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ITS Product/Project Manager

**RWIS Implementation thru Multi-Agency Coordination**

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Presentation Outline

- What is Multi-Agency Coordination (MAC)
- Why Coordinate & How Does It Work?
- Successes
  - Kansas – Multi Agency Coordination
  - Arizona – Multi-Agency Task Force
- Challenges
- Considerations
Multi-Agency Coordination (MAC)

- What is MAC?

- MAC is the combination of personnel, facilities, equipment procedures and communications integrated into a common system.

- The successful MAC will provide timely and useful early warning weather information to transportation managers, law enforcement, emergency managers and travelers in order to ensure safe transportation in both normal and evacuation conditions for residents, commerce and visitors.
Why Coordinate?

- Maximize use of resources
  - Utilize available funding for the benefit of multiple agencies.
  - Utilize funding from one agency to benefit other agencies.
- Maximize benefit
  - “We are able to provide data to agencies that they might not otherwise be able to obtain.” Fred Weyermiller, AZFCD
  - “You can’t improve what you don’t measure.” Michael Ross, City of Overland Park, KS
- Realize common goals
  - Improve public/traffic safety
  - Understand regional weather
How to Coordinate…

- **IGA – Inter-Governmental Agreement**
  - A common method is to enter into Inter-Local Agreements (ILA) with one another.
    - Formal contract for services. One government agency agrees to provide a service to another government agency for an agreed price.
    - Joint service agreement. Two or more jurisdictions join forces to plan, finance and deliver a service within the boundaries of all participating jurisdictions.
    - Finally, agencies may enter into various types of service exchange arrangements under which participating jurisdictions agree to lend services to one another, generally without any payment being required. (i.e., Mutual Aid)
  - Authority
    - In the case of State of Washington The Interlocal Cooperation Act (Ch. 39.34 RCW) contains a broad authorization for any one or more public agencies to contract with any one or more other public agencies to perform any governmental activity or service which each agency is authorized by law to perform individually.
How to Coordinate...

- Memorandum of Understanding (MOU)
  - A less formal method of cooperating is via MOU.
    - A document describing a bilateral or multilateral agreement between parties. It expresses a convergence of will between the parties, indicating an intended common line of action.
    - The MOU is often used in cases where parties either do not imply a legal commitment or in situations where the parties cannot create a legally enforceable agreement.
  - Authority
    - One advantage of MOUs over more formal instruments is that they can often be put into effect without requiring legislative approval.
    - An MOU can be a legally binding document, but doesn’t have to be.
Pros and Cons of Interlocal Agreements

- **Advantages of Interlocal Agreements**
  - Increased efficiency can be attained by establishing optimum-size operating units.
  - Underutilized and expensive equipment, facilities and manpower can be shared. Seldom used or expensive facilities and equipment and specialized personnel may be better utilized.
  - A local government can obtain a service or a product which it cannot produce itself or can produce only at a prohibitively high cost.
  - Duplication of efforts may be eliminated and overall service efficiency increased.
  - Intergovernmental service contracts allow local governments to avoid start-up costs of purchasing new equipment or hiring staff to provide a particular service.

- **Limitations on Use of Interlocal Agreements**
  - Poorly drafted agreements which do not provide adequate definitions of expected service levels and responsibilities can cause friction between participating jurisdictions.
  - Smaller jurisdictions contracting for services from a larger jurisdiction may fear loss of control over service delivery. It may be difficult to distribute costs and services equitably among participating agencies.
  - Retirement, insurance, and other overhead costs may be difficult to compute and distribute to other agencies.
Successes

- Kansas City Area
  - City of Overland Park, KS
  - National Weather Service
  - Johnson County, KS
  - Kansas City, MO

- Share weather information
Data Sharing

● Johnson County, Overland Park & Kansas City own and operate their own equipment and share data with one another via FTP file transfer.

● FTP file transfer to NWS

● Unrestricted Public Web Access (www.stormwatch.com)
  - Struggle somewhat with providing information in a format useful to their public.

● Working on sharing data with Clarus System
  - Part of web redesign project.
Benefits Realized KS/MO

- Sharing creates a much more comprehensive system than any one of the agencies alone could provide.
- Public has benefited through the use of RWIS data by the snow and ice control operations, as well as for barricading of flooded low-lying roadways.
- University of Kansas now teaches urban hydrology…
  - Class assignments look at Weather Data, which has led to important observations about the nature of urban runoff and resulted in higher quality Stormwater designs.
  - The system has been added to the Stormwater Engineering curricula. Re-study of Johnson County FEMA FIRMS allowed each model to be calibrated with historical weather data.
Non-Intrusive Pavement Sensor & NTCIP MiniRWIS RPU

- Sensor provides air & surface temp, surface status and friction coefficient
- 1U RPU ties into Ethernet fiber traffic network
### Monthly Site History

#### Monthly History for: January 2010

**Site ID:** 100 - College & Quivira IceSight

<table>
<thead>
<tr>
<th>Day</th>
<th>100 Temperature</th>
<th>101 Pavement Temp</th>
<th>102 RWIS Road State</th>
<th>103 RWIS Friction</th>
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<td>Max</td>
<td>Min</td>
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<tr>
<td></td>
<td>Jan 4</td>
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#### Temperature

- Max: 58°C on Jan 27
- Min: 12°C on Jan 8
- Mean: 48°C on Jan 8

#### Pavement Temp

- Max: 31°C on Jan 2
- Min: -8°C on Jan 8
- Mean: 3°C on Jan 8

#### RWIS Road State

- Max: 9°C on Jan 4
- Min: 2°C on Jan 2
- Mean: 6°C on Jan 3

#### RWIS Friction

- Max: 99°C on Jan 5
- Min: 2°C on Jan 4
- Mean: 9°C on Jan 3

*Contact Us*
- Rain & Stream gauge in flood prone neighborhood
- Located on re-purchased land
Successes

- Arizona Flood Warning Multi-Agency Task Force (MATF)
  - Arizona Department of Water Resources (ADWR) – Central Sponsor
  - Arizona Department of Transportation (ADOT)
  - Arizona Game & Fish Department (AZGFD)
  - Arizona Flood Control District (AZFCD)
  - 7 County Flood Control Districts
  - Arizona Department of Emergency & Military Affairs
  - Salt River Project (SRP) – State Electric & Water Utilities
  - Clark County (NV) Flood Control District
  - Nevada Flood Control District
  - National Weather Service, Las Vegas, NV (NWS)
  - US Army Corps of Engineers
  - US Bureau of Reclamation
  - JE Fuller/ Hydrology & Geomorphology, Inc. (Consulting/Civil Engineering)
Data Sharing

- Import USGS data from gauges operating within Mohave County
- Share data with 2 NWS offices in real-time
- Share with ADWR via 3rd party software that pushes the data in 10 minute intervals
- ADOT collects data directly off air
- AZGFD is fed data via internet
- Clark & Yavapai County receive data via repeater feed to their respective networks
- SRP data warehouse is the most commonly used data share-point
- Public access to all data statewide is available at web-site (www.afws.org), and from various local agencies involved
Mohave County initiated an IGA with ADOT. ADOT funded purchase of a Base Station and gauging sites (Road Surface Status sensors, Air Temperature, Relative Humidity and Precipitation).

ADOT receives data off air on their own Base Station.

ADOT benefits by tapping into resources available from another agency, adding RWIS sites at a cost far lower than would have been possible otherwise.

Mohave County benefits by collecting rainfall information within their county that was funded by another entity.
Benefits Realized - Arizona

- An IGA with AZGFD allowed them to fund installation of 3 Rainfall & Water Level gauging sites.
- Gauges monitor water level in 3 man-made drinking water catchments for Bighorn Sheep.
- In arid Arizona climate, monitoring the Bighorn Sheep habitat is very critical for AZGFD.
- Low water alarms are sent by email to AZGFD when thresholds are met.

- Game & Fish capitalizes on an existing monitoring system to provide information important to their own mission. Mohave County is pleased to get additional Rainfall data into the regional network.
Benefits Realized - Arizona

- ADOT sites are located within highway ROW.
- AZGFD sites are in remote locations where permits already exist for placing on Federal land.
- AZGFD provides helicopter annually to Mohave County for maintenance access to a particularly remote site.
Administrative Activities

- Mohave and other Counties provide funding to ADWR to help manage the network.
- NWS, ADWR and counties meet every 2 months for coordination of information and projects, roundtable discussions & presentations.
  - “We used to get cookies too, but budget cuts have hurt us all.” Brian Iserman, JE Fuller Hydrology & Geomorphology, Inc.
ALERT System Information

AFWS Network Status
Development of the ALERT Flood Warning System
Historic Weather Events
Weather Cameras
Public Access
Administrative Access
Related Links
NWS Forecast Office - Las Vegas, Nevada
Arizona Flood Warning & Drought Monitoring
SRP Hydrologist Viewer
Colorado River Forecast Center
USGS Real-time Water Data for Arizona
Real-time Observation Monitor and Analysis Network
Weather Related Road Closure Information
Regional ALERT Systems
Yavapai County, Arizona
Maricopa County, Arizona
Pima County, Arizona
Clark County, Nevada

ALERT System Contacts
Waterways & Flood Warning Systems Supervision
Regional Flood Control District
Clark County, NV

Welcome to the Clark County Regional Flood Control District web site. The District was created in 1985 to develop a coordinated and comprehensive Master Plan to solve flooding problems, to regulate land use in flood hazard areas, to fund and coordinate the construction of flood control facilities, and to develop and contribute to the funding of a maintenance program for Master Plan flood control facilities.

Here you will find information about flood events around Clark County and the work that the District performs to improve the protection of life and property for existing residents, future residents, and visitors from the impacts of flooding. Visit the History of Flooding area to view historical information about rain and flooding or the Rainfall and Weather area to find up-to-the-minute readings from weather gauges around Clark County. To see if your property is in a 100-year flood zone use FloodZone, or to view drainage studies, current and proposed flood control facilities, and parcel information, take a look at FloodView Advanced.

If you would like to contact us about a flooding concern then click here: Contact Us

Forms, Links, and TV Schedule

Find us on Facebook to learn more about flood control

Flood Control Projects Out to Bid
Weather Related Road Closure Information

**Links**
- NWS Forecast
- Statewide Road Conditions
- Construction Projects & Road Work

**Map Legend**
- Location of Road Closure
- Weather Cam Image

**Urgent Road Information**

Road Closure -

No reported weather related road closures.

Last updated on May 10, 2018 @ 12:06 PM.
Public Access Weather Cameras

Upper Sacramento Wash Weather Camera
Last Updated by Bed. weymiller on Dec 24, 1999

View Public Access Weather Cameras in a larger map

Fred Weymiller
Flood Warning Systems Supervisor
Initial Challenges

- Differing Policies and Procedures
- Lack of previous interagency interaction
- Lack of interagency communications
- Different jargon
- Lack of resource information
- Lack of familiarity with other organizations
- Differing organizational structures
- Varying levels of agency participation
Ongoing Challenges

- Complex and confusing legal requirements
- Increasing response costs
- High property losses
- Public safety issues
- Poor public opinion of government
- Intense media driven public scrutiny
- Political and budgetary considerations
- Meta Data management is cumbersome
- BLM permitting for any gauge on federal land is difficult and time consuming
Getting Started

- Identify potential partners (i.e., DOT checks for existing weather networks in areas of interest)
- Identify and articulate common need
- Goal setting
- Agree to coordinate
- Roadmap
- Installation
- Operations
- Maintenance
- Regular planning & review meetings
RWIS Implementation thru Multi-Agency Coordination

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