A vision for a more resilient Iowa

The Iowa Watershed Approach

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How can we stay informed about the North Raccoon project?

How can we learn about projects in other watersheds?

What data is/will be available and where can it be accessed?
Welcome!

The Iowa Watershed Approach:
Reducing Flooding and Advancing Water Quality

The Iowa Watershed Approach (IWA) is a vision for Iowa’s future that voluntarily engages stakeholders throughout the watershed to achieve common goals, while moving toward a more resilient state.

Nine Participating Watersheds:
- Clear Creek Watershed
- Dubuque/Bec Branch Watershed
- East Nishnabotna Watershed
- English River Watershed
- Middle Cedar Watershed
- North Raccoon Watershed
- Upper Iowa Watershed
- Upper Wauphinonon Watershed
- West Nishnabotna Watershed

HUD Disaster Resilience Grant to Iowa: $66.9 million

The Iowa Watershed Approach is an example of how a vision can bring people together to work on a common goal.
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http://iwa.iowawis.org/app/
Flooding trends in Iowa and across the Midwest
Trends in floods and heavy rainfall events
Trends show more floods in recent decades
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Trends show more frequent floods and heavy rainfall

Increased flooding

Increased heavy rainfall
Conclusions

• An increase in frequency, not magnitude, of flood events is detectable from observational records.

• Similar results are found when analyzing discharge and rainfall.

• However, directly attributing changes in discharge, precipitation, and temperature to human impacts on climate is very challenging to do using only observational records.
Physically-based Modelling
Lumped Parameter Modelling

- Still simulates these processes using a systematic, mathematical approach
- Modeler breaks the watershed down into manageable and representative user defined areas (called subbasins)
- Modeling software then solves systems of equations for each process in each subbasin and then routes the water balances through the watershed
Lumped Parameter Modelling

- Modeler identifies where water flows on the landscape (the stream network) and then breaks the watershed down into manageable and representative user defined areas (called subbasins)
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Lumped Parameter Modelling

Approximately 2470 square miles
Subbasins Delineated
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Lumped Parameter Modelling

- Watershed breakdown includes:
  - Lake/Reservoir Outlets that Regulate Discharge
  - Known Discharge (or Stage) Measurement Locations
  - Points of Interest

- North Raccoon Model:
  - 950 Subbasins Delineated
  - Average of approx. 2.6 square miles

- IFC is currently in process of obtaining storage-discharge relationships for Lakes/Reservoirs and finalizing initial model setup
**Lumped Parameter Modelling**

North Raccoon + South Raccoon Watershed

- To get discharges in the Raccoon River coming into the Des Moines area, IFC will also build a model to simulate discharge in the South Raccoon Watershed with the inflow added to the N. Raccoon model near Van Meter

- **North Raccoon Model:**
  - 950 Subbasins Delineated

- **South Raccoon Subbasin Delineation** has yet to be completed
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Monitoring
Existing BMPs

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

October 13, 2016
Existing BMPs

- Water and Sediment Control Basin
- Terrace
- Pond Dam
- Stripcropping
- Contour Buffer Strips

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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/
IWA Program Timeline

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IWA Program Timeline

Watersheds Requiring WMA Formation
North Raccoon
E. Nishnabotna
W. Nishnabotna

WMA formation
Hydrologic Assessment
Watershed Plan
Select Implementation Sites
Project Design
Project Construction/Implementation
Sensor Deployment
Baseline Data Collection and Analysis
Detailed Model Development and Scenario Analysis
Evaluation of Projects
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