



Working Group Accomplishments



Floodplain Management Working Group



Flood Risk Identification Toolbox

Richard Sims, USDA-NRCS
State Conservationist, Iowa

Gregg Hadish, USDA-NRCS
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Missouri River Flood Risk Identification Toolbox

Floodplain Assessment Decision Support Tool

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Floodplain Assessment Decision Support Tool

Acknowledgements

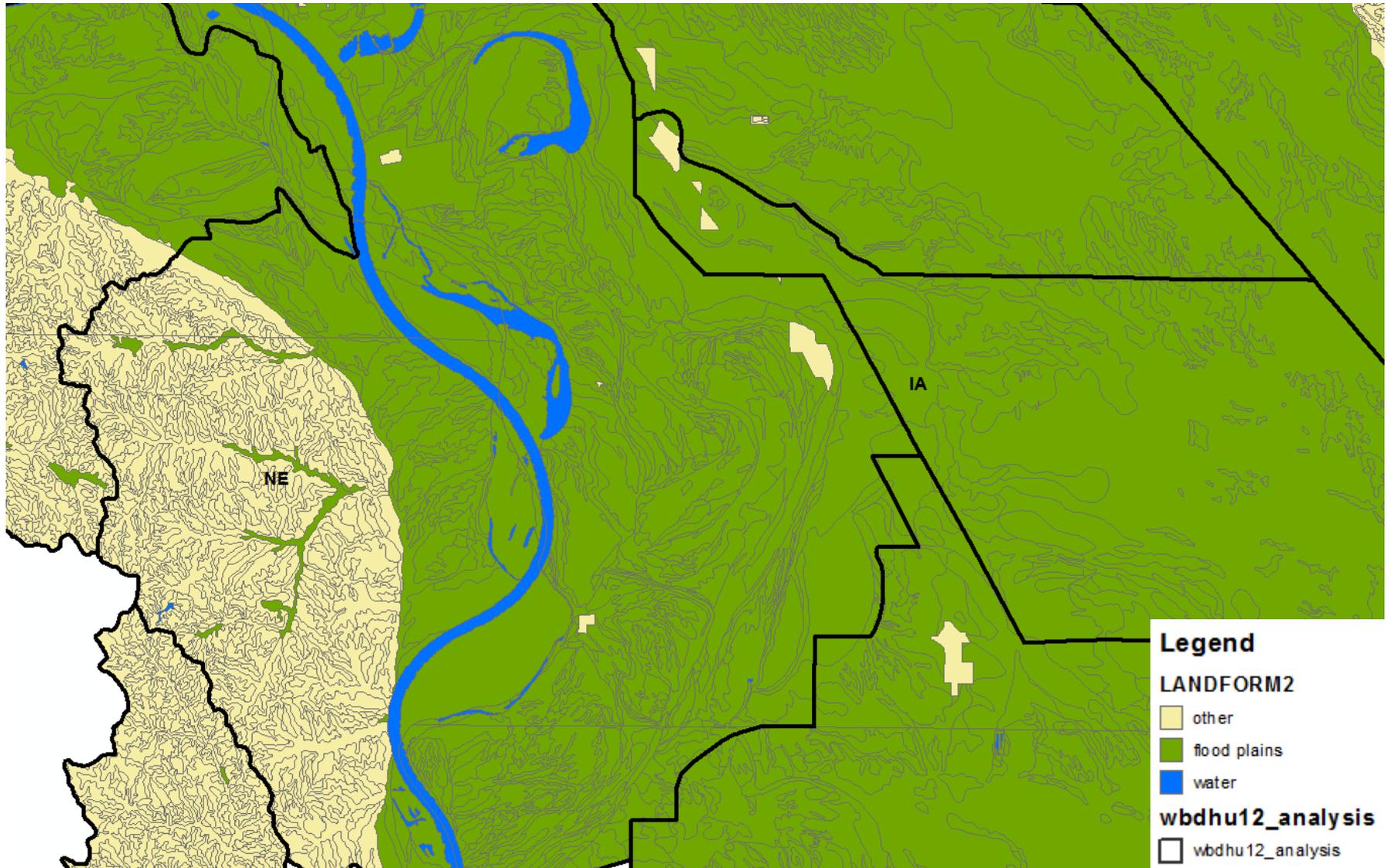
- Homeland Security Infrastructure Program
- US Army Corps of Engineers
- USDA Natural Resources Conservation Service (MT, ND, SD, NE, IA, KS, MO)
- USDA Risk Management Agency
- USDA National Agricultural Statistics Service
- US Fish and Wildlife Service
- USDHS Federal Emergency Management Agency
- US Geological Survey
- US Census Bureau
- Montana Natural Heritage Program
- Montana State Library
- Missouri State Emergency Management Agency
- Missouri Department of Conservation
- Iowa Homeland Security & Emergency Management
- Iowa Geological and Water Survey
- Nebraska Emergency Management Agency
- Kansas Department of Wildlife, Parks, and Tourism

Missouri River Flood Risk Identification Toolbox

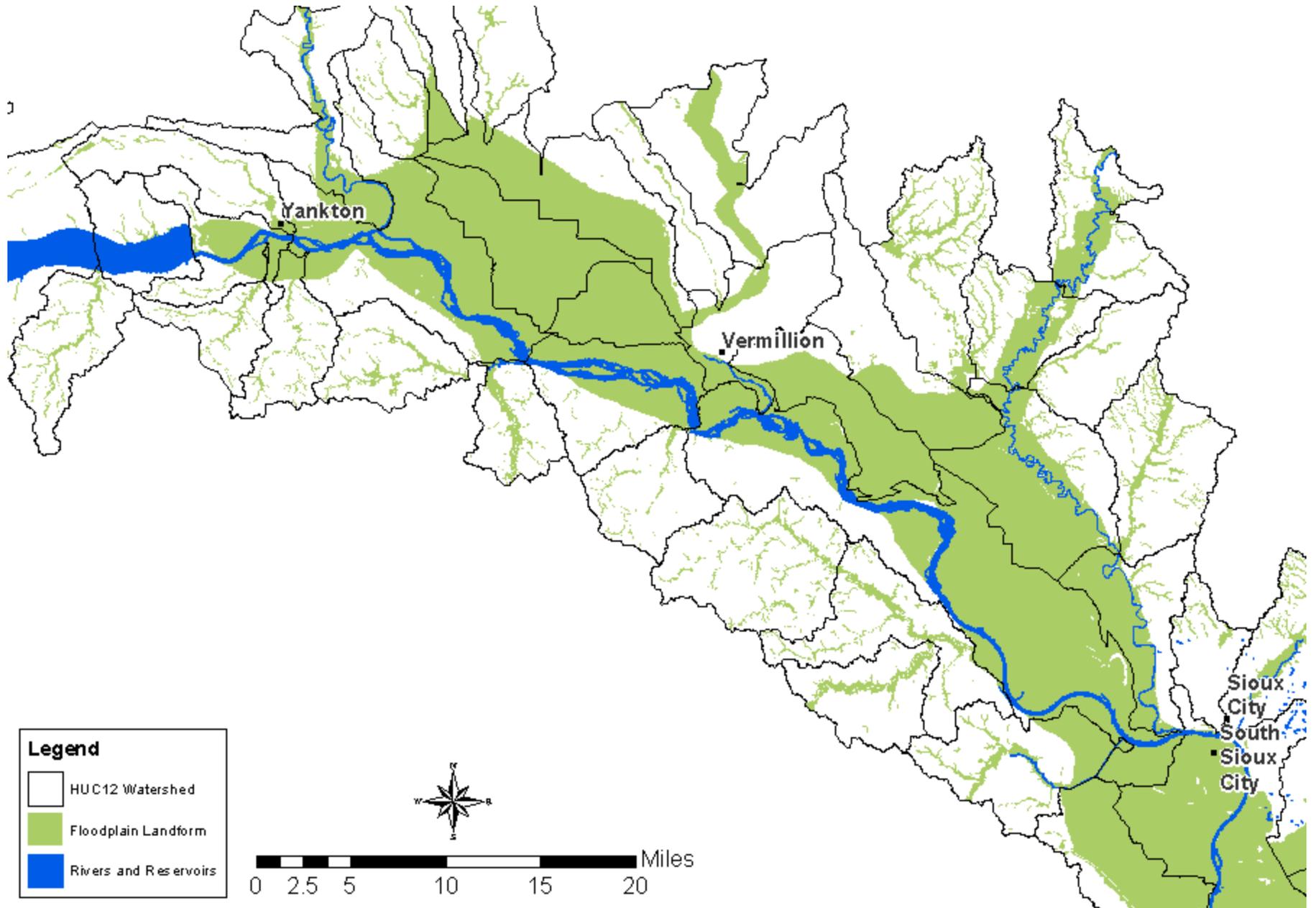
Floodplain Assessment Decision Support Tool

- Provides a high-cut assessment of at-risk areas
- Used to help prioritize floodplain segments for program use and potential areas for detailed study
- Utilizes existing readily-available GIS map layers for analysis: critical infrastructure, natural resources, population, and other map layer features that occur on the floodplain landform (as defined by soil map data) are counted
- Data are summarized to the 12-digit hydrologic unit for comparison, and to establish priority areas

Floodplain Landform Map Layer Development from Soil Survey Map Units

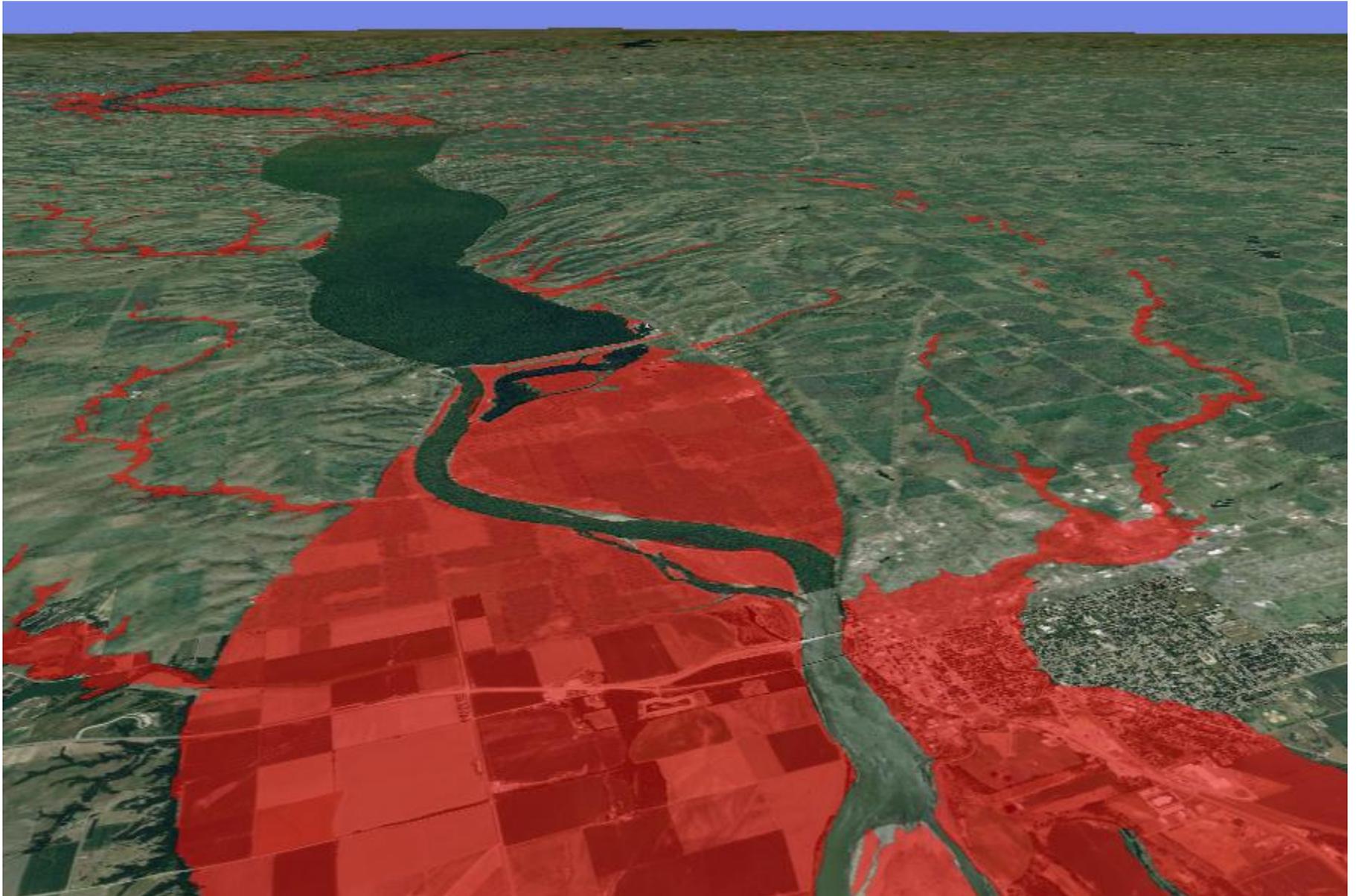


Sample Floodplain Landform Map from Soils





Review of Floodplain Landform in a 3D viewer

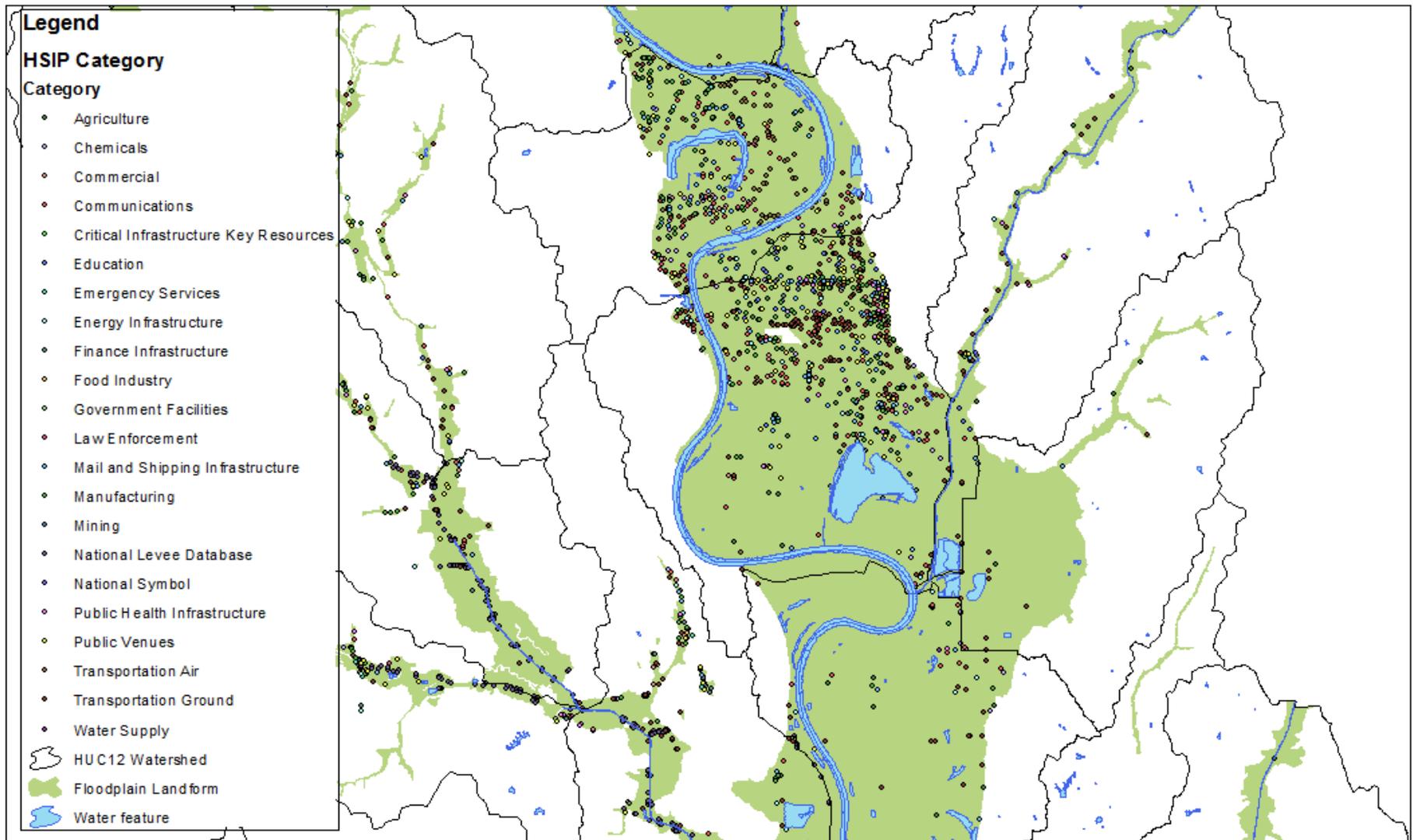


Missouri River Floodplain Assessment – GIS Dataset Summary

	Data Category	Number of GIS Layers for Analysis	Primary Sources
1	Agriculture	17	Homeland Security Infrastructure Program, USDA-NASS, USDA-NRCS
2	Boundaries (ownership, political)	18	Homeland Security Infrastructure Program, DOI, Bureau of Indian Affairs
3	Census 2010	2	US Department of Census
4	Chemicals	8	Homeland Security Infrastructure Program, US EPA
5	Commercial	5	Homeland Security Infrastructure Program
6	Communications	18	Homeland Security Infrastructure Program, DHS, FCC
7	Conservation Easement Areas	2	USDA-NRCS, USFWS, State DNR
8	DHS Facilities	9	Homeland Security Infrastructure Program, DHS
9	Education	7	Homeland Security Infrastructure Program, ORNL
10	Emergency Services	26	Homeland Security Infrastructure Program, FEMA, HIFLD
11	Energy Infrastructure	45	Homeland Security Infrastructure Program, DOE, DHS
12	Finance Infrastructure	16	Homeland Security Infrastructure Program, FDIC
13	Floodplain Landform Features	1	USDA-NRCS SSURGO
14	Flood Damage Locations	2	USDA-NRCS, FEMA, USACE
15	Flood Risk Areas	1	USDA-RMA
16	Flood Zone	1	FEMA FIRM
17	Food Industry Infrastructure	16	Homeland Security Infrastructure Program
18	Government Infrastructure	35	Homeland Security Infrastructure Program, ARNG
19	Land Cover Land Use	1	USDA-NASS, USGS NLCD
20	Law Enforcement Infrastructure	16	Homeland Security Infrastructure Program, DOI
21	Mail & Shipping Infrastructure	14	Homeland Security Infrastructure Program
22	Manufacturing Infrastructure	23	Homeland Security Infrastructure Program
23	Mining Infrastructure	13	Homeland Security Infrastructure Program, USGS
24	National Levee Database	12	USACE
25	National Points of Interest	3	Homeland Security Infrastructure Program, DOI
26	Natural Hazards	10	Homeland Security Infrastructure Program, USGS
27	Public Health Infrastructure	12	Homeland Security Infrastructure Program
28	Public Venues Infrastructure	38	Homeland Security Infrastructure Program
29	Threatened & Endangered Species	2	USFWS, State DNR
30	Transportation Air Infrastructure	8	Homeland Security Infrastructure Program
31	Transportation Ground Infrastructure	16	Homeland Security Infrastructure Program
32	Water Supply	3	Homeland Security Infrastructure Program, USGS
33	Watershed Boundary Dataset	1	USDA-NRCS, USGS
34	Wildlife Habitat, Critical Areas	2	USFWS, State DNR
	TOTAL	403	

Sample Analysis – HSIP Infrastructure

Intersect data points with floodplain landform



Data Normalization

Point counts by watershed from the analysis layers were normalized to a 0-100 range.

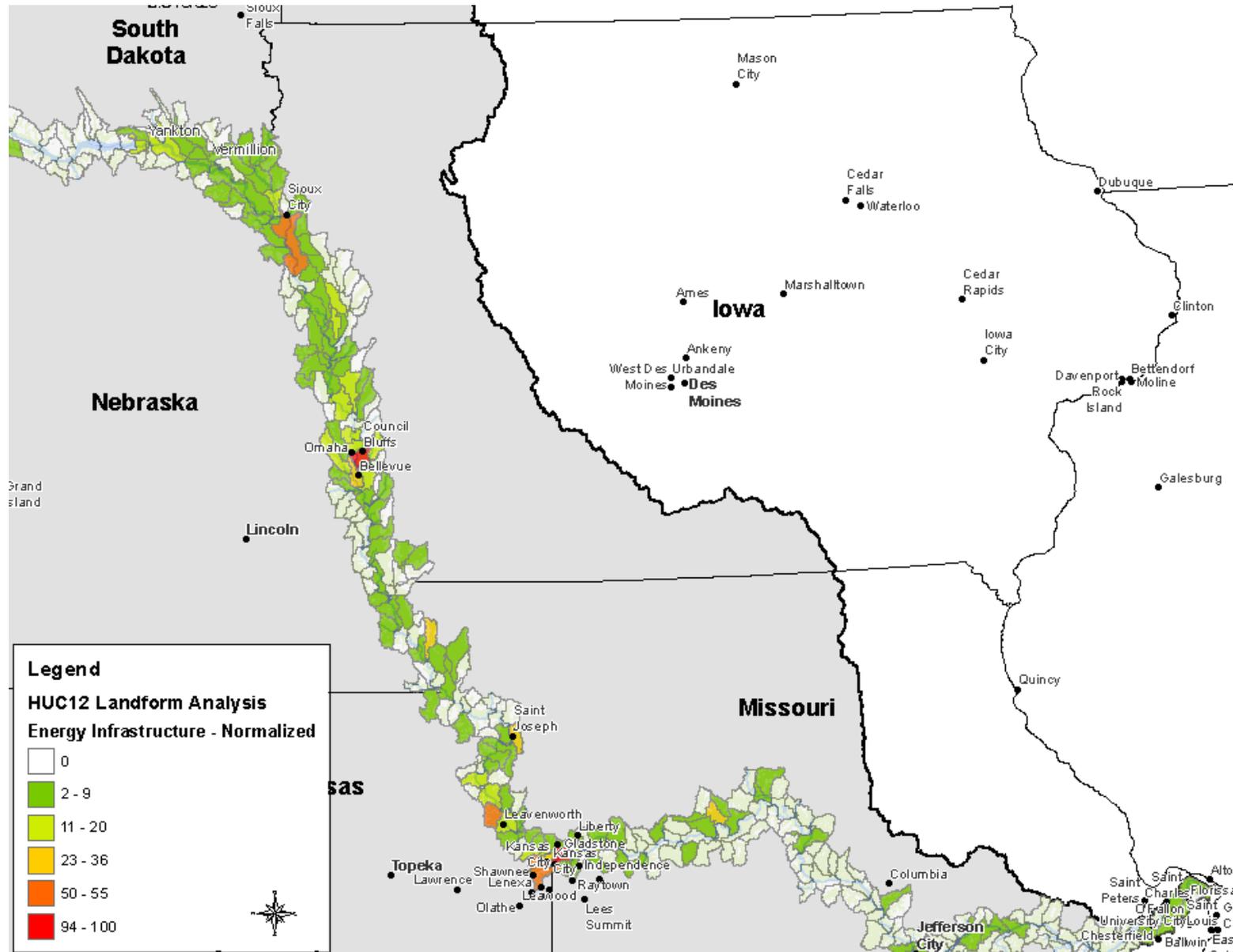
	Critical_infrastructure	Critical_infrastructure_norm	Housing_units	Housing_units_norm
	0	0	28	0
	0	0	19	0
	3	4	1065	3
	4	6	1978	6
	3	4	1407	4
	5	7	3035	9
	21	31	5477	16
	5	7	7236	21
	48	71	19006	56
	5	7	5980	18
	4	6	2660	8
	19	28	7237	21
	4	6	4385	13
	0	0	296	1
	0	0	729	2
	0	0	5416	16
	3	4	3188	9
	5	7	6610	19
	1	1	1444	4
	68	100	34163	100
	3	4	4761	14
	2	3	2298	7
	11	16	5278	15
	17	25	8179	24
	7	10	3275	10
	0	0	325	1
	10	15	3040	9
	0	0	658	2
	13	19	7475	22
	5	7	1351	4
	19	28	6856	20
	14	21	10617	31
	0	0	93	0
	0	0	23	0
	3	4	2335	7
	4	6	2288	7
	34	50	4797	14
	15	22	3671	11

Actual count

Normalized value

Sample Analysis – Energy Infrastructure

HUC12 Analysis Summary



TRANSPORTATION_GROUND_INFRASTRUCTURE	CENSUS_POPULATION_2010	CENSUS_HOUSING_UNITS_2010	WETLAND_EASEMENT	LEVEE_BREACHES	PROTECTED_BIODIVERSITY	Scenario1
0	0	0	0	0	100	100
2	17	17	6	0	96	473
0	0	0	0	0	71	194
0	0	0	0	0	86	199
0	0	0	0	0	59	100
0	0	0	0	0	57	89
0	0	0	0	0	57	75
0	0	0	0	0	55	70
0	0	0	0	0	54	104
0	0	0	0	0	52	53
0	0	0	0	0	52	74
0	0	0	0	0	51	83
0	0	0	0	0	49	110
0	0	0	0	0	47	73
0	0	0	0	0	46	132
0	0	0	0	0	41	41
0	0	0	0	0	40	45
0	0	0	0	0	40	142
0	0	0	0	0	39	92
0	0	0	0	0	37	46
0	0	0	0	0	35	41
0	0	0	0	0	35	54
0	0	0	0	0	34	39
0	0	0	0	0	31	109
0	0	0	0	0	30	30
0	0	0	0	0	29	95
0	0	0	0	0	28	53
0	0	0	0	0	26	35
0	0	0	0	0	25	55
0	0	0	0	0	22	1304
0	0	0	0	0	21	123
0	0	0	0	0	19	57
0	0	0	0	0	16	16
0	0	0	0	0	17	17
0	0	0	0	0	17	50
0	0	0	0	0	16	16
0	0	0	0	0	16	137
25	16	16	118	0	16	118
0	16	65	0	0	15	44
0	14	169	0	0	14	169
0	13	13	0	0	13	13
0	13	13	0	0	13	13
0	12	35	0	0	12	35
0	12	13	0	0	12	13

Field Calculator

Parser: VB Script Python

Fields: TRANSPORTATION_AIR_INFRASTRU
TRANSPORTATION_GROUND_INFRA
CENSUS_POPULATION_2010
CENSUS_HOUSING_UNITS_2010
WETLAND_EASEMENT
LEVEE_BREACHES
PROTECTED_BIODIVERSITY
Scenario1

Type: Number String Date

Functions:
Abs ()
Atn ()
Cos ()
Exp ()
Fix ()
Int ()
Log ()
Sin ()
Sqr ()
Tan ()

Show Codeblock:

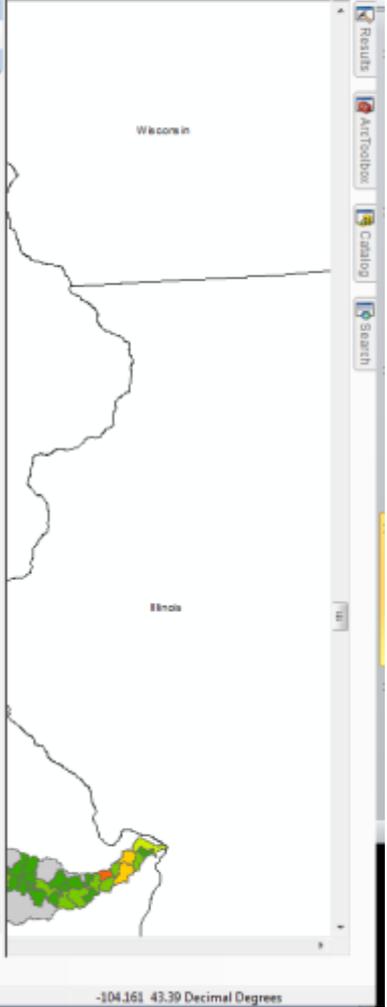
Scenario1 =

```
[AGRICULTURE_INFRASTRUCTURE] + [CHEMICAL_INFRASTRUCTURE] +
[COMMERCIAL_INFRASTRUCTURE] + [COMMUNICATIONS_INFRASTRUCTURE] +
[CRITICAL_INFRASTRUCTURE] + [EDUCATION_INFRASTRUCTURE] +
[EMERGENCY_SERVICES_INFRASTRUCTURE] + [ENERGY_INFRASTRUCTURE] +
[FINANCE_INFRASTRUCTURE] + [FOOD_INDUSTRY_INFRASTRUCTURE] +
[GOVERNMENT_FACILITIES_INFRASTRUCTURE] +
[LAW_ENFORCEMENT_INFRASTRUCTURE] + [MAIL_SHIPPING_INFRASTRUCTURE]
+ [MANUFACTURING_INFRASTRUCTURE] + [MINING_INFRASTRUCTURE] +
[NATIONAL_SYMBOL_INFRASTRUCTURE] + [PUBLIC_HEALTH_INFRASTRUCTURE] +
[PUBLIC_VENUES_INFRASTRUCTURE] +
[TRANSPORTATION_AIR_INFRASTRUCTURE] +
[TRANSPORTATION_GROUND_INFRASTRUCTURE] + [CENSUS_POPULATION_2010]
```

Clear Load... Save... Help

File operation aborted.

OK Cancel



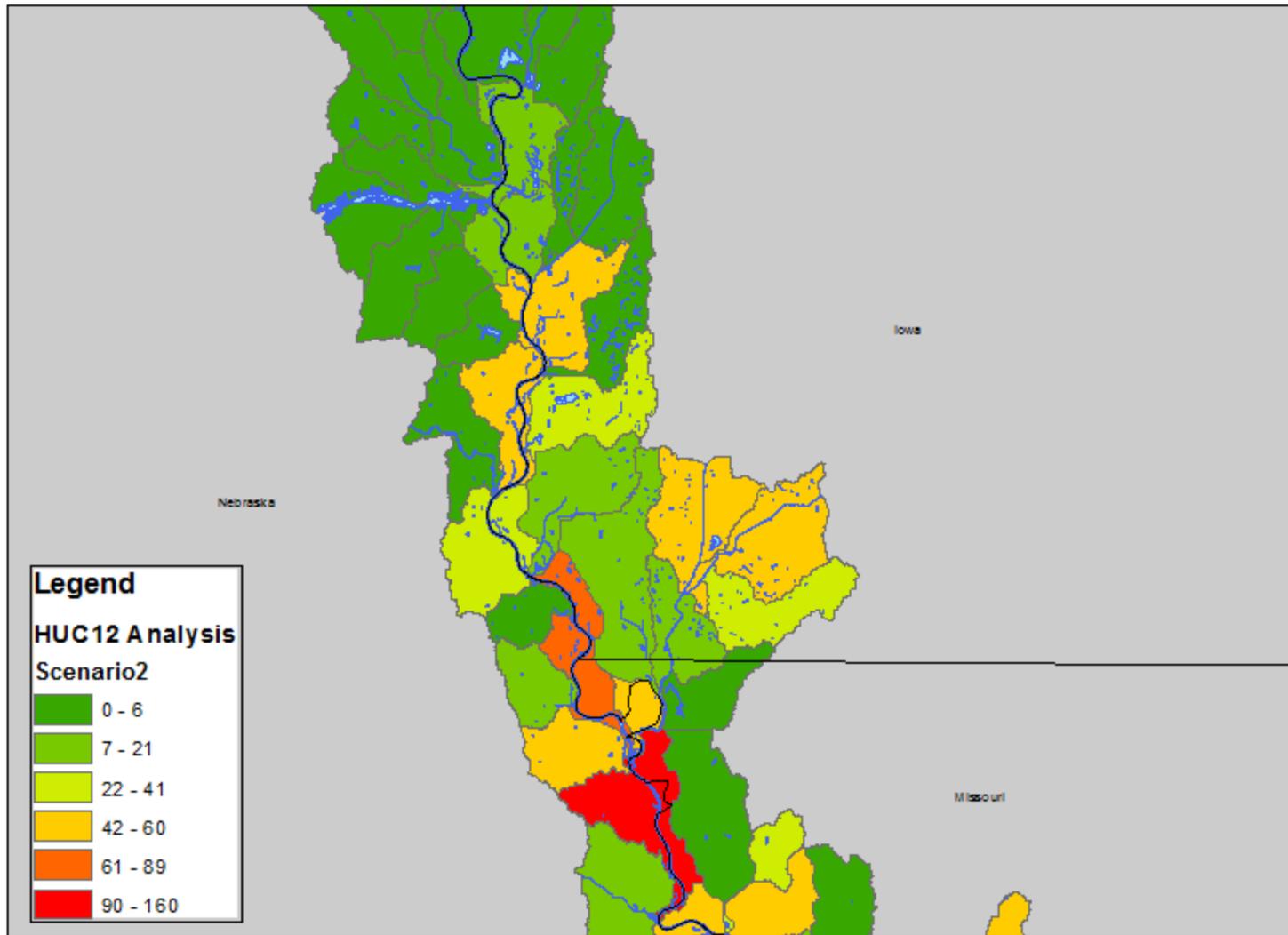
Sample Analysis – All Data Categories

HUC12 Analysis Summary



Sample Analysis Scenario

Levee Breaches + Wetland Conservation Easements + Protected Biodiversity Areas



Missouri River Flood Risk Identification Toolbox

Migrating Summarized HUC 12-level data to web-based interactive map tool on USACE SimSuite



Missouri River Flood Task Force (MRFTF) Viewer Search Maps



Emergency Management

[Create a Viewer](#)
[Add Services](#)
[Admin Users](#)

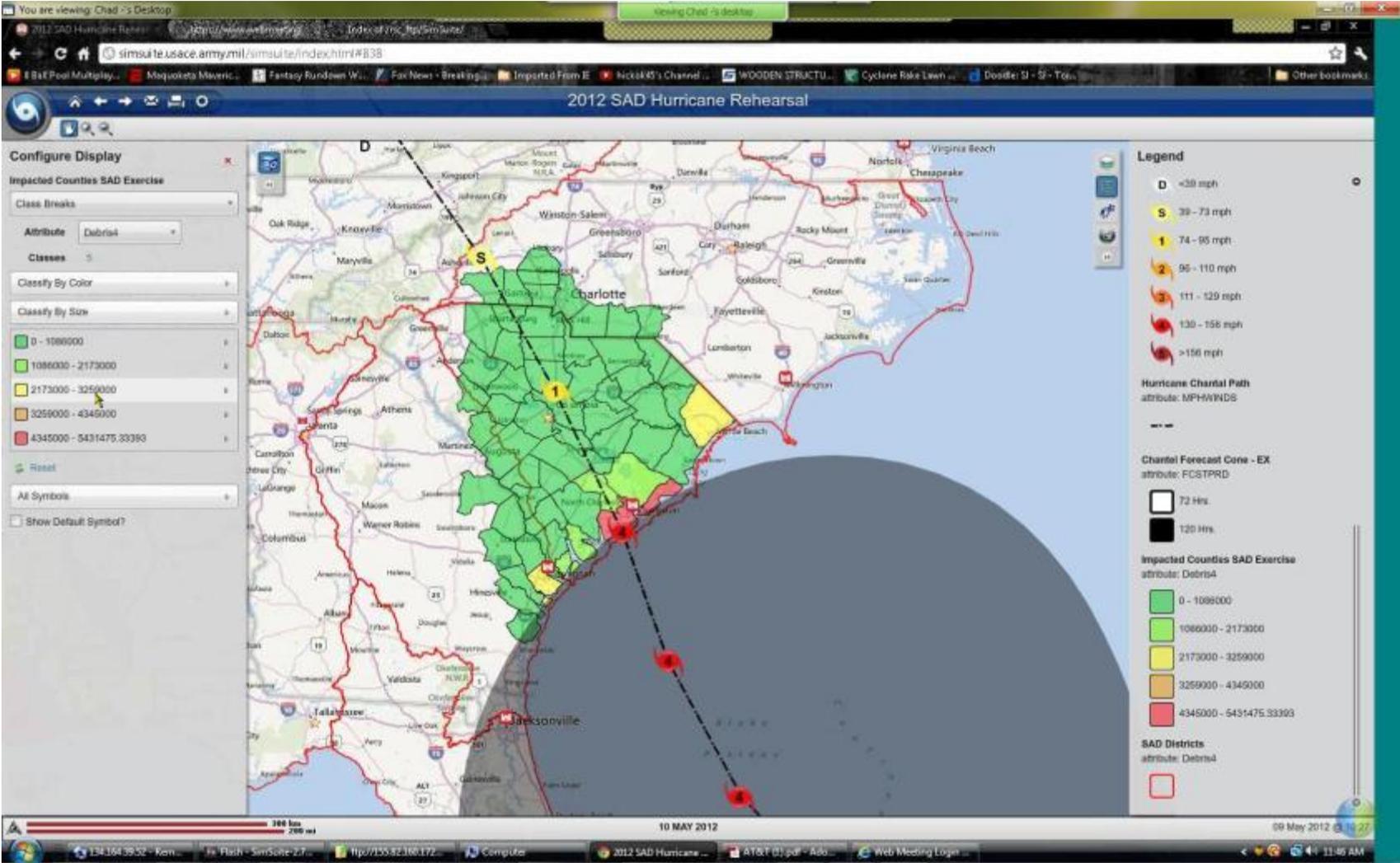
Emergency Management Viewers | -

Filters: include Archive? Sort by: Newest | Oldest | Title | USACE Org

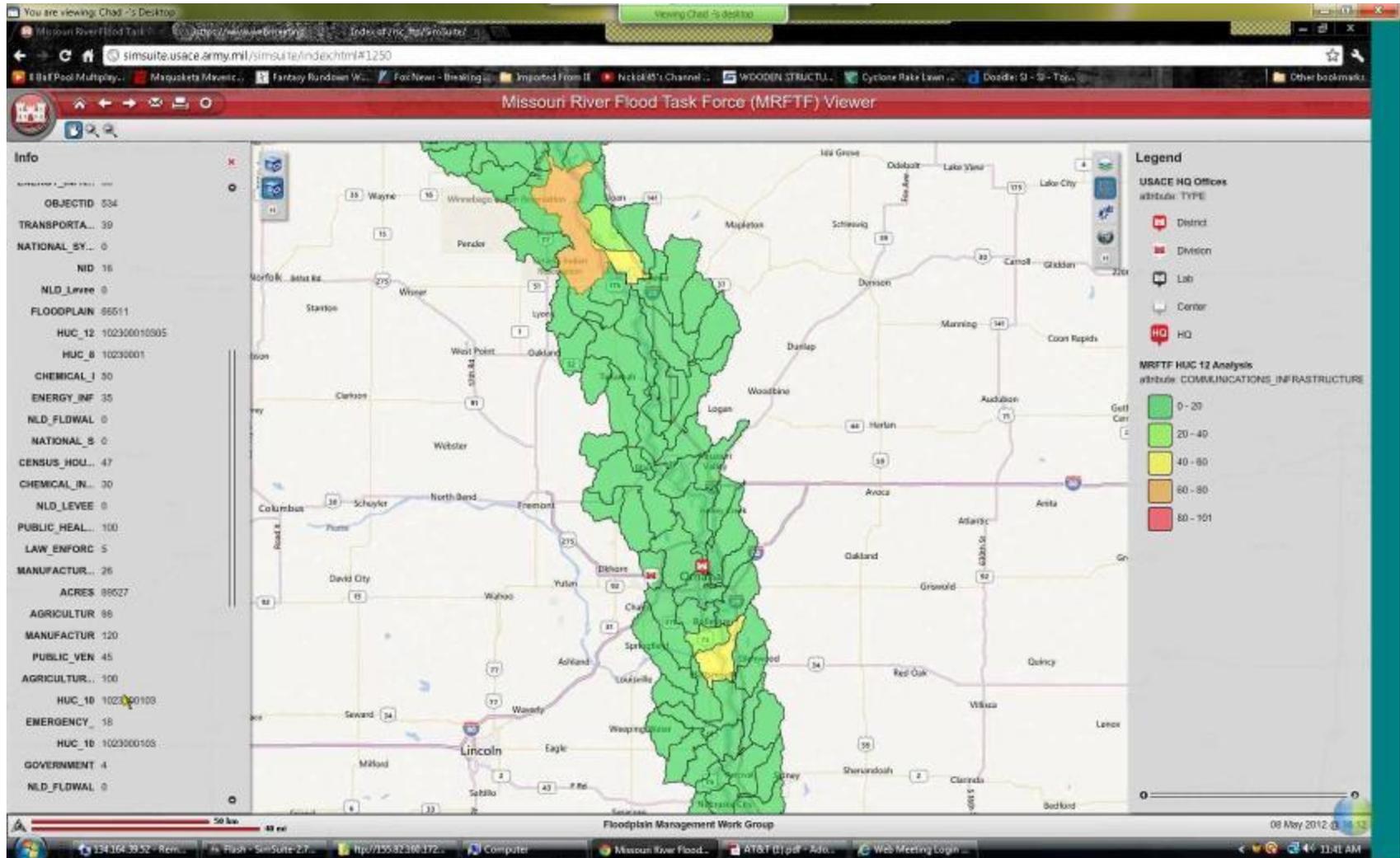
 Louisville District EM Viewer	 FFE Joliet, IL Flood Event	 USACE Power Mission Viewer	 Buffalo District (LRB) Viewer
 SAS COOP Exercise 2012	 2012 Philipot Dam Break Exercise	 SWD Hurricane TTX 2012	 National Hurricane Program
 SAD Common Operating Picture (COP)	 Huntington District (LRH) Emergency Management...	 Charleston District (SAC) Emergency Management...	 Pittsburgh District (LRP) Emergency Management...
 Dev Team SimSuite v2.6 Test Viewer	 Miami, FL CAT 4 Landfall	 New Orleans, LA CAT 4 Landfall	 2012 SAD Hurricane Rehearsal
 Northwestern Division (NWD)	 Detroit District (LRE)	 Great Lakes and Ohio River Division	 Wilmington District (SAW)
 Mobile, AL CAT 4 Landfall	 New Madrid Earthquake Exercise	 Chicago District (LRC)	 SimSuite Common Ops Viewer



USACE SimSuite

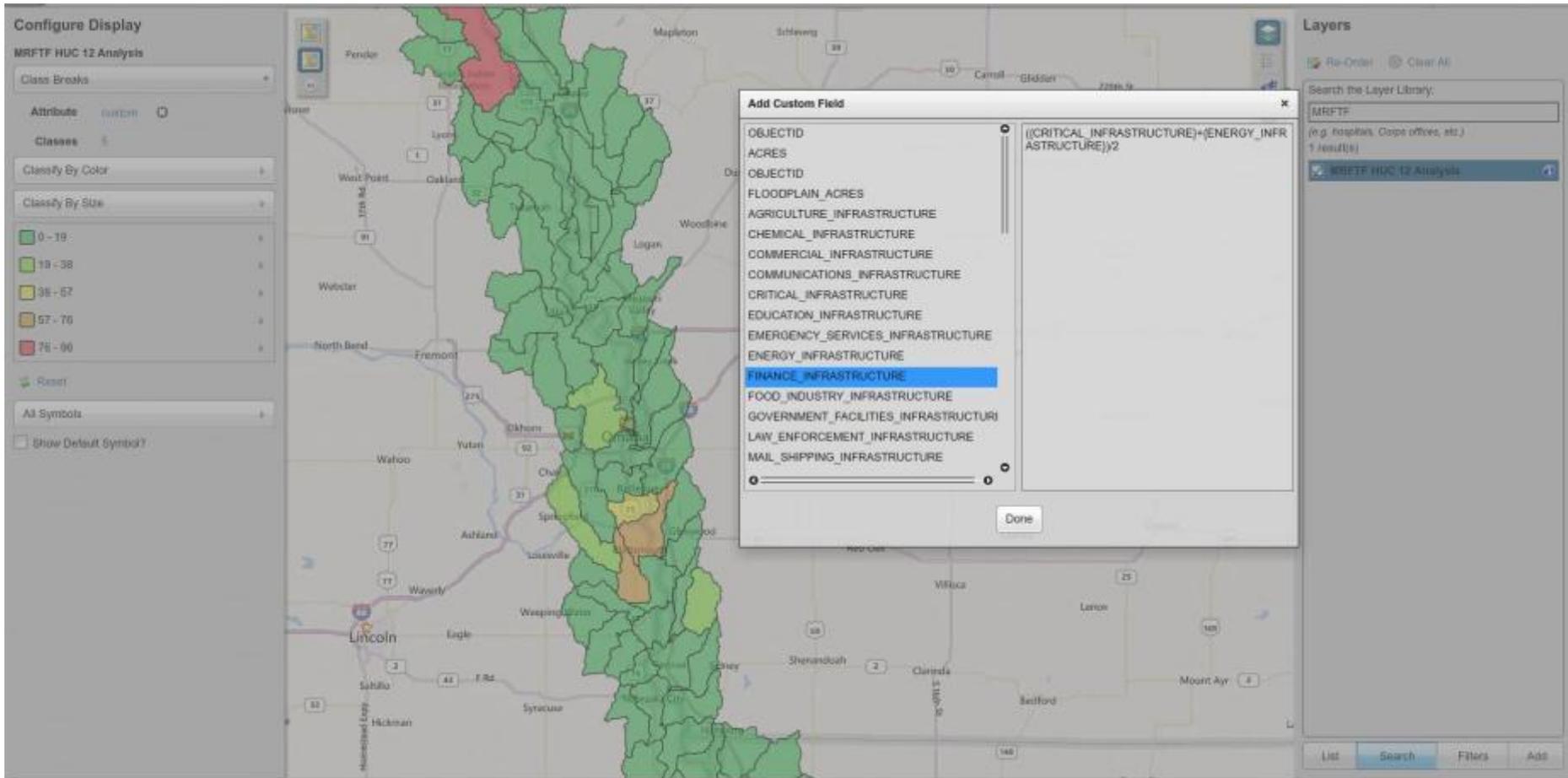


USACE SimSuite – MRFTF Viewer



USACE SimSuite – MRFTF Viewer

User input Scenarios





Floodplain Management: Flood Risk Mitigation Toolbox

Missouri River Flood Task Force
May 24, 2012

Presented by:
Hector Santiago, NPS

Floodplain Management

- **Facilitator: Randall Behm, USACE-Omaha**
- **Focus Area Co-Leads:**
 - ❖ **Focus Area 1 – Richard Sims, Marty Adkins**
 - ❖ **Focus Area 2 – Julie Baxter, Steve Mietz**
 - ❖ **Focus Area 3 – Randall Behm**
 - ❖ **Focus Area 4 – Randall Behm**
 - ❖ **Work Group Note Development: Brian Rast**

Focus Areas

- ❖ Focus Area 1: Develop Flood Risk Identification Toolbox
- ❖ **Focus Area 2: Develop Potential Mitigation Toolbox**
Julie Baxter (FEMA R8)
Steve Mietz (NPS MNRR)
- ❖ Focus Area 3: Identify Potential Constraints to Flood Hazard Identification and Mitigation
- ❖ Focus Area 4: Exchange of Technical Data

Mission Statement

Promote gathering, sharing, and dissemination of information associated with the Missouri River floodplain and to provide a platform for open dialog around the information needs of group members. This group will develop a floodplain hazard identification and mitigation toolbox of resources and information, best practices and lessons learned, and provide it to stakeholders for their use.

Flood Risk Mitigation Toolbox

Microsoft Excel - Flood Risk Mitigation Toolbox.xls [Compatibility Mode]

	A	B	C	D	E	F	G	H
1	DEPARTMENT	AGENCY/ BUREAU/ OFFICE	PROGRAM	SECTOR	TYPE OF SUPPORT	DESCRIPTION	TARGET AREA	ELIGIBILITY/PROCESS
2	NEBRASKA DEPARTMENT OF ECONOMIC DEVELOPMENT	Rural Development Commission				Supports the collabora farming and ranching, of value-added agricult growth of rural commu		
3	NEBRASKA DEPARTMENT OF ECONOMIC DEVELOPMENT					Certifies communities t readiness for economic meeting specific criteri Certified communities business and industry a as economic developm		
4	NEBRASKA DEPARTMENT OF ECONOMIC DEVELOPMENT		Nebraska Affordable Housing Program	HOUS	Capital; Program	Provides grants to non governments and publi for a number of uses, ir new single-family hous moderate income renta buildings as rental hous existing rental properti homebuyer assistance programs.		

Sort A to Z
Sort Z to A
Sort by Color
Clear Filter From 'TYPE OF SUPPORT'
Filter by Color
Text Filters
Search

- (Select All)
- Capital
- Capital; Planning
- Capital; Planning; Program
- Capital; Program
- Capital; Program; Technical
- Capital; Program; Technical
- Capital; Technical
- Capital; Technical Assistance
- Planning

OK Cancel



Benefits and Services

- ❖ UPDATEABLE One Stop Shop of links to information and potential technical and financial resources
- ❖ PROACTIVE opportunities to cooperatively address and actively mitigate flood risk before a flooding event
- ❖ ACCESSIBLE list of resources, programs, and practices that can be used as part of a coordinated response to a flooding event
- ❖ [Flood Risk Mitigation Toolbox](#)



River Management Work Group

Kevin Grode, Reservoir Regulation Team Lead,
Missouri River Basin Water Management, USACE NWD

Jim Pennaz, Chief, Hydrologic Engineering Branch,
USACE NWK

MISSOURI RIVER FLOW CORRIDOR STUDY

- Corridor between St. Joseph and Omaha (RM 448 and 615)
- Funded by Missouri River Recovery Program
- Will locate constriction points
- Will study levee setbacks and channel modifications
- Will examine environmental and flood risk reduction benefits vs economic costs
- Results will be a tool to establish shallow water habitat priorities on public lands and identify future habitat sites

PROPOSAL FOR PLAINS SNOW AND BASIN CONDITIONS NETWORK