GIS Tools Available Now to Support HH&C or Geospatial Integration of Hydrology & Hydraulics Tools for Multi-Purpose, Multi-Agency Decision Support

Timothy Pangburn, Joel Schlagel, Martha Bullock, Michael Smith, and Bryan Baker

2005 Tri-Service Infrastructure Systems Conference & Exhibition
HH&C Track
3 August 2005
Outline

- ArcGIS Applications
  - Hydrologic Processors
  - Reservoir Inundation Calculator
- CorpsViewWeb
- CorpsMap
- NAE CWMS Applications
- Missouri River Geospatial Decision Support Framework
- Future Viewers
Distributed Input for Hydrologic Models using Object-Oriented Tools
Object-Oriented Tools for Interpolation of Meteorological Parameters for Hydrologic Modeling
Reservoir Inundation Calculator

Background

- Developed in collaboration with the US Army Engineer District, Los Angeles
- ESRI ArcGIS extension
- Calculates inundation GIS layers and area and capacity values for reservoir water levels
Reservoir Inundation Calculator Interface
Reservoir Inundation Calculator
GIS Output Example
# Reservoir Inundation Calculator Report Output Example

## Great Day Reservoir, CA - Capacity Table

Survey date: July 15, 2004  
Elevation in feet, Capacity in acre-feet

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## Report Details

Reservoir name: Great Day Reservoir  
Reservoir state: CA  
Report created by: Tim Baldwin  
Organization: US Army Corps of Engineers  
Reservoir Inundation Calculator run date: September 29, 2004  
Vertical datum of elevation used in Calculations: NGVD29  
Survey date: July 15, 2004  
Survey description: LIDAR  
Survey source: Hard Working Surveyor Company
Output of ArcGIS Inundation Calculator visualized with CorpsView and integration with CWMS Real-time Conditions
A Database Driven Remote Sensing & GIS Architecture for Basin-Wide Studies

USACE Enterprise GIS Architecture

1. USACE Enterprise GIS Architecture
2. Other Geospatial Data to be included in CorpsMap
3. ArcIMS Access to CorpsMap
4. Partner & Public Access to CorpsMap

ArcIMS & ArcGIS Services for CorpsMap (API)

CorpsMap Geodatabase
ArcSDE

CorpsMap Base Data
(GDT, NHD, NWI, ...)

Other Corps AIS 1..n
(ORM, FUDS, ...)

Web Application

ArcIMS

ArcGIS

OWS & WFS Services

OGC

Partner & Public Access To CorpsMap

Geo-One Stop Presence

Other Geodata Sources

(NIMA, NASA, USGS, I3, ...)

District & Division EGIS Databases

Other Geodata Sources
(NIMA, NASA, USGS, I3, ...)

Geo-One

Stop Presence

WMS & WFS Services

ArcIMS Services

ArcIMS & ArcGIS Services for CorpsMap (API)
CorpsMap Portal

Map Browser
Browse USACE spatial data.

IENC Map Browser
Browse Inland Electronic Navigational Charting (IENC) data.

Find
Find NID dams, Corps projects, counties, GNIS places, and other locations by name.

Data Catalog
Get information on the data used in CorpsMap.
CorpsMap Map Browser
Real-time and Historical CWMS Data Access

Birch Hill Dam, Millers River

- Birch Hill Dam Home Page
- Real Time Graphs
  - Hydrologic Data
  - Air Temp and Precip. Data
- Real Time Tabular Data
- USGS Data for the Birch Hill Dam, Millers River

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Report generated July 29, 2005 10:40 am

Maximum 24 Hr Drawdown Rate (5 feet/day): 59 cfs + Inflw. (chts) = cfs

Rating Curve Gate1  Project Spec. Data  Project Photos
Historical CWMS Data Plotting
Gage Management Utility – Maintenance History for Every Site
Missouri River Fish and Wildlife Recovery Plan

How reach locations were decided upon, model used, timeframe for data, update frequency, and all other summary information.

Model Calculations

Select a Reach: Bakers Bend
Select a Flow Rate: 50,000 cfs

Calculate Total Area Where Depth falls within 5-10 ft, Velocity falls within 2 ft/sec.

Result: 34.12 acres
“Transforms The Web:”
RS/GIS Absorbs
McAlpine Cofferdam Accident on Mar 31, 2005
NAE CWMS Stations Mapped via Google Earth
Detail View of NAE CWMS Gage on Google Earth
Whittier Narrows Visualization at Higher Stage Levels
Comments/Questions?