

WALTER P MOORE

THE WATER IS RISING

SCALABLE, RELIABLE, AND RELEVANT INFORMATION
SUPPORTING FIRST RESPONDERS

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The Water Is Rising

Scalable, Reliable, and Relevant Information Supporting First Responders

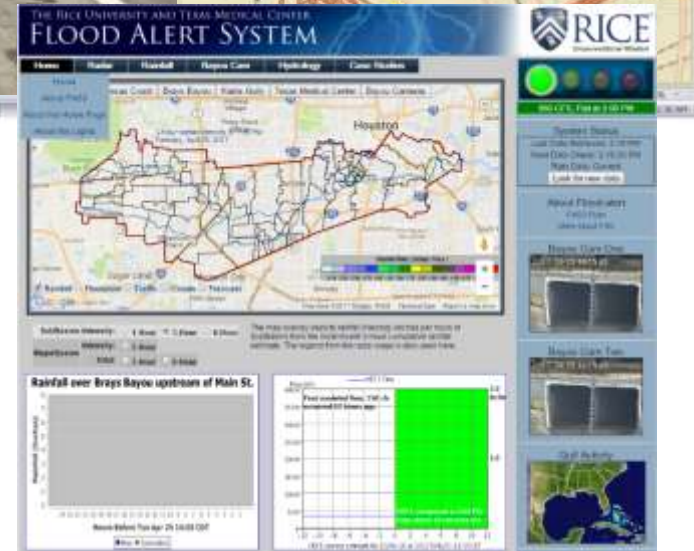
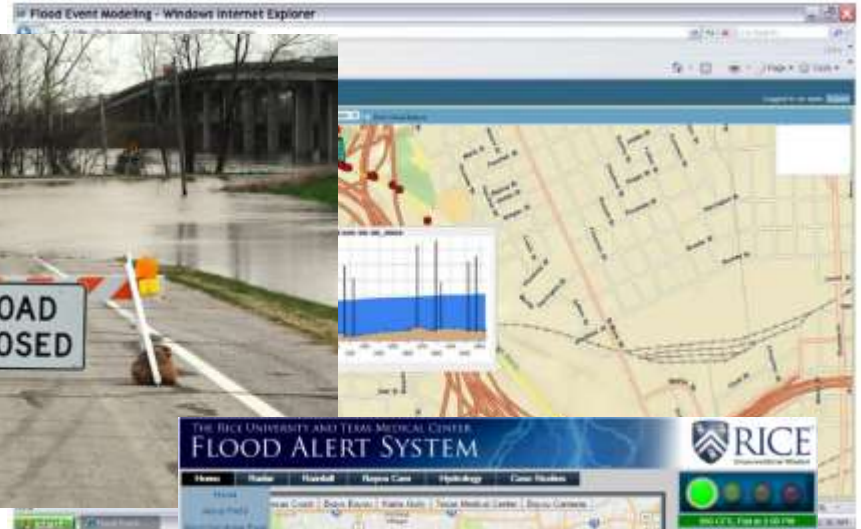
→ Presentation Overview

- Introduction
- Grand Prairie Project Overview
- Project Approach
- Next Steps



Grand Prairie Flood Warning System Introduction

→ What is a Flood Warning System?

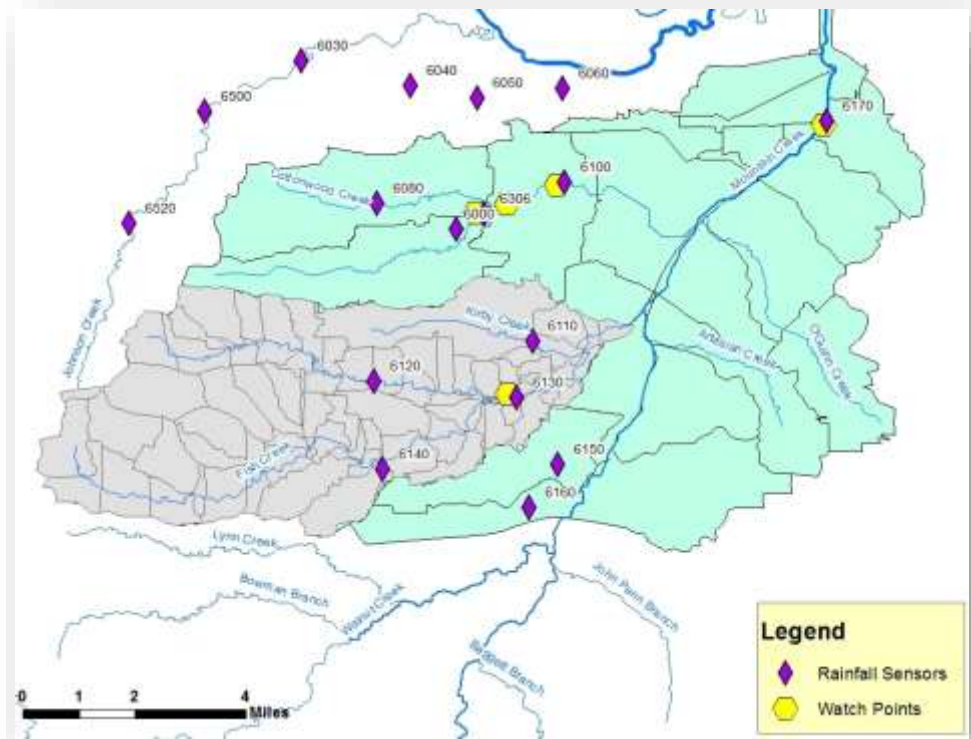


Grand Prairie Flood Warning System

Introduction

→ Each Community has unique risks and needs

- So you have all these gages, what can you do with them?
- System must convey risk to life and property
- Provide Decision Support



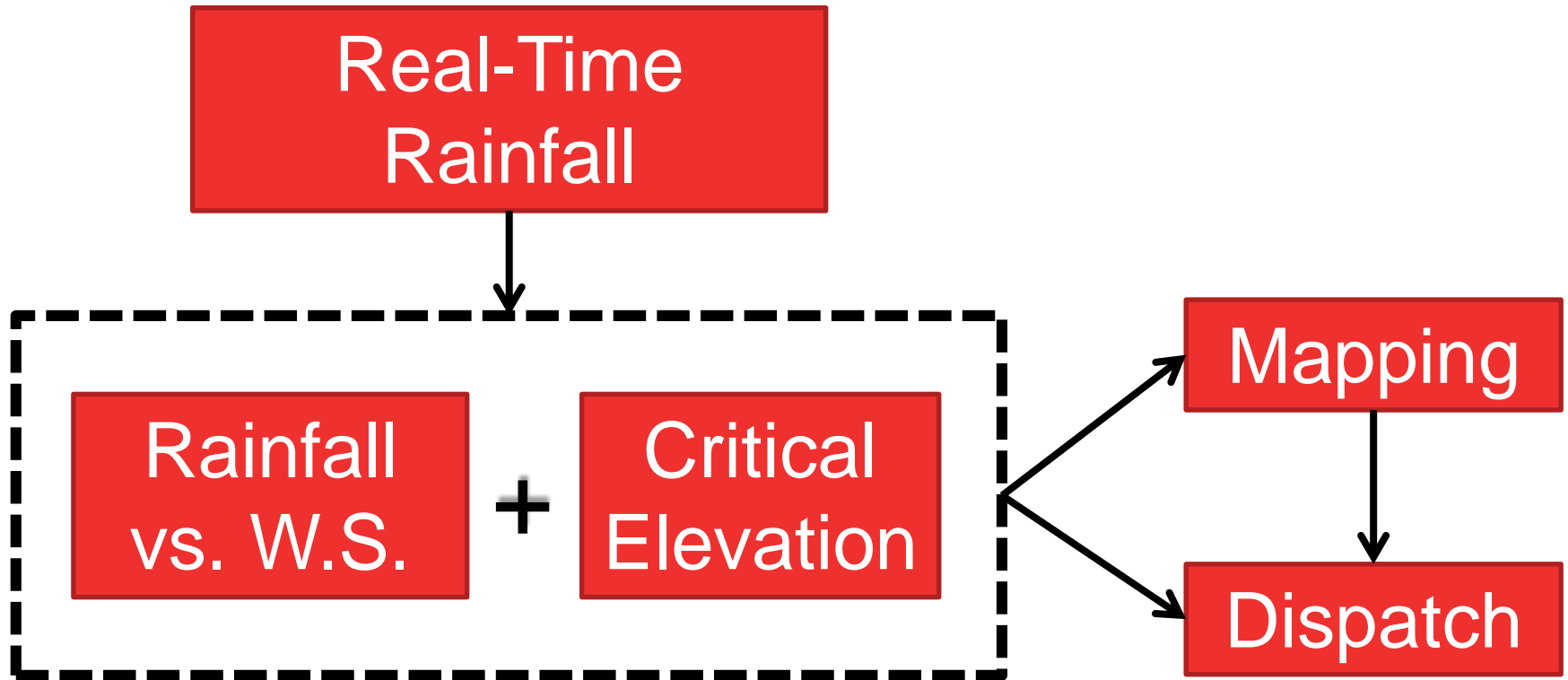
- *If you can't utilize and react to real time information, the only thing you provide is data to confirm what happened.*

Grand Prairie Flood Warning System

Project Overview

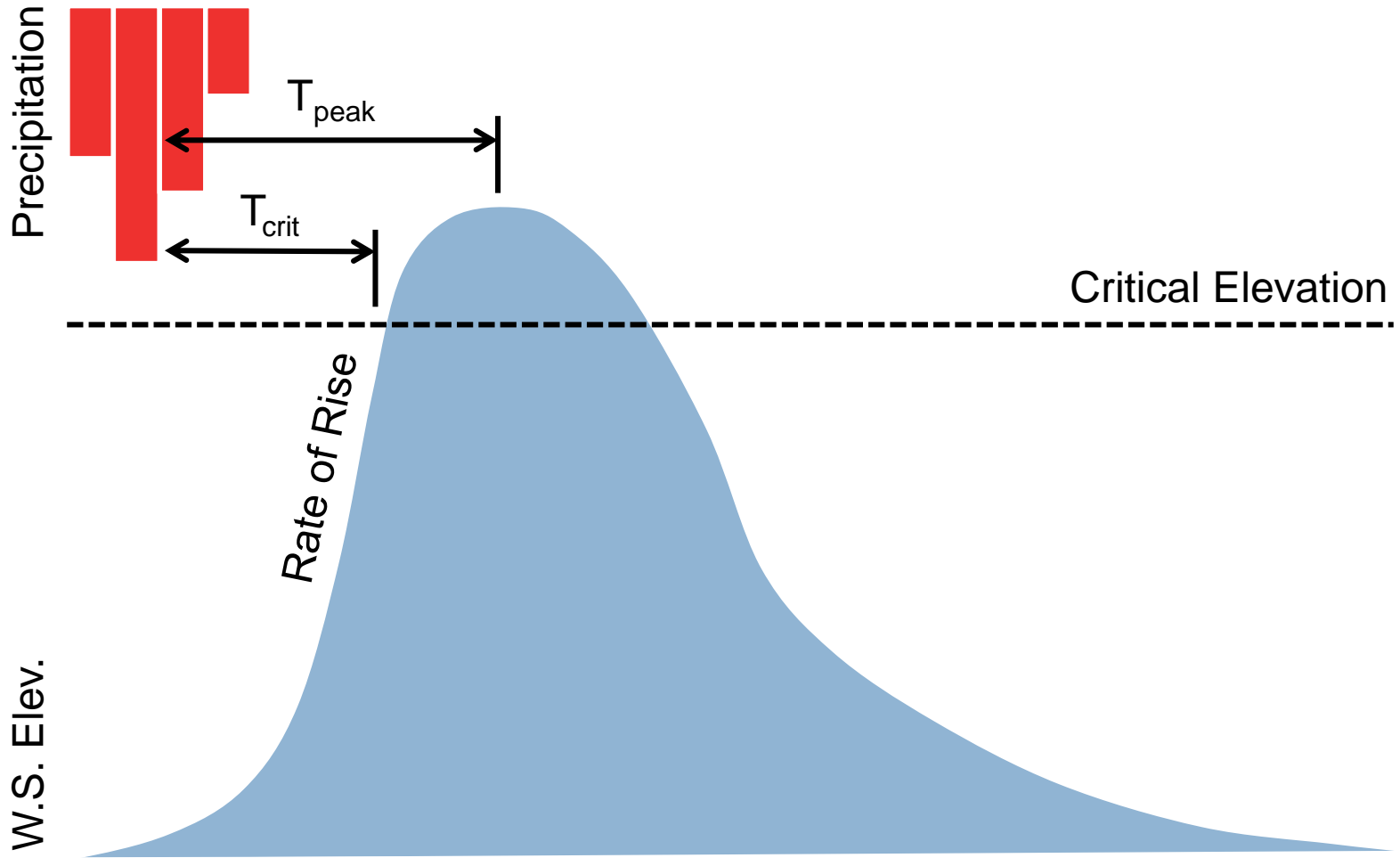
- City engaged Walter P Moore and UT Arlington
- Phased approach
- Objective: *To provide a flood warning / forecasting system that will permit City Emergency Managers to identify areas of inundation and allow the timely dispatch of first responders to these areas to close roads, evacuate, shelter-in-place, and/or begin rescue operations.*
- In other words, *if it rains X inches, how high will the water get here, and when?*

Grand Prairie Flood Warning System Project Overview



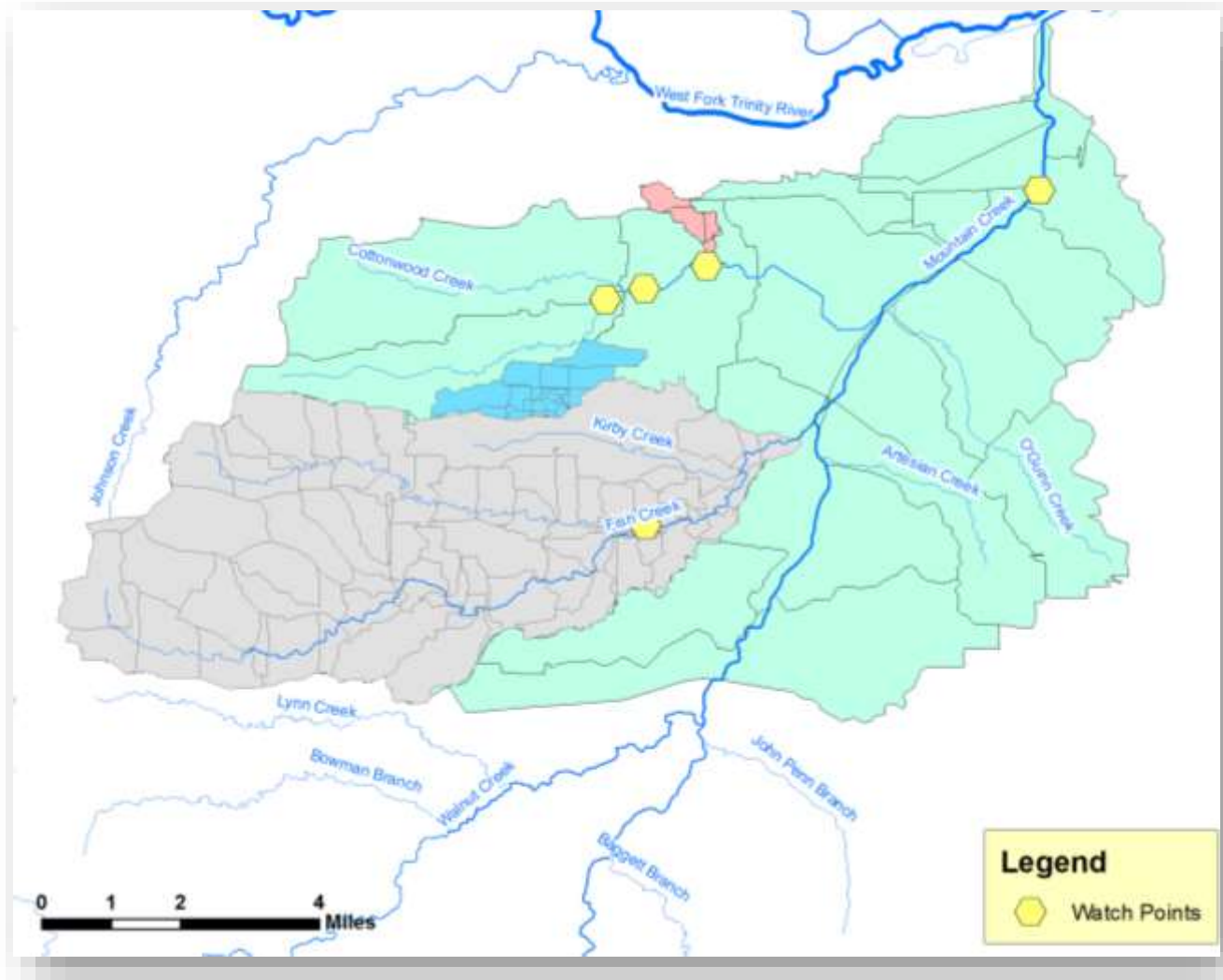
Grand Prairie Flood Warning System

Project Overview



Grand Prairie Flood Warning System Project Overview

→ Phase 1 – Five Pilot Watch Points



Grand Prairie Flood Warning System

Project Approach

→ Focus is *Implementation* and *Decision Support*

- Integrating with existing hardware & software
- System is a tool that does not replace human interaction
- Should enhance decision making and add lead time
- Must meet needs of both primary users and first responders
- Phased approach with scalable system architecture

Grand Prairie Flood Warning System

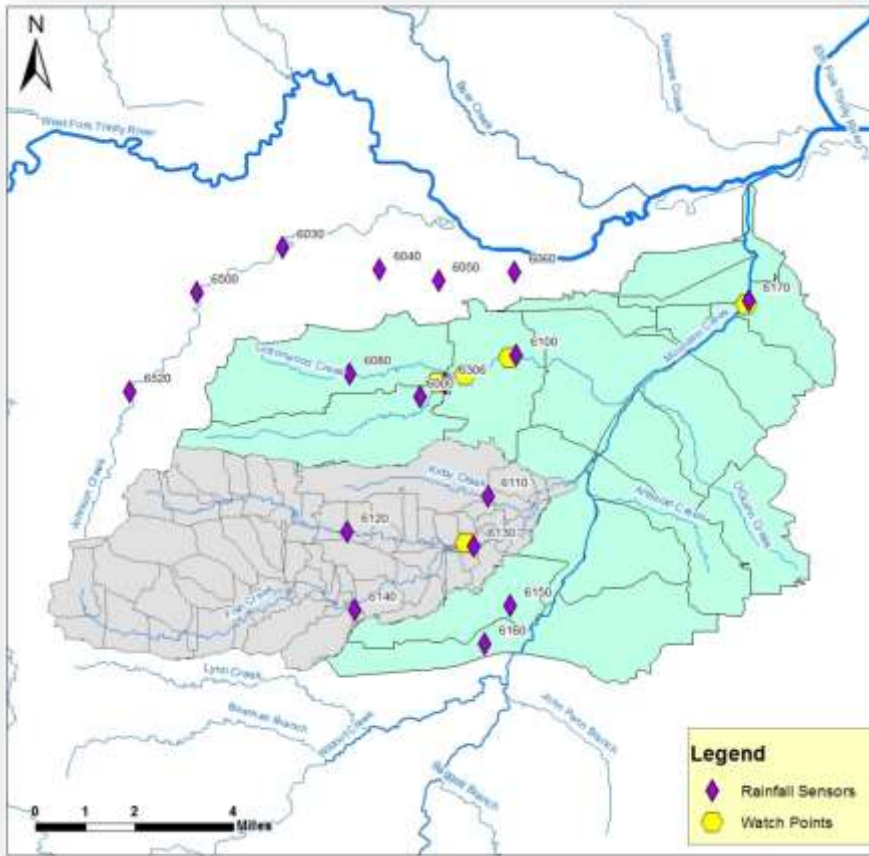
Project Approach

→ Initiated Project with Half-Day Workshop

- City Staff and Project Team
 - Stormwater Ops, Public Works/Streets, Fire, Police, Emergency Management
- Listening session
 - Understand current operations & protocols
 - What are needs of FWS users?
 - What are needs of first responders?
- Identified data needs & opportunities for integration with current systems
- Manage expectations

Grand Prairie Flood Warning System Project Approach

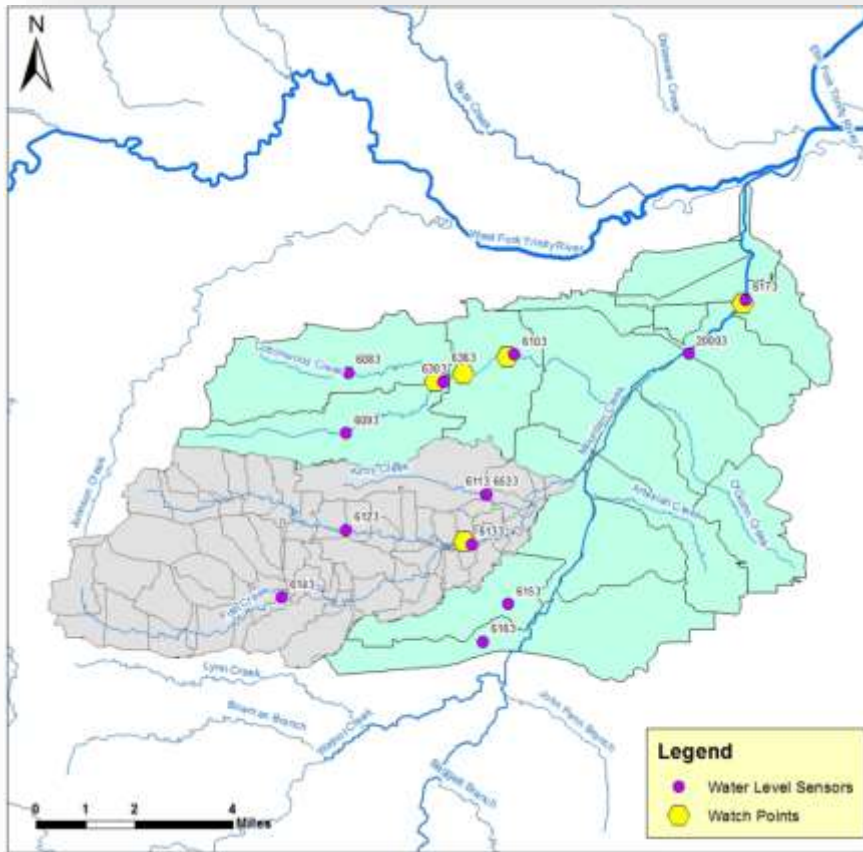
→ Rainfall Gage Availability



	Sensor Number	2010 Sep (Hermine)	2015 April - June	2015 Nov	Now
Fish Creek	6110	✓	✓	✓	✓
	6120	✓	✓	✓	✓
	6130	✗	✓	✓	✓
	6140	✓	✓	✓	✓
Cottonwood Creek	6000	✓	✓	✓	✓
	6080	✗	✓	✓	✓
	6100	✓	✓	✓	✓
	6306	✗	✓	✓	✓
Mountain Creek	6150	✓	✓	✓	✓
	6160	✓	✓	✓	✓
	6170	✓	✓	✓	✓
Outside watershed	6030	✗	✓	✓	✓
	6040	✗	✓	✓	✓
	6050	✗	✓	✓	✓
	6060	✗	✓	✓	✓
	6500	✗	✓	✓	✓
	6520	✗	✓	✓	✓

Grand Prairie Flood Warning System Project Approach

→ Water Level Sensor Availability

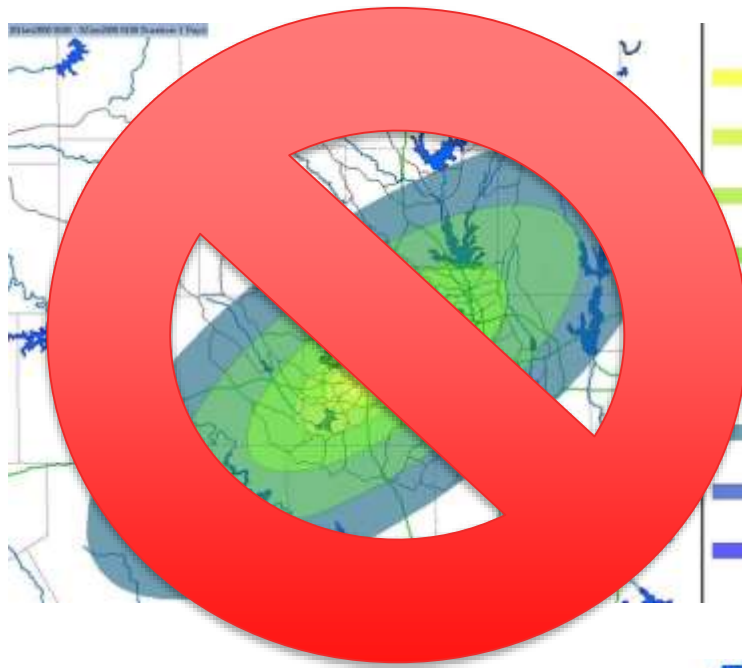


	Sensor Number	2010 Sep (Hermine)	2015 April - June	2015 Nov	Now
Fish Creek	6113/6533	✓	✓	✓	✓
	6123	✓	✓	✓	✓
	6133	✓	✓	✓	✓
	6143	✓	✓	✓	✓
Cottonwood Creek	6083	✓	✓	✓	✓
	6093	✓	✓	✓	✓
	6103	✗	✓	✓	✓
	6303	✓	✓	✓	✓
	6363	✗	✓	✓	✓
Mountain Creek	6173	✗	✓	✓	✓
	20003	✗	✓	✓	✓

Grand Prairie Flood Warning System Project Approach

→ Hydrologic & Hydrometeorologic Analysis

- Evaluating watershed response times
 - Various depths, durations, and frequencies
- Evaluating movement of storms over watersheds



Grand Prairie Flood Warning System

Project Approach

→ Hydraulic Analysis & Mapping

- Keep it simple! No need for real-time dynamic modeling.
- Based on existing steady state HEC-RAS models
- Developing stage vs. discharge rating curves at control points
- Developing staged inundation mapping
- Mapping will be called up by the system

Grand Prairie Flood Warning System Project Approach

→ Hydraulic Analysis & Mapping



Grand Prairie Flood Warning System Project Approach

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Grand Prairie Flood Warning System Project Approach

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Grand Prairie Flood Warning System Project Approach

→ Hydraulic Analysis & Mapping



Grand Prairie Flood Warning System Project Approach

→ Hydraulic Analysis & Mapping



Grand Prairie Flood Warning System

Project Approach

→ Flood Warning System Software Development

- Bring above components together
- Output data in various formats (GIS, database, web)
- Web-based mobile platform
- Initially restricted access to City personnel
- Will serve data directly to EM/dispatch systems
- System redundancy & security

→ Challenges and Next Steps

- City installing automated low water crossing gates
 - Cottonwood Creek @ Carrier Pkwy
 - No precedent, will work closely after install on system integration
- Timing
 - Difficult to get more than 2 hours lead time. Accurate forecasting is still a long way off
- Phase 1 scheduled to complete October 2017
- System will be tested internally prior to going “live”

→ Summary and Conclusions

- Flood Warning means different things to different communities
- Focus on *Integration* and *Decision Support*
- Keep system simple for reliability
- Design system to be flexible & scalable
- Output relevant information for users & first responders

Grand Prairie Flood Warning System

Scalable, Reliable, and Relevant Information Supporting First Responders

→ Any Questions?

