MDE Field Data Collection
Tool utilized for Limited Detailed Modeling

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AECOM Water – Watershed Concepts
Overview

• Maryland floodplain mapping update
• MDE Field Data Collection Tool
  – Reason for development
  – Implementation and development
  – Data Collection Process
  – Future possibilities

• Limited Detailed Study (Enhanced Approximate)
  – Review of FEMA study types
  – Link between MDE data collection tool and LDS
  – LDS approach
  – DFIRM Integration
Maryland Floodplain Mapping Update

- FEMA funded 13 MD counties to be updated with digital flood insurance rate maps
- MDE as the CTP recognized several opportunities:
  - Leverage new LIDAR dataset for the state
  - New hydrology by University of Maryland
  - Select the USACE for engineering support
  - Utilize Maryland Environmental Services for field data collection

- Key dataset was missing
  - Culvert crossings!
MDE Field Data Collection Tool

- **Reasons for development**
  - In need of structure survey data for modeling
  - Field data collection is expensive
  - Limited budget

- **Implementation and development**
  - Data to be georeferenced (ArcPad)
  - Data in standard format
  - Data intelligent enough for multiple applications
  - Direct link to photos, sketches, and notes
  - Visual Basics Programming by MES
Field Data Collection Process

Bridge # AA09130894-1

deck from downstream

deck from upstream

N 35° 59.540' W 076° 30.481'
09/13/2006 9:58:11 AM

MDE - Bridge Inspection

Bridge # FQ0126066B

11:51:09 AM

MDE - Bridge Inspection

N 35° 59.540' W 076° 30.481'
09/13/2006 9:58:11 AM

MDE - Bridge Inspection

Bridge # FQ0126066B

11:51:09 AM

MDE - Bridge Inspection
Import of Field Data into ArcMap

Export Form from Arc/Pad

Result: Shapefile Database in Arc/Map
Field Data in ArcMap
Field Data in ArcMap Cont.
Field pictures (Auto upload)
State\County road & bridge plans

Microsoft Excel - 31990005A.xls

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AS BUILT
MAR 11 1981

State of Maryland
Department of Transportation
State Highway Administration

Riprap Inlet & Outlet Ditch
Scour Reports (reduced data entry)

CALVERT COUNTY
DEPARTMENT OF PUBLIC WORKS

CALVERT COUNTY
ESTABLISHED 1654

2006 BRIDGE INSPECTION REPORT

BRIDGE NO. C-0005
DALRYMPLE ROAD OVER
Reference information
Digital sketch tool
Future Opportunity for Collection Tool

- .NET development
- LiDAR Integration (3D)
- Integrate Permit and Field Data w/ Models
- Multiple Users – GIS Tool (MDE)
- GIS Hydro (Inventory tool for Models)
- Web access (Likely) / GeoDatabase
- Wetland Assessment Tools (at MDE)
FEMA Study Types - LDS

- FEMA Study Types
  - Detailed Study
    - 1%, 0.2%, FW
  - Approximate Zone A
  - Redelineation

- FEMA Limited Detailed Modeling (Enhanced approximate)
  - Limited structure survey
  - No cross section survey (taken from terrain)
  - 1% annual chance flood hazard delineated
    - placement of BFEs and XS on DFIRM possible
# General Survey Requirements for LDS

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<th>LDS Requirement</th>
<th>MDE Survey tool</th>
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<td>Measurements</td>
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![Survey Images]
Collected Information

- TOR – Top of Road elevation
- Hydraulic width, Pier and Deck dimensions
- Culvert size, length and material
- Channel Measurements
  - Taken at upstream face of the structure
    - Top width
    - Bottom width
    - Channel bank elevations
    - invert
Graphics

[Diagram showing various measurements and relationships for channel and road design, including top width, deck thickness, hydraulic width, and channel elevation.]
Utilization of survey data for LDS

- Survey data gets imported into Open Inventory Module of WISE
- Stored in database format and can be edited and blended with terrain data
- Export to txt format for HEC RAS import
- Modeling performed in HEC RAS
- Boundary delineation performed within WISE
  - GeoRAS
Survey data for in HEC RAS
DFIRM Production

- Merging of boundary data
- Base data prep
- DFIRM DB creation (GIS)
- Panel border creation
- Annotation
Questions?