Environmental Health Field Mapping Application

UP GIS USER GROUP

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Quick Bios

- Chris Cantrell
  - BS, MS Geography
  - 15 + years experience in local govt. GIS
  - GIS Coordinator, Midland County, 10 years
- Ken Curry, Amalgam
  - BS, MA Geography
  - 20 + years experience in GIS industry
  - Co-founded Amalgam in 2005

Presentation Overview

- Development Approach
- Current workflows and problems
  - Site research
  - Field mapping
- Solution
  - Technology
  - Demo

Development Approach

- Collaboration
  - Environmental Health
    - Midland, Bay, Saginaw County & Mid-Michigan Health Departments
  - GIS
    - Midland, Bay and Saginaw County GIS Departments, and Gratiot GIS Authority
  - Private Sector
    - Amalgam

Development Approach

- Meetings over a year to discuss problems and identify potential solutions
  - Expertise and input from Environmental Health and GIS communities
  - Evaluate problems and solutions from multiple perspectives
  - Outcome - identified common problems, prioritized them and defined solution framework

Current Workflow

- EH staff workflows include
  - Site research
  - Field visits/data collection

Current Workflow

- Research
  - Visit multiple web sources for maps and records
    - Well Logic, Logs, Groundwater, UST/LUST, Oil/Gas, Water Quality, Land Use, Soils, BS&A, etc.
  - Many local maps/records on paper and used as local sources for research

Current Workflow

- Research Problems
  - Digital source data can’t be viewed in a single mapping system
  - Multiple paper records introduce research inefficiencies
  - Lacking process/models to digitize and geo-enable paper records
  - Limited to no integration with GIS or existing local GIS data (parcels, roads, imagery, hydro, etc.)

Current Workflow

- Field
  - Field measurements conducted by hand
  - Mapping conducted in paper format
  - Many paper forms still used to capture information about water/septic systems
  - Information from paper forms is often re-entered in a digital format at office

Current Workflow

- Field Problems
  - Mapping process is inefficient
  - Paper field maps have limited value
    - Difficult to use with other digital or paper data
  - Duplicative data entry into digital format at office
  - Little automation to reduce keyed data entry errors
  - No integration with GIS

Solution

- Develop an application that:
  - Creates a single access point for research maps and information
  - Provides digital field mapping capabilities
  - Uses digital forms to capture water and septic system information
  - Establishes GIS framework to manage field captured data and capabilities for future paper to digital conversion
  - Leverages technology so application can be used without onsite GIS or GIS staff at local level

Technology

- Web Application
  - Responsive design for desktop and mobile platforms
  - Cost effective development compared to native or mashup of field collection tech
- Works without data connection
  - Map caching for work areas
- Consumes map services rather than duplicating resources

Application Demo

Future

- Evaluate potential to integrate with existing permitting solutions
- Identify where reporting can be automated and develop solutions
- Expand mapping capabilities to other EH use cases
- Conduct pilots to convert paper maps/records to digital GIS format

Questions

Thank you for your time!