# Iowa BMP Mapping Project

Agriculture Water Quality Partnership Forum

March 12, 2018

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EFFORTS TO IMPROVE TRACKING OF STRUCTURAL PRACTICES

- Collaborative project
  - Iowa State University
  - Iowa Dept. of Natural Resources
  - Iowa Nutrient Research and Education Council
  - Iowa Department of Agriculture and Land Stewardship
- Use GIS mapping software to delineate structural practices recommended in the Iowa Nutrient Loss Reduction Strategy.
  - 2010 LiDAR data and historic/current aerial imagery.

Iowa Nutrient Reduction Strategy
Annual Progress Report
Prepared by:
Iowa Department of Agriculture and Land Stewardship,
Iowa Department of Natural Resources,
Iowa State University College of Agriculture and Life Sciences

INRC 0015   December 2017
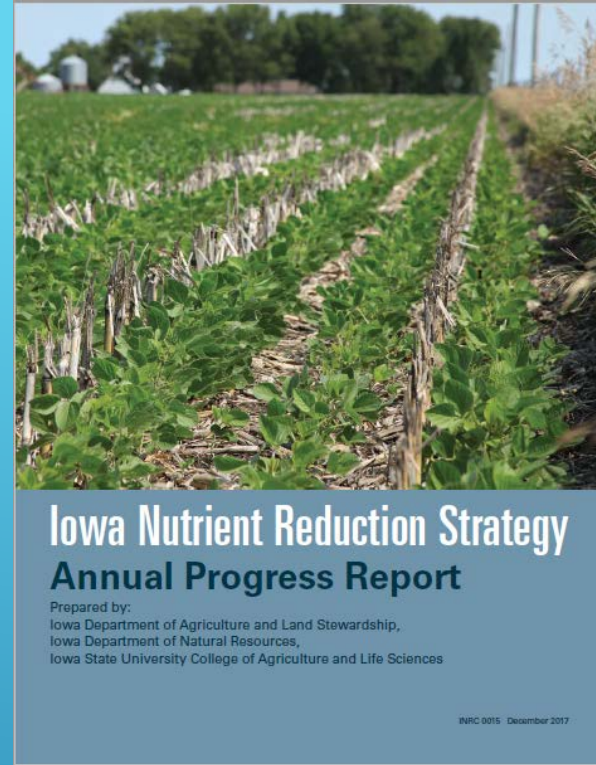
Best Management Practices (NRCS Practice Codes) being digitized:

Contour Buffer Strip - 332   ~~P~~ ~~Dam~~ - 378

Grassed Waterway~~~~   Stripcropping - 585

Terrace - 6~~~~   Water and Sediment Control Basin - 638

NOT RECOMMENDED PRACTICES IN ILLINOIS NLRS!

- Each Semester since the spring of 2015, student interns have been digitizing six specific management practices in watersheds across the state.
- Over 1,400 HUC 12 watersheds have been completed.
- Strong collaboration among funding partners
  - AmericaView, state government and private industry.
- IowaView received minigrant from AmericaView to create three tutorials:
  - Digitizing Conservation Practices
  - Historical Occurrence Evaluation
  - Identifying and Mapping tile drainage.
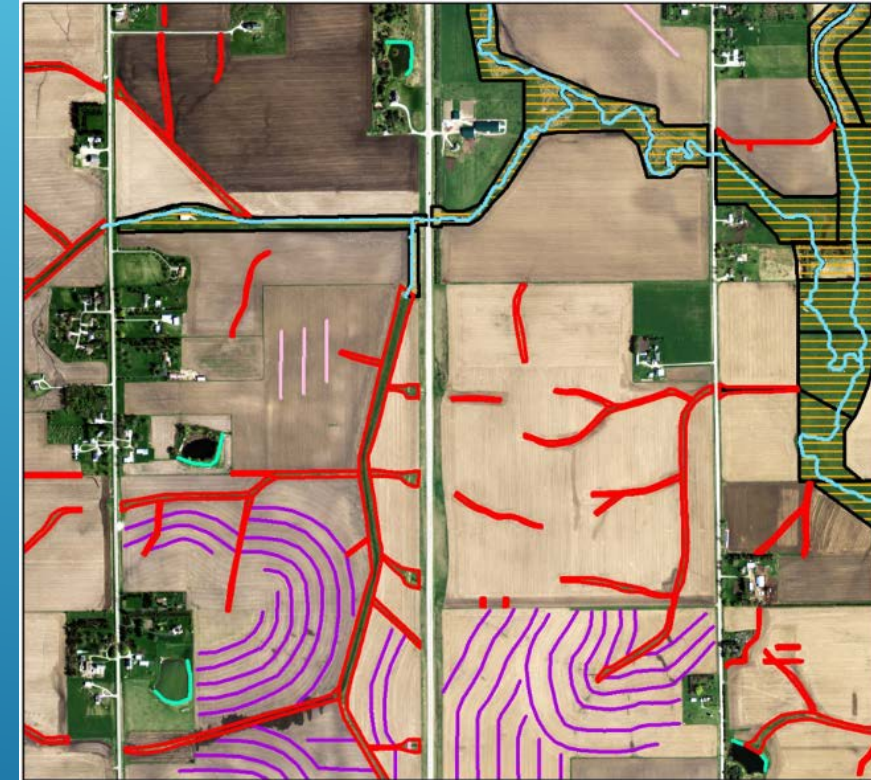
Digitized Conservation Practices in HUC 12 Watershed 0708050905 in Black Hawk County, Iowa
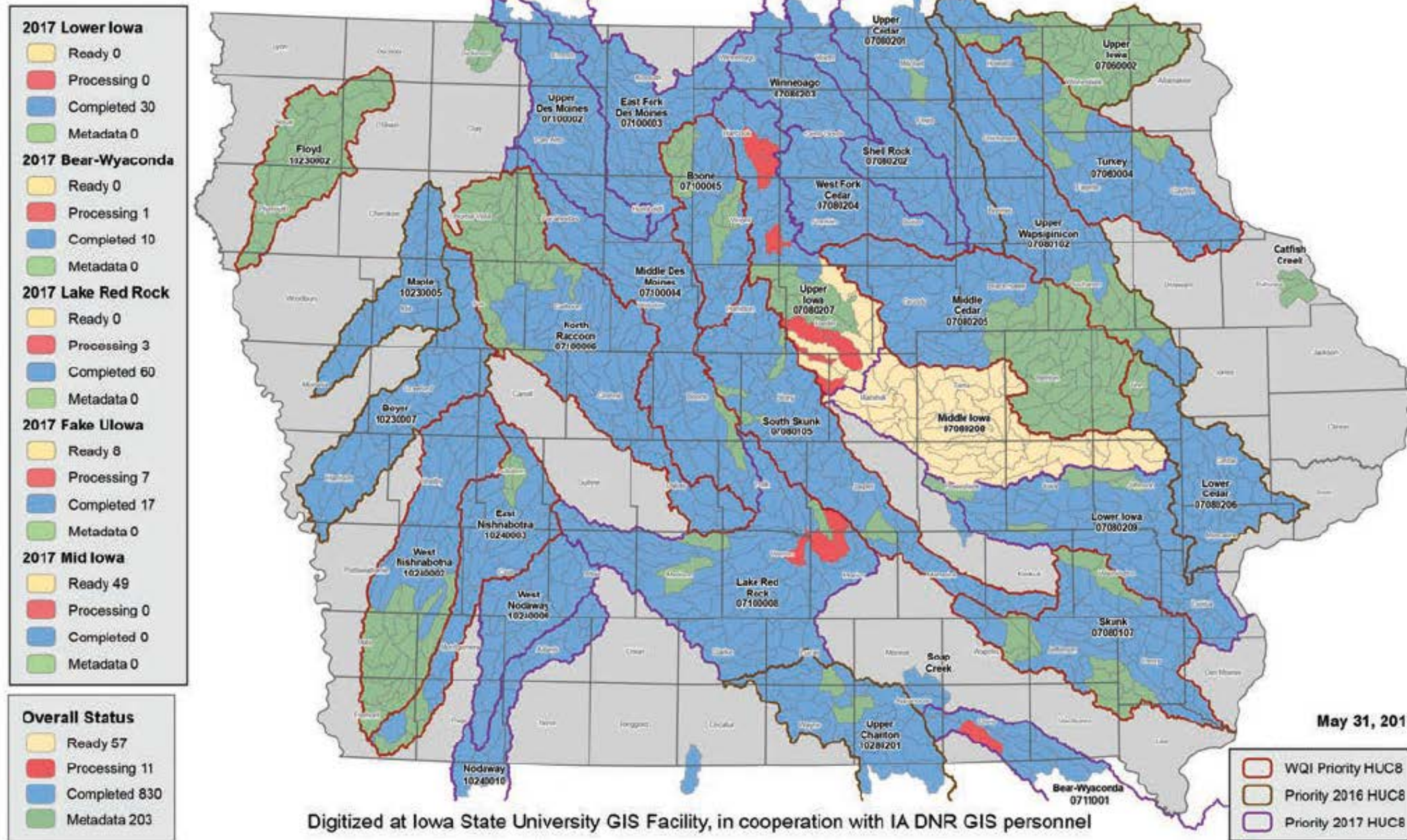
Digitized Conservation Practices
- Riparian Areas
- Grassed Waterway
- Pond Dam
- Terrace
- Water and Sediment Control Basin
- Stream Reach

COMPONENTS AND RESOURCES

- 1. Baseline Assessment to map practices: $150-$250/HUC 12
    - (We have 1,877 in Illinois)
    - 10-12 GIS students at IA State working on this at a time.
- 2. QA/QC
    - IA State Staff review work of students, 1-2 staff part time.
- 3. Progress assessment using 25% sample size of HUC12s comparing 1980s aerial imagery with the baseline assessment
    - Then doing update using updated aerial imagery.
- Other side projects using this information in the works.
- Baseline to be done Spring 2018 with QA/QC complete by Fall 2018.

Best Management Practices Inventory HUC 12 Watershed Status
Late Spring 2017 Focus HUC 8: Lower Iowa; Bear-Wyaconda; Lake Red Rock; Upper Iowa; Middle Iowa

May 31, 2017

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

# QUESTIONS FOR AWQPF

▶ Do we want to try this in Illinois?

▶ What practices would we want to map?

  ▶ Filter strips/Riparian Buffers (recommended in NLRS)

  ▶ Grass Waterways

  ▶ Terraces

  ▶ WASCOBs

  ▶ Others

▶ Who could do it, Who pays?

▶ Do we do whole state or select watersheds?

  ▶ Priority Watersheds for Phosphorus

OPTION- FOCUS ON FILTER STRIPS IN PHOSPHORUS PRIORITY WATERSHED(S)

- ▸ Not as complex or expensive to map.

- ▸ Focuses on a relatively simple and cheap practice.

- ▸ Provide baseline and target where practice is needed

- ▸ Track implementation over time

- ▸ Incorporate Negative slope analysis?
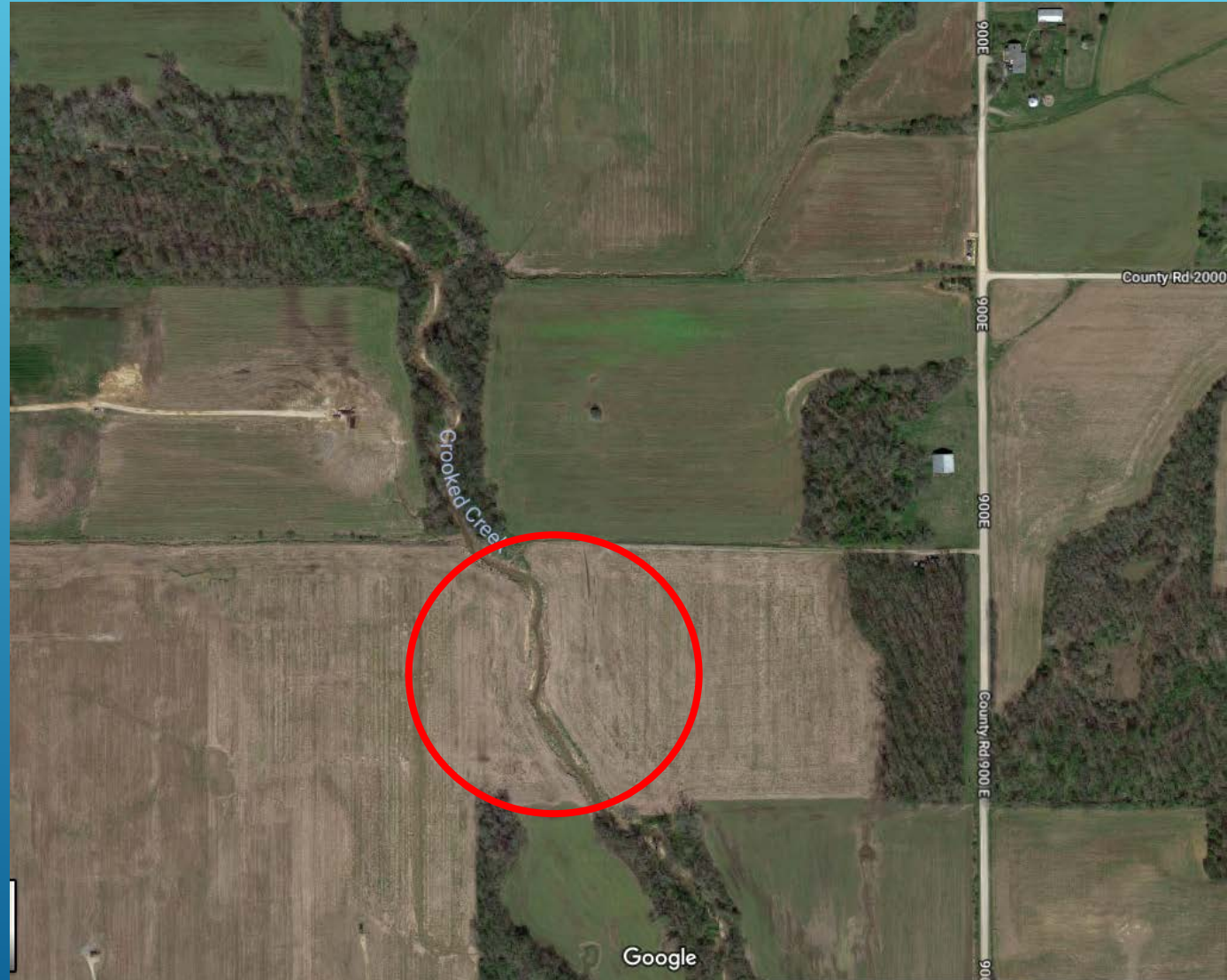
AGRICULTURE CONSERVATION PLANNING FRAMEWORK (ACPF)

- Watershed planning toolbox
- High-resolution geo-spatial datasets
- Used within ArcGIS.

AGRICULTURE CONSERVATION PLANNING FRAMEWORK (ACPF)

NORTH CENTRAL REGION WATER NETWORK

USDA

- ▶ Determine which fields within a watershed are most prone to contribute runoff to streams
- ▶ Identify where field-scale and edge of field practices could be installed

AGRICULTURE CONSERVATION PLANNING FRAMEWORK (ACPF)

NORTH CENTRAL REGION WATER NETWORK

▶ Practices include:

- Controlled Drainage (drainage water management)
- Surface Intake Filters or Restored Wetlands for topographic depressions
- Grassed Waterways
- Contour Buffer Strips
- Water and Sediment Control Basins
- Nutrient Removal Wetlands
- Edge-of-field Bioreactors

- Map opportunities for riparian management:

  - Prioritize for runoff interception and to address bank erosion
  - Opportunities for removal of dissolved nutrients and floodplain reconnection
  - Saturated Riparian Buffers

User options are included in every tool to allow flexibility in matching practice-siting criteria to each local setting.

LAND USE AND SOILS DATA: 📥 DOWNLOAD

Recent land use (through 2016), field boundary, and soil survey information for individual HUC12 watersheds in Iowa, Illinois, southern Minnesota, eastern Kansas, and portions of Nebraska, Missouri, and Wisconsin can be downloaded.

Via this ACPF land use viewer web page, users may navigate to individual HUC12 watersheds, view land-use maps, and download land use and soils data that can be directly used as input data for the ACPF toolbox. Before developing information on conservation priorities and opportunities using the ACPF toolbox, users will need to obtain elevation data for their watershed.

ELEVATION DATA: 📥 DOWNLOAD

The ACPF Development Team at the USDA/ARS National Laboratory for Agriculture and the Environment, in cooperation with the **Iowa State University GIS Facility (ISUGISF)** are pleased to announce web access to state-wide, high-resolution elevation data for Iowa. These data are being made available in support of the Agricultural Conservation Planning Framework (ACPF) and other GIS applications. The new release and accompanying information is available on the ACPF DEM page, on the ISUGISF web. The ISUGISF has created an ArcGIS Server application to download 2-meter DEM by HUC12 watershed for the state of Iowa.

SUPPORT AND TRAINING

TRAINING VIDEOS:

The ACPF ArcGIS **Training videos** are a series of 26 lessons explaining how to setup, use, and interpret all the tools in the ACPF toolbox. This is essential training for users who have not attended a hands-on workshop or who want to review modules.

The videos are designed for people with intermediate ArcGIS skills, including importing and managing files and layers, and processing raster data such as for terrain analyses or hydrological modeling of DEMs. They assume the viewer is comfortable navigating toolboxes, using tool dialogs, manipulating map characteristics, moving around tables, and joining tables, etc.

The videos build on each other, so work through them in sequence from Lecture 1 to Lecture 26. As you watch, have the User Guide available and ArcGIS open so you can follow along. Allow two full days of watching the videos and practicing to become well-trained in using the ACPF.

ACPF FORUM:

The ACPF Forum is an online group for discussing technical issues related to using the ACPF tools. Anyone can view the discussions **Here**. To participate, first join the group by sending an email to **acpf-group+subscribe@umn.edu.**