SUGAR CREEK
How Ponding a Golf Course Can Benefit Everyone

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City of Sugar Land, Texas

City Background
- Located 20 miles SW of Houston
- Original Home of Imperial Sugar
- Incorporated in 1959
- Est. Pop. 2017 ~ about 87,000
  After annexation ~ about 117,000
City Background

• $12 Billion Property Tax Base
• Current FY Budget - $260 Million
• Planned 5-year CIP - $175 Million
  • ~$45 M on drainage
  • ~$3 M on airport
  • ~$6 M on municipal
  • ~$18 M on parks
  • ~$55 M on streets
  • ~$15 M on surface water
  • ~$4 M on traffic
  • ~$15 M on wastewater
  • ~$14 M on water

Sugar Land

Sugar Land in the News

NY Daily News
ABC Daily News
TIME
NBC
CBS
Sugar Land ISWMM

- ISWMM – Integrated storm water management model
- Used to identify problematic drainage areas
- Determine drainage projects to be include in the CIP

Purpose

To discuss how a golf course can provide great benefit to improving drainage in a neighborhood.

Presentation Agenda

- Background
- Preliminary engineering
- Public outreach
- Design modifications
- Construction
East Sugar Creek

- Industrial Area
- Residential Area
- Open Area/Golf Course
- Open Channel w/Arch Pipe
- Confluence with Sugar Creek
- Sugar Creek Siphon

Drainage Issues

- Excessive Ponding
  - > 3 feet in roadways
- Long Ponding durations
  - > 6 Hours
- Flooding cars
- Emergency access limited
- Topography
Hydraulic Analysis
• 1D/2D Hydraulic Model
• 780 Acres
• 200+ Inlets
• 48,000+ linear feet of storm drain
• Developed from survey
Proposed Improvements

• Overall Improvements
  • Inlet, lateral, main trunk replacement
  • Enclosing East Sugar Creek
  • New Outfalls
• Phased Approach
  • Need and Outfall Location
  • Presented to City Council and Residents
• City Updated the CIP

Phase 1

• Improve Longview Drive Drainage
• Streets, water, drainage
• Open channel through Golf Course
  • Cost effective
  • Golf course was in process of rebuilding the back nine
• City presented the open channel concept to residents and council

Ready for Design

• Open Channel Layout
• Drain 81 acres
• City engaged public feedback
• Marked out open channel layout for residents
Public Outreach

- City informed residents on various occasions
- Progress on City website
- Mailed fliers and delivered door hangers
- Held public meeting on the project site
- Held public meeting at the country club
- Held public meetings at City Hall
- Updated City Council
- Created renderings of proposed improvements

Longview Dr. and Country Club Blvd.
Public Outreach

Additional Concepts

- Explored additional alternatives with Golf Course Architect
- Current Option – Open Channel through Golf Course
  - Some residents opposed to option
  - Flooding depths in Longview are 1.8 ft. Durations over 0.5 feet are 3 hours.
  - Preliminary Cost - $14.9 to $16.4 million

- Option 1 – Longview/Broadmoor
  - Requires buyout and pipeline relocation
  - Longview flood depths are 1.6 ft. Durations over 0.5 feet are 2 hours.
  - Preliminary Cost - $15.6 to $19.7 million

- Option 2 – Dual Outfalls
  - Requires two buyouts and pipeline relocation
  - Longview flood depths are 1.4 ft. Durations over 0.5 feet are 2 hours.
  - Preliminary Cost - $15.0 to $18.1 million

- Option 3 – Lake/Swale/Pipe
  - Preferred by Council
  - Longview flood depths are 1.8 ft. Durations over 0.5 feet are 3.5 hours.
  - Preliminary Cost - $15.6 to $17.1 million

Revised Alternative

- Lake/Swale/Pipe Combination
  - Low flows in pipes
  - High flows into ponds
  - Presented to City Council
  - Presented to Public
  - Agreed to by Golf Course
Revised Alternative

Design
- Design of alternative
- Project split into two
  - Golf Course portion
  - Longview Drive improvements

Construction
- Golf course began in June 2016
  - $2.1 Million
- Longview began in September 2016
  - $5.1 Million