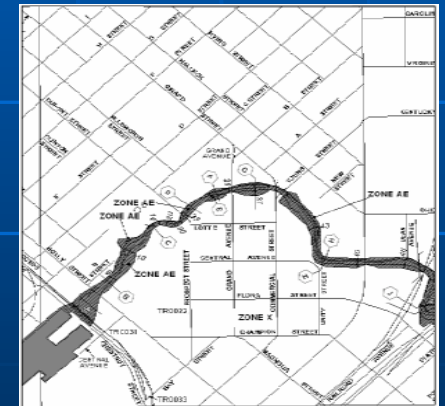
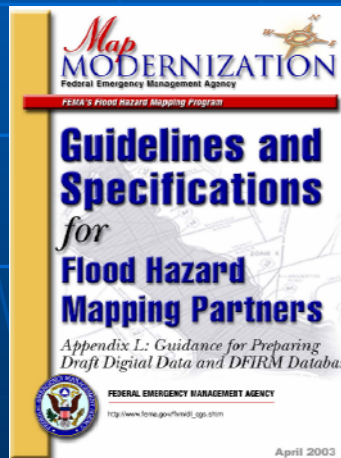


GIS & Surveying to Support FEMA Map Modernization

Mark Flick

GD&S Program Manager

Nashville District



GIS & Surveying to Support FEMA Map Modernization

OUTLINE

- 1) National PDT for FEMA Support**
- 2) Introduction to Washington D.C. Map Modernization Study**
- 3) Bridge Survey Techniques Applied**
- 4) GIS Tools available for Map Modernization Studies**

GIS & Surveying to Support FEMA Map Modernization

National PDT for FEMA Support

Formed as a result of FEMA Region III “rocking the boat”

HQUSACE recognition and support – Spirit of USACE 2012

Project Management located at RS/GIS Center of Expertise

Organization-wide PDT membership – Districts, Labs

GIS & Surveying to Support FEMA Map Modernization

National PDT for FEMA Support

Why is FEMA interested in working with a USACE National PDT?

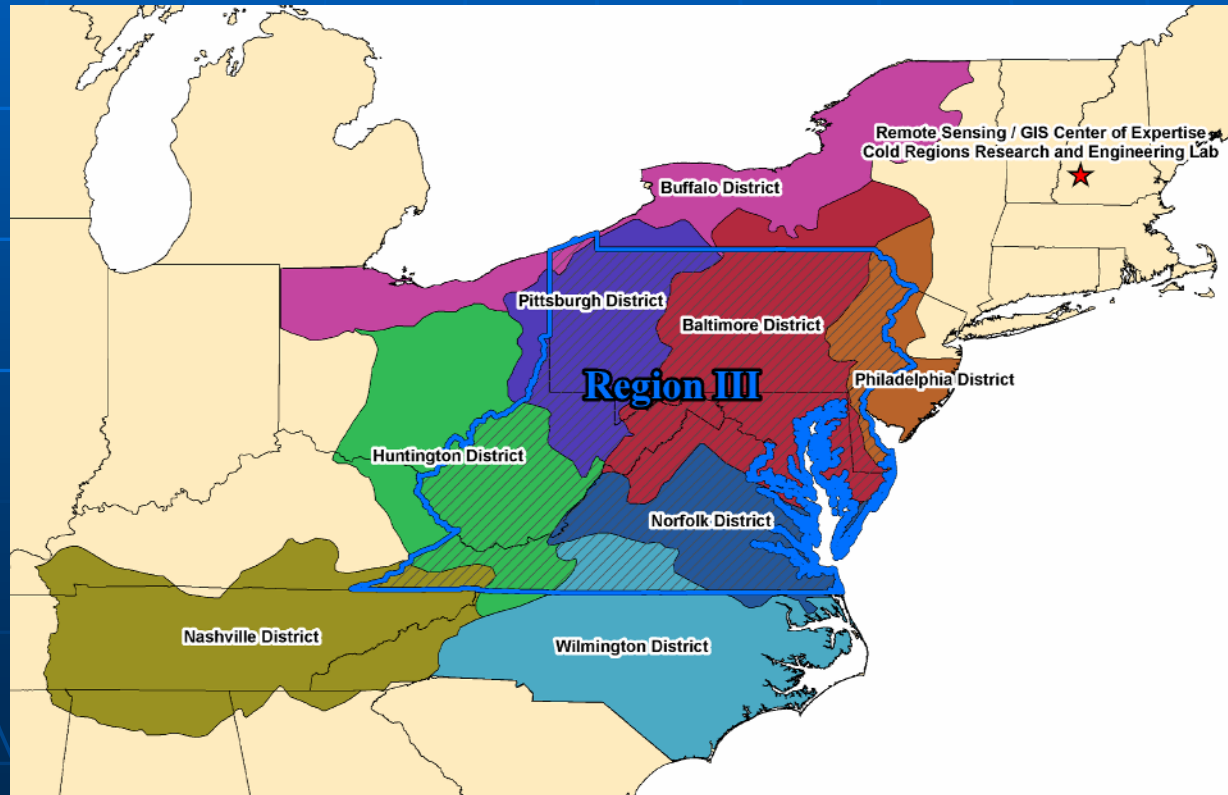
Inspiration came from Corps' presentations on USACE 2012 ... Brings to the table scalable staffing and scalable management that cut across the Corps' areas of expertise ... Allows us to use the Corps for more work than would be possible by just assigning to Districts based on their boundaries ... Gives us confidence that the Corps is maintaining levels of expertise in the disciplines we need.

Excerpts from conversation with Jon Janowicz, FEMA Region III

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National PDT for FEMA Support

Why is USACE interested in forming a National PDT?



GIS & Surveying to Support FEMA Map Modernization

National PDT for FEMA Support

INVITATION:

What: FEMA Meeting

When: Thursday evening, 5:30PM – 7:30PM

Where: Conference Room G (first floor)

Who: Anyone interested in Map Modernization work and/or the National PDT

GIS & Surveying to Support FEMA Map Modernization

Washington DC Map Mod Study

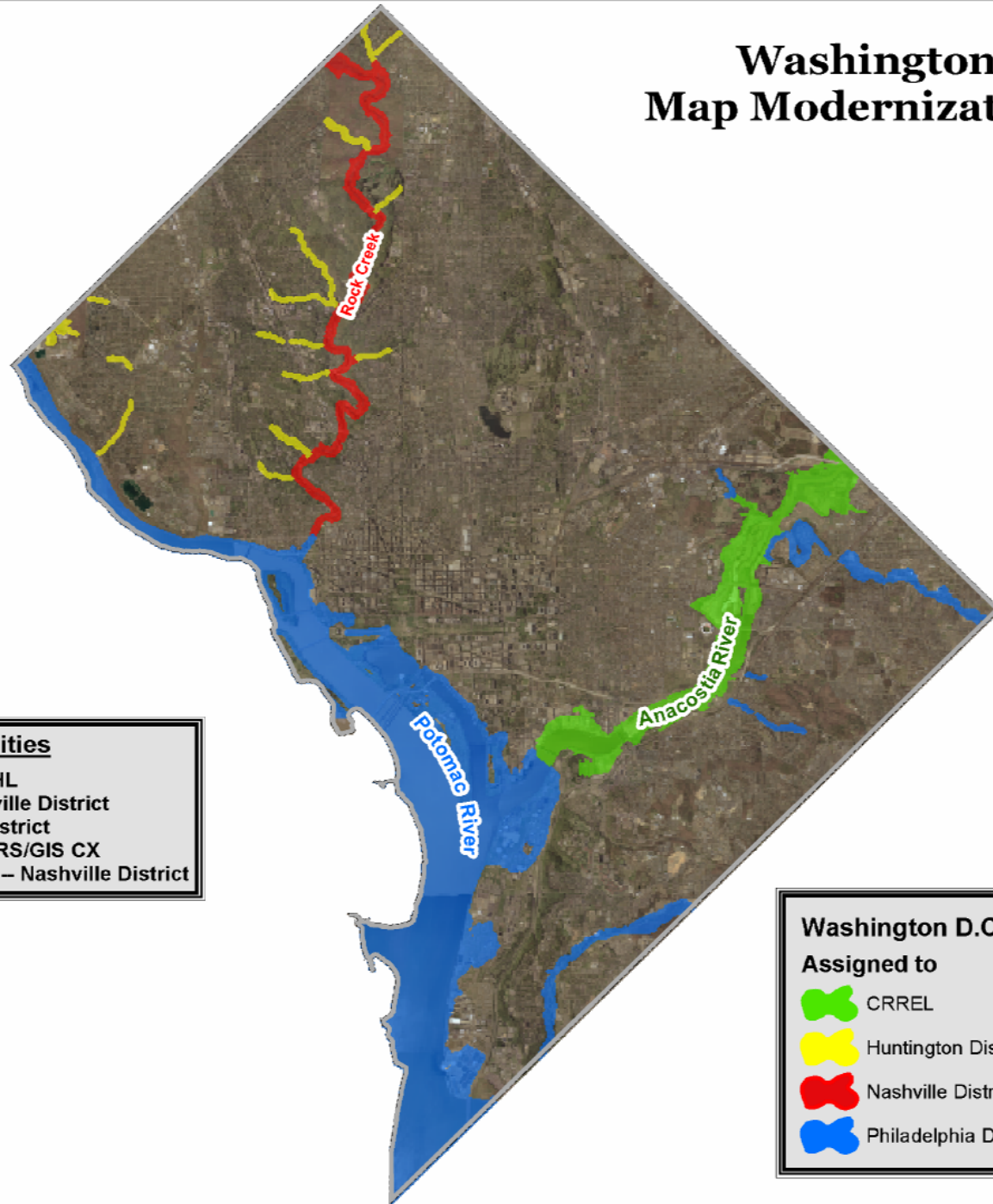
First Map Mod Study for National PDT

PDT Membership from CHL, CRREL, LRH, LRN, NAB, NAP

\$200,000 study to be completed in 1-year

42 stream miles of detailed study; 8.75 miles of approximate study

Washington D.C. Map Modernization Study



Project Responsibilities

Coastal Hydrology -- CHL
Hydraulic Lead -- Nashville District
GIS Lead -- Nashville District
Project Management -- RS/GIS CX
Technical Management -- Nashville District

Washington D.C. Floodplains

Assigned to

-  CRREL
-  Huntington District
-  Nashville District
-  Philadelphia District

GIS & Surveying to Support FEMA Map Modernization

Washington DC Map Mod Study

Scope of Work:

Convert all effective HEC-2 models to HEC-RAS

Update all bridge sections to current

Develop new GIS-related method for Approximate Areas

Use new LIDAR for over-bank portions of cross-sections

Use new LIDAR for development of inundation areas

Develop DFIRM geodatabase

GIS & Surveying to Support FEMA Map Modernization

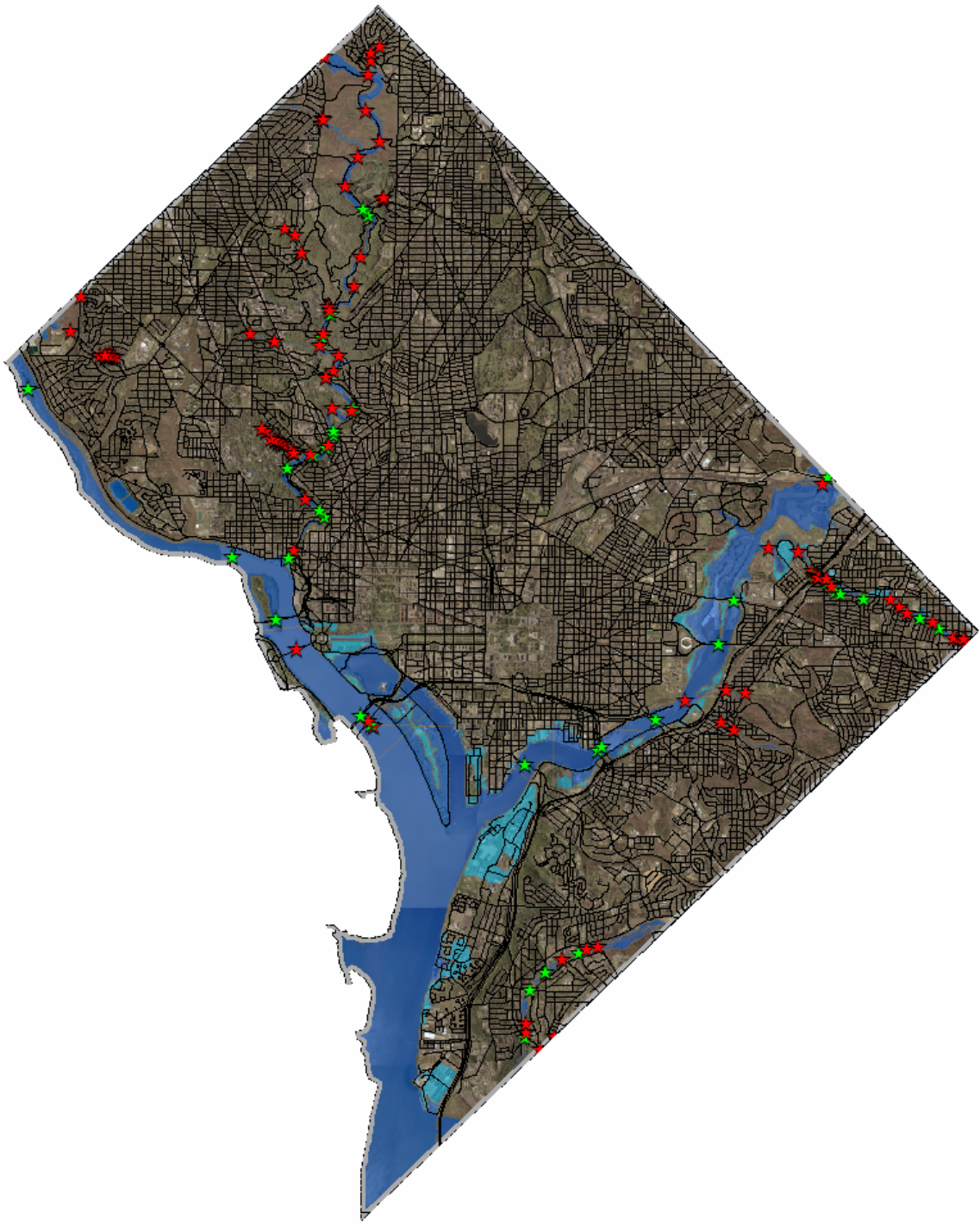
Bridge Survey Techniques

129 current stream crossings (bridges) in effective FIS floodplains

Limited Budget – Impossible to conduct/contract full survey

How about “in-the-can” data ... Coordination with D.C. DOT

D.C. DOT had current drawings for 40 of the 129 bridges – Majority of missing data within Rock Creek National Park



GIS & Surveying to Support FEMA Map Modernization

Bridge Survey Techniques

89 bridges ... LIMITED funds ... What to do ???

“Just import from HEC-2” ... No way to know if current; Several bridges built after effective HEC-2 models

“Perform limited surveying and combine with high-resolution GIS data” ... Still a costly alternative

Combine the two – While in the field compare HEC-2 bridges imported into HEC-RAS with actual bridge to judge vintage, and perform limited survey when necessary

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Bridge Survey Techniques

Survey conducted 28 Feb – 4 Mar 2005 (Cold and snowing !!)

Survey Crew of three (3):

Mark Flick - GIS Specialist w/ H&H background and limited surveying

Gordon Gooch – Civil Engineering Technician w/ Surveying background

Jim Barton – Department of Public Works ... One hell of a work ethic

Survey Equipment:

Laptop with ArcGIS and all GIS data

Laser dimensioning tool

100-ft tape

Level, tripod and surveying rod

Digital camera

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Bridge Survey Techniques

Procedure:

GIS used to: 1) Layout "plan of attack", 2) Navigate D.C.

At each bridge:

Navigate to bridge in HEC-RAS model and compare

If model 'matches' present-day, take digital pictures and document w/in the shapefile

If model and present-day do not match, perform limited survey

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Bridge Survey Techniques

Limited Survey:

Sketch upstream opening and use laser dimensioning tool to measure all features pertinent to HEC-RAS bridge coding

Survey enough elevations that could be combined with dimensions and GIS data to model the bridge in HEC-RAS

Vertical control in order of preference:

- 1 NGS Benchmarks**
- 2 LIDAR control points**
- 3 Spot elevations**

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Bridge Survey Techniques



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Bridge Survey Techniques

Reporting:

Field sketches 'prettied up' and scanned

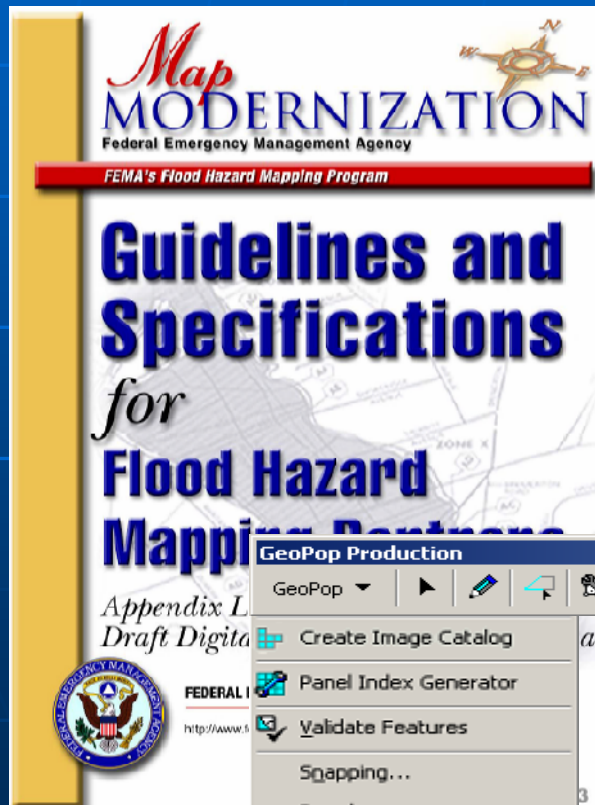
Word document prepared to highlight all relevant information

Word document, digital pictures, and sketch combined into PDF

Example ...

GIS & Surveying to Support FEMA Map Modernization

GIS Tools for Map Mod Studies



NOTES TO USER

LEGEND

MAP INDEX

FIRM FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA
AND INCORPORATED AREAS
 (SEE TABLE SHOWN ON LEFT FOR LISTING OF COMMUNITIES)
MAP INDEX

GeoPop Production

GeoPop

GENERAL STRUCTURE

BRIDGE

AQUEDUCT

BRIDGE

CANAL

CHANNEL

CHANNEL CONTAINS 0.2 PCT FLOOD EVENT

CHANNEL CONTAINS 1 PCT FLOOD EVENT

CONTROL STRUCTURE

CULVERT

MAP NUMBER
 32003CIND0A

EFFECTIVE DATE:
 September 27, 2002

Federal Emergency Management Agency

GIS & Surveying to Support FEMA Map Modernization

GIS Tools for Map Mod Studies

FEMA IDIQ Contractor has developed suite of tools to assist in the project management and development of DFIRM geodatabases

FEMA specifications for DFIRM geodatabases and all the required feature classes are quite voluminous

Project Management is run on a custom ESRI Job Tracking Extension (JTX) application

The JTX and DFIRM Tools are accessible through FEMA's CITRIX server environment ... **Only after attending training**

Job Tracking for ArcGIS

File Job Help

Plumas County: DFIRM Study

Admin Queries
 My Administrator
 My Administrator

Group Queries
 Assign Steps

Type comment

Time
 5/2/05 2:06:11

Assign Step

Assign To: [M]
 [C]
 [T]

Description:
 DFIRM Study for []

Create Child Jobs

Select Child Job Type to Create:

Populate Look-up Tables

Number of Jobs:
 1

OK Cancel

Current Step	User or G...	Create Date/Time	Description
4: Add Study Inf...	miptest006	10/28/04 9:09am	Plumas Cr

Job to Student01 training by Student

4/28/05 9:37:22 am Student01 trainin Started executing step Create Version

Assign Steps History Comments Notes

4/28/05 9:37:22 am Assign Steps History Comments Notes

4/28/05 Assign Steps History Comments Notes

4/28/05

4/28/05

4/28/05

4/28/05

Step order and Description

- 1 Create A Version of the Data For the Job
- 2 **Launch GeoPop Pro for LUT Population**
- 3 Quality Check the Version For This Job
- 4 Reconcile and Post the Job Version

Description:
 DFIRM Conve Studies QL
 Studies QC Admin

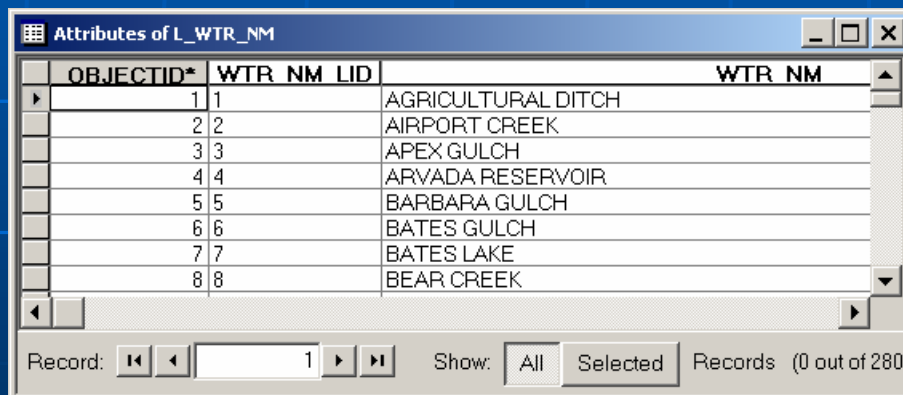
New Job
 Curt Nelson
 Ruth Olson
 Sareth Sokhon

Tester 06 MIP FEMA023P010 1 Job found in your jobs October 28, 2004 2:35 pm

GIS & Surveying to Support FEMA Map Modernization

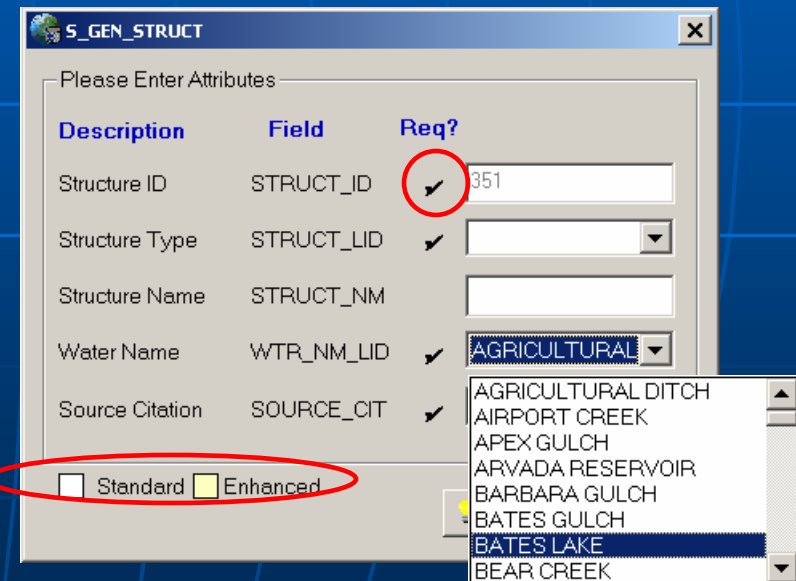
GIS Tools for Map Mod Studies

Attribute Tool



OBJECTID*	WTR_NM_LID	WTR_NM
1	1	AGRICULTURAL DITCH
2	2	AIRPORT CREEK
3	3	APEX GULCH
4	4	ARVADA RESERVOIR
5	5	BARBARA GULCH
6	6	BATES GULCH
7	7	BATES LAKE
8	8	BEAR CREEK

Record: 1 Show: All Selected Records (0 out of 280)



Please Enter Attributes

Description	Field	Req?	
Structure ID	STRUCT_ID	<input checked="" type="checkbox"/>	351
Structure Type	STRUCT_LID	<input checked="" type="checkbox"/>	
Structure Name	STRUCT_NM	<input type="checkbox"/>	
Water Name	WTR_NM_LID	<input checked="" type="checkbox"/>	AGRICULTURAL
Source Citation	SOURCE_CIT	<input checked="" type="checkbox"/>	

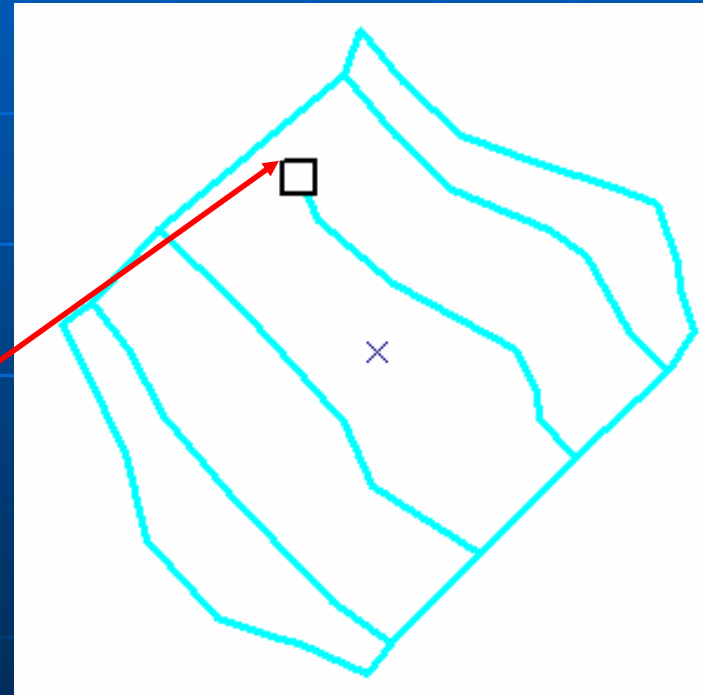
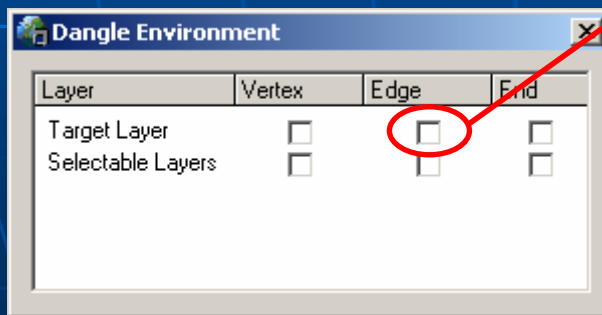
Standard Enhanced

- AGRICULTURAL DITCH
- AIRPORT CREEK
- APEX GULCH
- ARVADA RESERVOIR
- BARBARA GULCH
- BATES GULCH
- BATES LAKE
- BEAR CREEK

GIS & Surveying to Support FEMA Map Modernization

GIS Tools for Map Mod Studies

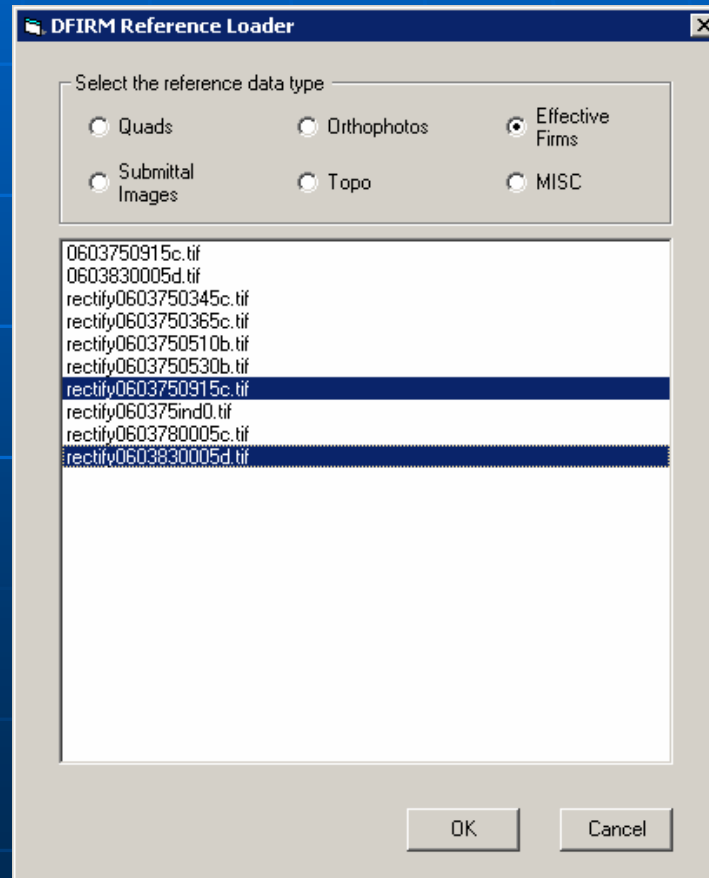
Dangle Tool



GIS & Surveying to Support FEMA Map Modernization

GIS Tools for Map Mod Studies

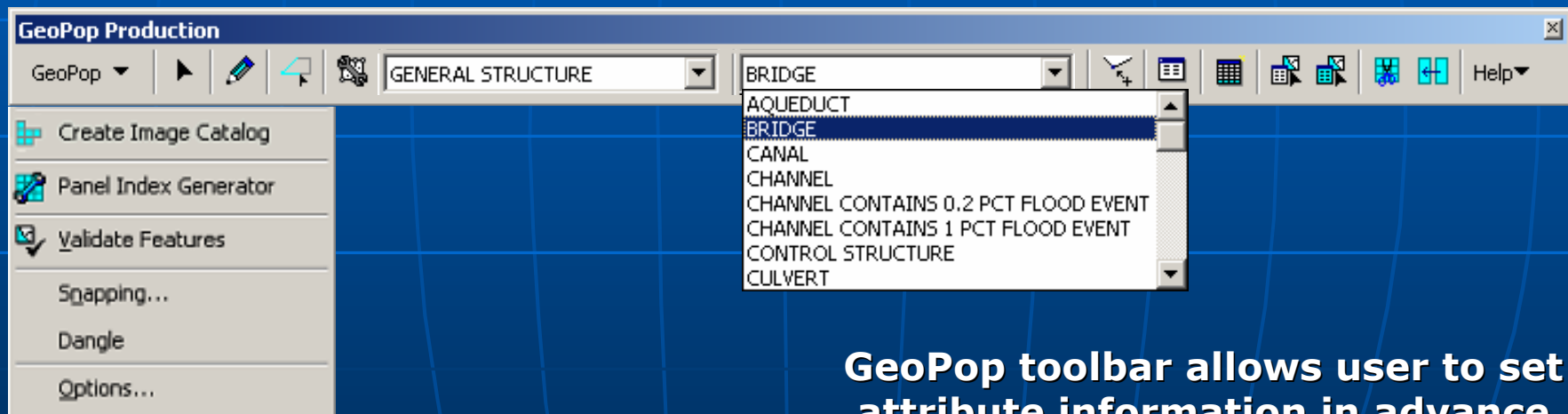
DFIRM Reference Loader Tool



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GIS Tools for Map Mod Studies

GeoPop Production Tool



GeoPop toolbar allows user to set attribute information in advance

GIS & Surveying to Support FEMA Map Modernization

GIS Tools for Map Mod Studies

Data Reviewer Toolbars

Data ReViewer Toolbar

PLTS GIS Data ReViewer

BY_1_SM

Meters

ErrNum	Location	FeatureClass	FCode	Check	Rev_Status	Rev_Tech	Rev_Date
1	J:\FEMA\R09\CALIFORNIA_06\SONORA	Notepad_Polyline		User Review	Add BFE, elevation 113	student01	6/2/2005
2	J:\FEMA\R09\CALIFORNIA_06\SONORA	Notepad_Polygon		User Review	reletter cross sections, starting at	student01	6/2/2005
3	J:\FEMA\R09\CALIFORNIA_06\SONORA	Notepad_Point		User Review	missing benchmark	student01	6/2/2005

Total Records: 3

Save Close

Error Table Tools

Meters

GIS & Surveying to Support FEMA Map Modernization

GIS Tools for Map Mod Studies

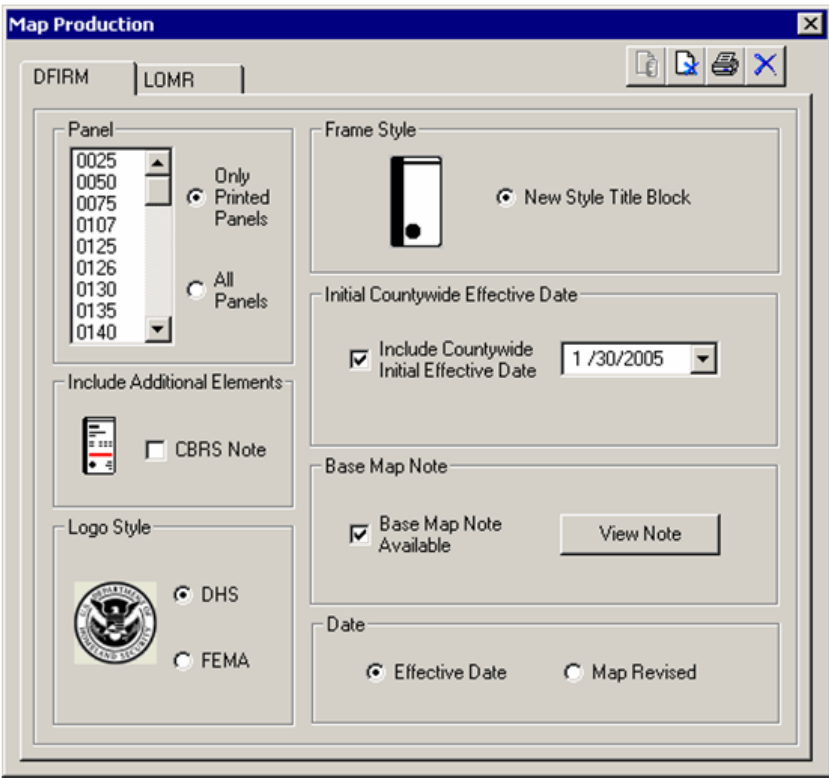
Map Production Tools

Create a **DFIRM** panel

Select panel for printing

If applicable, add a CBRS note to the DFIRM Layout

Choose the logo style



The screenshot shows the 'Map Production' software window with the 'DFIRM' tab selected. The interface includes several configuration sections: 'Panel' with a list of panel numbers (0025 to 0140) and radio buttons for 'Only Printed Panels' (selected) and 'All Panels'; 'Frame Style' with a preview icon and a radio button for 'New Style Title Block'; 'Initial Countywide Effective Date' with a checked box for 'Include Countywide Initial Effective Date' and a date dropdown set to '1/30/2005'; 'Base Map Note' with a checked box for 'Base Map Note Available' and a 'View Note' button; 'Logo Style' with radio buttons for 'DHS' (selected) and 'FEMA'; and 'Date' with radio buttons for 'Effective Date' (selected) and 'Map Revised'. There are also icons for printing and window management in the top right corner.

Map Production Pro tools

The Frame Style and Frame Size are set for the DFIRM panel and cannot be modified.

If applicable, you can add the initial countywide date to the legend.

View, add, or edit the base map note for the DFIRM panels.

Choose the date description that should appear on the DFIRM.

GIS & Surveying to Support FEMA Map Modernization

GIS Tools for Map Mod Studies

USACE recently coordinated DFIRM Tools and JTX training

Training was conducted online

No charge for class

Instructor from FEMA MapMod Team

11 USACE District, and 1 Lab – 36 participants

**We are considering a second training session in mid- to late-
October 2005 ... Please see me after this session if you are
interested.**

GIS & Surveying to Support FEMA Map Modernization

QUESTIONS

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