood Center community flood inundation map (during normal river flow) for Cedar Rapids. The lightest blue color might represent “low” social resource availability and the purple color might represent “high” social resource availability for individuals in the census block groups that are shown. The map on the right shows the same data and the massive flood inundation during the historic 2008 event in Cedar Rapids. This map represents how flood resilience could be visualized to potentially inform active flood mitigation planning.

The IWA Flood Resilience Team is ready to work with YOU to create value for your watershed community The IWA Flood Resilience Team seeks to provide value to Iowa’s watershed communities through partnerships to develop the tools to measure and visualize flood resilience in ways that make future mitigation, preparedness, response, and recovery planning actions more meaningful and useful. We can make our watershed communities more flood resilient, together.
How many Watershed Management Authority (WMA) meetings or meetings about forming a WMA have you attended? (Please check the appropriate box below.)

- □ This is the first WMA meeting I’ve attended.
  [If this is the first WMA meeting you’ve attended, how did you learn about the meeting?___________________]
- □ I attended one WMA meeting before this one.
- □ I have attended two or more WMA meetings.

This section asks you to think about the meeting you just attended and about your ideas about resilience. On a scale of 1 to 5, how much do you agree or disagree with the following statements? (Please check the box to indicate the extent of your agreement with each statement.)

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<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>Written materials I received at the meeting were helpful to me in understanding flood resilience.</td>
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<td>The resilience discussion at the meeting was helpful to me in understanding flood resilience.</td>
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<td>As a result of attending this meeting, I better understand what it means to be flood resilient.</td>
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<td>Working with the Iowa Watershed Approach flood resilience team will provide value in my community.</td>
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<td>Community engagement influences overall flood resilience.</td>
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<td>Active partnerships between local organizations influence overall flood resilience.</td>
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<td>Improving flood resilience requires an understanding of the watershed that surrounds the community.</td>
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<td>It is important to measure community flood resilience and track its progress over time.</td>
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<td>My community is flood resilient.</td>
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Thinking about the resilience discussion at the meeting, in what important ways does your community need to become more flood resilient?

In your experience, where in your community is flooding likely to occur?
Who in your community is most affected by these flood events?

Who else do you think should be involved in the IWA project or in resilience activities in your watershed area who were not present at this meeting?

What other questions do you have (if any) about improving your community’s flood resilience?

On a scale of 1 to 10, how interested are you in being involved in the work of the IWA in your watershed area? (Please circle the number that best represents the level of your interest below)

Not at all interested        Very Interested

1  2  3  4  5  6  7  8  9  10

Any other comments or questions?

Thank you for completing this survey. Your feedback is important to inform the work in your watershed! If you have any questions about this survey, please contact Julie Kearney at julie-kearney@uiowa.edu.