June 20, 2017

Honorable County Judge
& Commissioners Court

SUBJECT: Recommendation that Commissioners Court acknowledge studies, projects, construction, and support activities as part of the District’s FY2017-18 Capital Improvement Program

Dear Court Members:

I am pleased to transmit the enclosed list of studies, projects, construction, and support activities proposed as part of the District’s FY2017-18 capital improvement program (CIP) for your consideration. The proposed program totals $60 million in accordance with the District’s budget that was adopted by Commissioners Court on February 14, 2017, and is fully funded on a cash basis. Detailed descriptions of the efforts included in the proposed FY2017-18 CIP are attached; budget highlights include:

- $25 million in new infrastructure construction
- $14 million allocated for property acquisitions needed for future projects
- $12 million in major infrastructure rehabilitation projects

Not included in the proposed FY2017-18 CIP budget is funding from other sources, such as the Corps of Engineers and the Federal Emergency Management Agency, as these are not guaranteed. However, the District has averaged $20 million per year over the last 5 years in the form of federal grants and reimbursements, which are used to leverage local funding to increase CIP activities. The District is pursuing infrastructure repair grants associated with the Tax Day Flood of 2016 from the Natural Resources Conservation Service, and the local match (25%) is included in the allocation for major infrastructure rehabilitation projects. Should more funds become available, regardless of source, the District has additional projects ready to advance.

Sincerely,

Russell A. Poppe, P.E.
Executive Director

RAP:yw
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<td>Floodway Right-of-Way Acquisition on Armand Bayou</td>
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<td>Channel Conveyance Improvements Along C106-03-00, Phase 3 of 3</td>
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<td>Brickhouse Gully Flood Risk Reduction Study</td>
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<td>Inwood Stormwater Detention Basin</td>
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<td>Cypress Creek Overflow Management Study</td>
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<td>K163-00-00-E001</td>
<td>Channel Conveyance Improvements Along K163-00-00</td>
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<td>Channel Conveyance Improvements Along L112-01-00</td>
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<td>L500-10-00-E001</td>
<td>Mueschke West Stormwater Detention Basin</td>
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<td>P100-00-00-E011</td>
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<td>P118-00-00-P005</td>
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<tr>
<td>P118-26-00-E001</td>
<td>P118-26 Flood Risk Reduction Preliminary Engineering Report</td>
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<tr>
<td>P133-00-00-Y003</td>
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<td>P500-06-00-E003</td>
<td>Lauder Road Stormwater Detention Basin</td>
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<tr>
<td>P518-10-00-E001</td>
<td>Hopper Road Stormwater Detention Basin</td>
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<tr>
<td>Q100-00-00-P002</td>
<td>Cedar Bayou Master Planning and Mitigation Evaluation</td>
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<tr>
<td>T501-01-00-W001</td>
<td>Mason Creek Stormwater Detention Basin Revegetation and Environmental Enhancements</td>
</tr>
<tr>
<td>U100-00-00-E008</td>
<td>Upper Langham Creek Frontier Program</td>
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### Harris County Flood Control District
**Capital Project Programming for FY 2017-2018**
**List of Proposed Projects for $60M in Funding**

<table>
<thead>
<tr>
<th>ProjectID</th>
<th>ProjectTitle</th>
<th>Precinct</th>
<th>Stage</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>U100-00-00-G001</td>
<td>Upper Langham Creek Frontier Program Management and Design</td>
<td>3</td>
<td>Design</td>
<td>$400,000</td>
</tr>
<tr>
<td>U100-00-00-W001</td>
<td>Upper Langham Creek Frontier Program Revegetation and Environmental Enhancements</td>
<td>3</td>
<td>Construction</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>U101-00-00-P002</td>
<td>South Mayde Creek Flood Risk Reduction Preliminary Engineering Report</td>
<td>3</td>
<td>PER</td>
<td>$400,000</td>
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<tr>
<td>U102-00-00-X001</td>
<td>U102-00-00 Rehabilitation</td>
<td>3</td>
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<tr>
<td>U106-00-00-X001</td>
<td>U106-00-00 Rehabilitation</td>
<td>4</td>
<td>Construction</td>
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<tr>
<td>U107-00-00-X001</td>
<td>U107-00-00 Rehabilitation</td>
<td>3</td>
<td>Construction</td>
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<tr>
<td>U132-00-00-W001</td>
<td>Channel Revegetation and Environmental Enhancements</td>
<td>3</td>
<td>Construction</td>
<td>$100,000</td>
</tr>
<tr>
<td>U500-02-00-E002</td>
<td>Greenhouse Stormwater Detention Basin Construction, Phase 2 of 2</td>
<td>3</td>
<td>Construction</td>
<td>$500,000</td>
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<tr>
<td>U500-02-00-W001</td>
<td>Stormwater Detention Basin Revegetation and Environmental Compensatory Mitigation</td>
<td>3</td>
<td>Construction</td>
<td>$200,000</td>
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<tr>
<td>W129-00-00-C003</td>
<td>Channel Conveyance Improvements, Phase 3 of 3 from Richmond Avenue to Westpark Drive</td>
<td>3 &amp; 4</td>
<td>Design</td>
<td>$500,000</td>
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<tr>
<td>W140-00-00-X005</td>
<td>Spring Branch Creek Stabilization</td>
<td>3</td>
<td>Construction</td>
<td>$5,700,000</td>
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<tr>
<td>Feasibility</td>
<td>Feasibility Studies for Future CIP Projects</td>
<td>1, 2, 3 &amp; 4</td>
<td>Planning</td>
<td>$560,000</td>
</tr>
<tr>
<td>FEMA</td>
<td>Ongoing FEMA Cooperating Technical Partner Activities</td>
<td>1, 2, 3 &amp; 4</td>
<td>Planning</td>
<td>$300,000</td>
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<tr>
<td>LIDAR</td>
<td>Acquisition of 2018 LIDAR</td>
<td>1, 2, 3 &amp; 4</td>
<td>Support</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Major Maintenance</td>
<td>Major Maintenance Projects</td>
<td>1, 2, 3 &amp; 4</td>
<td>Design &amp; Construction</td>
<td>$11,000,000</td>
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<tr>
<td>Z100-00-00-G00X</td>
<td>Project Partnership Agreements with USACE for Greens Bayou and Hunting Bayou</td>
<td>1, 2, 3 &amp; 4</td>
<td>Support</td>
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</tr>
<tr>
<td>Z100-00-00-H042</td>
<td>Countywide General Acquisition</td>
<td>1, 2, 3 &amp; 4</td>
<td>ROW / Utility</td>
<td>$4,475,000</td>
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<tr>
<td>Z100-00-00-H058</td>
<td>Home Buyout - FEMA Annual Grant Applications</td>
<td>1, 2, 3 &amp; 4</td>
<td>ROW / Utility</td>
<td>$1,900,000</td>
</tr>
<tr>
<td>Z100-00-00-H060</td>
<td>Home Buyout - FEMA Hazard Mitigation Grant Program DR-4269-TX</td>
<td>1, 2, 3 &amp; 4</td>
<td>ROW / Utility</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Z100-00-00-P017</td>
<td>Develop Unsteady Modeling Guidelines</td>
<td>1, 2, 3 &amp; 4</td>
<td>Support</td>
<td>$250,000</td>
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</tbody>
</table>

**TOTAL** $60,000,000
# Harris County Flood Control District
## Capital Project Programming for FY 2017-2018
### Description of Project Stages

<table>
<thead>
<tr>
<th>STAGE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>Planning projects are investigations that range in size and complexity from alternative analyses that identify which alternative should proceed to the preliminary engineering report phase to watershed studies that provide a set of recommendations to reduce flood risk in a drainage area. Implementation studies to identify sequencing also occur during the Planning stage. The anticipated time to complete a planning study is 6-9 months though some federal planning studies may take longer to complete.</td>
</tr>
<tr>
<td>PER</td>
<td>A Preliminary Engineering Report (PER) refines the technical information to define benefits, costs and construction phasing for a project. PER efforts minimize uncertainty in managing the implementation of projects in the Capital Improvement Program. A PER typically includes information on geotechnical conditions, hydrology and hydraulic analysis, surveying, environmental investigations, costs, schedule, needed right-of-way (ROW), utility adjustments, and project benefits. The level of detail in a PER is sufficient for 50% design plans. The target duration of this stage is between 6-18 months.</td>
</tr>
<tr>
<td>ROW / Utility</td>
<td>Right-of-Way (ROW) Acquisition and Utility Relocation stage occurs prior to Final Design stage, after Planning stage, and is highly dependent on available property and funding. After a PER is developed, all work efforts on ROW acquisition and utility adjustment shall be underway to minimize the Final Design stage schedule.</td>
</tr>
<tr>
<td>Final Design</td>
<td>Final Design is the stage where previous work efforts are translated into a detailed design ready for construction. The final product is a set of documents to bid and award a construction project. Final Design stage work typically overlaps with ROW / Utility stage work efforts and is scoped to last 12 months or less.</td>
</tr>
<tr>
<td>Construction</td>
<td>Construction stage is when a project is built according to the construction drawings and specifications. The duration of Construction stage depends on the complexity and size of the project and can range from 6-24 months.</td>
</tr>
<tr>
<td>Support</td>
<td>The Support stage consists of all other work efforts needed to help complete other project stages. These activities occur at different times throughout a project, and vary in costs and duration from project to project. Examples include environmental investigations, material testing and surveying.</td>
</tr>
<tr>
<td>CATEGORY</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>----------</td>
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</tr>
<tr>
<td><strong>1</strong> Major Partnership Flood Damage Reduction Projects</td>
<td>These are generally “mega-projects” along the main channels of major watersheds, frequently in partnership with the federal government. These projects are the backbone for area drainage systems that benefit thousands of people and allow tributary and local drainage systems to function more efficiently. These are frequently Corps of Engineers or FEMA projects, with the federal share typically funding 50-75 percent of the project cost.</td>
</tr>
<tr>
<td><strong>2</strong> Partnership Flood Damage Reduction Projects</td>
<td>These are smaller scale projects that typically benefit a smaller area and help hundreds of people. This type of project includes FEMA Mitigation Grants that help reduce the number of insured losses experienced by the National Flood Insurance Program. These projects may also be cost sharing partnerships with other local government agencies.</td>
</tr>
<tr>
<td><strong>3</strong> Main Channel Flood Damage Reduction Projects</td>
<td>Similar to Category 1 projects, but without a cost-sharing partner.</td>
</tr>
<tr>
<td><strong>4</strong> Tributary Flood Damage Reduction Projects</td>
<td>Similar to Category 2 projects, but without a cost-sharing partner.</td>
</tr>
<tr>
<td><strong>5</strong> Major Maintenance Projects</td>
<td>Provides capital-type rehabilitation or upgrades to existing infrastructure including acquisition of sufficient right-of-way to provide efficient maintenance access.</td>
</tr>
<tr>
<td><strong>6</strong> Floodplain Acquisition and Preservation</td>
<td>Acquisition of homes (buyout) or undeveloped properties that are hopelessly deep in the floodplain for conservation, reclamation or detention purposes.</td>
</tr>
<tr>
<td><strong>7</strong> Frontier Projects</td>
<td>Projects in growth areas that meet the Flood Control District’s objectives of providing regional drainage infrastructure with participation by the development community</td>
</tr>
<tr>
<td><strong>8</strong> Harris County Support Projects</td>
<td>Support for development of Flood Control District drainage infrastructure in conjunction with Harris County initiatives or projects.</td>
</tr>
<tr>
<td><strong>9</strong> Local Participation Projects</td>
<td>Participation in appropriate local government flood damage reduction projects that may include stormwater infrastructure under the jurisdiction of another entity or municipality.</td>
</tr>
</tbody>
</table>
**B100-00-00-R002**

**Floodway Right-Of-Way Acquisition on Armand Bayou**

Precinct: 2  
Area: Pasadena  
Stage: ROW / Utility  
Category 6 - Floodplain Acquisition and Preservation  

**Budget Total: $600,000**

Purchase of approximately 125 acres of forested riparian area in floodway along Armand Bayou located downstream of Genoa-Red Bluff Road to channel B107-00-00.
**B500-04-00-E003**

**Site Stabilization of Red Bluff Stormwater Detention Basin**

- **Precinct:** 2
- **Category:** Main Channel Flood Damage Reduction
- **Stage:** Construction
- **Area:** Pasadena

**Key Map:** 578

**Budget Total:** $150,000

Final site grading, installation of backslope interceptors, swales and pilot channels.
Continuation of improvements along channel C106-03-00. This project includes installation of concrete side slopes, low flow section, and box culverts from South Houston city limits to the Gulf Freeway.
Evaluate and identify an appropriate alternative to reduce flood risks along channel C147-00-00 and evaluate potential alternatives in conjunction with the City of Houston and Fort Bend County.
Little White Oak Flood Risk Reduction Study

Precinct: 1 & 2  
Area: Houston  
Stage: Planning  
Category 4 - Tributary Flood Damage Reduction

Budget Total: $300,000

Identify and evaluate alternatives for a recommended plan to reduce flooding risk along Little White Oak Bayou. Study limits are from Loop 610 to the upstream headwaters.
E115-00-00-P001
Brickhouse Gully Flood Risk Reduction Study

Precinct: 4
Area: Houston
Stage: Planning

Category 4 - Tributary Flood Damage Reduction

Budget Total: $300,000

A study in partnership with the City of Houston to identify alternatives and a recommended plan to reduce flood risks along Brickhouse Gully.
Excavation of a stormwater detention basin to help reduce flood risks along White Oak Bayou.
Right-of-Way Acquisition for Long Term Maintenance and Site Improvements

Precinct: 2  Key Map: 540
Area: Morgan's Point
Stage: ROW / Utility
Category 5 - Major Maintenance Projects

Budget Total: $900,000

Acquisition of needed right-of-way for long term maintenance and site improvements along channel F210-00-00.
H500-01-00-E003
Homestead Stormwater Detention Basin, Phase 3 of 3
Precinct: 1
Area: Houston
Stage: Construction
Category 1 - Major Partnership Damage Reduction
Budget Total: $8,665,000

Excavation of Homestead Stormwater Detention Basin Phase 3 (final phase) and construction of the control structure.
The Bender Environmental Mitigation Site offers opportunities to mitigate unavoidable environmental impacts on Flood Control District and Harris County projects.
**K100-00-00-P004**

*Cypress Creek Overflow Management Study*

- **Precinct:** 3  
- **Area:** Unincorporated Harris County  
- **Stage:** Planning  
- **Category 7 - Frontier Projects**  
- **Budget Total:** $300,000

Continuation of the planning study to address special watershed management needs in Cypress Creek and Addicks Reservoir watersheds. Study is partially funded through a Texas Water Development Board grant.
Channel Conveyance Improvements Along K163-00-00

Precinct: 3  Key Map: 368
Area: Unincorporated Harris County
Stage: ROW / Utility and Support
Category 4 - Tributary Flood Damage Reduction

Budget Total: $1,520,000

ROW acquisition and support for design of improvements along channel K163-00-00. The project will provide additional depth and conveyance capacity that will reduce localized flooding occurrences.
The Little Cypress Creek Frontier Program is a strategic effort to plan for and implement effective regional flood risk management solutions in conjunction with private land development. The program management component provides updates to the master plan and hydraulic models, performs development plan reviews, and provides other program support activities.
L112-01-00-E001
Channel Conveyance Improvements Along L112-01-00

Precinct: 3
Key Map: 286
Area: Unincorporated Harris County
Stage: Construction
Category 4 - Tributary Flood Damage Reduction

Budget Total: $130,000

Modifications to an existing TxDOT stormwater detention basin and construction of a new grass-lined channel parallel to the existing L112-01-00 channel. Major activities include basin and channel excavation, installation of culverts, channel stabilization, stormwater pollution prevention measures, and relocation of utilities.
**L500-10-00-E001**

Mueschke West Stormwater Detention Basin

**Precinct:** 3  
**Key Map:** 326  
**Area:** Unincorporated Harris County  
**Stage:** ROW / Utility  
**Category 3 - Main Channel Flood Damage Reduction**  
**Budget Total:** $2,000,000

Acquisition of right-of-way for a regional stormwater detention basin adjacent to Mueschke Road to reduce flood risks along Little Cypress Creek. This basin is part of the Little Cypress Creek Frontier Program.
P100-00-00-E011
Greens Bayou Federal Flood Risk Management Project
Precinct: 4
Area: Houston
Stage: Support
Category 1 - Major Partnership Damage Reduction

Budget Total: $200,000

Activities in support of the Greens Bayou Federal Flood Risk Management Project.
P118-00-00-P005
Halls Ahead Flood Risk Reduction Program Implementation
Precinct: 1, 2 & 4     Key Map: Various
Area: Unincorporated Harris County
Stage: Planning
Category 3 - Main Channel Flood Damage Reduction

Budget Total: $605,000

Development of a prioritization and phasing of flood risk reduction projects identified in the Halls Ahead study.
P118-26-00-E001
P118-26 Flood Risk Reduction Preliminary Engineering Report
Precinct: 1 & 2  Key Map: 413
Area: Unincorporated Harris County
Stage: PER
Category 4 - Tributary Flood Damage Reduction
Budget Total: $500,000

Preliminary engineering report for a channel and stormwater detention project to reduce flood risks along channel P118-26-00.
Design for a channel project to reduce flood risks along channel P133-00-00 and improve outfall capacity for drainage systems on Smith Road.
P500-06-00-E003
Lauder Road Stormwater Detention Basin

Precinct: 2  Key Map: 414
Area: Unincorporated Harris County
Stage: Support
Category 3 - Main Channel Flood Damage Reduction

Budget Total: $800,000

Conduct hydrology and hydraulic analysis and other work efforts associated with the design and construction of the stormwater detention basin.
Land acquisition, design and project preparation for the P518-10-00 stormwater detention basin and associated channel conveyance improvements to reduce flood risks along channel P118-14-00.
Cedar Bayou Master Planning and Mitigation Evaluation

Precinct: 2  
Area: Unincorporated Harris County  
Stage: Planning  
Category 3 - Main Channel Flood Damage Reduction  
Budget Total: $250,000

Funding to complete the feasibility study for flood risk reduction in the Cedar Bayou Watershed. An implementation plan will be developed for improvements to the main stem, studied streams and some unstudied tributaries within Harris County.
Establishing permanent emergent and forested wetlands for stormwater quality enhancement, habitat improvement, and site stabilization in accordance with permit requirements.
U100-00-00-E008
Upper Langham Creek Frontier Program

Precinct: 3  Key Map: Various
Area: Unincorporated Harris County  Stage: Construction
Category 7 - Frontier Projects

Construction associated with implementation of the Upper Langham Creek Frontier Improvement Plan.

Budget Total: $2,200,000
U100-00-00-G001
Upper Langham Creek Frontier Program Management and Design
Precinct: 3  Key Map: Various
Area: Unincorporated Harris County
Stage: Design
Category 7 - Frontier Projects
Budget Total: $400,000

Program management and design associated with implementation of the Upper Langham Creek Frontier Improvement Plan.
Revegetation of the Langham Creek corridor associated with implementation of the Upper Langham Frontier Improvement Plan. Includes establishing permanent stormwater interceptor wetlands, geomorphic floodplain stabilization, stormwater quality enhancements and habitat improvements in accordance with permit requirements.
U101-00-00-P002
South Mayde Creek Flood Risk Reduction
Preliminary Engineering Report
Precinct: 3  Key Map: Various
Area: Unincorporated Harris County
Stage: PER
Category 3 - Main Channel Flood Damage Reduction
Budget Total: $400,000

Preliminary engineering report to develop a flood risk reduction project on South Mayde Creek.
Rehabilitation of channel U102-00-00 to restore conveyance capacity.
U106-00-00-Rehabilitation of channel U106-00-00 to restore conveyance capacity.

Precinct: 4  Key Map: 408
Area: Unincorporated Harris County
Stage: Construction
Category 5 - Major Maintenance Projects

Budget Total: $1,250,000
Rehabilitation of channel U107-00-00 to restore conveyance capacity.
U132-00-00-W001
Channel Revegetation and Environmental Enhancements
Precinct: 3  Key Map: 366 & 406
Area: Unincorporated Harris County
Stage: Construction
Category 4 - Tributary Flood Damage Reduction

Budget Total: $100,000

Revegetation of U132-00-00, a tributary associated with the Upper Langham Creek Frontier Improvement Program. Includes establishing permanent stormwater interceptor wetlands for stormwater quality enhancements.
U500-02-00-E002
Greenhouse Stormwater Detention Basin
Construction, Phase 2 of 2
Precinct: 3  Key Map: 406 & 407
Area: Unincorporated Harris County
Stage: Construction
Category 7 - Frontier Projects

Budget Total: $500,000

Funding for excavation of the U500-02-00 stormwater detention basin phase 2.
Revegetation of the Greenhouse Stormwater Detention Basin. Includes establishment of permanent wetlands and riparian corridor, and reforestation planting for compensatory environmental mitigation of anticipated stream impacts.
Channel Conveyance Improvements, Phase 3 of 3 from Richmond Avenue to Westpark Drive

Precinct: 3 & 4  Key Map: 491
Area: Houston  Stage: Design
Category 4 - Tributary Flood Damage Reduction

Budget Total: $500,000

Design and construction of the third phase of channel conveyance improvements along W129-00-00 which will increase capacity by reconstructing approximately 2,500 linear feet of channel between Richmond Avenue and Westpark Drive. Approximately 1,900 linear feet of the existing channel will be converted to enclosed drainage system by installing dual 12 ft x 10 ft reinforced concrete boxes. The remaining 600 linear ft of existing channel will be converted to a U-shaped concrete channel.
Major channel repairs to stabilize Spring Branch Creek between Memorial Drive and Chimney Rock Road.
Feasibility Studies for Future CIP Projects

Precinct: 1, 2, 3 & 4  
Area: Countywide  
Stage: Planning  
Category 3 - Main Channel Flood Damage Reduction  
Budget Total: $560,000

Feasibility studies that will identify engineering efforts and right-of-way acquisitions for future fiscal years.
Annual Cooperating Technical Partner activities with FEMA including discovery phase efforts on Luce, Cedar and Jackson Bayou watersheds, Risk MAP for Hunting Bayou watershed, and ongoing model management.
Acquisition of 2018 LIDAR in Harris County to support Flood Control District activities. This dataset is updated every 10 years.
Major Maintenance Projects

Precinct: 1, 2, 3 & 4  
Area: Countywide  
Stage: Design & Construction  
Category 5 - Major Maintenance Projects  
Budget Total: $11,000,000

Funding for major maintenance projects along various channels in Harris County.
Project Partnership Agreements with USACE for Greens Bayou and Hunting Bayou

Precinct: 1, 2, 3 & 4  
Key Map:
Area: Countywide
Stage: Support
Category 1 - Major Partnership Damage Reduction

Budget Total: $500,000

Provides funding for U.S. Army Corps of Engineers review and coordination of federal projects in Harris County.
Z100-00-00-H042
Countywide General Acquisition

Precinct: 1, 2, 3 & 4   Key Map:
Area: Countywide
Stage: ROW / Utility
Category 6 - Floodplain Acquisition and Preservation
Budget Total: $4,475,000

A countywide general acquisition fund for the purpose of acquiring land in Harris County where the Flood Control District has an interest in floodplain reclamation, preservation or flood risk reduction projects.
Home Buyout - FEMA Annual Grant Applications

Precinct: 1, 2, 3 & 4    Key Map: Area: Countywide    Stage: ROW / Utility    Category 2 - Partnership Flood Damage Reduction

Budget Total: $1,900,000

Voluntary acquisition and demolition of flood-prone homes located in buyout areas of interest with FEMA's annual flood mitigation assistance grant program.
Voluntary acquisition and demolition of flood-prone homes located in buyout areas of interest with the FEMA hazard mitigation grant DR-4269-TX, which is associated with the April 2016 federally declared disaster.
Z100-00-00-P017
Develop Unsteady Modeling Guidelines

Precinct: 1, 2, 3 & 4   Key Map:
Area: Countywide
Stage: Support
Category 3 - Main Channel Flood Damage Reduction
Budget Total: $250,000

Develop unsteady modeling guidelines to facilitate internal and external engineering analysis.