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5-YEAR CAPITAL IMPROVEMENT PLAN (FY 2018 – 2022)



COASTAL WATER AUTHORITY



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Coastal Water Authority Capital Improvement Plan

The Fiscal Year 2018-2022 Capital Improvement Plan (CIP) is a forward looking document outlining CWA's infrastructure improvement strategy. This plan organizes projects by priority, project capacity and timing constraints, and identifies funding sources for all anticipated projects. This organization creates a realistic plan to address the current and expected infrastructure needs of CWA, subject to resource constraints.

Capital Improvement Plan

The five-year program totals \$27 million and is funded through the use of Special Project Equity Funds (SEALS funds) and the Bayport Construction Fund. Budget estimates for the identified items are included on Attachment 1.

Highlights of the Draft FY2018-2022 CIP include:

1. Lake Houston Dam Rehabilitation
 - a. Evaluation and rehabilitation of the Lake Houston Dam to improve the sliding stability factors of safety.
 - b. Identified improvements include raising two of the downstream weir structures to provide increased ballast in the hearth of the dam.
 - c. The Lake Houston Dam O&M Plan will be updated to account for the changes in the tail water elevations.
 - d. Rehabilitation Design is 90% complete. Authorization to bid for construction is planned to be taken before CWA's Board of Directors at the June Directors Meeting.

2. Pipeline Condition Assessment/Repairs
 - a. Continue a large diameter pipeline condition assessment project to evaluate 100% of the CWA pipeline system using electromagnetic technologies.
 - b. Remaining 25 pipeline segments are planned for condition assessment using personnel entry and in-service technologies.
 - c. As necessary, complete repairs of any identified damage to the pipelines including joints and valves.
 - d. Update the CWA GIS to reflect current condition and any repairs.

3. GE VFD SYNCDRIVE Replacements – Lynchburg Pump Station
 - a. After years of reliable service, replacement parts for these GEC Automation drives and the Alstom Sigma control system are becoming difficult to source as the Sigma control system is no longer in production.

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- b. Replace all GE SYNCDRIVES at LPS to the fully supported Pulse-Width-Modulated (PWM) Drives. This is a critical upgrade to increase pump station reliability and ability to resource repair parts.
 - c. PWM drives offer higher electrical performance such as reduced power system harmonics, reactive power demand, and torque pulsations, as well as a smaller physical footprint and lower overall cost.
4. Radial Gate Inspection and Rehabilitation or Replacement
 - a. The existing radial gate located at the Canal Maintenance Station has been in continuous operations since 1974.
 - b. Previous surface level inspections indicate corrosion at several locations on the gate.
 - c. The new radial gate bypass structure will allow diversion of flows to inspect and rehabilitate or replace the existing gate.
5. Delivery Reconfiguration – Northwest Lateral D
 - a. Evaluate the alternatives to an alternate delivery configuration at the EPROD facility in Mont Belvieu.
 - b. Alternatives may include pump station and force main or canal modification and bypass of the facility.
 - c. Project will include alternatives evaluation, preliminary engineering, design and cost estimate, and construction.
 - d. Implementation is based on continued discussions with City of Houston (Houston Water) and Enterprise Products.
6. SCADA System Replacement
 - a. The existing HSQ system consists of a main system at LPS and subsystems at 27 remote sites. The LPS Invensys and HSQ SCADA systems serve collectively as the central monitoring location for the Lynchburg and operational status of equipment at other CWA facilities.
 - b. Both software systems are proprietary which requires trained representative/technicians from the respective manufacturers to perform software updates, modifications, or troubleshooting for continuous system operation.
 - c. Replacement scope includes development of an overall SCADA master plan.
 - d. Objective is to implement and install a SCADA system that is non-proprietary and ensures compatibility with all existing CWA facilities.
7. Bayport HP410/411 Extension
 - a. Currently the Bayport System is supplied through the A-Line Pipeline with no redundant secondary supply.

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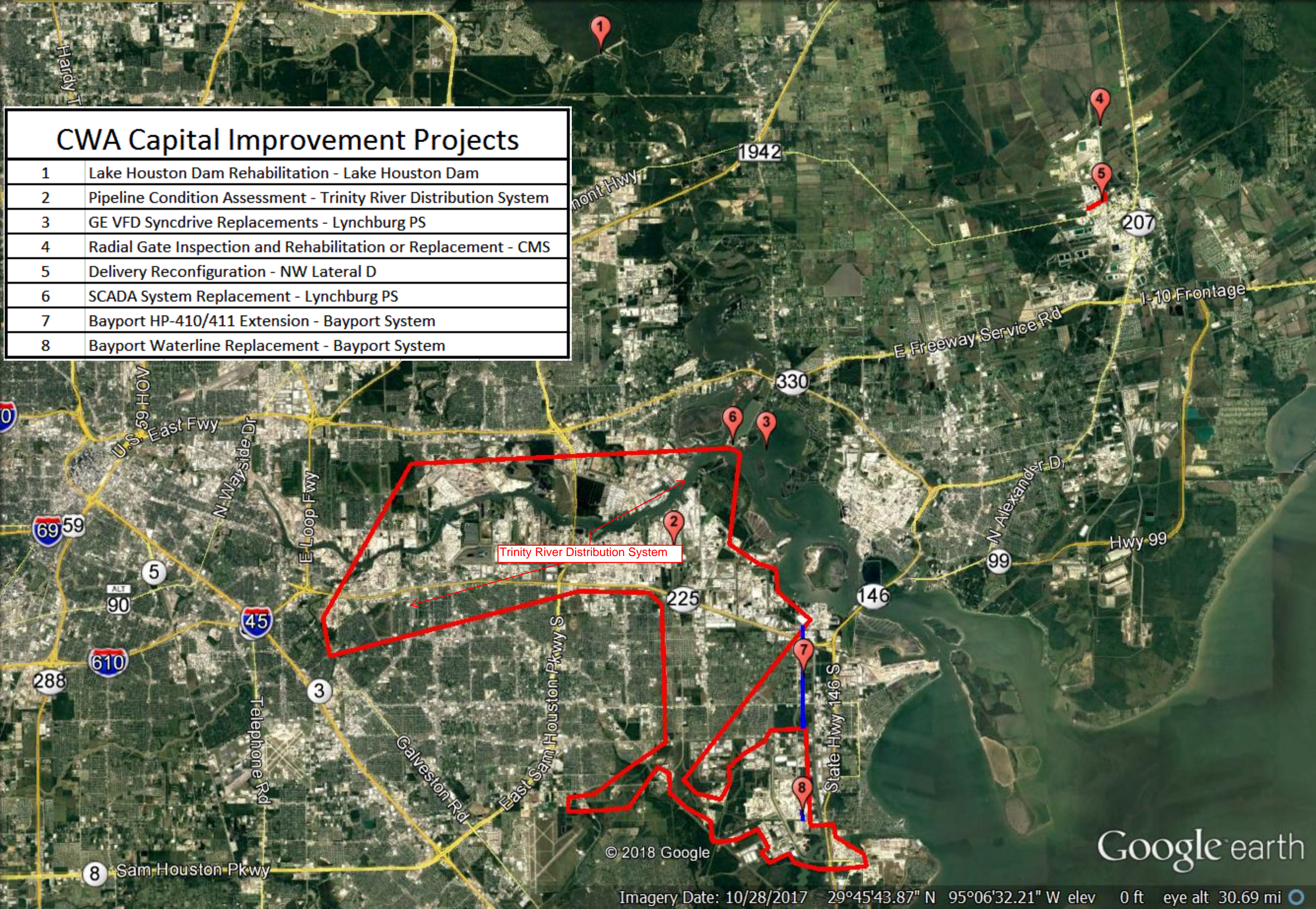
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- b. Extension of the B-Line from its current terminus point at HWY 225 to the north side of the Bayport Complex will provide a secondary supply option.
 - c. Scope includes: Easement acquisition, pipeline design and construction.
8. Bayport Waterline Replacement, 12 and 24-inch along Bay Area BLVD
- a. Replacement of asbestos-cement (transite) pipe originally installed in 1967 is reaching the end of its service life.
 - b. Scope includes construction of approximately 6,570 linear feet of 12-inch and approximately 7,880 linear feet of 24-inch diameter water lines along Bay Area Boulevard with all necessary valves and appurtenances, with retainage of all existing service connections.
 - c. The proposed water line installation will consist of primarily open cut construction; however, trenchless methods are required at crossings Harris County Flood Control District (HCFCD) drainage systems, Union Pacific Rail Road tracks, private pipelines and designated access driveways.

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CWA Capital Improvement Projects

| | |
|---|---|
| 1 | Lake Houston Dam Rehabilitation - Lake Houston Dam |
| 2 | Pipeline Condition Assessment - Trinity River Distribution System |
| 3 | GE VFD Syncdrive Replacements - Lynchburg PS |
| 4 | Radial Gate Inspection and Rehabilitation or Replacement - CMS |
| 5 | Delivery Reconfiguration - NW Lateral D |
| 6 | SCADA System Replacement - Lynchburg PS |
| 7 | Bayport HP-410/411 Extension - Bayport System |
| 8 | Bayport Waterline Replacement - Bayport System |



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Imagery Date: 10/28/2017 29°45'43.87" N 95°06'32.21" W elev 0 ft eye alt 30.69 mi

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| CWA CIP Schedule | | Budget | Budget | Budget | Budget | Budget | |
|-------------------------|---|---------------------|----------------------|---------------------|---------------------|---------------------|-----------------------|
| | | 2018 | 2019 | 2020 | 2021 | 2022 | Total (Budget) |
| TR - LAN | SEALS Projects | | | | | | |
| | TRWDS Condition Assessment Program | \$ 1,300,000 | \$ 1,300,000 | \$ 1,300,000 | \$ 1,300,000 | \$ 1,300,000 | \$ 6,500,000 |
| TR - LAN | Delivery Reconfiguration - Northwest Lateral D | \$ 650,000 | \$ 5,300,000 | \$ - | \$ - | \$ - | \$ 5,950,000 |
| | Preliminary Engineering Report | \$ 150,000 | | | | | |
| | Design and Additional Services | \$ 500,000 | | | | | |
| | Construction Cost | | \$ 5,000,000 | | | | |
| | Construction Phase Services and Construction Administration & Observation | | \$ 300,000 | | | | |
| LH - Stantec | Lake Houston Dam Rehabilitation Evaluation and Final Design Services | \$ 100,000 | \$ - | \$ - | \$ - | \$ - | \$ 100,000 |
| LH - Stantec | Lake Houston Dam Rehabilitation Construction | \$ 5,500,000 | \$ 5,500,000 | \$ - | \$ - | \$ - | \$ 11,000,000 |
| TR - Others | GE SynchDrive Replacements | \$ 100,000 | \$ 1,000,000 | \$ 1,000,000 | \$ 1,000,000 | \$ - | \$ 3,100,000 |
| TR - | SCADA System Replacement | | \$ 100,000 | \$ 1,000,000 | \$ - | \$ - | \$ 1,100,000 |
| TR - LAN | Radial Gate Assessment and Rehabilitation or Replacement | \$ 150,000 | \$ 1,100,000 | \$ - | \$ - | \$ - | \$ 1,250,000 |
| | Radial Gate Assessment Report | \$ 50,000 | | | | | |
| | Design and Additional Services | \$ 100,000 | | | | | |
| | Rehabilitation/Replacement | | \$ 1,000,000 | | | | |
| | Construction Phase Services and Construction Administration & Observation | | \$ 100,000 | | | | |
| | SEALS FUND Total | \$ 7,800,000 | \$ 14,300,000 | \$ 3,300,000 | \$ 2,300,000 | \$ 1,300,000 | \$ 29,000,000 |
| | Bayport Construction Fund Projects | 2018 | 2019 | 2020 | 2021 | 2022 | Total (Budget) |
| BP - LAN | ROW Acquisition Support - HP 410-411 Extension | \$ 665,000 | \$ 165,000 | \$ - | \$ - | \$ - | \$ 830,000 |
| | Right of Way Acquisition Services (assuming 4 parcels) | \$ 125,000 | \$ 50,000 | | | | |
| | Metes-n-Bounds Survey | \$ 30,000 | \$ 15,000 | | | | |
| | Easement/Parcel Cost | \$ 510,000 | \$ 100,000 | | | | |
| BP - LAN | Water Line Rehabilitation 12 and 24 inch | \$ 225,000 | \$ 4,180,000 | \$ - | \$ - | \$ - | \$ 4,405,000 |
| | Design and Additional Services | \$ 225,000 | | | | | |
| | Construction Cost | | \$ 3,800,000 | | | | |
| | Construction Phase Services and Construction Administration & Observation | | \$ 380,000 | | | | |
| | Bayport Construction Fund Total | \$ 1,555,000 | \$ 4,510,000 | \$ - | \$ - | \$ - | \$ 5,235,000 |

| Pipeline Condition Assessment /Repairs | Segments | Cost/Segment | Cost |
|---|---------------------|---------------------|----------------------|
| Assessment | | | |
| | 5 year Total | 20 \$ | 250,000 \$ 5,000,000 |
| | Annual Total | 5 \$ | 250,000 \$ 1,000,000 |
| Repairs | | | |
| | 5 year Total | 12.5 \$ | 120,000 \$ 1,500,000 |
| | Annual Total | 2.5 \$ | 120,000 \$ 300,000 |