Leveraging Local Funds to Provide Big Results in Bryan, TX

September 20, 2012
Outline

- City of Bryan Stormwater Master Plan
- FPP (Flood Protection Planning) Grant
- Still Creek Watershed Study
- SRL (Severe Repetitive Loss) Grant
Bryan SWMP

- Data collection
  - Completed studies and master plans
  - GIS data
  - Drainage complaints and work orders
  - Existing H&H models
  - City input
  - Field visits
**Project ID:** SC11  
**Project Name:** Lynndale Acres Ph 2 Flooding, Old Hearne and McHaney Street  
**Existing Study:** No  
**Panel #:** L09  
**Project Type:** Flooding  
**Date Identified:** 2010  
**Date Last Reported:** Study File  
**Council District:** 2  
**Original Cost Year:** 0  
**Drainage CIP:** 1

### Description

A study of the drainage area is needed to assess and propose improvements to reduce flooding in the area. As part of this study, alternatives should be recommended.

### Justification

The Lynndale Acres Ph 2 subdivision is developed with residential homes. Several homes along McHaney Street, Louisiana Street, Missouri Street, Old Hearne Road, and Wilkes Street have been identified as flooding in 2005, 2007, and 2009, according to the City of Bryan flooding and erosion issues database, and many have been named repetitive loss structures. Drainage from the northeast side of Old Hearne Road flows under the road to a drainage swale near 2914 Old Hearne Rd. The crossing is located near a school to the northwest. Due to undrained subsurface water, the road is flooded on the gravel road into the ditch and surrounding area.

### Funding Options:

<table>
<thead>
<tr>
<th>DesignConst</th>
<th>Type</th>
<th>Original Cost</th>
<th>Source</th>
<th>Year</th>
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<tr>
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<td>Stormwater</td>
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### Total

$643,000.00
# Bryan SWMP: Cost Estimates

## TABLE 1

**OPINION OF PROBABLE CONSTRUCTION COST**

**WOODLAND DRIVE CROSSING**

**CITY OF BRYAN: STORMWATER CIP**

<table>
<thead>
<tr>
<th>ACCOUNT NO.</th>
<th>ESTIMATOR</th>
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<tr>
<td>BRY10121</td>
<td>KMH</td>
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**NOTES:** OPINION OF PROBABLE COST BASED ON 2010 COSTS. IT IS ASSUMED THAT THE PROJECT WILL REQUIRE A NON-NOTIFICATION SECTION 404 NATIONWIDE PERMIT.
# Bryan SWMP: Pair-Wise

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<th>Criteria</th>
<th>Public Safety</th>
<th>Economic Impact</th>
<th>Project Timing</th>
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<td>Right-of-Way Availability</td>
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Bryan SWMP: Projects

Drainage Master Plan Update
Project: SC11 - Lynndale Acres Ph 2 Flooding: Old Hearne and McHaney Street

Project Type: Flooding
Date Identified: 2010
Date Last Reported:

Description:
A study of the drainage area is needed to assess and propose improvements to reduce flooding in the area. As part of this study, alternatives should be recommended.

Justification:
The Lynndale Acres Ph 2 subdivision is developed with residential homes. Several homes along McHaney Street, Louisiana Street, Missouri Street, Old Hearne Road, and Wilkes Street have been identified as flooding in 2005, 2007, and 2009, according to the City of Bryan flooding and erosion issues database, and many have been named repetitive loss structures. Drainage from the northeast side of Old Hearne Road flows under the road to a drainage swale near 2944 Old Hearne Road. The crossing is located near a school to the northeast. Due to undersized culverts, water is backed up into the streets and surrounding homes. According to the Thompson "Storm Water Modeling and Infrastructure Mapping Project" project number NBA1, the driveway culvert at 3408 Old Hearne Road is overtopping during the 10-year storm event.

Funding Options:

Funding Source Summary:

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<tr>
<th>Type</th>
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<th>2012</th>
<th>2013</th>
<th>2014</th>
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<td>Stormwater</td>
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<td>Total</td>
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Ranking Criteria

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<th>Life Safety</th>
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<table>
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<th>Structures Flooding</th>
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<th>Funding Source</th>
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</table>
Master Plan Overview

• Maintainable database to keep track of stormwater CIPs
• Consolidate information from multiple sources into a consistent format
• Based on technical criteria similar to W/WW master plan
• Updated every 5 years
Outline

1. City of Bryan Stormwater Master Plan
2. FPP (Flood Protection Planning) Grant
3. Still Creek Watershed Study
4. SRL (Severe Repetitive Loss) Grant
FPP Grant Overview

- Texas Water Development Board funding
- Projects: watershed studies only
- 50% Local / 50% State
- Requirements
  - Flood insurance
  - HMAP is **NOT** required
- Available annually
FPP Grant

- Call for applications in November 2009
- Submitted grant application in January 2010
- Received grant in March 2010
  - Requested $131,330
  - Received $86,203*
- Scope was adjusted to match lower fee
- Final contract amount $183,529
- Project Started in December 2010

* Application tied for 3rd place. Funds were split between the 3rd place applicants.
Outline

City of Bryan Stormwater Master Plan

FPP (Flood Protection Planning) Grant

Still Creek Watershed Study

SRL (Severe Repetitive Loss) Grant
Still Creek Watershed

- Road overtopping at several locations in watershed
- Repetitive flooding of homes in Lynndale Acres
Study Overview

Still Creek Watershed

- **Road overtopping at several locations in watershed**
- Repetitive flooding of homes in Lynndale Acres
Study Overview

Still Creek Watershed

- Road overtopping at several locations in the watershed
- Repetitive flooding of homes in Lynndale Acres
Flooding History

• 29 flood insurance claims in the past 32 years
• Recent storm events
  – May 1, 2007: 2-year storm floods 14 homes
  – April 25, 2009: 1-year storm floods 12 homes
• 9 public comment forms received
  – “Entire yard, ditches, and street have flooded from Old Hearne Rd to Bonham Park”
  – “Water runs through side yards and backyard”
  – “Whole yard 18 inches deep”
Observed Flooding
Existing Conditions

- Two major causes of flooding
  - Channel has insufficient capacity
  - Inadequate infrastructure for large local drainage area
Existing Conditions

- Two major causes of flooding
  - Channel has insufficient capacity
  - Inadequate infrastructure for large local drainage area
Existing Conditions

- Two major causes of flooding
  - Channel has insufficient capacity
  - **Inadequate infrastructure for large local drainage area**
Existing Conditions
Existing Conditions
Existing Conditions

- Two major causes of flooding
  - Channel has insufficient capacity
  - Inadequate infrastructure for large local drainage area
Hydraulic Model
Observed Flooding
## Model Results

<table>
<thead>
<tr>
<th>Resident Comment</th>
<th>Model Results (2007 storm)</th>
<th>Model Results (2009 storm)</th>
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</thead>
<tbody>
<tr>
<td>Front, back yards flood; 15-20” twice</td>
<td>18” in yard</td>
<td>13” in yard</td>
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<tr>
<td>Sheds flooded 4-5” twice since 2006</td>
<td>6” at sheds</td>
<td>3” at sheds</td>
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<tr>
<td>Workshop has come within 2” of flooding once</td>
<td>Within 1” of workshop</td>
<td>Within 2’ of workshop</td>
</tr>
<tr>
<td>Yard and street floods 18”</td>
<td>18” in yard</td>
<td>12” in yard</td>
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</table>
Existing Conditions
Improvement Options

Goal: Flood damage reduction

Two-part solution required:
(1) Address insufficient channel capacity
(2) Address inadequate infrastructure for large local drainage area
• Approaches:
  – **Bigger pipes/channels:** Provide extra capacity (conveyance), move excess rainfall downstream
  – **Detention ponds:** Store excess rainfall upstream, release slowly into existing channel
  – **Buyouts:** Remove homes from flooding area
Recommended Improvements

- Detention ponds: $5.7 million
- Storm drain: $1.3 million
- New culverts: $436,500
Benefit-Cost Analysis

- FEMA BCA program

FEMA BCA program
– Federal standard for drainage projects
– "Benefits" = Reduction in expected damages, net present value
– Damages based on depth - damage curves
Benefit-Cost Analysis

• **Input**
  - Property information
  - Hydraulic results
  - GIS tool

• **Output**
  - Project benefits: $11.5 million (NPV)
  - Project cost: $7.78 million
  - **BCR:** 1.48
Outline

- City of Bryan Stormwater Master Plan
- FPP (Flood Protection Planning) Grant
- Still Creek Watershed Study
- SRL (Severe Repetitive Loss) Grant
SRL Grant Overview

• FEMA funding managed by TWDB

• Projects
  – Acquisition for demolition or relocation
  – Structure elevation
  – Mitigation reconstruction
  – Dry flood-proofing (historic structures)
  – Minor, localized flood reduction projects
SRL Grant Overview

• 10% Local / 90% Federal
• Requirements
  – Participation in NFIP with history of claims
  – FEMA-approved HMAP
  – Cost-beneficial
• Available annually
SRL Grant

- Call for applications in August 2011
- Grant submitted to TWDB October 2011
- TWDB submitted to FEMA December 2011
- Requested $7 million
- Received notice in Spring 2012 that project was not selected; no Texas projects selected
  - HMAP had expired and was being updated
- Planning to re-submit next cycle
Lesson Learned:

- FEMA no longer considers a HMAP to be valid if it has expired, even when the update to the plan is in progress.
- Be aware of impacts resulting from overlapping HMAP update process and grant applications.
Summary

- City-Wide Masterplan
- Watershed Study
- Design

- FPP Grant
- SRL Grant
Summary

- Total funding received to date: $86k
- Potential future funding: $7M
- Diligent planning put Bryan in the position to receive critical grant funding
Questions

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