



# Faster Flood Insurance Map Updates

Lessons from Lubbock's Phased LOMR Approach

Texas Floodplain Management Association  
2025 Annual Conference, Denton  
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City of Lubbock

**Gavin Waldrop, EIT, CFM**  
Freese and Nichols, Inc.



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## Agenda

- Lubbock LOMR History
- Phased LOMR Approach
- ICPR/Stormwise Benefits and Limitations
- Addressing ICPR Limitations



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## Lubbock LOMR History

Lubbock County, Texas FIS Restudy  
for  
Federal Emergency Management Agency



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## History of FEMA Submittals in Lubbock



### Original FIS Study (1978)

- 1-ft topo mapping
- SCS TR-20 model
- Water Surface Profile (WSP)
- Study of entire County
- Oversimplified floodplain delineation



### FIS Restudy (1999)

- Update of original study using HEC-1, HEC-2, and HEC-RAS
- Did not include Playa System B
- Updated Playa Systems C-G with detailed modeling
- Digitized maps of other Playa Systems



### Recent ICPR Submittals

- LOMR 21-06-0664P (Mar/22) – used ICPR
- Basis for System B submittal
- Model consistency across the City
- Multiple 1D ICPR models already available (created by developers)

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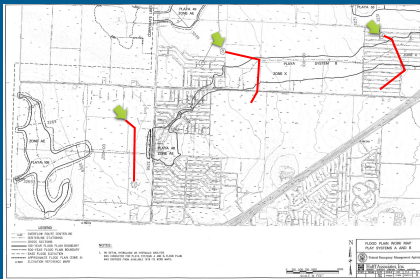
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## FEMA History in Lubbock (1978)




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## Phased LOMR Approach

### Why do we need to update the maps?

- ✓ Capture changes in physical conditions
- ✓ Revise **outdated** FEMA Flood Insurance Rate Maps to reflect flood reduction CIP improvements

### Strategy

- ✓ The City of Lubbock turned to a Phased LOMR approach

### Outcomes

- ✓ Faster map updates
- ✓ Remove properties that no longer face high flood risk
- ✓ Reduce flood insurance premiums for large areas




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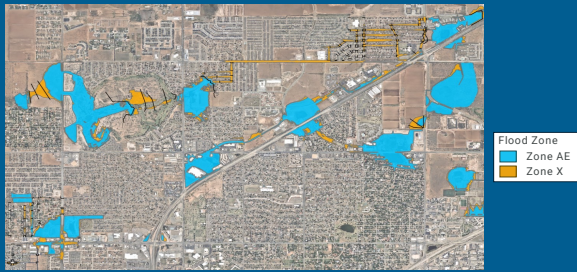
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### FEMA History in Lubbock (Proposed)



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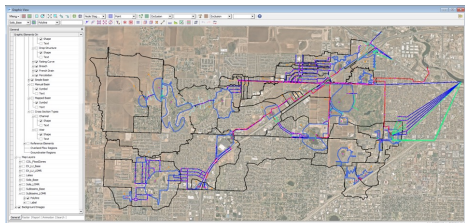
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### ICPR/Stormwise Benefits and Limitations



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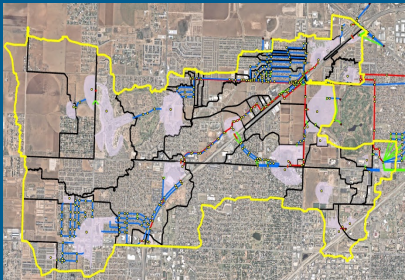
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### ICPR/Stormwise - Benefits

- Captures intricacies of Playa-to-Playa modeling
- Simulates interaction of surface and pipe flow
- Accounts for storage components of Playa systems



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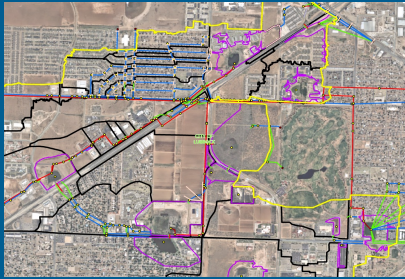
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## ICPR/Stormwise - Limitations

- Automatic mapping is not possible
- Results stored in tabular format for nodes and links
- Results are not produced spatially



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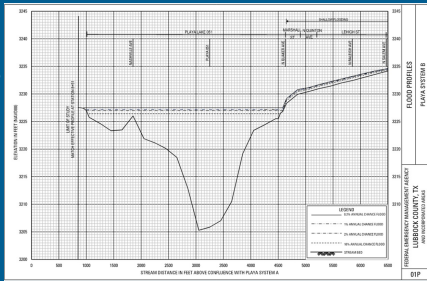
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## ICPR/Stormwise - Limitations

- FEMA Flood Profiles are challenging to develop
- Unable to use HEC-RASPlot for flood profiles



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## Addressing ICPR Limitations



# StormWise



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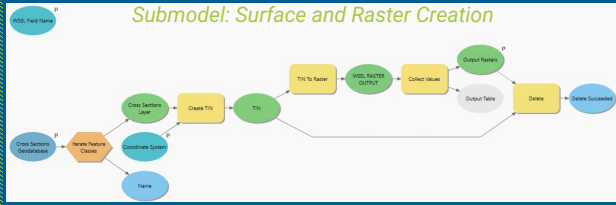
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## Innovation: GIS Mapping Tool



- ✓ Used ModelBuilder to automate 1D floodplain creation




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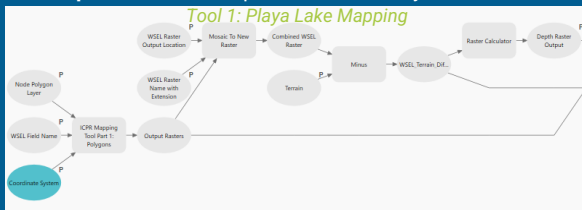
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## Innovation: GIS Mapping Tool

### Tool 1

- ✓ Input: Playa polygons (29), Model results, Terrain
- ✓ Output: WSEL and depth rasters for Playa lakes




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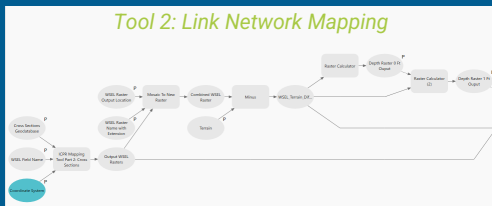
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## Innovation: GIS Mapping Tool

### Tool 2

- ✓ Input: Cross-sections (112), Model results, Terrain
- ✓ Output: WSEL and depth rasters for Cross-sections




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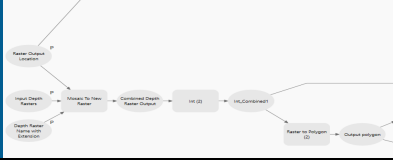
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### Innovation: GIS Mapping Tool

#### Tool 3

- ✓ **Input:** Tool 1 + Tool 2 output
- ✓ **Output:** Combined WSEL and depth rasters and floodplain polygons (4 FEMA Storm Events)

Tool 3: Raster Mosaicking and Mapping



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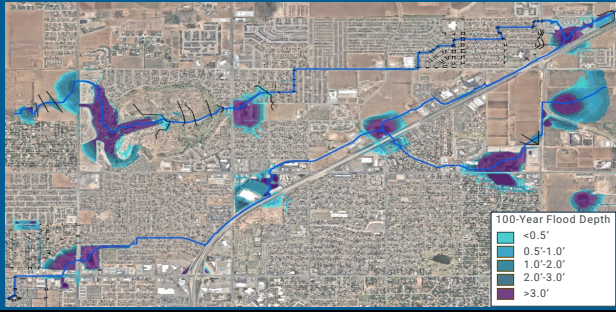
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### Innovation: GIS Mapping Tool-Raw Output



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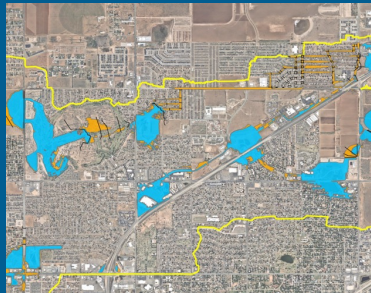
### Innovation: GIS Mapping Tool

#### Final Product

- ✓ 29 Playa Lake Polygons
- ✓ 112 Cross-section paths

#### Saves Time and Effort

- ✓ Manually – days
- ✓ Tool – hours
- ✓ Frees up time for other tasks



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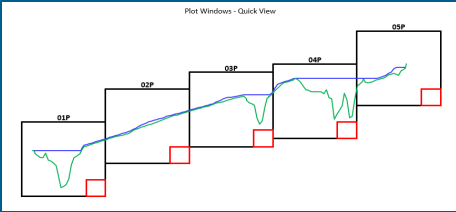
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## Innovation: Flood Profile Generation

- ✓ **Input:** Retrofitted existing flood profile tool with tabular inputs
- ✓ **Output:** Final flood profiles




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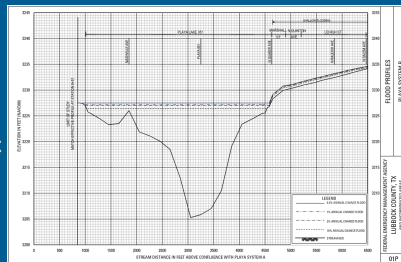
## Innovation: Flood Profile Generation

### Final Product

- ✓ 3 Playa Systems
- ✓ Over 12.5 miles of total stream length

### Saves Time and Effort

- ✓ Tool – hours
- ✓ Matches FEMA format




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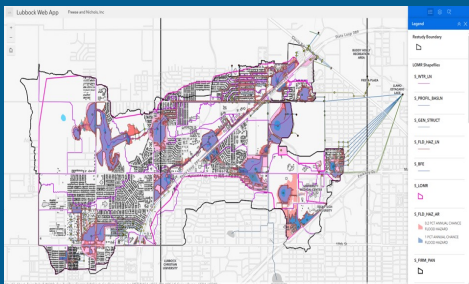
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## Innovation: ArcGIS Webmap

### Fully Interactive

- ✓ 19 Square Miles
- ✓ 20 Playa Lakes
- ✓ Model Components
- ✓ FEMA Shapefiles
- ✓ Floodplain Boundaries
- ✓ Building IDs




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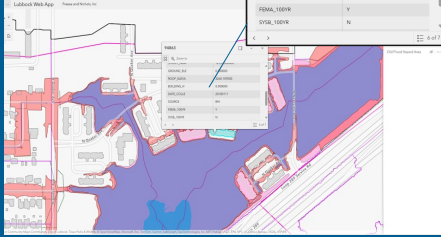
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## Innovation: ArcGIS Webmap

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## Key Takeaways

### ✓ Ease and Consistency

*Lubbock will be able to revise large outdated maps with Phased LOMR Approach*

### ✓ Leverages Completed Work

*Utilize existing 1D ICPR models to update FEMA flood maps*

### ✓ Saves Time and Effort

*Faster floodplain mapping, flood profile development, and FEMA review process*



Playa Lake 054 Intake Tower – Blue Sky Lateral, NWLDIP Phase 4

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## Questions?

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