Improving Flash Flood Response with GIS Mobile Applications

GREG BROWN, GISP, CPM
GIS MANAGER
The Problems

- Flash Flood Alley
- Four water channels prone to flooding
- Communication chain
- Legacy map application
- Redundant mapping efforts
- No data redundancy for map features
- No tracking mechanism
- No public input (Crowdsourcing)
- No archiving after the event
- No predictability (Flood Inundation)
- No Common Operating Picture (COP)
- Response plan without GIS support
Communication Problems

- Failures resulted in road closures not being mapped
- Information chain of when the barricade went up in the field to when GIS was notified failed repeatedly
- City Administration and City Council frustration

Barricade Goes Up

Call Dispatch

Dispatch Emails EOC

EOC Emails GIS

GIS Updates Map
Legacy App Problems

- Not device agnostic
- Instable application structure
- Redundant mapping effort
- No redundancy for map updates
- No method for archiving
The Solution

- Application and workflow redesign
- Proactive approach
- Reduce communication chain
- New road closure web map application
- Redundancy for data entry
- Dashboard integration
- Report generation
Map Known Closures

- “Necessity is the mother of invention”
- Legacy workflow mapped flooding locations for every event
- New workflow to expedite mapping deliverables
- During the event, only change the status of pre-mapped locations
Workforce for Road Closures (Dispatcher)
Workforce for Road Closures
(Mobile Worker)

- Task assignments are received via iPhone app
- Changes to the assignment are seen immediately by Dispatcher
Collector for ArcGIS

- Workforce launches Collector Damage Assessment App
- Quick method for changing the status of closures
- Requires no searching for locations
- Eliminates crews reporting to Dispatch
- Valuable in cases where street signs have washed away and/or user is not local
- Utilized by Streets, Police, Parks
Non-Map App for Updates

- Rapid, intuitive way to search and change status of pre-existing closures
- Device agnostic
- Immediate updates to the map
- Easy for non-mapping staff
ArcGIS Desktop for Updates
ArcGIS Pro for Updates
Generates a report from ArcMap on demand to service Admin requests for updates

References the feature class that serves out the REST service of the web application
Crowdsourcing Road Closures

- Device agnostic web application for public consumption
- Public can crowdsource to inform the OEM staff of:
  - Debris blocking the road
  - Add road barricades
  - Remove road barricades
Road Closure Public Viewer

This site provides information regarding the status of the roads inside the City of New Braunfels, specifically if they are open or closed due to construction, planned events, public safety activity, etc. Simply click at the base of the road block symbol to view descriptive information about the location. You can zoom into an area to get a more detailed map of the closure by using the plus or minus buttons located at the upper left corner of the map display. If you are using a tablet or smartphone then you can use your fingers spread or shrink motion.
Road Closure Public Viewer

Legend
Map Layers
- Road Blocks
- Road Closures
- Road Detours
- Low Water Barricades

About
City of New Braunfels
Road Closure Web Map
This site provides information regarding the status of the roads inside the City of New Braunfels, specifically if they are open or closed due to construction, planned events, public safety activity, etc.

Simply click at the base of the road block symbol to view descriptive information about the location. You can zoom into an area to get a more detailed map of the closure by using the plus or minus buttons located at the upper left corner of the map.

Road Blocks: Seguin Ave
The road closure at Seguin Ave at RR Tracks began on October 30, 2015 and is scheduled to end on October 30, 2015.

The road is closed due to Flooding.
Comments: Closed Due To Flooding
Is the road fully closed? Yes
The alternate route is .

Click the magnifying glass icon below to zoom to the road block.
Improving Flash Flood Response with GIS Mobile Applications

GREG BROWN, GISP, CPM
GIS MANAGER

City of New Braunfels