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Missouri River Geospatial Decision Support Framework

Bryan Baker, Martha Bullock
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Introduction

- Operation of the Missouri River Mainstem Reservoir System to adequately provide for flood control, navigation, irrigation, hydropower, water supply, water quality, recreation, and fish and wildlife requirements is an ongoing challenge for the the Corps
- Revision of the Missouri River Master Water Control Manual in 2004 addresses requirements set by USFWS to restore the Missouri River ecosystem and to protect and recover threatened and endangered species
- To facilitate a comprehensive approach to recovery implementation, the Missouri River Recovery Implementation Committee (MRRIC) has been established

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Introduction

- The strategy defined and implemented by the MRRIC will generate volumes of research data on the ecological habitat needs, physiological endpoints and population modes of species
- To address these requirements, and to encourage a collaborative approach to restoration activities, a web portal has been developed that permits access to associated data and information about the shallow water habitat restoration on the Missouri River
- The web portal integrates the data, tools, and utilities into a comprehensive system to facilitate stakeholder collaboration, data sharing, and sound decision-making

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Web Portal

- Single, uniform access point for all stakeholders to load, view, modify, and share data, documentation, and information

- Provide incentive to stakeholders to collect and distribute data in a standard and systematic way

Active stakeholders include:

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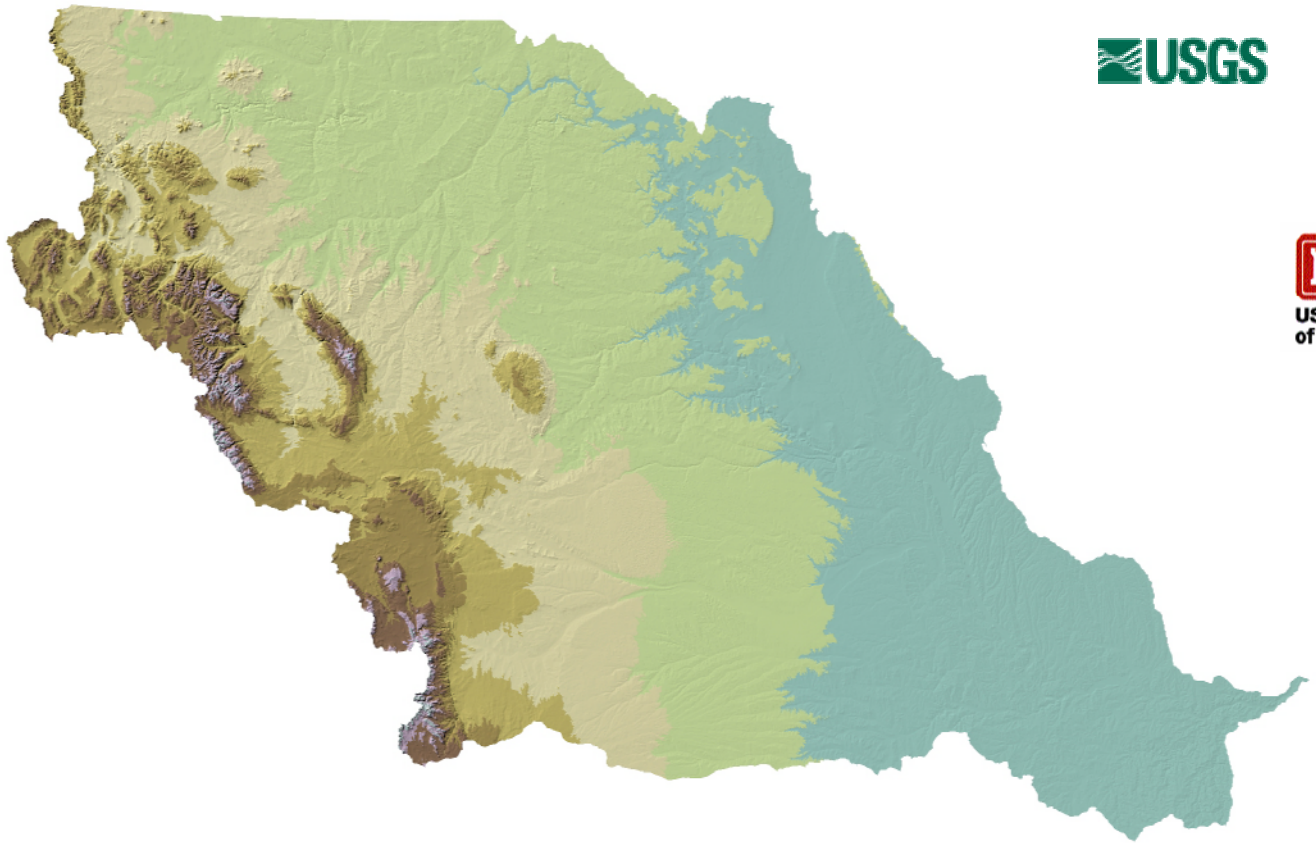
RECLAMATION
Great Plains Region
Managing Water in the West

RS/GIS



USGS

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Some States have shown interest like IA

National Biological Information Infrastructure

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Approach To Problem

- Net-centric data strategy encourages local control of distributed databases, rather than data standardization
- Support for Oracle Integrating Architecture
  - Vector data available as Oracle Tables through straight SQL queries or through Oracle API (OCI)
  - Any CADD or GIS client that can access Oracle geometry can use these data
- Support for ESRI integrating architecture
  - Vector data available as seamless SDE 8.3 layers
  - Map views available as ArcIMS Services
- Support for Service Oriented Architecture
  - Application can consume as well as expose web services
  - Integrates services developed for and supported by other Corps automates information systems (AIS)

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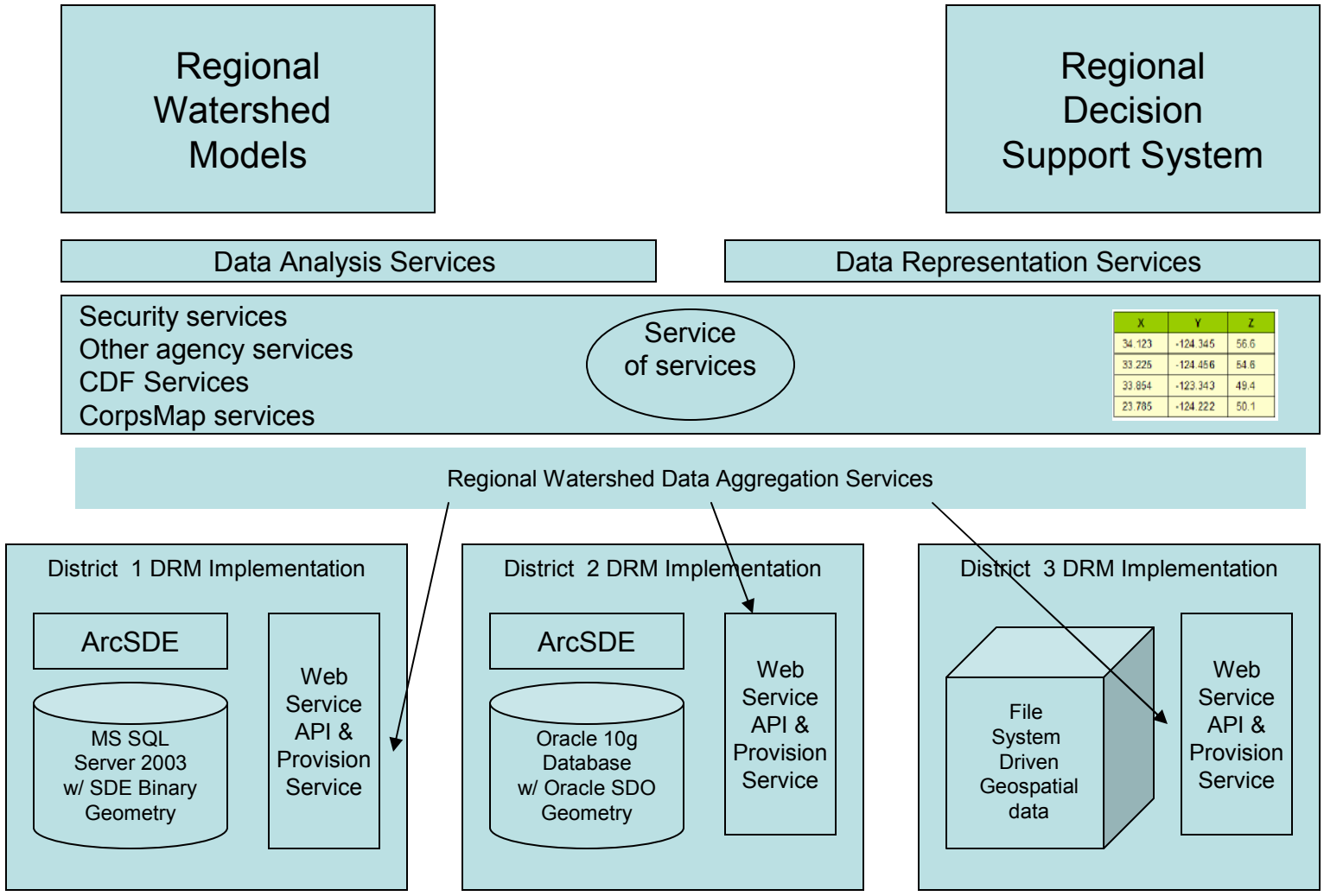
Application

- Database driven – distributed Oracle database
  - Consistent with standard established by the Corps of Engineers and other federal and state agencies
- Spatially enabled database – Oracle/ESRI ArcSDE
  - Attributes and geometries fully integrated in the database
  - Geometries accessible via open standards-based interfaces
  - Full integration with suite of ESRI software including ArcGIS and ArcIMS
- System architecture supports real-time access to and analysis of other Corps and cooperating agency information systems
  - NWD-MR CWMS (Oracle service integration)
  - METerological Aerodrome Report (METAR) (SOAP XML)
  - USGS Sturgeon tracking data (WMS)
  - USFWS Critical Habitat Data (WMS)

Implementation of Approach

This proposed method for integration of distributed enterprise geospatial data via service oriented architecture is consistent with Corps enterprise architecture and industry best-practices



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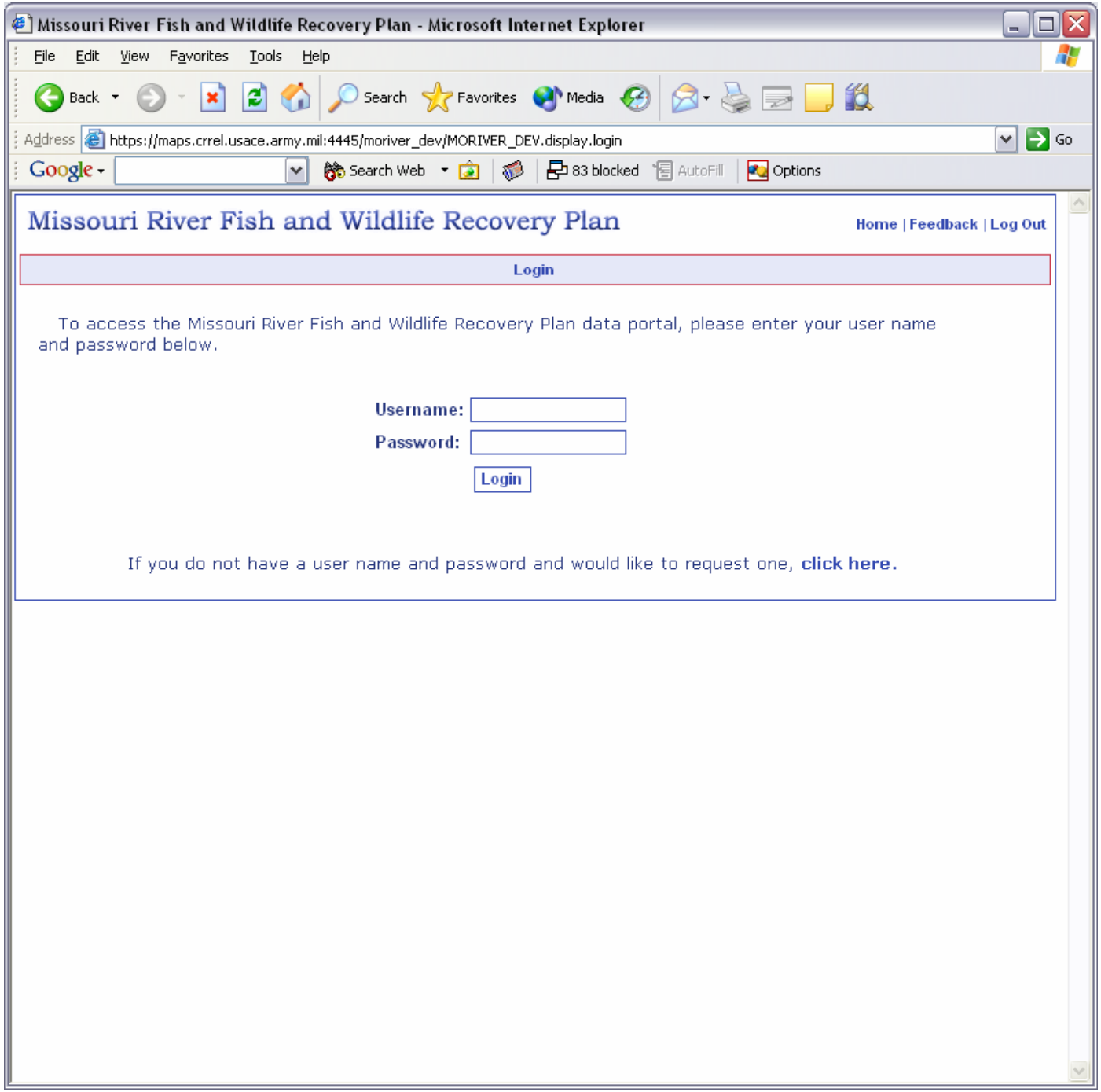

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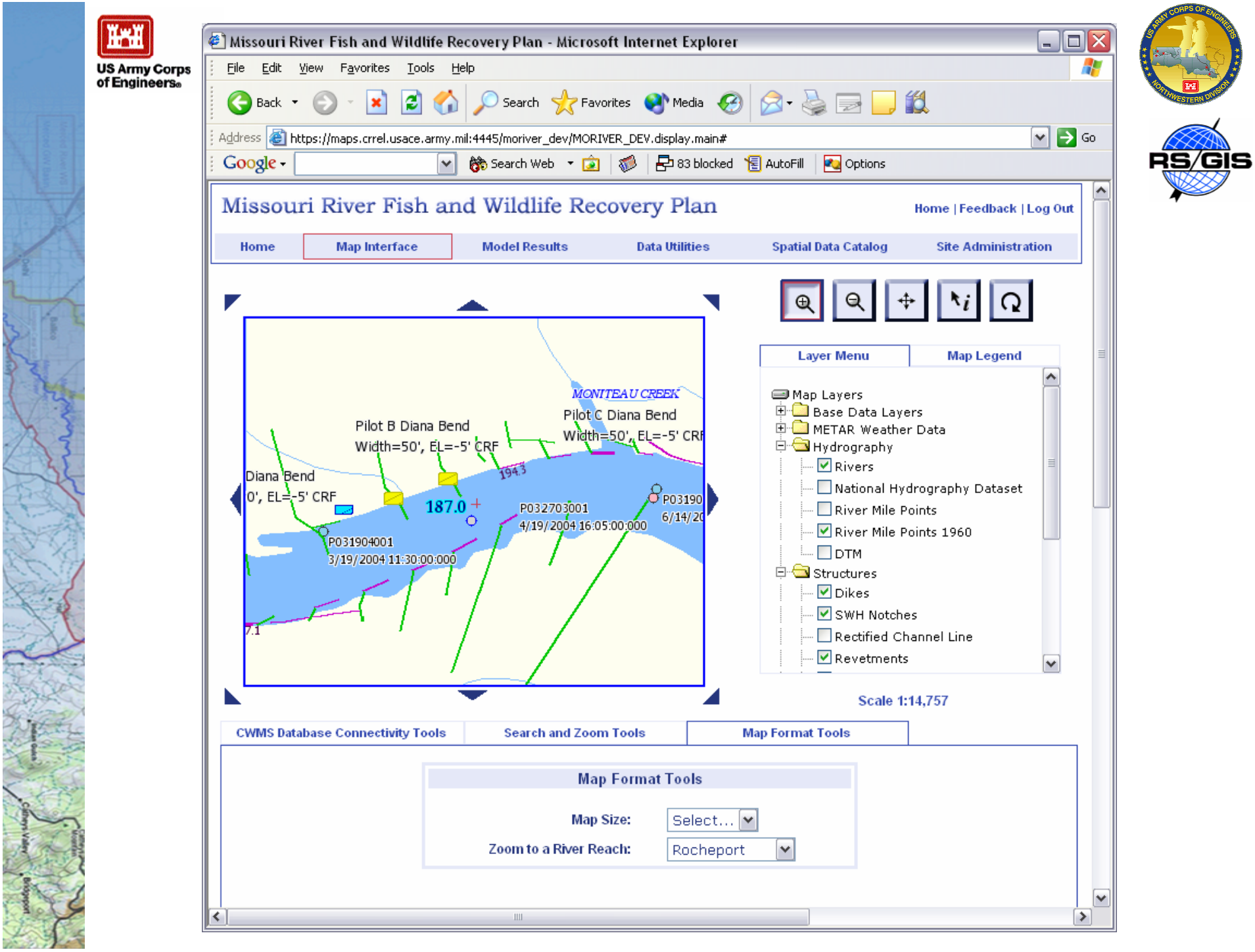
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Go
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Missouri River Fish and Wildlife Recovery Plan
Home | Feedback | Log Out
Home
Map Interface
Model Results
Data Utilities
Spatial Data Catalog
Site Administration
MONITEAU CREEK
Pilot B Diana Bend
Width=50', EL=-5' CRF
Pilot C Diana Bend
Width=50', EL=-5' CRF
Diana Bend
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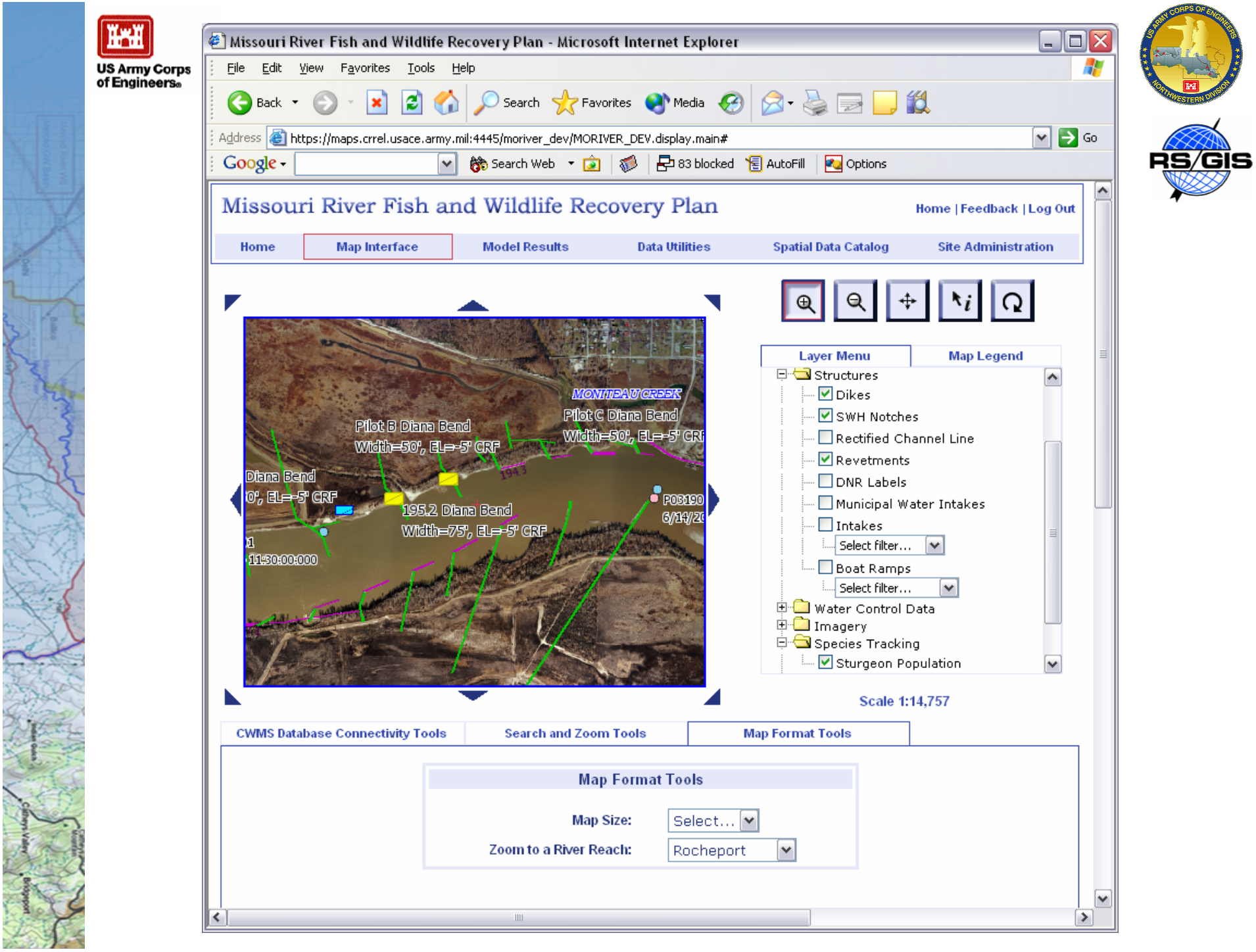
194.3
187.0
P032703001
4/19/2004 16:05:00:000
P031904001
3/19/2004 11:30:00:000
P03190
6/14/20
7.1
Layer Menu
Map Legend
Map Layers
Base Data Layers
METAR Weather Data
Hydrography
Rivers
National Hydrography Dataset
River Mile Points
River Mile Points 1960
DTM
Structures
Dikes
SWH Notches
Rectified Channel Line
Revetments
Scale 1:14,757
CWMS Database Connectivity Tools
Search and Zoom Tools
Map Format Tools
Map Format Tools
Map Size:
Select...
Zoom to a River Reach:
Rocheport
RS/GIS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MONTEAU CREEK
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Diana Bend
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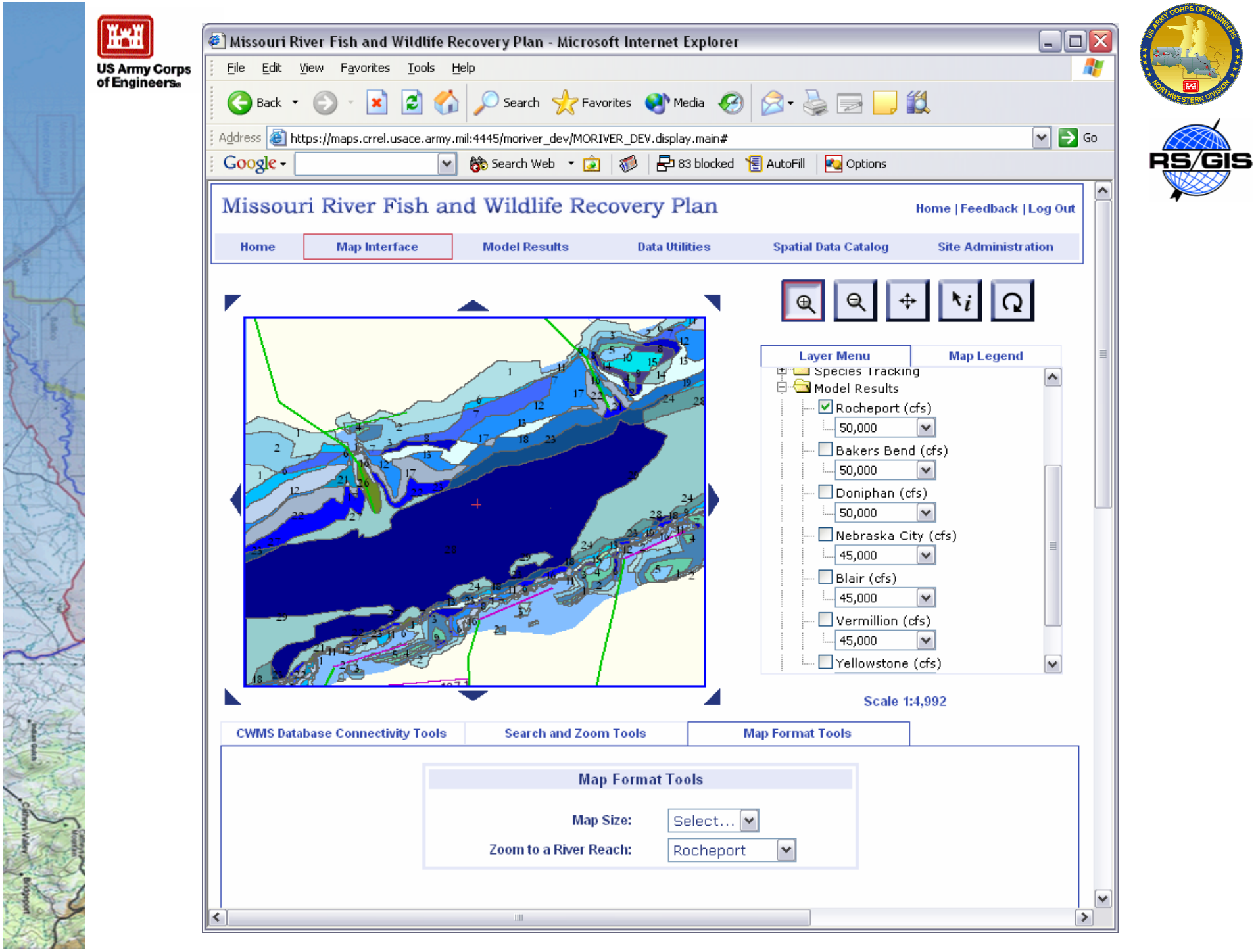
195.2 Diana Bend
Width=75', EL=-5' CRF
Layer Menu
Map Legend
Structures
Dikes
SWH Notches
Rectified Channel Line
Revetments
DNR Labels
Municipal Water Intakes
Intakes
Select filter...
Boat Ramps
Select filter...
Water Control Data
Imagery
Species Tracking
Sturgeon Population
Scale 1:14,757
CWMS Database Connectivity Tools
Search and Zoom Tools
Map Format Tools
Map Format Tools
Map Size:
Select...
Zoom to a River Reach:
Rocheport
RS/GIS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Map Legend
Species Tracking
Model Results
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Bakers Bend (cfs)
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Doniphan (cfs)
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Nebraska City (cfs)
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Blair (cfs)
45,000
Vermillion (cfs)
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Yellowstone (cfs)
Scale 1:4,992
CWMS Database Connectivity Tools
Search and Zoom Tools
Map Format Tools
Map Format Tools
Map Size:
Select...
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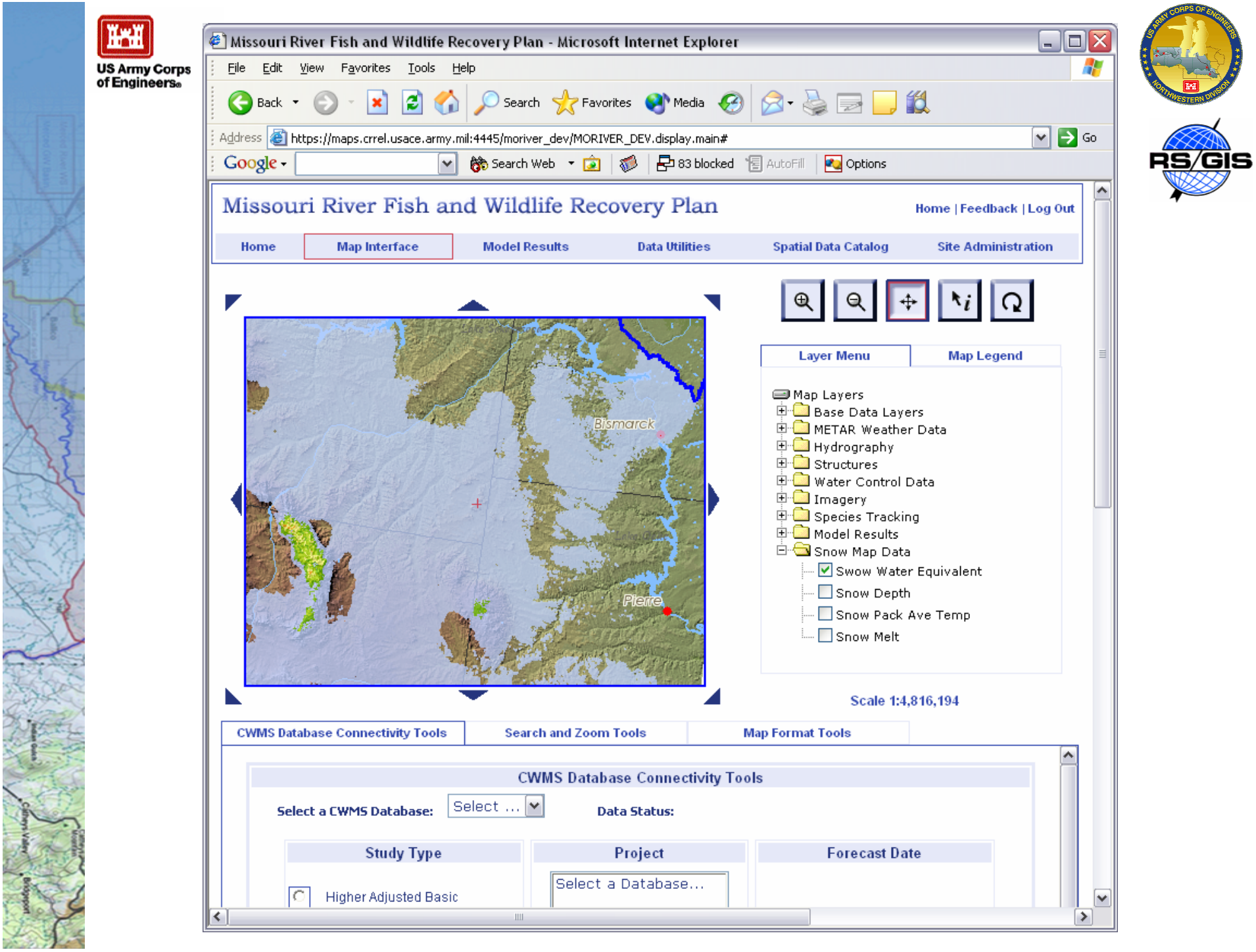
RS/GIS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Base Data Layers
METAR Weather Data
Hydrography
Structures
Water Control Data
Imagery
Species Tracking
Model Results
Snow Map Data
Swow Water Equivalent
Snow Depth
Snow Pack Ave Temp
Snow Melt
Scale 1:4,816,194
CWMS Database Connectivity Tools
Search and Zoom Tools
Map Format Tools
CWMS Database Connectivity Tools
Select a CWMS Database:
Select ...
Data Status:
Study Type
Project
Forecast Date
Higher Adjusted Basic
Select a Database...
RS/GIS

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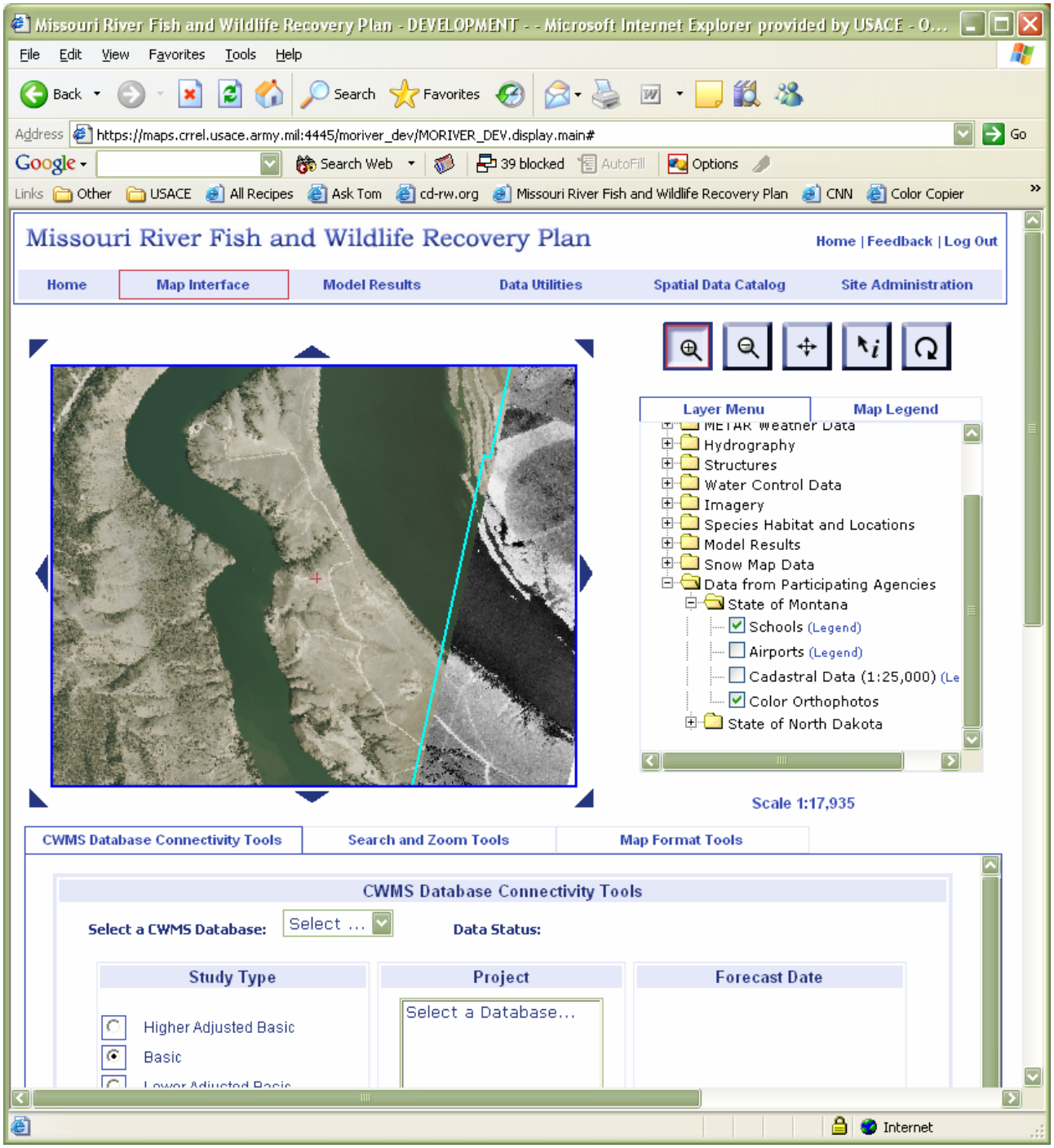

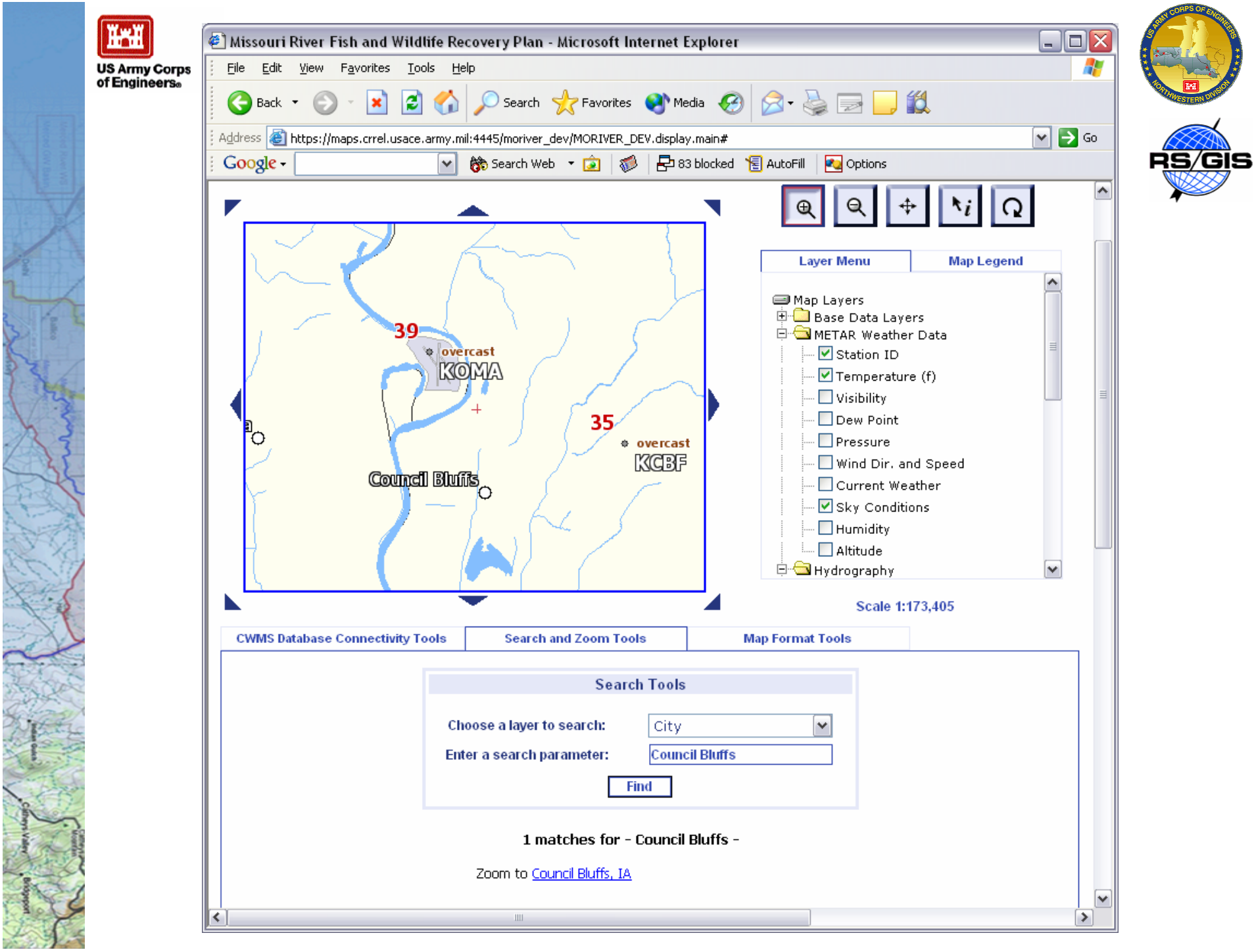
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39
overcast
KOMA
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overcast
KCBF
Council Bluffs
Layer Menu
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Map Layers
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METAR Weather Data
Station ID
Temperature (f)
Visibility
Dew Point
Pressure
Wind Dir. and Speed
Current Weather
Sky Conditions
Humidity
Altitude
Hydrography
Scale 1:173,405
CWMS Database Connectivity Tools
Search and Zoom Tools
Map Format Tools
Search Tools
Choose a layer to search:
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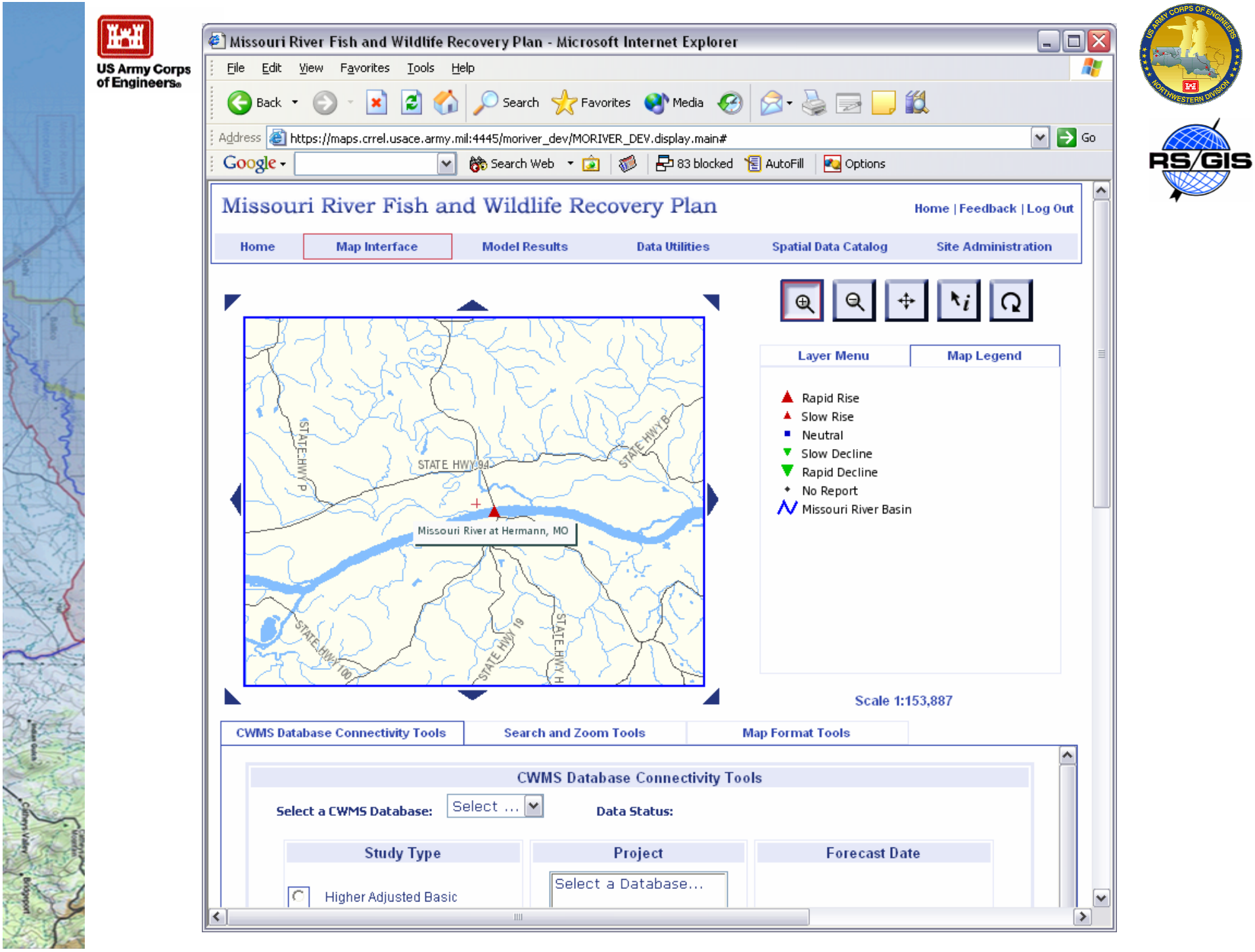
1 matches for - Council Bluffs -
Zoom to Council Bluffs, IA
RS/GIS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STATE HWY 94
STATE HWY P
STATE HWY B
Missouri River at Hermann, MO
STATE HWY 100
STATE HWY 19
STATE HWY H
Layer Menu
Map Legend
Rapid Rise
Slow Rise
Neutral
Slow Decline
Rapid Decline
No Report
Missouri River Basin
Scale 1:153,887
CWMS Database Connectivity Tools
Search and Zoom Tools
Map Format Tools
CWMS Database Connectivity Tools
Select a CWMS Database:
Select ...
Data Status:
Study Type
Project
Forecast Date
Higher Adjusted Basic
Select a Database...
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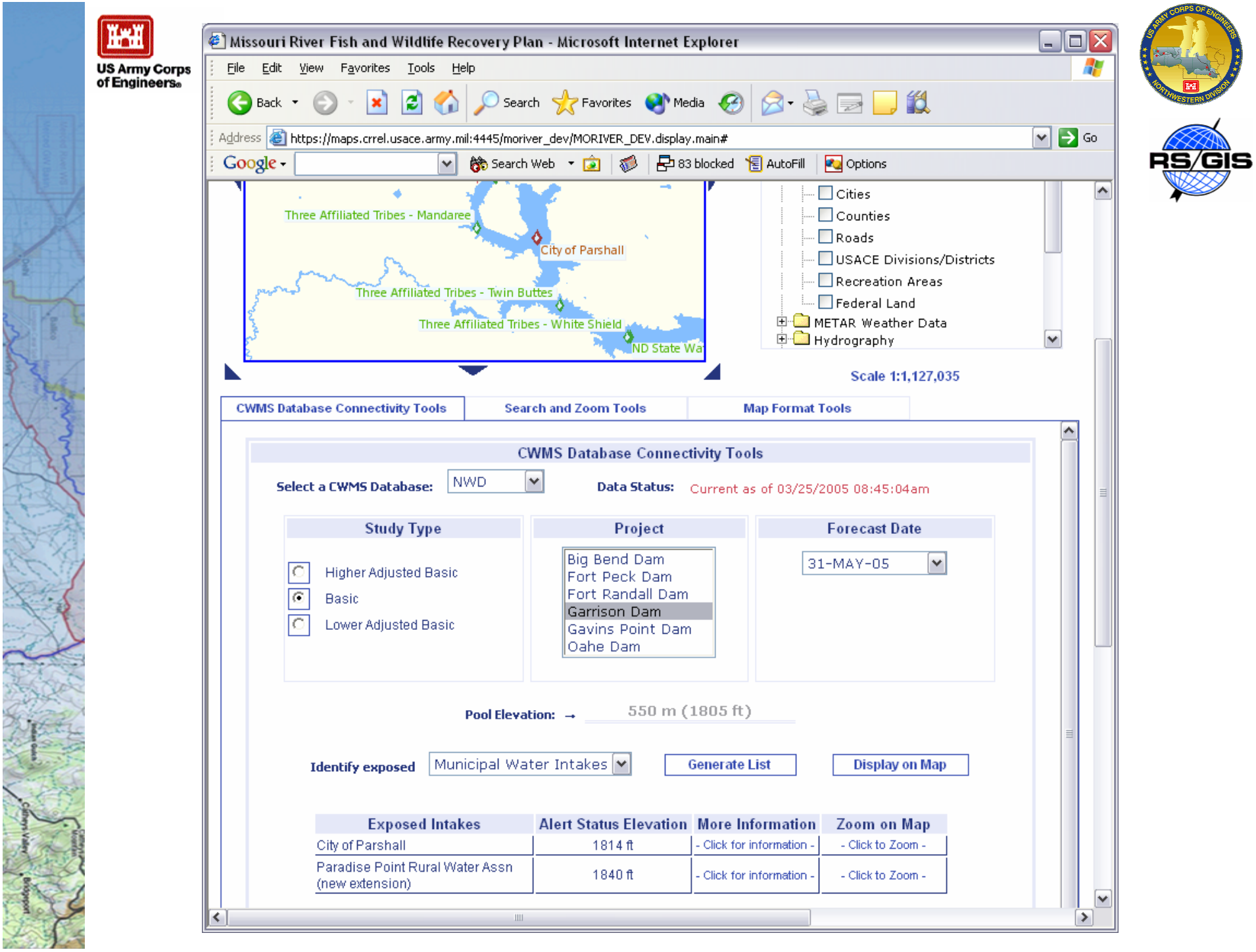
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Three Affiliated Tribes - Mandaree
City of Parshall
Three Affiliated Tribes - Twin Buttes
Three Affiliated Tribes - White Shield
ND State Wa
Cities
Counties
Roads
USACE Divisions/Districts
Recreation Areas
Federal Land
METAR Weather Data
Hydrography
Scale 1:1,127,035
CWMS Database Connectivity Tools
Search and Zoom Tools
Map Format Tools
CWMS Database Connectivity Tools
Select a CWMS Database: NWD
Data Status: Current as of 03/25/2005 08:45:04am
Study Type
Higher Adjusted Basic
Basic
Lower Adjusted Basic
Project
Big Bend Dam
Fort Peck Dam
Fort Randall Dam
Garrison Dam
Gavins Point Dam
Oahe Dam
Forecast Date
31-MAY-05
Pool Elevation: → 550 m (1805 ft)
Identify exposed Municipal Water Intakes
Generate List
Display on Map
Exposed Intakes
Alert Status Elevation
More Information
Zoom on Map
City of Parshall
1814 ft
- Click for information -
- Click to Zoom -
Paradise Point Rural Water Assn (new extension)
1840 ft
- Click for information -
- Click to Zoom -
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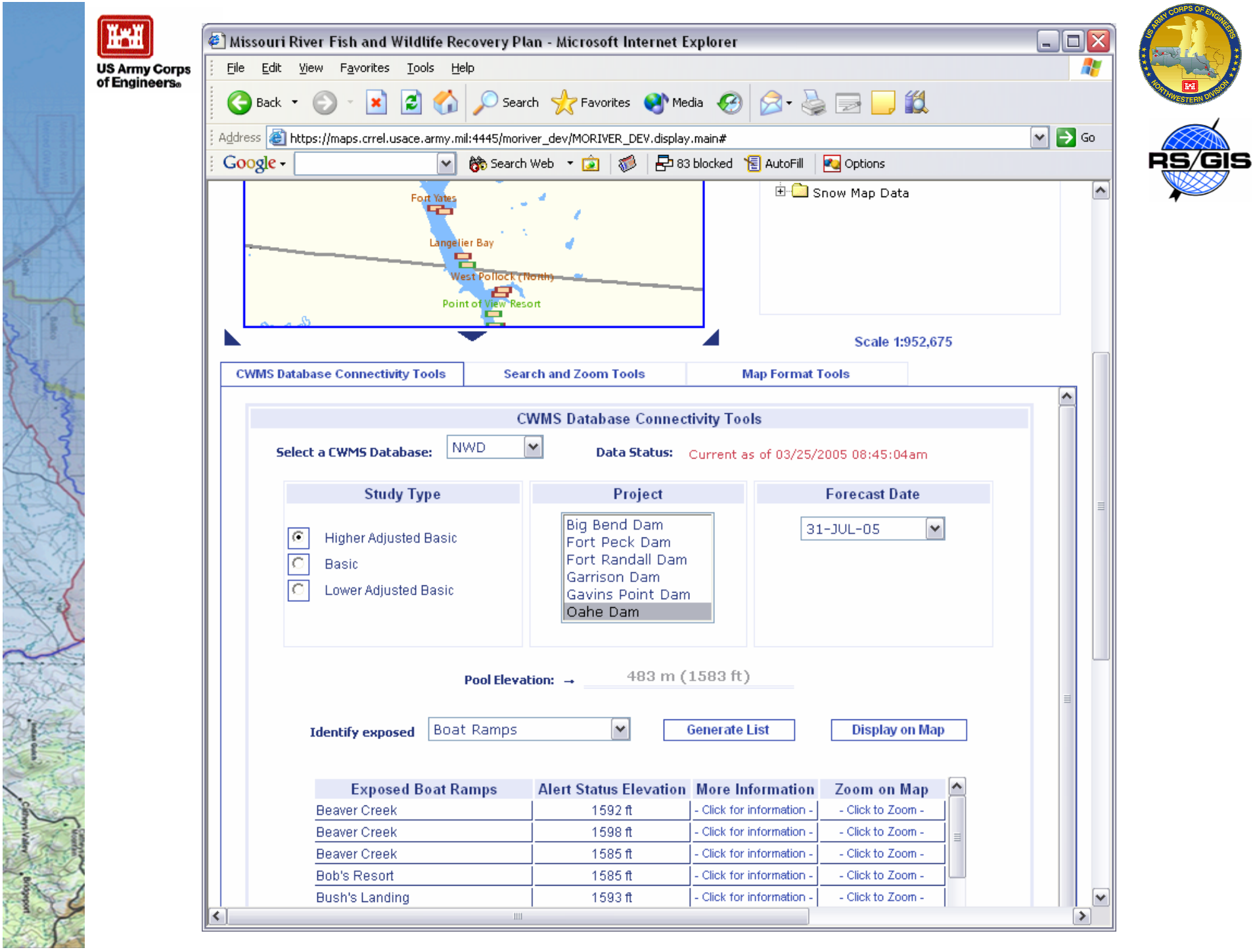
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Go
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Fort Yates
Langelier Bay
West Pollock (North)
Point of View Resort
Snow Map Data
Scale 1:952,675
CWMS Database Connectivity Tools
Search and Zoom Tools
Map Format Tools
CWMS Database Connectivity Tools
Select a CWMS Database: NWD
Data Status: Current as of 03/25/2005 08:45:04am
Study Type
Higher Adjusted Basic
Basic
Lower Adjusted Basic
Project
Big Bend Dam
Fort Peck Dam
Fort Randall Dam
Garrison Dam
Gavins Point Dam
Oahe Dam
Forecast Date
31-JUL-05
Pool Elevation: → 483 m (1583 ft)
Identify exposed Boat Ramps
Generate List
Display on Map
Exposed Boat Ramps | Alert Status Elevation | More Information | Zoom on Map
Beaver Creek | 1592 ft | - Click for information - | - Click to Zoom -
Beaver Creek | 1598 ft | - Click for information - | - Click to Zoom -
Beaver Creek | 1585 ft | - Click for information - | - Click to Zoom -
Bob's Resort | 1585 ft | - Click for information - | - Click to Zoom -
Bush's Landing | 1593 ft | - Click for information - | - Click to Zoom -
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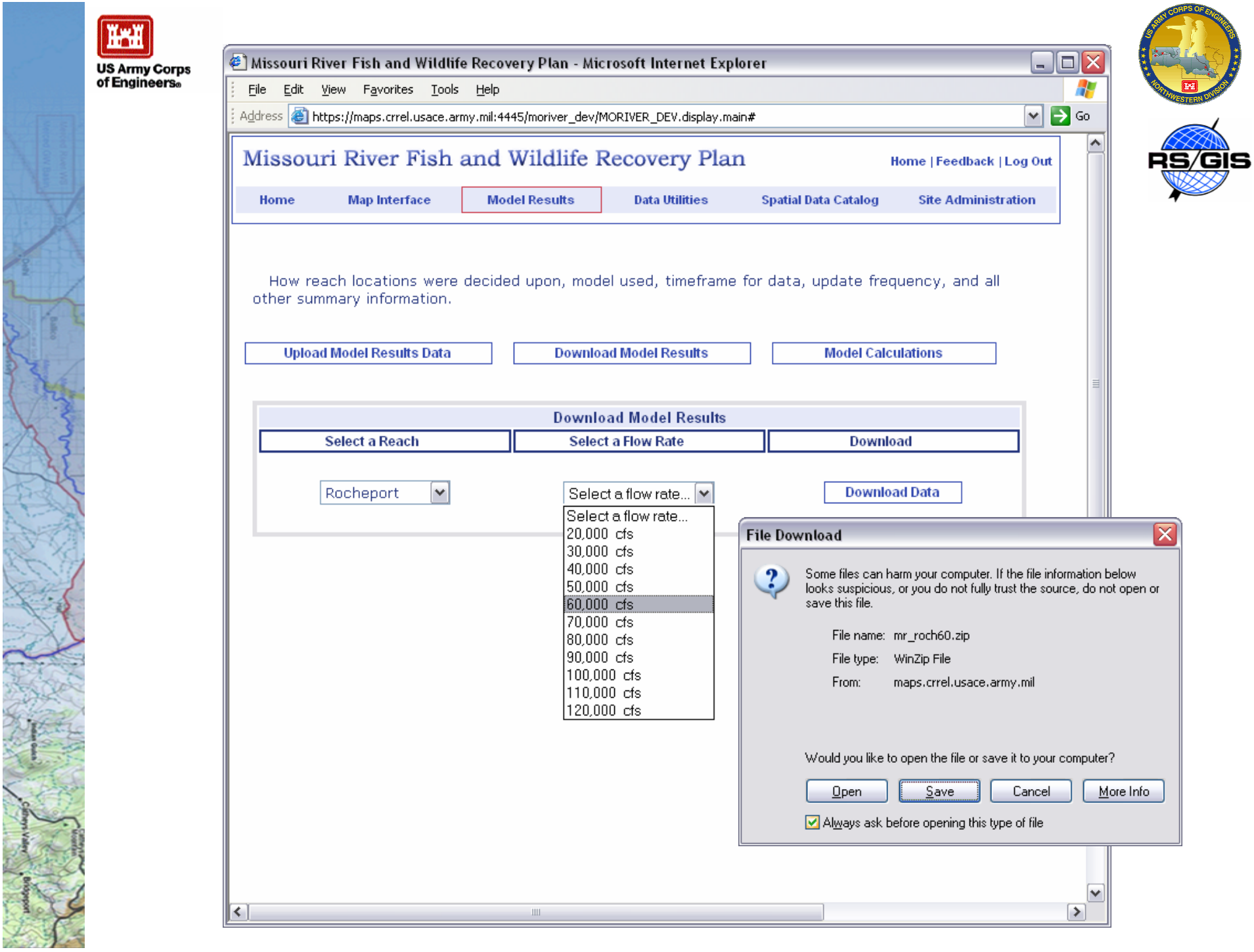
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How reach locations were decided upon, model used, timeframe for data, update frequency, and all other summary information.
Upload Model Results Data
Download Model Results
Model Calculations
Download Model Results
Select a Reach
Select a Flow Rate
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Select a flow rate...
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Download Data
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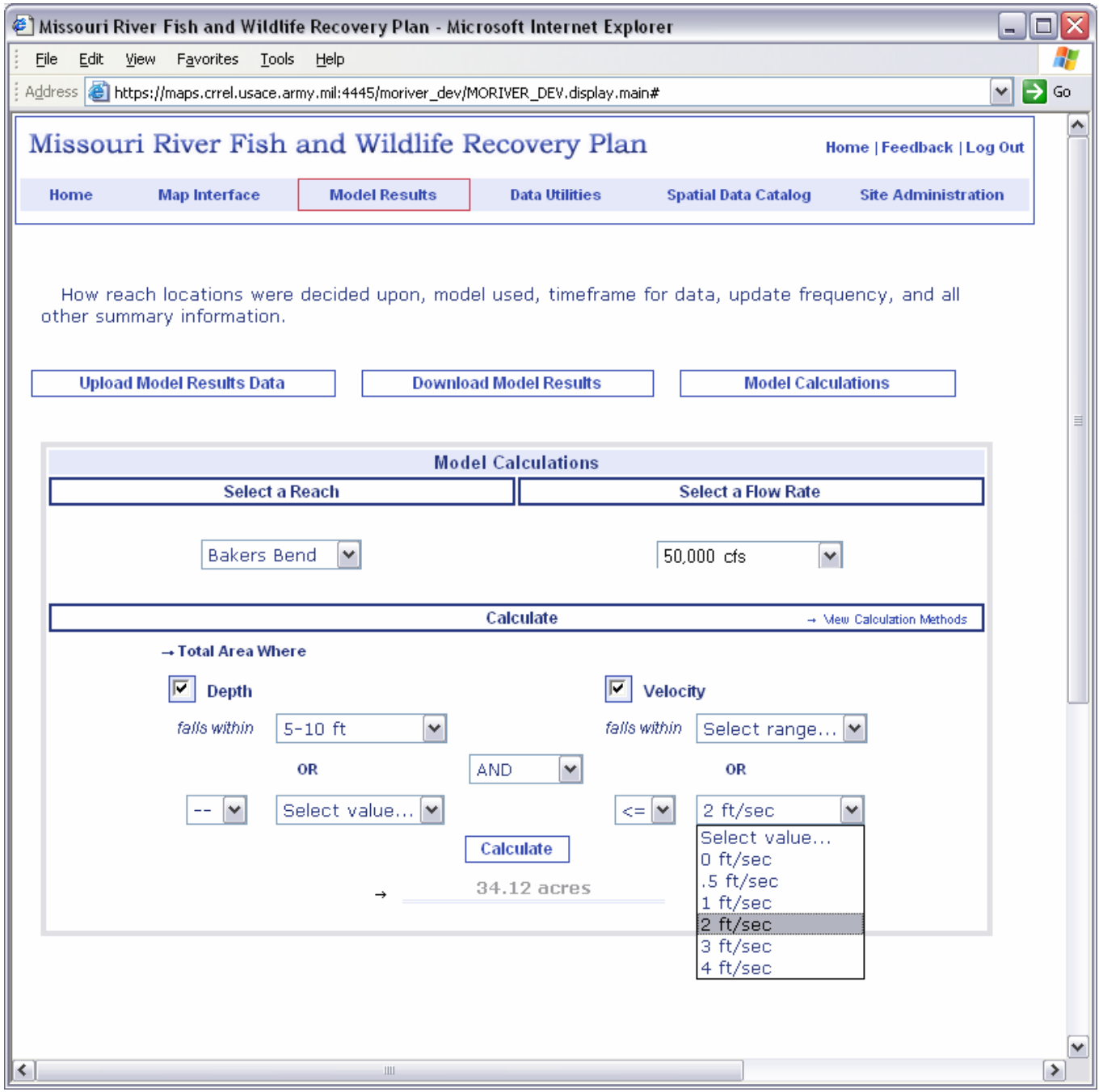

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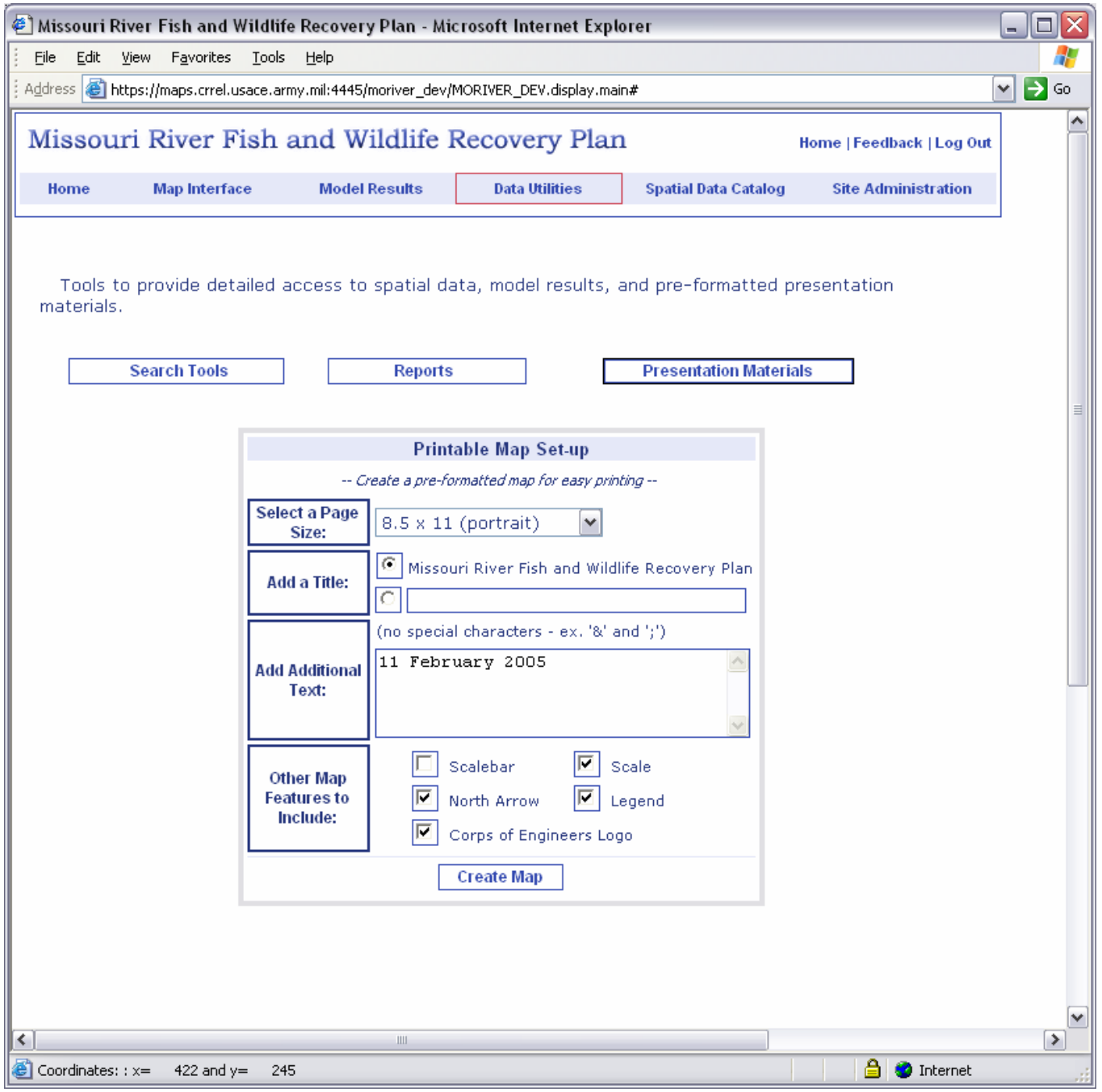

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Home | Map Interface | Model Results | Data Utilities | Spatial Data Catalog | Site Administration

To view the spatial data available in the Map Interface, select the data type from the buttons below. Data are listed by file name. To get more information about the source of each dataset, click on the link listed under the "Source" column for each "Theme Name". Most datasets are available for download by clicking the "Download" button. Data are delivered in a .zip file and include the spatial dataset (ESRI shapefile) and available metadata.

Base Data | Missouri River Data | Missouri River Imagery

Base Data

THEME NAME	SOURCE	DOWNLOAD
Airports	GDT	Download Data
Airports	ESRI	Download Data
Arial Landmarks	GDT	Download Data
Cities	ESRI	Download Data
Cities	Navigation Data Center	Download Data
Counties	USGS National Atlas	Download Data
Counties	GDT	Download Data
Countries	ESRI	Download Data
Dams	USGS National Atlas	Download Data
Digital Ortho Quads	i-cubed	- not available at this time -
Federal Land	USGS National Atlas	Download Data
Interstate Exits	GDT	Download Data
Interstates	ESRI	Download Data
Lakes	USGS National Atlas	Download Data

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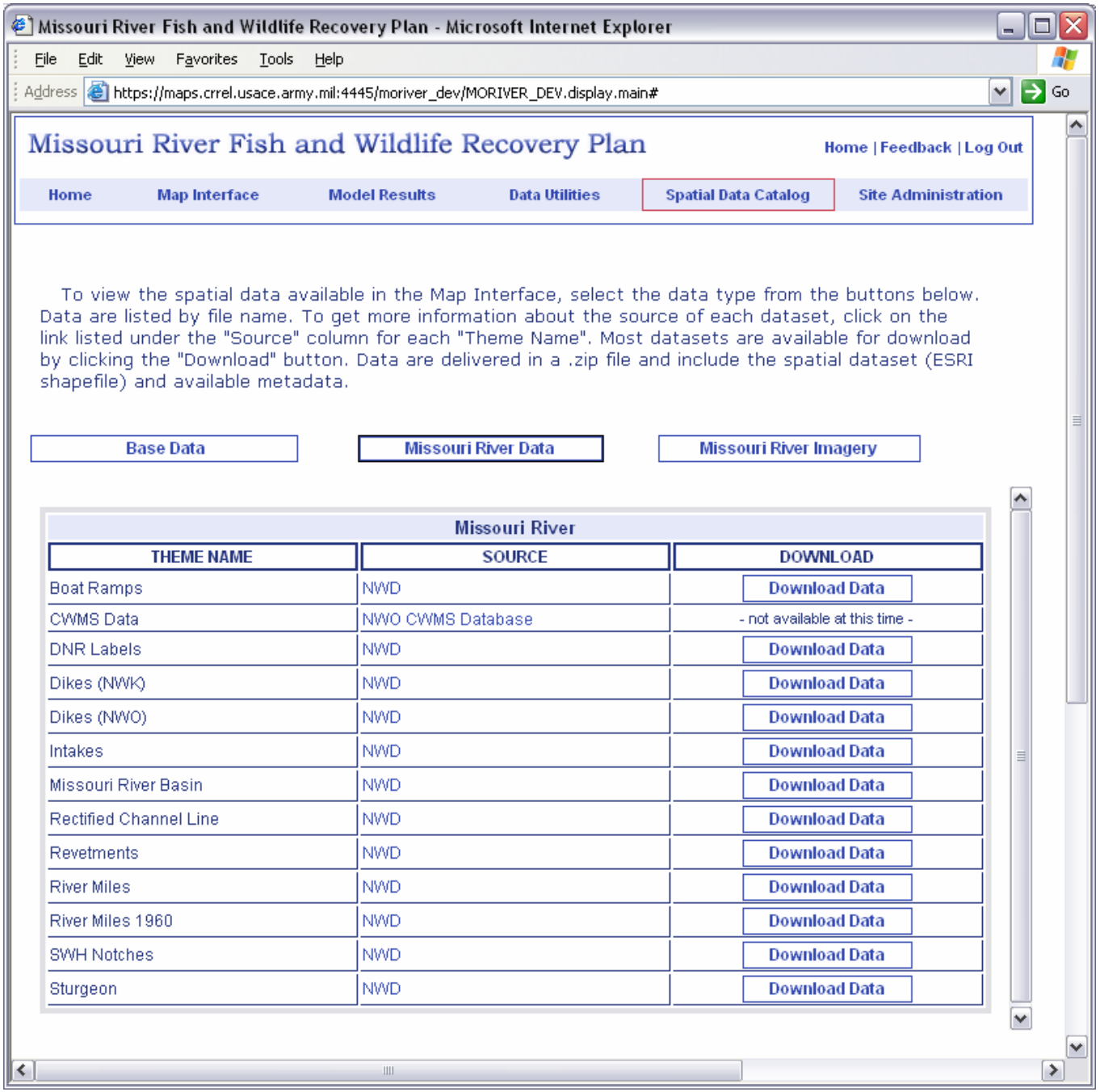

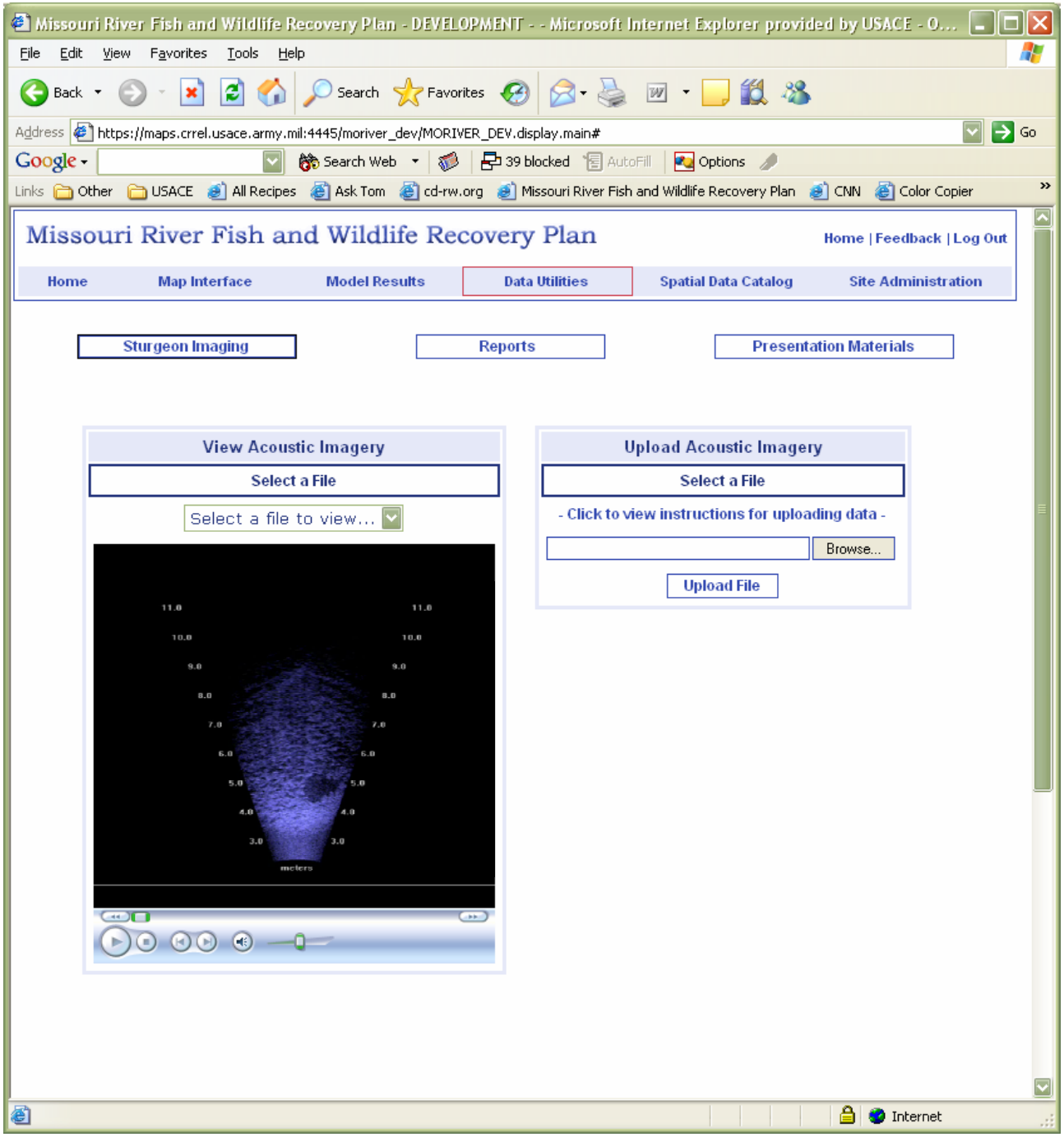
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View Acoustic Imagery
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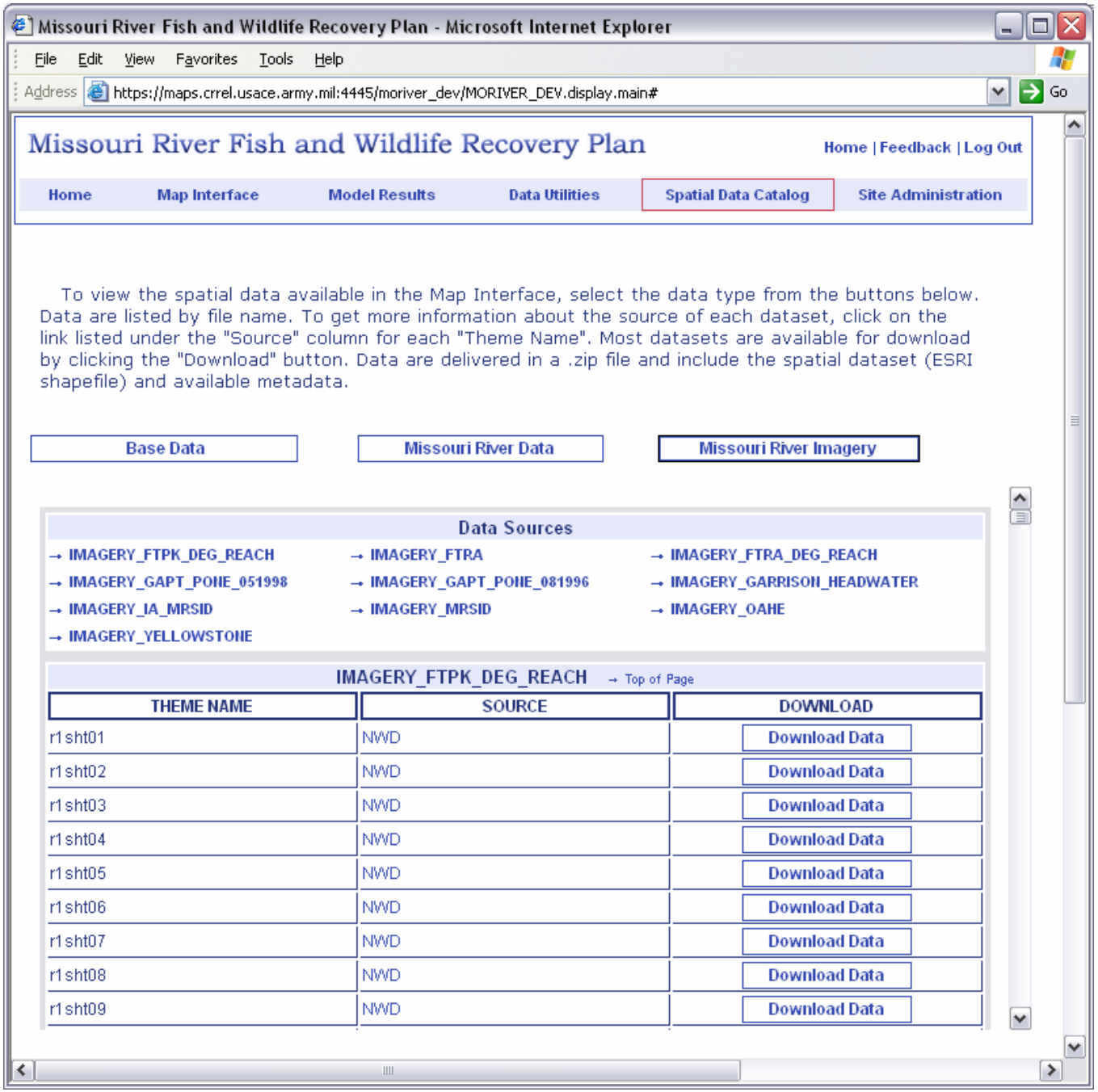

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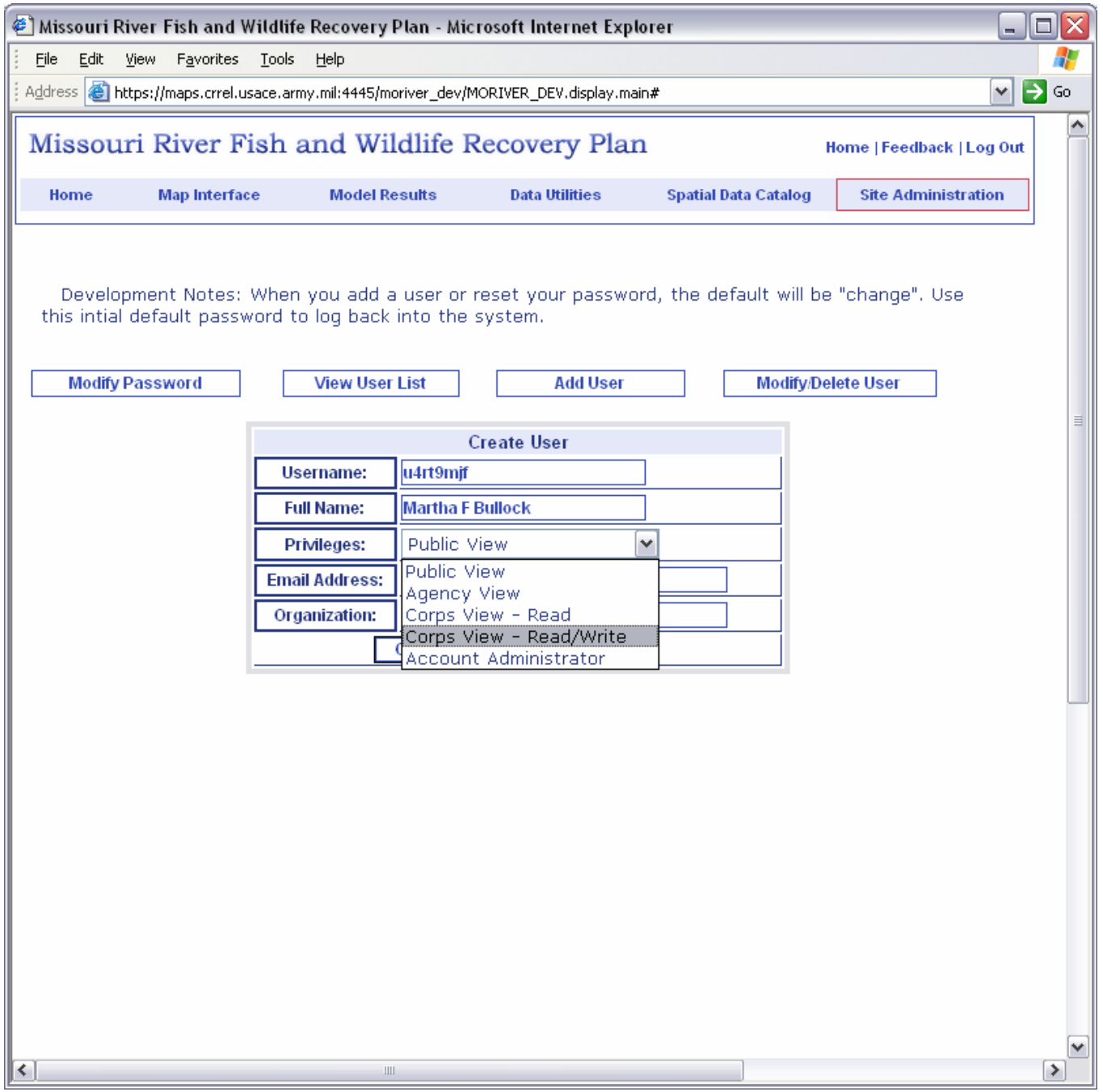

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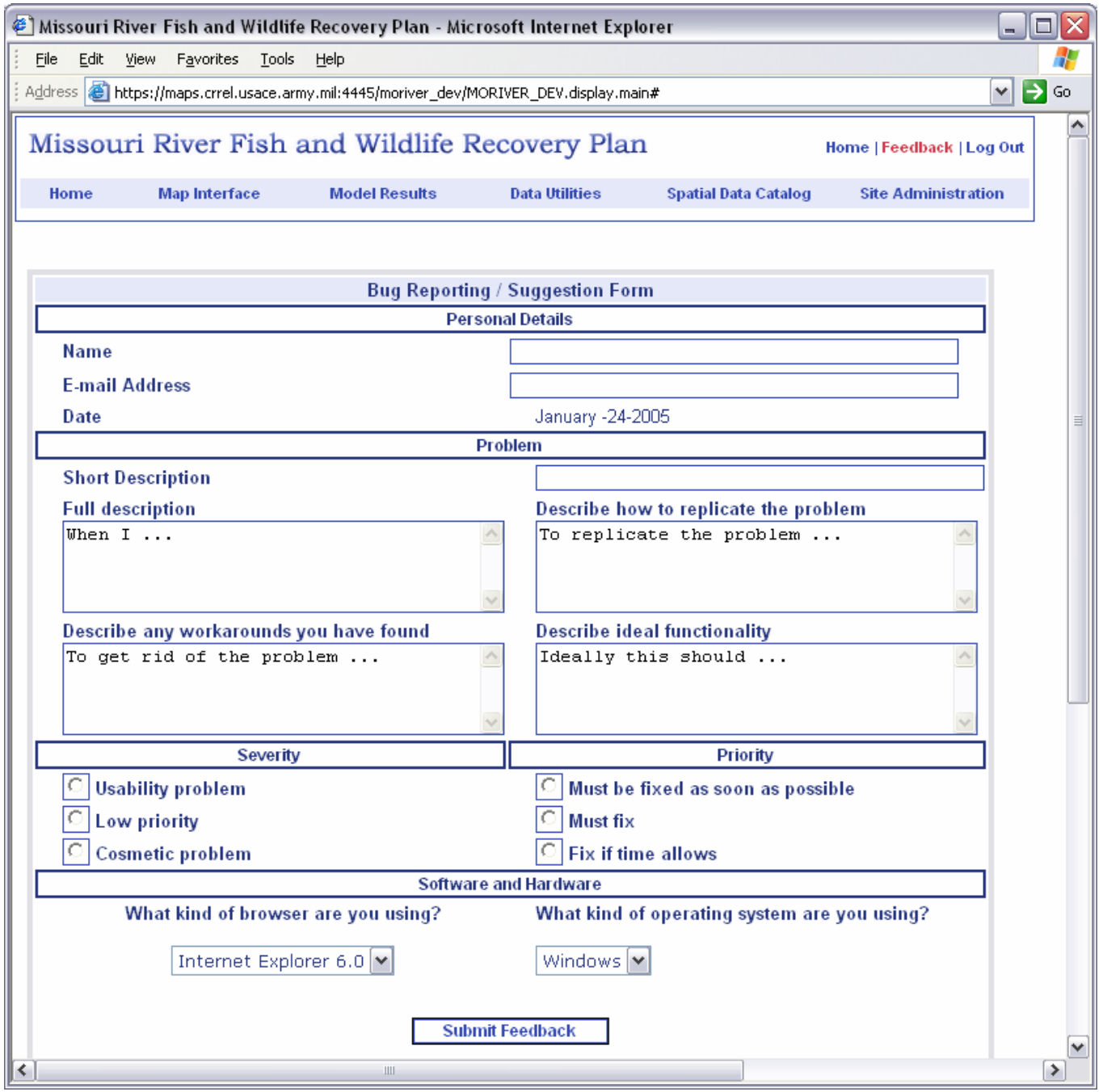

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Comments/Questions?

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