



City of League City, TX

300 West Walker
League City TX 77573

Meeting Minutes City Council

Tuesday, July 13, 2021

5:00 PM

Johnnie Arolfo Civic Center
400 West Walker Street

Council Work Session

The City Council of the City of League City, Texas, met in a work session in Johnnie Arolfo Civic Center at 400 West Walker Street on the above date at 5:00 p.m.

Mayor:

Pat Hallisey

City Council Members:

**Andy Mann
Hank Dugie
Larry Millican
John Bowen
Justin Hicks
Chad Tressler
Nick Long**

City Manager:

John Baumgartner

Assistant City Manager

Bo Bass

Assistant City Manager

Michael Kramm

City Attorney:

Nghiem Doan

City Secretary:

Diana M. Stapp

Chief of Police:

Gary Ratliff

Executive Director of Development Services

David Hoover

Executive Director of Finance/Project Management

Angie Steelman

Director of Engineering:

Christopher Sims

Interim Director of Finance:

Deborah Jordan

Director of Human Resources/Civil Service:

James Brumm

Director of Parks & Cultural Services:

Chien Wei

Director of Public Works:

Jody Hooks

1. CALL TO ORDER AND ROLL CALL OF MEMBERS

Mayor Pro Tem Dugie called the meeting to order at 5:01 p.m. and called the roll. All members of Council were present except Mayor Hallisey. Mr. Mann arrived at 5:13.

Absent 1 - Mayor Pat Hallisey

Present 7 - Mr. Andy Mann, Mr. Hank Dugie, Mr. Larry Millican, Mr. John Bowen, Mr. Justin Hicks, Mr. Chad Tressler and Mr. Nick Long

2. PRESENTATION REGARDING THE CITY-WIDE 2D DRAINAGE ANALYSIS

Christopher Sims, Director of Engineering, this study is funded through a hazard mitigation grant and supplemented with our GO Bond funds. It looks at 9 different watersheds within the city. Obviously, there are more watersheds that are being explored, and LJA will incorporate those in their final version. Tonight, we are just looking at the ones associated with their scope of work.

John Grounds with LJA Engineering gave the presentation:

Project Scope and Authorization

Funded by Texas Division of Emergency Management Hazard Mitigation Grant Program (DR-4322) Hurricane Harvey. Project limits: League City Limits, 9 Watersheds. Riverine only, no coastal.

Project goals: Define existing conditions for drainage infrastructure and identify future problems, evaluate severity of problems and potential solutions, develop a water shed improvement strategy for current and future infrastructure, create a watershed improvement strategy for current and future infrastructure, create a master drainage plan to document recommendations for required improvement projects, develop detailed cost and implementation information for immediate/future projects.

Outreach and Coordination

Public and stakeholder meetings: Bay Ridge, June 22, 2020; LCCDB, October 28, 2020; Bay Ridge Subdivision Phase 1A, December 2, 2020; Transportation and Infrastructure Committee Briefing, May 27, 2021; Final Public Meeting, June 29, 2021; Council Workshop, July 13, 2021.

Coordination: LCCDB bi-weekly meetings since August 2020. Clear Creek Watershed Steering Committee. FNI for Robinson Bayou, Newport-Landing Ditch, and Interurban Ditch Watersheds. DEC for Borden's Gully, Magnolia Bayou and West Dickinson Bayou Watersheds.

Studied Watersheds (slide)

Borden's Gully, Corum Ditch, Interurban Ditch, Jarbo Bayou, Landing Ditch, Magnolia Bayou, Prairie Estates, Robinson Bayou, West Dickinson Bayou.

Wetlands (slide) – Potential Tidal Wetlands, Potential Freshwater Wetlands, Potential Man-Made Natural Ponds, Potential Streams

Pipelines, Oil Wells, and Superfund Sites (slide)**Previous and Ongoing Studies**

- **Master Drainage Plan - Lockwood, Andrews & Newnam, Inc., April 2014**
- **Magnolia Bayou and Borden's Gully analysis of improvements to existing detention areas - Dannenbaum Engineering Inc., July 2018**
- **Preliminary Engineering Report, Landing, Rustic Oaks and Countryside Drainage – Huitt Zollars, May 2018**
- **Preliminary Engineering Report, Meadows Subdivision – Huitt Zollars, July 2018**
- **Oaks of Clear Creek post Harvey Analysis – Lockwood, Andrews & Newnam, Inc., August 2018, April 2014**
- **Preliminary Engineering Report, Hidden Oaks Drainage – Huitt Zollars, February 2018**
- **Magnolia Bayou and Borden's Gully – Dannenbaum Engineering, Inc., July 2018**
- **Analysis Summary Letter for W. Wilkins St., W. Saunders St., and W. Galveston St. – Dannenbaum Engineering, May 2020**
- **Bay Colony Area Detention Modifications – Halff Associates, Inc., September 2020**
- **Bay Ridge Subdivision Phase 4 Drainage Improvements – LJA Engineering, December 2020**

Bensons Bayou Detention Analysis - Lockwood, Andrews & Newnam, Inc., April 2021
Hydrologic and Hydraulic Modeling

NOAA Atlas 14 Precipitation. Analysis of 2-, 5-, 10-, 25-, 50-, 100-, and 500-year storms. Only studied open channels, bridges, culverts, detention ponds, and overland flow paths, underground storm sewer systems were not studied in detail. Hydrologic Methodology Basin Development Factor HEC-HMS version 4.5. Hydraulic Methodology HEC-RAS version 5.0.7, 2-dimensional rain-on-grid, 1-dimensional tributary models. Linked 1D-2D Tributary Models. Results presented are based on Atlas 14 100-year rainfall. (Note: Methodology coordinated with all studies in League City)

Proposed Structural Improvements

Detention Ponds - 4:1 side slope, 30' maintenance berms, offline, side spill weirs

Channel Widening - 4:1 side slope (TYP), limited top width to available ROW, avoid pipelines

Bridge Replacements - Low chord above 100-year WSEL, culvert replacements or

additional culverts with bridge, bridge widening

Corum Ditch:

Existing 100-YR - Channel improvements completed 2011 successfully increased service and reduced claims in upstream end. Determined that 36" trunkline is not sized to convey large events. Sheet flow is obstructed by high point in FM 518 profile. No inlets in lower Breckenridge Cove cul-de-sac

Proposed 100-YR – Storm Sewer Improvements 1. Channel Improvement 4 - no modeled but will provide subdivision improvements. Detention Pond 2 - 24.2 acre-feet of storage and 4.4 acres pond area. Detention Pond 5 - 2.4 acre-feet of storage and 2.2 acres pond area

Potential Water Surface Reductions: 100-YR (slide)

Interurban Ditch:

Existing 100-YR – Less than 5-yr level of service in channel near Patton and Patton Sec 2. No overland flow paths when storm sewer is exceeded in Patton subdivisions. 10-yr level of service in channel adjacent to Pecan Forest Sec 2

Proposed 100-YR – Storm Sewer Improvements 2. Channel Improvement 4 - 10-foot bottom widening, approximately 2000 linear feet, potential conflicts along western channel banks. Detention Pond 1 - 38.6 acre-feet of storage and 8.0 acres pond area. Detention Pond 5 - 10.9 acre-feet of storage and 2.6 acres pond area

Potential Waster Surface Reductions: 100-YR (slide)

Newport-Landing Ditch:

Existing 100-YR – Overtopping of ditch in upstream section. Shallow but extensive flooding occurs for 500-yr storm across Brittany Lakes Sec 4 and Sec 2. Less than 50-yr level of service downstream of League City Parkway. ROG shows universal inundation in Newport Sec 1 and Landing Sec 1, lack of a complete storm sewer system. Two eastbound and westbound structures at League City Parkway cause 1.3' headloss

Proposed 100-YR – Storm sewer improvements 12 & 14. Channel Improvements 6 - improved side slopes to 4:1, channel bench added with width of 10-17ft, and approximately 1400 linear feet. Detention Pond 2 - 2.8 acre-feet of storage and 1.0 acres pond area. Detention pond 3 - 7.0 acre-feet of storage and 1.7 acres pond area. Detention Pond 9 – 57.9 acre-feet of storage, 7.4 acres pond area. Detention Pond 13 – 112.9 acre-feet of storage, 28.7 acres pond area. Bridge Replacement 1 – add one 10'x10' RCB to existing two 10'x10' RCB.

Potential Water Surface Reductions: 100-YR (slide)**Robinson Bayou:**

Existing 100-YR – Bayou overtops banks at 25-yr flooding adjacent low elevation areas. Bayou is sensitive to tidal conditions, high tailwater causes overtopping at 2-yr event. ROG shows ponding at upstream end, Saint Charles St cul-de-sac has lack of overland flow path. Residences on Power St and Illinois Ave are lower in elevation than surrounding areas, flooding depths of approx. 1.5’.

Proposed 100-YR – Detention Pond 4 – wetland constraint, 60.1 acre-feet of storage, 6.7 acres of pond area. Detention Pond 5 – 63.5 acre-feet of storage, 8.0 acres of pond area. Detention Pond 9 – Wetland constraint, 19.9 acre-feet of storage, 3.8 acres of pond area. Detention Pond 12 – Potential well constraint, need in depth analysis, not modeled. Channel Improvement 7 – deepening of flowline by 2’, additional extreme event overflow swale, reported reduction of 2’ in Meadows Subdivision. Bridge Replacement 10 (FM 270) – increase span width by 30’. Bridge Replacement 11 (E Main) – increase span width by 40’, low chord raised 1’. Storm Sewer Improvement 1.

Potential Water Surface Reductions: 100-YR (slide)**Jarbo Bayou**

Existing 100-YR – Tailwater is affected by variety of factors that include surge, runoff, tides, location, and flow. High tailwater causes overtopping with all storm events. Homes impacted due to riverine are in neighborhoods Harbour Park, Meadow Bend, and Shore Village. ROG demonstrates ponding east of Columbia Memorial Pkwy. Culvert on South Shore Blvd has a headloss of 0.87 feet. Few homes and building impacted south of FM 2094.

Proposed 100-YR – three 8’x6’ RCP replaced with a bridge with a low chord elevation of 15.44’. Detention Pond 2 - Potential wetlands constraint. 129.4 acre-feet of storage. Detention Pond 3 - potential wetlands constraint. 145.8 acre-feet of storage. Project located in Kemah. Provides minimal benefit to League City, could be a co-sponsor. Storm Sewer Improvements 4.

Potential Water Surface Reductions: 100-YR, all detention ponds (slide)**Potential Water Surface Reductions: 100-YR, without Pond 3 in Kemah (slide)****Magnolia Bayou:**

Existing 100-YR – Upstream of the Bayou is largely undeveloped and has no overland flow paths. 10-year level of service near Bay Colony Parkside and Northpointe. ROG shows street ponding in Colony Parkside, Bay Colony Northpointe and Bay View at 2-yr storm.

Proposed 100 YR – Detention Pond 1 – 11.6 acre-feet of storage, 3.2 acres pond area. Detention Pond 2 – 33.6 acre-feet of storage, 6.8 acres pond area. Future upstream development should limit allowable discharges to capacity of downstream channels, this could eliminate needs for Ponds 1&2,

Potential Water Surface Reductions: 100-YR (slide)

Bordens Gully

Existing 100- Yr – Over 500 flood insurance claims in this area from Hurricane Harvey. Areas of major flooding from 1D include Dove Meadows, Bay Colony Pointe Sec 1 and 3, Centerfield Lakes in Bay Colony Sec 1 and 2. Southern portion of Dove Meadows exhibits flooding during 10-yr event, only area with rep loss. ROG shows inundations as soon as 2-yr for residences along Tallow Forrest and Mary Lane

Proposed 100-YR – Detention Pond 1 – 17.3 acre-feet of storage, 5.1 acres pond area. Detention Pond 2 – 33.7 acre-feet of storage, 8.8 acres pond area. Detention Pond 3 – 3.1 acre-feet of storage, 2.0 acres pond area. Detention Pond 4 – 3.1 acre-feet of storage, 2.0 acres pond area.

Potential Water Surface Reductions: 100-YR (slide)

West Dickinson Bayou

Existing 100-Yr – Watershed is largely undeveloped. Lack of routing causes universal ponding throughout area. Lack of routing causes universal ponding throughout area. Overflows occur in middle of straight-away first. Most homes are significantly raised to avoid water except in very large events.

Proposed 100-YR – Largely undeveloped. Future development will provide mitigation. Bridge Replacement, bridge of FM 517 and West Dickinson Bayou raised by 2’.

Potential Water Surface Reductions: 100-YR (slide)

Prairie Estates Ditch

Existing 100-YR – Water reaches homes beginning in the 2-yr frequency due to lack of capacity in Prairie Estates. Ponding only occurs in subdivision north of FM 517 due to channel having much smaller cross-sectional area. Subdivision only relies on roadside ditch, streets raised above homes, so runoff is routed towards housing. Topography slopes towards northwest corner so water is not routed to ditch and accumulates around homes. All undeveloped areas flood in ROG due to lack of routing.

Proposed 100-YR – Channel Improvements 3 & 5 – 4: 1-side slopes, 6’ bottom width, at least 5’ depth. Bridge Replacement, additional 8’x4’ box culvert. Detention Pond – 57.6

acre-feet of storage, 12.9 acres pond area. This project would benefit property located outside of the city limits and would provide an opportunity for partnership with Galveston County to reduce flooding within the Prairie Estates subdivision.

Potential Water Surface Reductions: 100 YR (slide)

Landing Subdivision

Proposed Improvements - Storm sewer will reroute flow towards the pond on the west side. 1,580 linear feet of storm sewer. 17 Type C1-inlets. 11 Type C-manholes.

Newport Subdivision

Proposed Improvements - 2,770 linear feet of storm sewer, 27 type C1-inlets, 15 type C-manholes.

Hidden Oaks Subdivision

Proposed Improvements - 2,156 linear feet of storm sewer, 1,810 linear feet of box pipe, 4 type E-inlets, 18 type C1-inlets, 9 manholes, a potential constraint includes a shared easement with an energy service provider.

Patton Subdivision

Proposed Improvements - 3,653 linear feet of storm sewer, 30 type C1-inlets, 19 type C-manholes, storm sewer will drain into the detention pond downstream of improvements.

Crestwood Subdivision

Proposed Improvements - 721 linear feet of storm sewer, 6 type C1-inlets, 6 type C-manholes, further downstream there is a pond that will help mitigate the storm sewer improvements.

Columbia Memorial Parkway

Proposed Improvements - Replacement of existing roadside ditches with; 3,192 linear feet of storm sewer, 24 type C1-inlets, 12 type C-manholes.

Cost Estimates:

Development of Unit Costs: collection of unit prices based on historical unit price data. City, TxDOT, Harris County, and HCFCD bid projects. No more than 3 years old.

Engineering Fees: preliminary engineering analysis, survey, Geotech, preliminary design, final design, construction inspection, 20%

Contingency: unforeseen problems, potential utility/environmental conflicts, labor rates escalate, 30%

Land Costs: estimated to be 180% of market value of vacant land as determined by Galveston County Appraisal District. Additional 80% includes appraisals, surveys, legal fees and other relocation costs.

Example Cost Estimate: Channel Improvement, Prairie Estates Ditch (South) (slide)

Summary of Channels, Bridges, and Ponds (slide)

Summary of estimated construction costs Improvements - \$120,416,053 total all projects:

Corum Ditch - \$9,138,574

Interurban Ditch – \$11,406,572

Newport Landing Ditch – \$18,855,139

Robinson Bayou - \$25,350,463

Jarbo Bayou - \$26,249,476

Magnolia Bayou - \$12,100,315

Bordens Gully - \$7,546,917

West Dickinson Bayou – \$41,673,863

Prairie Estates - \$8,094,735

Storm Sewer Cost Estimate Summary (slide)

Summary of Storm Sewer Costs - \$7,701,004 total all projects:

Corum Ditch - \$1,242,318

Interurban Ditch - \$2,152,304

Newport Landing Ditch - \$928,052

Jarbo Bayou - \$1,380,181

Robinson Bayou – \$497,470

Cost Benefit Analysis – only includes detention, channel and bridge improvements. Benefit is determined as a difference in flood damages from existing and proposed development. Damages based on depth damage curve from USACE. Finished flood elevations calculated to be 1 foot above ground elevation of building footprint. Inundation depth calculated for all frequencies for existing and proposed. Benefits annualized. Cost/Benefit calculated for each watershed.

Cost Benefit Summary Table – Benefit Cost Ratio by Watershed (slide)

Recommended Plan

Prioritize Recommended Projects

Storm sewer improvements (Corum Ditch, Interurban Ditch, Newport-Landing Ditch, Robinson Bayou, Jarbo Bayou)

Non-Structural Alternatives (Buyouts, Structural Elevation, Updates to Flood Damage Prevention Ordinance, Update Specifications for Drainage Standards)

Partnerships with Local, State, and Federal Agencies

Funding (Grants, Low Interest Loans from State, Ad-Valorem Taxes, Storm Water Utility, Drainage Impact Fees)

New Steps:

Finalize Plan with input from the City

Incorporate Public Comments into Report

Finalize Report and Develop Recommendations

3. PUBLIC COMMENTS

4. ADJOURNMENT

PAT HALLISEY
MAYOR

DIANA M. STAPP
CITY SECRETARY

(SEAL)

MINUTES APPROVED: July 27, 2021