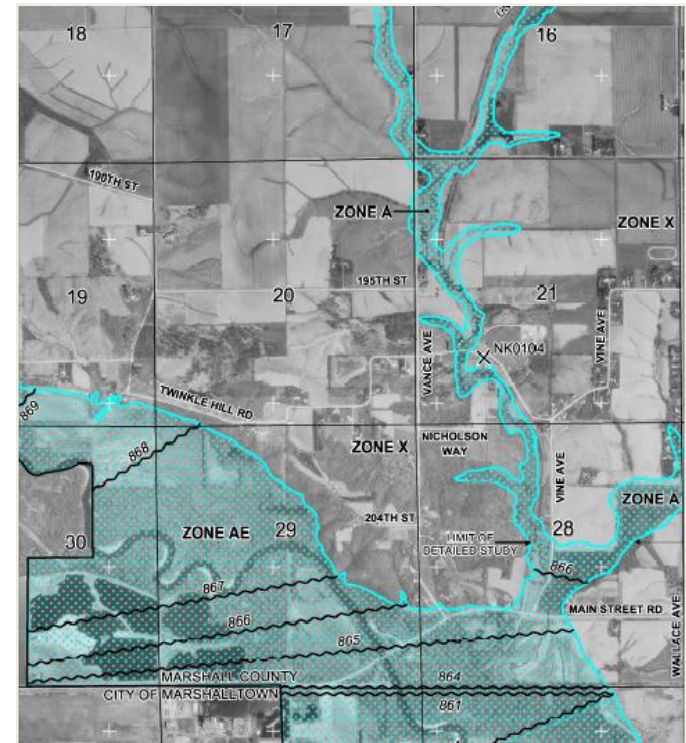# IOWA STATEWIDE FLOODPLAIN MAPPING PROGRAM

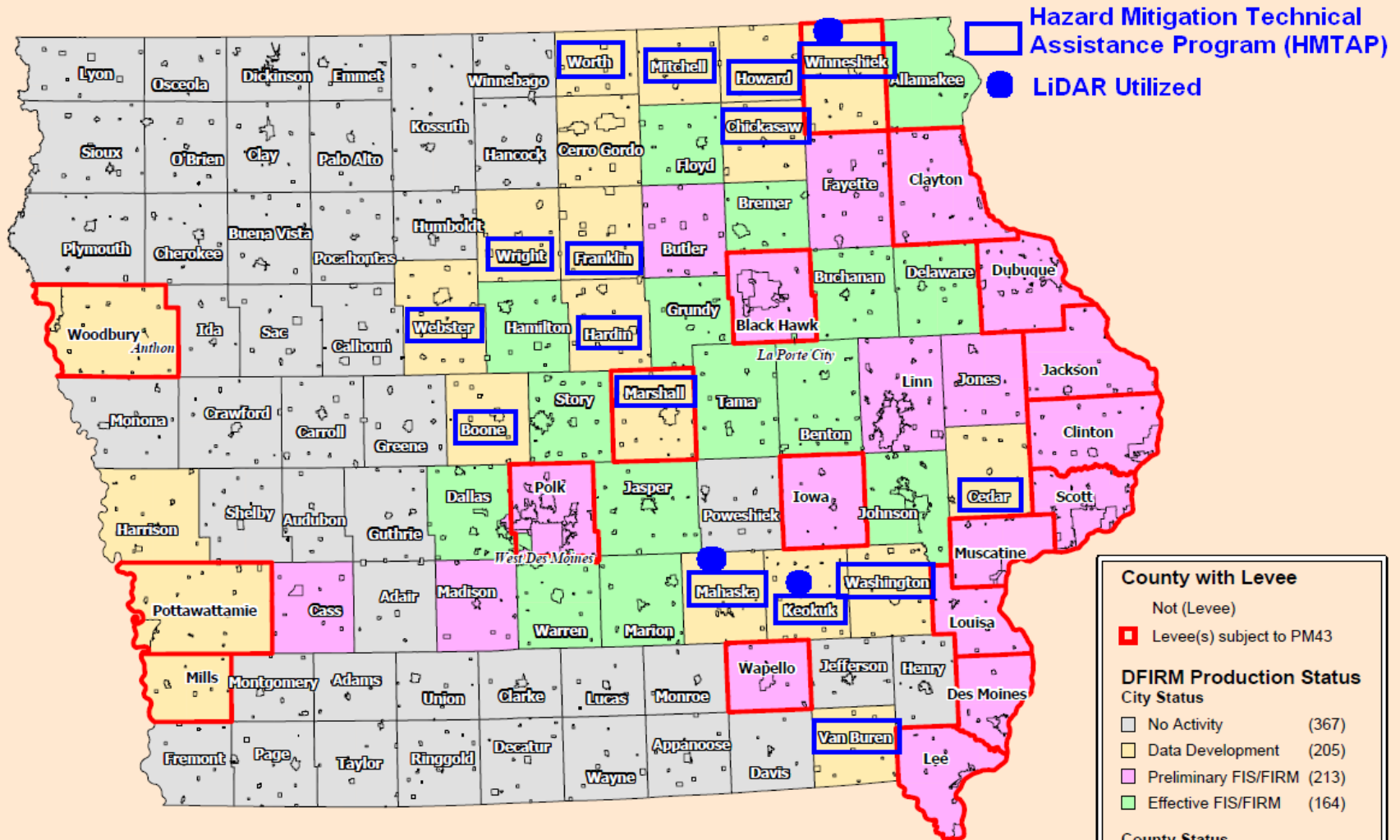*Turkey River Basin Flood Seminar*
June 14, 2012

Scott Ralston, P.E., CFM

Christopher Kahle, GIS Specialist

Topics To Be Covered

- Iowa's Current Floodplain Mapping Status

- Iowa's Floodplain Mapping Program

December 2009: IOWA - FLOODPLAIN MAP STATUS

Hazard Mitigation Technical Assistance Program (HMTAP)

LiDAR Utilized

County names (map labels)

Lyon, Osceola, Dickinson, Emmet, Winnebago, Worth, Mitchell, Howard, Winneshiek, Allamakee

Sioux, O'Brien, Clay, Palo Alto, Kossuth, Hancock, Cerro Gordo, Floyd, Chickasaw, Fayette, Clayton

Plymouth, Cherokee, Buena Vista, Pocahontas, Humboldt, Bremer, Butler, Buchanan, Delaware, Dubuque

Woodbury, Anthon, Ida, Sac, Calhoun, Webster, Hamilton, Hardin, Grundy, Black Hawk, La Porte City

Monona, Crawford, Carroll, Greene, Boone, Story, Marshall, Tama, Benton, Linn, Jones, Jackson

Wright, Franklin, Harrison, Shelby, Audubon, Guthrie, Dallas, Polk, Jasper, Poweshiek, Iowa, Johnson, Cedar, Scott, Clinton

West Des Moines, Pottawattamie, Cass, Adair, Madison, Warren, Marion, Mahaska, Keokuk, Washington, Muscatine, Louisa

Mills, Montgomery, Adams, Union, Clarke, Lucas, Monroe, Wapello, Jefferson, Henry, Des Moines

Fremont, Page, Taylor, Ringgold, Decatur, Wayne, Appanoose, Davis, Van Buren, Lee

Legend

County with Levee
Not (Levee)
Levee(s) subject to PM43

DFIRM Production Status

City Status

Status	Count
No Activity	(367)
Data Development	(205)
Preliminary FIS/FIRM	(213)
Effective FIS/FIRM	(164)

County Status

Status	Count
No Activity	(44)
Data Development	(21)
Preliminary FIS/FIRM	(19)

FEMA

No Activity - FEMA does not have a DFIRM planned for the county/community.

Scoping - FEMA is developing a Statement of Work to fund a project in the current fiscal year.

Data Development - FEMA has contracted for approximate and detailed analysis, redelineation and digital conversion (where needed), and DFIRM production.

Preliminary FIS/DFIRM - A preliminary FIS/DFIRM is available for community and public comment. May be in 90-day appeal or 6-month compliance period.

Effective FIS/DFIRM - FIS and DFIRM are effective and available from Map Service Center.

Levee Note - Per proceedure memo 34 and 43, the level of protection of accredited levees is required to be verfied before a new FIRM may be released. In some cases, a community and levee owner will be allowed a 24 month period to provide certification documents.

IOWA
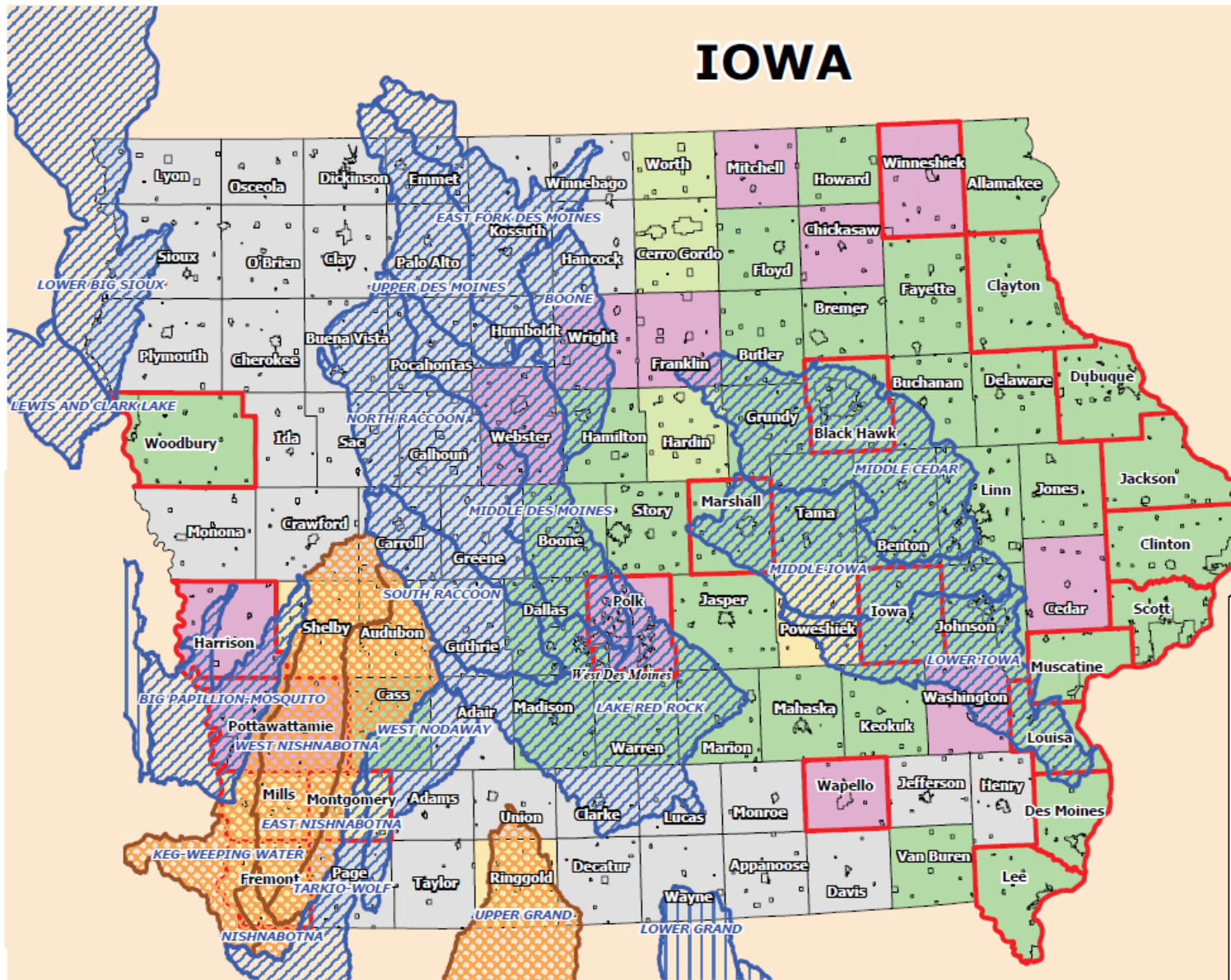
Watershed Project

▨ Discovery	
▥ Discovery & Topo Data	
▦ Topographic Data	
▩ Data Developement	

County with Levee

■ Levee(s) subject to PM43 (21)

County wide Projects
City Status

☐ No Activity	(319)
☐ Data Development	(55)
☐ Preliminary FIS/FIRM	(116)
☐ Notice of Final Determination	(28)
☐ Effective FIS/FIRM	(430)

County Status

☐ No Activity	(38)
☐ Data Development	(7)
☐ Preliminary FIS/FIRM	(12)
☐ Notice of Final Determination	(3)
☐ Effective FIS/FIRM	(39)

FEMA

U.S. Dept. of Homeland Security
FEMA - Region VII
MapMod all states status.wor
February 10, 2012

No Activity - FEMA does not have a DFIRM planned for the county/community.
Discovery - FEMA is developing a Statement of Work for a future project.
Data Development - FEMA has contracted for basic and enhanced analysis, redelineation and digital conversion (where needed), and DFIRM production.
Preliminary FIS/FIRM - A preliminary FIS/FIRM is available for community and public comment.
Notice of Final Determination - Effective date determined, communities have 6 months to adopt revised FIS/DFIRM.
Effective FIS/DFIRM - FIS and DFIRM are effective and available from Map Service Center.

Levee Note - Per proceedure memo 34 and 43, the level of protection of accredited levees is required to be verfied before a new FIRM may be released.
In some cases, a community and levee owner will be allowed a 24 month period to provide certification documents.

Brief History

- ## 1993 Floods
  - Major flooding in Midwest

- ## Statewide LiDAR Project: 2005-2010
  - Floodplain mapping was not primary impetus for project

- ## 2008 Floods
  - Only 15 years since last widespread flood event (1993)
  - Flood of record in many parts of state
  - Flood risk awareness rose significantly

- ## State Response
  - Rebuild Iowa Advisory Commission
  - $640 Million Statewide Disaster Relief CDBG Grant

- ## Federal and State Mapping Investment
  - $4.3 Million for LiDAR (State & Federal Agencies)
  - $15 Million in CDBG Funds ($150k / County)
  - $2.2 Million in ACOE Section 22 Planning Assistance to States (PAS) Funding
  - Portion of $2 Million Floodplain Management (SFY 2010, 2011, 2012)

- ## Iowa Flood Center (U of I)

Floodplain Mapping Program Background

- $15M HUD CDBG grant

- Administered by Iowa DED and DNR

- Supports floodplain mapping in the 85 counties declared federal disaster areas

- "…to produce floodplain maps that meet FEMA technical standards and can be published as Digital Flood Insurance Rate Maps (DFIRMs)."

Figure 1 - Federal Disaster Declaration (FEMA-1763-DR)

85 Disaster Declared Counties
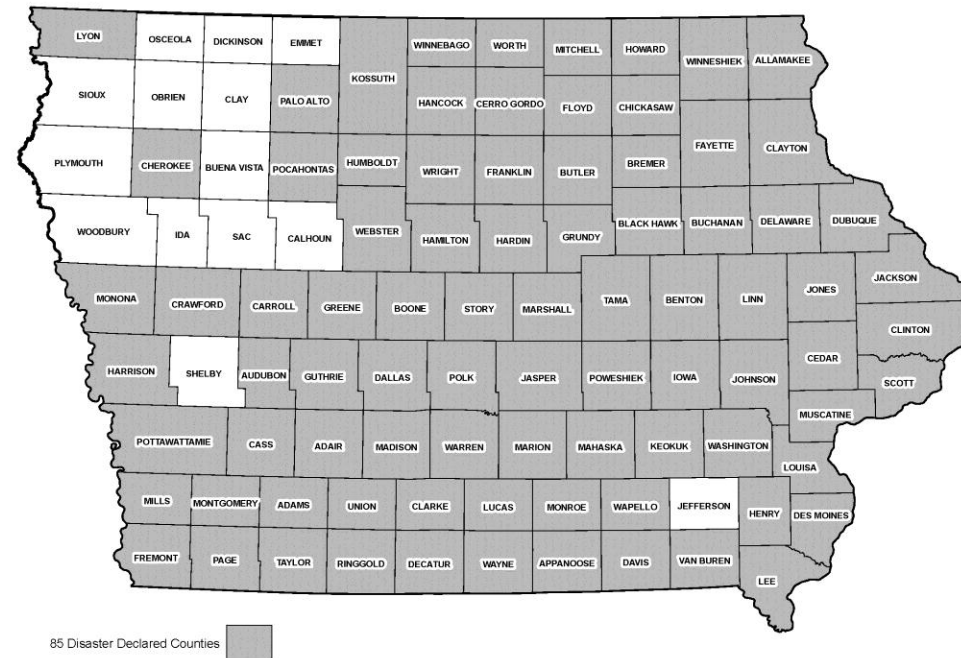
LiDAR Components

Light Detection and Ranging

- – Laser Rangefinder
- – IMU (INS)
- – GPS
- – On board computer

Scanning LiDAR
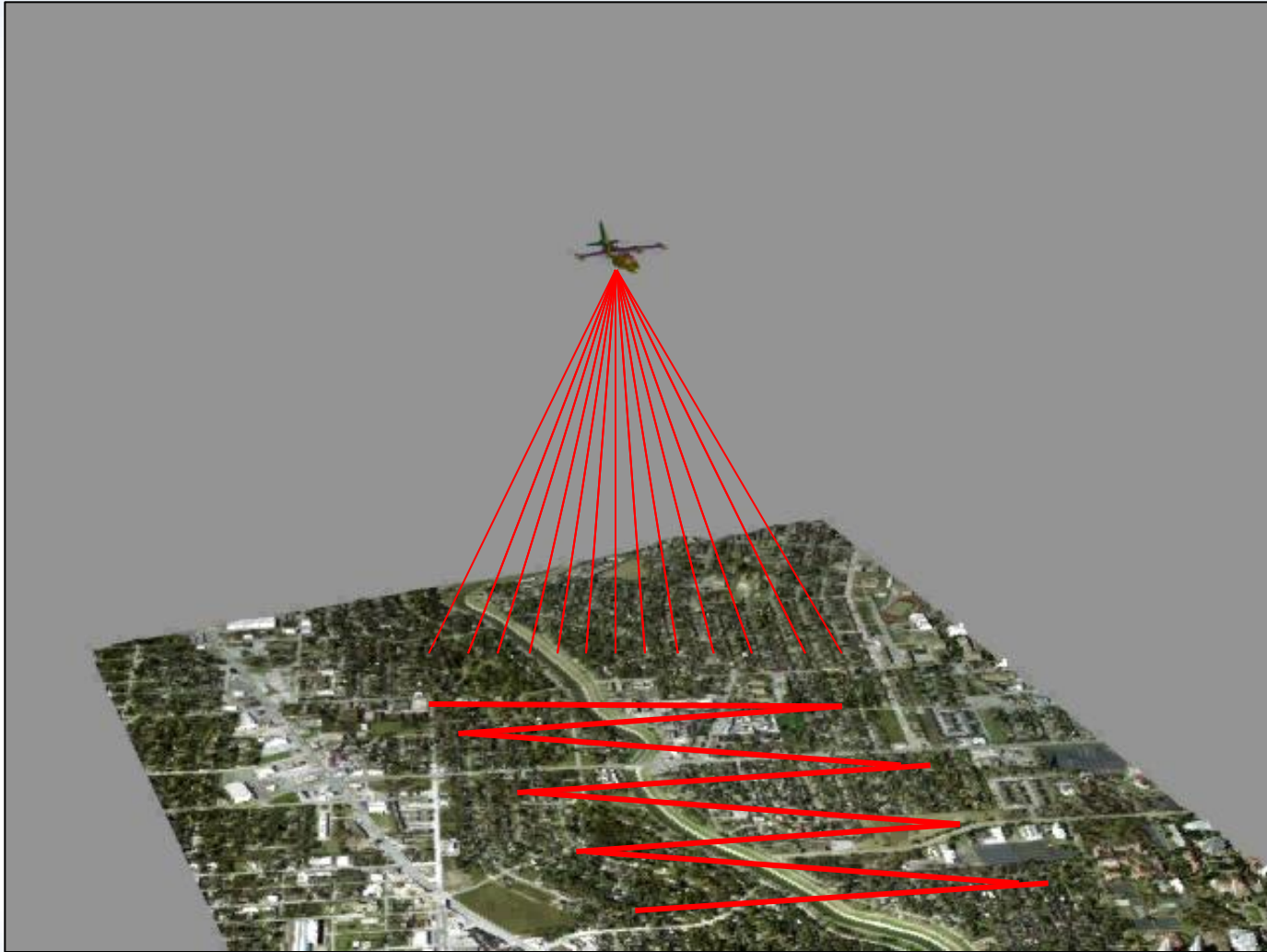
USGS 30 meter DEM – Shaded Relief
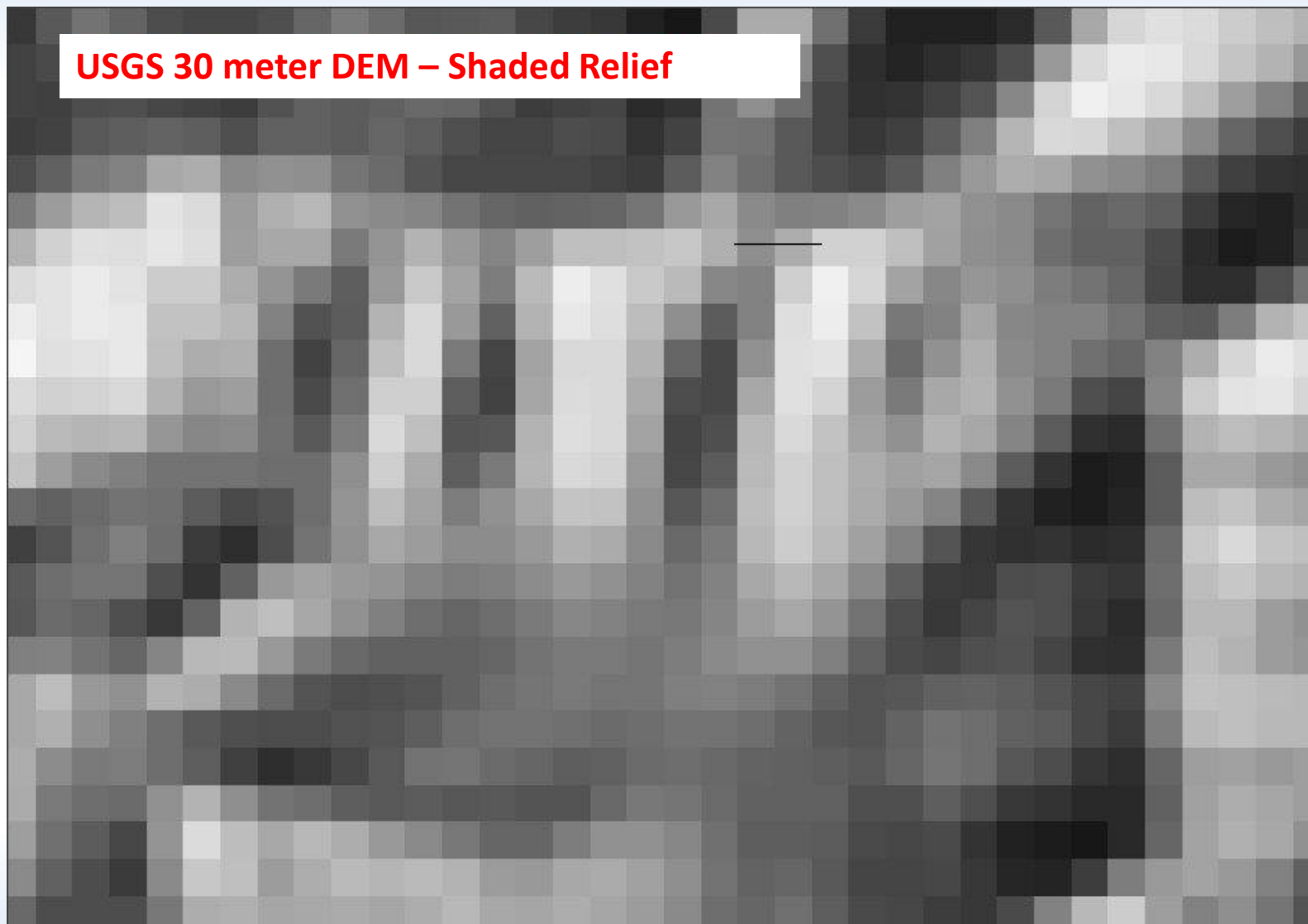
LiDAR 1 meter DEM – Shaded Relief
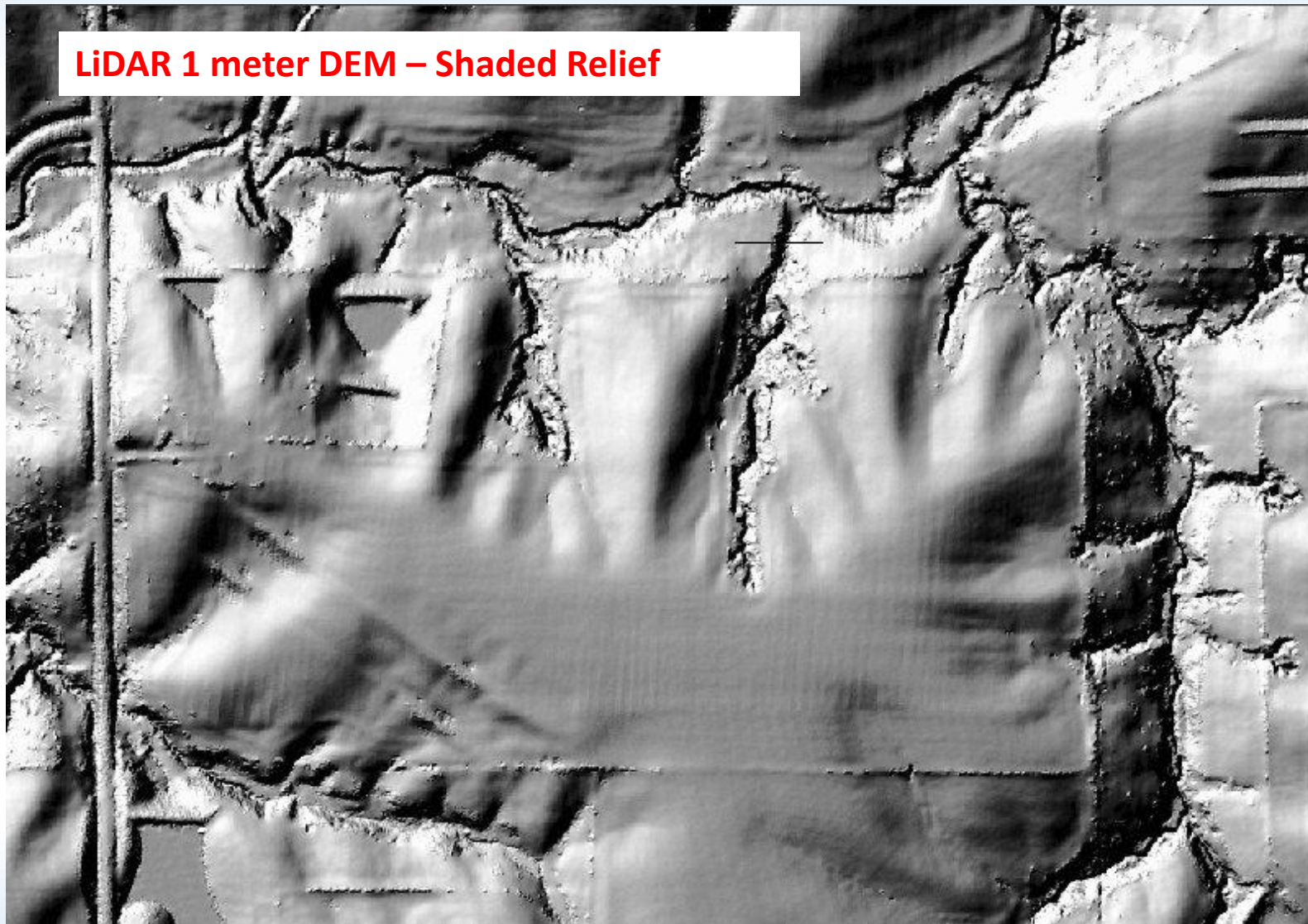
Bare Earth
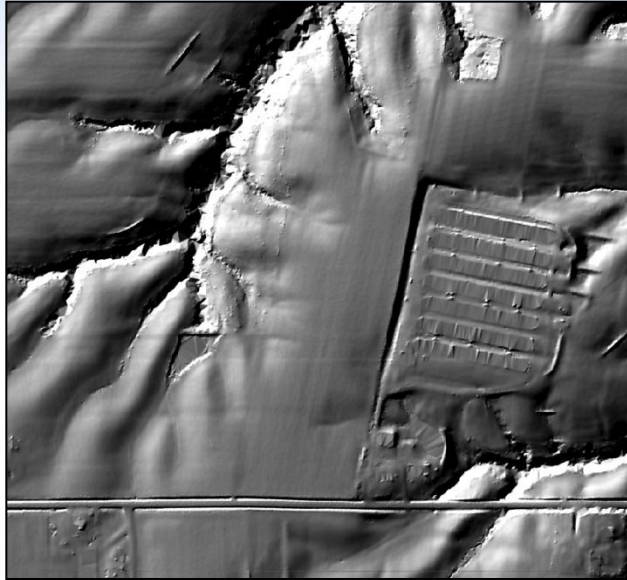
First Return
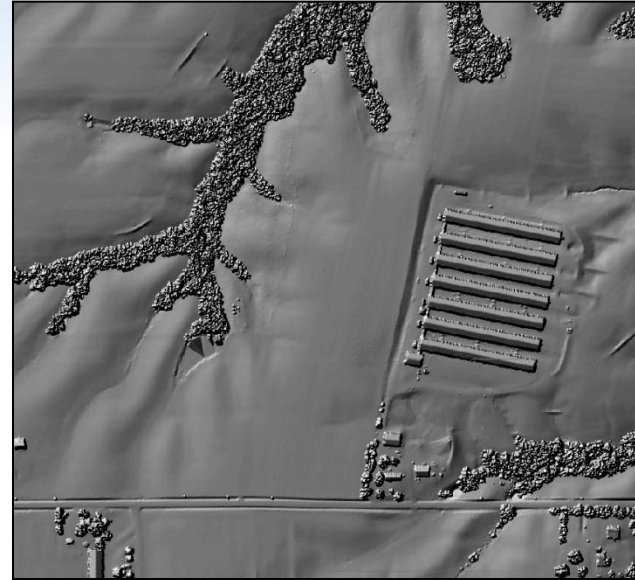
Last Return
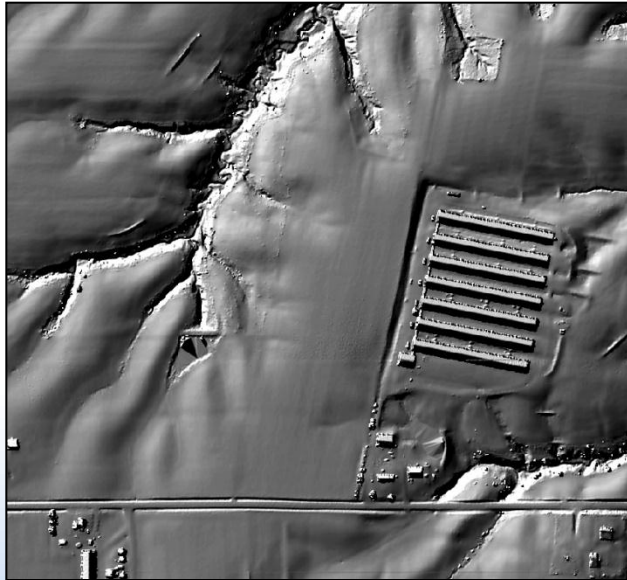
Intensity

IOWA FLOOD CENTER

- Created by State legislation following the 2008 flood
  - A technical and educational resource for Iowans
  - Coordinates closely with IDNR and other state and federal agencies operating within Iowa
- Housed at IIHR – Hydroscience & Engineering, the University of Iowa
  - 90-year history
  - Expertise in river hydraulics, hydrology, and fluid mechanics
- Activities
  - Inundation mapping
  - Flood forecasting
  - Flood frequency estimation
  - Flood monitoring
  - Training
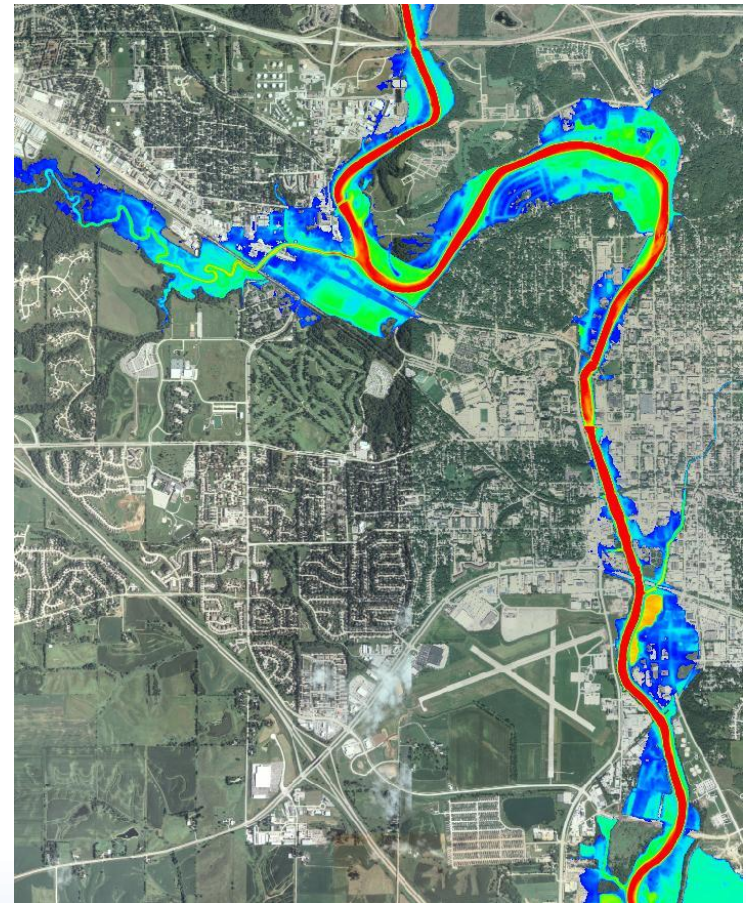
2008 Flood in Iowa City

Risk MAP

Risk Mapping, Assessment, and Planning (Risk MAP) Multi-Year Plan: Fiscal Years 2010–2014

Risk MAP Goals

Goal 1: Data Gaps
Address gaps in flood hazard data

Goal 2: Awareness & Understanding
Measurable increase of public awareness & understanding

Goal 3: Mitigation Planning
Lead effective engagement in Mitigation Planning

Goal 4: Digital Platform
Provide an enhanced digital platform

Goal 5: Synergize Programs
Align Risk Analysis programs and develop synergies

Risk MAP Measures

- Ensure 80 percent of the Nation's flood hazards are current by 2014 – the flood hazard data are new, have been updated, or deemed still valid through Risk MAP review and update process

- Increase State, local, and Tribal officials' level of understanding of flood risk

- Ensure 80 percent of the U.S. population (excluding territories) is covered by a Local or Tribal hazard mitigation plan that is approved or approvable pending adoption

- Percent of Local hazard mitigation plans approved using quality Risk MAP data or better

- Establish a culture of continuous improvement and executing projects aimed at reducing process cycle time and improving the quality of Risk MAP products and services

Vision
Risk MAP will deliver quality data that increases public awareness and leads to action that reduces risk to life and property

Traditional Regulatory Products

Non-Regulatory Products

Business Process Definition Diagram
9/18/2009

Manage Flood Map Study Project

Manage Scoping

Manage Flood Engineering

Manage Flood Mapping

Manage Data Development Process

Obligate Project Funds **Study Project Administrator** (PM or FEMA) *UC177*

Manage Data Development **Data Development Mgr** *(DataDev Org)* UC R0N0DX001

Acquire Base Map **Base Map Task Lead, Study Task Lead** *(DataDev Org)* UCR5FDXX001

Develop Topographic Data **Topography Task Lead, Study Task Lead** *(DataDev Org)* UCR5FDXX002

Perform Field Survey **Field Survey Task Lead, Study Task Lead** *(DataDev Org)* UCR5FDXX003
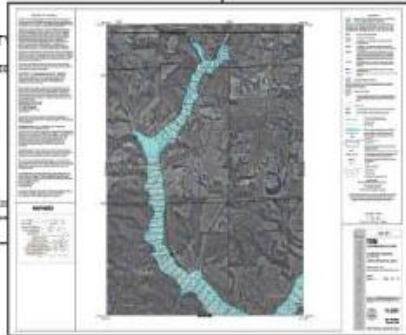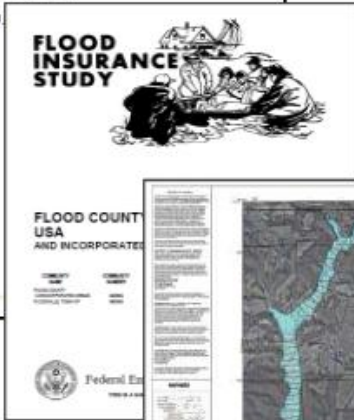
Develop Hydrologic Data **Hydrology Task Lead, Study Task Lead** *(DataDev Org)* UCR5FDXX004

Develop Hydraulic Data **Hydraulic Task Lead, Study Task Lead** *(DataDev Org)* UCR5FDXX005

Perform Coastal Analysis **Coastal Analysis Task Lead, Study Task Lead** *(DataDev Org)* UCR5FDXX009

Perform Alluvial Fan Analysis **Alluvial Fan Task Lead, Study Task Lead** *(DataDev Org)* UCR5FDXX010

Perform Floodplain Mapping **Floodplain Task Lead, Study Task Lead** *(DataDev Org)* UCR5FDXX007

Develop DFIRM Database **DFIRM Database Task Lead, Study Task Lead** *(DataDev Org)* UCR5FDXX012

Authorize Planned Data Development Task **Study Project Administrator** *(Obligate Org)* UC234

Manage QA

Manage Preliminary Map Production

Manage Preliminary Map Production

Setup Map Production **Study Project Administrator** *UC244*

Manage Preliminary Map Production **Preliminary Map Mgr** *(Prelim Org)* UCR3MPMPR001

Produce Preliminary Map Products **Preliminary Map Products Task Lead, Study Task Lead** *(Prelim Org)* UCR3FMPR002

Manage QA

Distribute Preliminary Map Products **Preliminary Map Products Task Lead, Study Task Lead** *(Prelim Org)* UCR3FMPR003

Setup Post Preliminary Processing **Study Project Administrator** *(Obligate Org)* UC210

Manage Post Preliminary Processing

Manage Post Preliminary Processing

Manage Post Preliminary Map Production **Post-Prelim Map Mgr.** *(PostPrelim Org)* UCR3MPPP001

Determine Community Meeting Schedule **Pre-Appeal Study Task Lead** *(PostPrelim Org)* UC212

Prepare and Hold Intermediate Meetings **Pre-Appeal Study Task Lead** *(PostPrelim org)* UC213

Confirm Community Meeting List **Pre-Appeal Study Task Lead** *(PostPrelim Org)* UC235

Prepare Community Meetings **Pre-Appeal Study Task Lead** *(PostPrelim Org)* UC236

Hold Community Meetings **FEMA Study Lead, PTS Pre-Appeal Study Task Lead, FEMA, PTS, PostPrelim Org)** UC239

Determine if Appeal Period is Required **Pre-Appeal Study Task Lead** *(PostPrelim Org)* UC241

Manage Appeal

Produce Final Map Products **Final Map Products Task Lead** *(PostPrelim Org)* UCR3FMPP001

Submit MSC Deliverable **Final Map Products Task Lead** *(PostPrelim Org)* UCR3FMPP002

Manage QA

Prepare LFD Docket **Post-Appeal Study Task Lead** *(PostPrelim Org)* UC245

Review LFD Docket **PTS Post-Appeal Study Task Lead** UCR3FMPP005

Approve LFD Docket **FEMA Study Lead, PTS Post-Appeal Study Task Lead** *(FEMA,PTS)* UC248

Distribute LFD Docket **Post-Appeal Study Task Lead** *(PostPrelim Org)* UC251

Create Final Rule for Federal Register **Post-Appeal Study Task Lead** *(Post Prelim org)* UC266

Manage Revalidation

Manage Map Adoption

Manage Pre-Scoping

Perform Pre-Scoping **Pre-Scoping Task Lead** *(Pre-Scoping Org)* UCR06CXX001

Hold Pre-Scoped Project **Pre-Scoping Task Lead** *(Pre-Scoping Org)* UC151

Initiate Study Project **Create Study Project Administrator** *(FEMA or PM)* UC168

Manage Flood Map Study Project

Manage Scoping

Prepare for Scoping Meeting **Scoping Task Lead** *(Scoping Org)* UC169

Conduct Scoping Meeting **Scoping Task Lead** *(Scoping Org)* UC171

Finalize Project Scope **Scoping Task Lead** *(Scoping Org)* UC174

Manage Quality Assurance

Validate Content Submission **QA Task Lead** *(PTS)* UC194

Perform Independent QA **Independent QA Task Lead** *(IQA Org)* UCR3IQA001

Perform National DFIRM QA **QA Task Lead** *(PTS)* UCR3FMQA001

Manage Revalidation

Prepare Revalidation Letter **Post-Appeal Study Task Lead** *(PostPrelim Org)* UC283

Review Revalidation Docket **PTS Post-Appeal Study Task Lead** *(PTS)* UC286

Approve Revalidation Docket **FEMA Study Lead, PTS Post-Appeal Study Task Lead** *(FEMA, PTS)* UCR3REVAL001

Distribute Revalidation Letter **Post-Appeal Study Task Lead** UC288

Manage Appeal

Create BFE Notice **Appeals Task Lead** *(PostPrelim Org)* UC268

Approve BFE Notice **PTS Appeals Task Lead** *(PTS)* UC270

Review BFE Docket **FEMA Study Lead, PTS Appeals Task Lead** *(FEMA, PTS)* UC301

Distribute BFE Publication **Appeals Task Lead** *(PostPrelim Org)* UC273

Receive BFE Publication Affidavit **Appeals Task Lead** *(PostPrelim Org)* UC276

Record Appeal or Protest **Appeals Task Lead** *(PostPrelim Org)* UC281

Review Appeal or Protest **Appeals Task Lead** *(PostPrelim Org)* UC284

Prepare Appeal Package **Appeals Task Lead** *(PostPrelim Org)* UC287

Review Appeal Resolution **FEMA Study Lead, PM Appeals Task Lead** *(FEMA, PM)* UC289

Distribute Appeal Resolution **Appeals Task Lead** *(PostPrelim Org)* UC290

Prepare Federal Register Proposed Rule **Appeals Task Lead** *(PostPrelim Org)* UC278

Manage Map Adoption

Check Adoption Status **Map Adoption Task Lead** *(PTS)* UC291

Prepare 90-Day Suspension Notification **Map Adoption Task Lead** *(PTS)* UC292

Review 90-Day Suspension Notification **FEMA Study Lead, Map Adoption Task Lead** *(FEMA, PTS)* UC293

Distribute 90-Day Suspension Notification **Map Adoption Task Lead** *(PTS)* UC294

Recheck Adoption Status **Map Adoption Task Lead** *(PTS)* UC295

Prepare 30-Day Suspension Notification **Map Adoption Task Lead** *(PTS)* UC296

Review 30-Day Suspension Notification **FEMA Study Lead, Map Adoption Task Lead** *(FEMA, PTS)* UC297

Distribute 30-Day Suspension Notification **Map Adoption Task Lead** *(PTS)* UC299

Confirm Adoption Status **Map Adoption Task Lead** *(PTS)* UC300

Legend: Process / Activity Name **User Role** *(Organization)* Use Case # / Activity / Decision

CNMS Phase 3 - Data Model: State of Iowa

March 2011

Study Type and Status

Enhanced (Zone AE)
- VALID
- INVALID
- UNKNOWN

Basic (Zone A)
- Iowa FP Mapping (All)
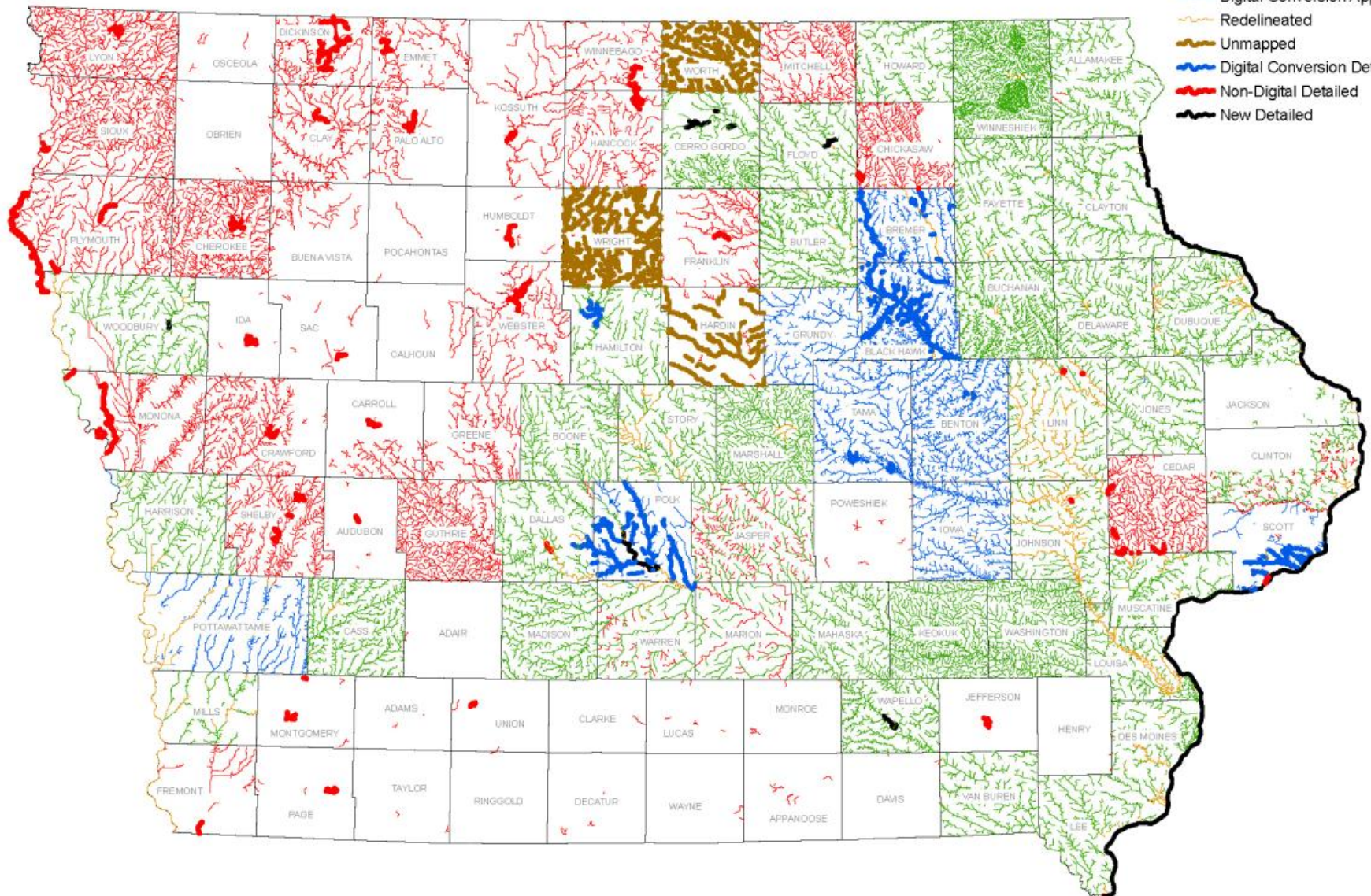- Zone X - Assessed
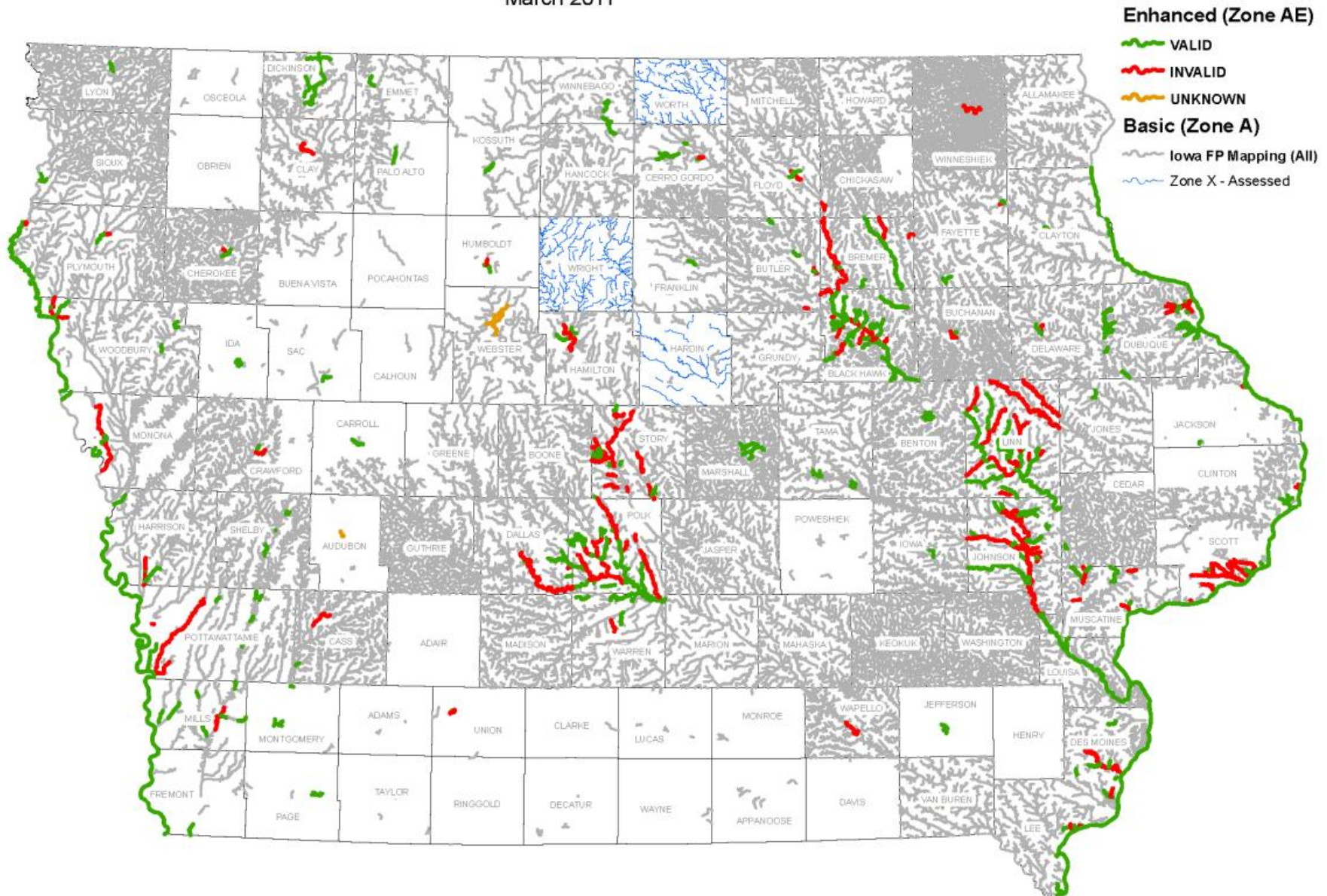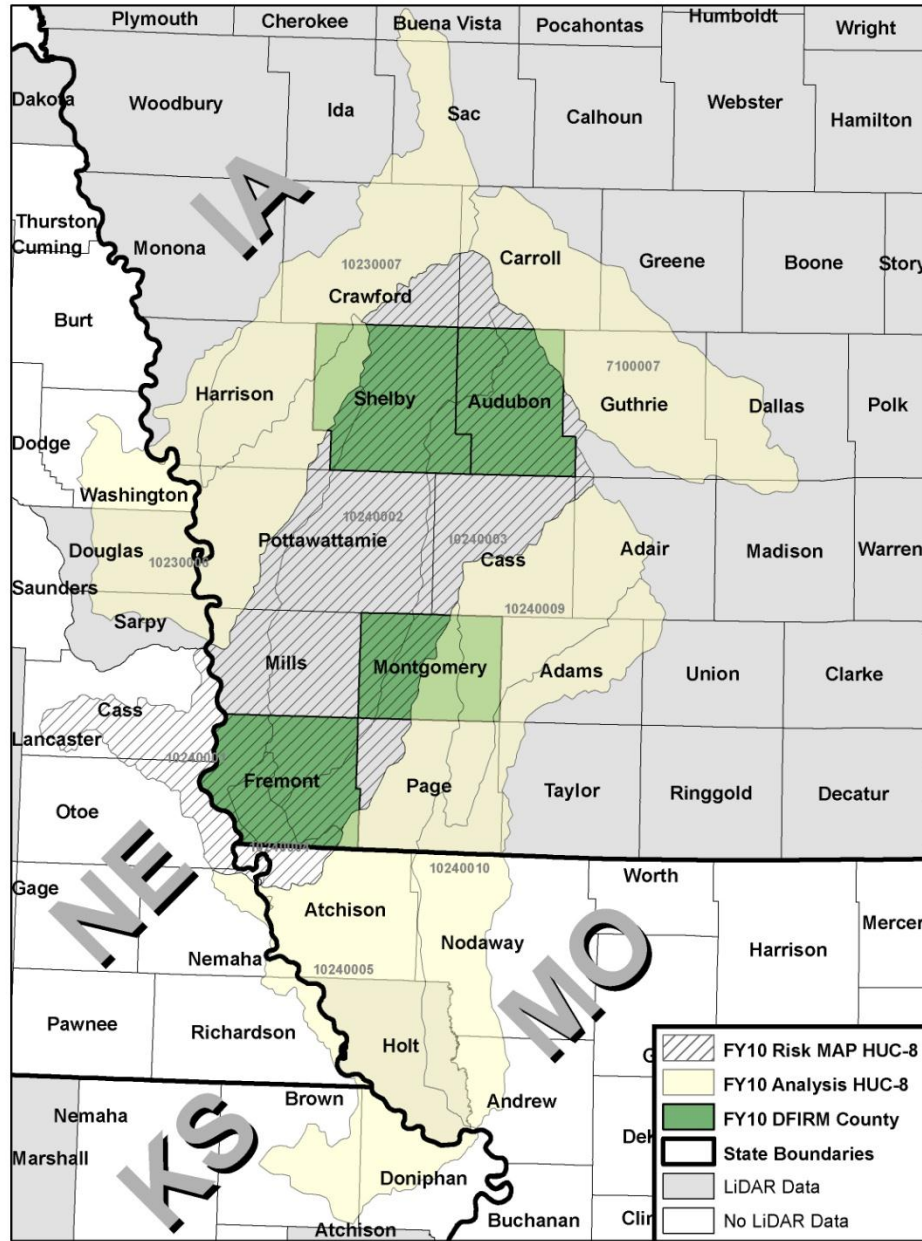
CNMS Phase 3 - Data Model: State of Iowa
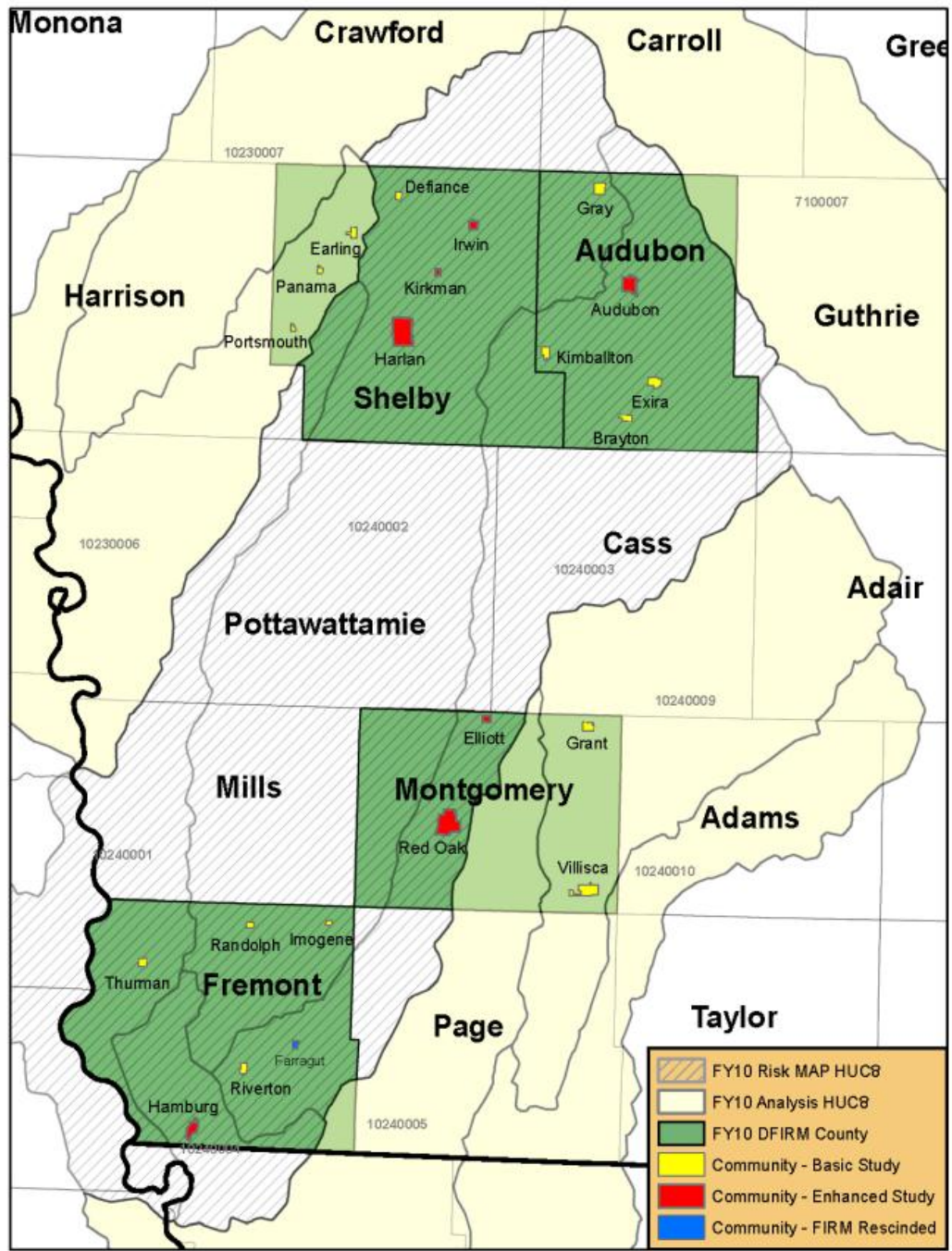
March 2011

Study Type
- New Approximate
- Non-Digital Approximate
- Digital Conversion Approximate
- Redelineated
- Unmapped
- Digital Conversion Detailed
- Non-Digital Detailed
- New Detailed

Iowa Floodplain Mapping Sequence
Work Map Schedule
March 2012

*Watersheds with CROSSHATCH denote U.S. Army Corps of Engineers Section 22 agreement projects. Those not crosshatched represent Iowa Flood Center projects.

Legend:
January — December
2012
2013
2014
2015
2016

Risk MAP - FY 2010 Iowa Floodplain Mapping Project

FEMA FY 2010 - Iowa Flood Plain Mapping Project

Floodplain Mapping Status
April 2012
Iowa Department of Natural Resources

County names shown on map (from northwest, reading across):
LYON, OSCEOLA, DICKINSON, EMMET, WINNEBAGO, WORTH, MITCHELL, HOWARD, WINNESHIEK, ALLAMAKEE, KOSSUTH, CERRO GORDO, FLOYD, CHICKASAW, FAYETTE, CLAYTON, SIOUX, OBRIEN, CLAY, PALO ALTO, HANCOCK, HUMBOLDT, FRANKLIN, BUTLER, BREMER, PLYMOUTH, CHEROKEE, BUENA VISTA, POCAHONTAS, WRIGHT, WEBSTER, BUCHANAN, DELAWARE, WOODBURY, IDA, SAC, CALHOUN, HARDIN, GRUNDY, BLACK HAWK, DUBUQUE, HAMILTON, JONES, JACKSON, MONONA, GREENE, BOONE, STORY, MARSHALL, TAMA, BENTON, LINN, CRAWFORD, CARROLL, CLINTON, POWESHIEK, CEDAR, SCOTT, HARRISON, SHELBY, GUTHRIE, DALLAS, JASPER, IOWA, JOHNSON, AUDUBON, POLK, MUSCATINE, POTTAWATTAMIE, CASS, ADAIR, MADISON, WARREN, MAHASKA, KEOKUK, WASHINGTON, LOUISA, MARION, MILLS, MONTGOMERY, ADAMS, UNION, CLARKE, MONROE, WAPELLO, JEFFERSON, HENRY, DES MOINES, FREMONT, PAGE, TAYLOR, LUCAS, RINGGOLD, DECATUR, WAYNE, APPANOOSE, DAVIS, VAN BUREN, LEE

County Status

- **Collecting Watershed Data** (green)
- **Calculating Flood Flows and Depths** (cyan)
- **Developing Work Map** (magenta)
- **FEMA Review** (yellow)
- **Effective Flood Insurance Rate Map (FIRM)** (blue)

☐ County ☐ HUC 8 Watershed

N W E S (compass rose)

Section 22 (PAS) - Watersheds In Non Disaster-Declared Counties

Legend:
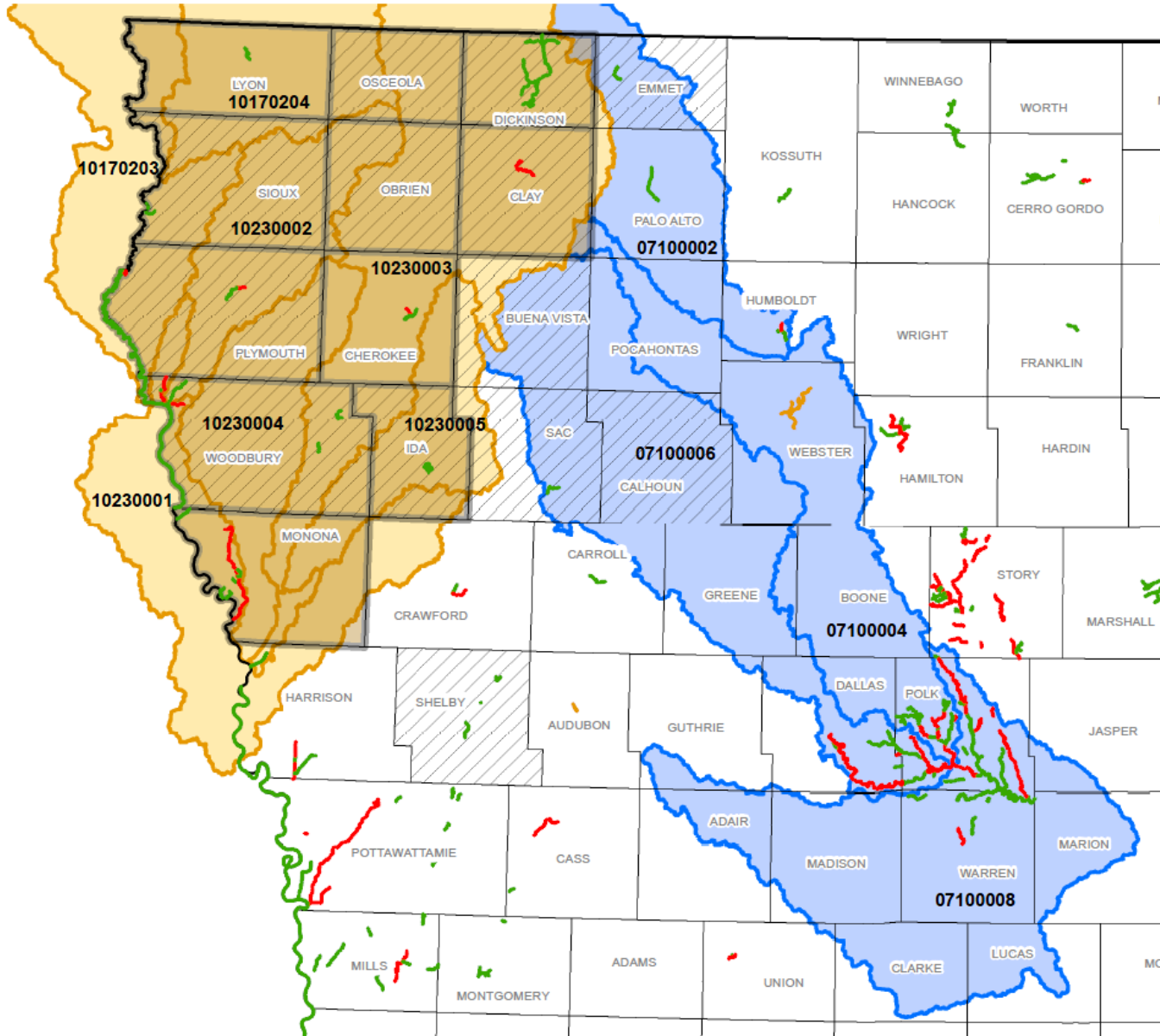- **HUC-12s In Non-Declared (315)**
- **14 Non-Disaster-Declared Counties**

Potential Funding Eligibility by County in Iowa

APPENDIX C
Section 22 - PAS: Army Corps of Engineers & IDNR

June 2011

APPENDIX C
Section 22 - PAS: Army Corps of Engineers & IDNR
May 2012
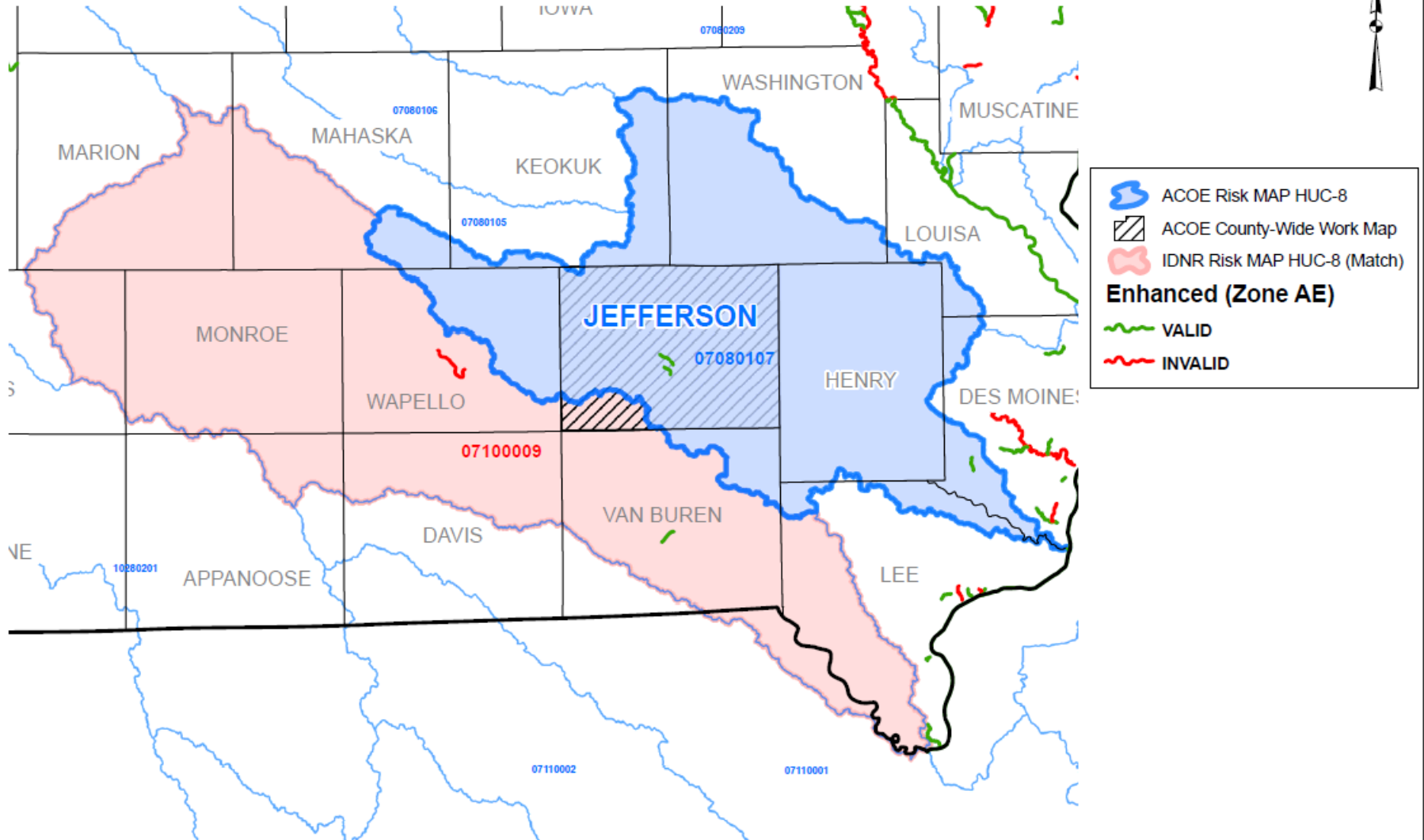
THANK YOU

HTTP://WWW.IOWADNR.GOV/INSIDEDNR/REGULATORYLAND/FLOODPLAINMANAGEMENT/FLOODPLAINMAPPING.ASPX

http://www.iowafloodcenter.org/maps/

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515-281-8121