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 Evaluation

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<th>Project Evaluation</th>
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<td>Street Flooding</td>
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<td>Structures Flooding</td>
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<td>Frequency of Flooding</td>
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### Project Cost

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**Total:** $643,000.00

### Funding Options

- **Right-of-Way Availability:** 10
- **Funding Source:** 0
- **Maintenance:** 10
- **Project Cost:** 6
- **Structures Flooding:** 10
- **Infrastructure Damage:** 10
- **Street Flooding:** 6
- **Life Safety:** 8

#### 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 Lyndale 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 underdrainage, excess water is backing up into the ditch and surrounding areas.
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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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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:
Drainage CIP Ranking: 1
Total Weighted Score: 1111
Existing Study: No
Council District: 2
Panel #: L09

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 254 Old Hearne Road. The crossing is located near a school to the northeast. Due to undersized culverts, water is backed up into the ditches 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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Ranking Criteria

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<td>Life Safety</td>
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<td>Street Flooding</td>
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<td>Infrastructure</td>
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<td>Damage</td>
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<td>Maintenance</td>
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<td>Structures</td>
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<td>Flooding</td>
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<tr>
<td>Funding Source</td>
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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
City of Bryan Stormwater Master Plan

FPP (Flood Protection Planning) Grant

Still Creek Watershed Study

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
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 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
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
Existing Conditions
Observed Flooding

Legend:
- STILL CREEK APPROX FLOODPLAIN
- 2007 FLOODED RESIDENCES
- 2009 FLOODED RESIDENCES
- STORM FLOW 2009
- FLOODED PROPERTIES
- CONTOURS MAJOR (10 ft)
- CONTOURS MINOR (2 ft)
- STREETS
- BCAD PARCELS
- BRYAN CITY LIMITS
- CREEKS
- COB BUILDING FOOTPRINTS
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<thead>
<tr>
<th>Resident Comment</th>
<th>Model Results (2007 storm)</th>
<th>Model Results (2009 storm)</th>
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<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>
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<tr>
<td>Workshop has come within 2” of flooding once</td>
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<tr>
<td>Yard and street floods 18”</td>
<td>18” in yard</td>
<td>12” in yard</td>
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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
Improvement Options

• 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

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

- FEMA BCA program
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
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

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Questions

Brett McCully, P.E.
979-209-5030
bmccully@bryantx.gov

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jgj@freese.com