Capital Improvement Program (CIP)

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District of Columbia Water and Sewer Authority

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Leonard Benson, Sr. Vice President and Chief Engineer

Presented by:
Craig Fricke, Director, Department of Engineering and Technical Services
I. Introduction to DC Water and Sewer Authority

II. Capital Improvement Program

III. Upcoming Work
   a) DCCR
   b) Blue Plains AWTP
   c) Water System
   d) Sewer System

IV. Looking into the Future

V. Vendor Registration Information
I. Introduction to DC Water and Sewer Authority
Introduction:
DC Water and Sewer Authority

- **DC Water**
- **Provides:**
  - Drinking water distribution for DC population of 693,972
  - Required wastewater collection and treatment
  - Stormwater collection and conveyance
- **Treats wastewater for a population of 2.1 million**
  - District of Columbia
  - Montgomery & Prince George's counties, MD
  - Fairfax & Loudoun counties, VA
- **Operates the world’s largest advanced wastewater treatment plant**
  - Average daily capacity, 370 mgd
  - Peak daily capacity, 1 billion+ gallons
II. Capital Improvement Program (CIP)
Capital Improvement Program (CIP) - Structure

- CIP is organized into six service areas:
  - Non Process Facilities
  - Wastewater Treatment
  - Sanitary Sewer
  - Stormwater
  - Water
  - Combined Sewer Overflow/Long Term Control Plan (DC Clean Rivers Project)
- In addition to the above, CIP includes funding for the Washington Aqueduct and Capital Equipment
10-Year Approved CIP

*Includes the following Service Areas: Water, Sanitary Sewer, Stormwater, and non-Clean Rivers portion of Combined Sewer Overflow

- Cash disbursements basis
## 10-Year Approved CIP – Compared to Previous

<table>
<thead>
<tr>
<th>Service Area ($000's)</th>
<th>FY19</th>
<th>FY20</th>
<th>FY21</th>
<th>FY22</th>
<th>FY23</th>
<th>FY24</th>
<th>FY25</th>
<th>FY26</th>
<th>FY27</th>
<th>FY28</th>
<th>10-Yr Total</th>
<th>Last Year's CIP</th>
<th>(Increase)/Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wastewater Treatment</td>
<td>69,979</td>
<td>66,620</td>
<td>76,510</td>
<td>97,635</td>
<td>110,047</td>
<td>82,434</td>
<td>81,249</td>
<td>133,338</td>
<td>137,575</td>
<td>123,351</td>
<td>978,738</td>
<td>855,948</td>
<td>(122,790)</td>
</tr>
<tr>
<td>Clean Rivers</td>
<td>187,859</td>
<td>147,208</td>
<td>139,786</td>
<td>191,573</td>
<td>151,411</td>
<td>64,415</td>
<td>55,689</td>
<td>144,295</td>
<td>97,067</td>
<td>83,286</td>
<td>1,262,589</td>
<td>1,313,196</td>
<td>50,607</td>
</tr>
<tr>
<td>Combined Sewer</td>
<td>7,491</td>
<td>4,219</td>
<td>9,444</td>
<td>8,015</td>
<td>8,646</td>
<td>13,520</td>
<td>8,852</td>
<td>5,800</td>
<td>5,593</td>
<td>7,598</td>
<td>79,178</td>
<td>119,151</td>
<td>39,973</td>
</tr>
<tr>
<td>Stormwater</td>
<td>4,220</td>
<td>8,571</td>
<td>8,118</td>
<td>8,586</td>
<td>3,725</td>
<td>4,987</td>
<td>7,564</td>
<td>7,494</td>
<td>5,239</td>
<td>10,102</td>
<td>68,608</td>
<td>24,452</td>
<td>(44,156)</td>
</tr>
<tr>
<td>Sanitary Sewer</td>
<td>44,927</td>
<td>43,646</td>
<td>57,249</td>
<td>85,588</td>
<td>97,220</td>
<td>98,194</td>
<td>115,011</td>
<td>140,020</td>
<td>134,664</td>
<td>140,615</td>
<td>957,135</td>
<td>532,490</td>
<td>(424,645)</td>
</tr>
<tr>
<td>Water</td>
<td>61,884</td>
<td>71,720</td>
<td>96,300</td>
<td>101,039</td>
<td>84,395</td>
<td>96,491</td>
<td>103,325</td>
<td>106,145</td>
<td>105,338</td>
<td>118,378</td>
<td>945,015</td>
<td>730,672</td>
<td>(214,343)</td>
</tr>
<tr>
<td>Capital Equipment</td>
<td>34,518</td>
<td>26,823</td>
<td>36,907</td>
<td>33,086</td>
<td>32,725</td>
<td>36,860</td>
<td>35,540</td>
<td>35,426</td>
<td>34,339</td>
<td>34,279</td>
<td>340,324</td>
<td>198,133</td>
<td>(142,191)</td>
</tr>
<tr>
<td>Washington Aqueduct</td>
<td>12,930</td>
<td>15,532</td>
<td>15,909</td>
<td>15,536</td>
<td>35,006</td>
<td>14,830</td>
<td>32,731</td>
<td>9,034</td>
<td>12,298</td>
<td>23,321</td>
<td>187,127</td>
<td>120,052</td>
<td>(67,075)</td>
</tr>
<tr>
<td>ADDITIONAL CAPITAL PROGRAMS</td>
<td>47,448</td>
<td>42,355</td>
<td>52,816</td>
<td>48,622</td>
<td>67,731</td>
<td>51,509</td>
<td>68,272</td>
<td>44,461</td>
<td>46,637</td>
<td>57,600</td>
<td>527,450</td>
<td>318,185</td>
<td>(209,265)</td>
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<tr>
<td>TOTAL CIP</td>
<td>439,117</td>
<td>420,342</td>
<td>467,016</td>
<td>561,724</td>
<td>530,006</td>
<td>422,608</td>
<td>450,358</td>
<td>585,454</td>
<td>535,665</td>
<td>544,490</td>
<td>4,956,780</td>
<td>4,002,126</td>
<td>(954,655)</td>
</tr>
<tr>
<td>Last Years CIP</td>
<td>439,118</td>
<td>420,342</td>
<td>402,681</td>
<td>445,647</td>
<td>385,312</td>
<td>326,284</td>
<td>318,360</td>
<td>439,427</td>
<td>375,004</td>
<td>4,002,126</td>
<td></td>
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</tr>
</tbody>
</table>

(Increase)/Decrease

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</tr>
</thead>
<tbody>
<tr>
<td>(Increase)/Decrease</td>
<td>1</td>
<td>(0)</td>
<td>(64,335)</td>
<td>(116,077)</td>
<td>(144,694)</td>
<td>(96,324)</td>
<td>(131,998)</td>
<td>(146,027)</td>
<td>(160,661)</td>
<td>(544,490)</td>
<td>(954,655)</td>
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</tbody>
</table>
The Modified Baseline CIP balances financial and affordability concerns with additional investment in our assets that begin to address aging water and sewer infrastructure during this 10 year period.

- **Non Process Facilities** - $58 million increase
  - Additional facilities needs including HVAC and roof rehabilitation
- **Wastewater** - $95 million increase
  - Upgrades to Effluent Filters, Secondary and Nitrification treatment processes
- **Stormwater** - $35 million increase
  - Upgrading of storm water pump stations, from $1M/year to $5M/year
Sanitary Sewers - $314 million increase

- Condition Assessment:
  - Local Sewers (<60-in), from 35 mi/year to 69 mi/year (50-year cycle to 25-year cycle)
  - Major Sewers (≥60-in), from 7 mi/year to 11 mi/year (25-year cycle to 15-year cycle)
- Rehabilitation:
  - Local Sewers (<60-in), 6 mi/year to 17.5 mi/year
  - Major Sewers (≥60-in), funds address what we know or expect to find
  - Sewer On-going (funding for emergency repairs), increased by 32% (from $11M/year to $14.5M/year)

Water - $154 million increase

- Rehabilitation:
  - Small Dia. Water Mains (<16-in), from 8 mi/year to 11 mi/year
  - Lead Service Lines Replacement, from 150 to 1,000 in public space
  - Water On-going (funding for emergency repairs), increased by 45% (from $11M/year to $16M/year)
III. Upcoming Work
III. a. Upcoming Work – DCCR
Clean Rivers Project

DC Clean Rivers Project and Nitrogen Removal Programs

- DC Clean Rivers Project: $2.7 Billion
- Nitrogen Removal: $950 Million
- Total > $3.5 Billion
- 25 yr implementation (2005 – 2030)
- 96% reduction in CSOs & flood relief in Northeast Boundary
- Approx 1 million lbs/yr nitrogen reduction predicted
Tunnel connections for CSOs 027-029 contingent on Green Infrastructure practicability determination

**Schedule**
- Facility Planning/Environmental Approvals: 2015-2018
- Preliminary Design: 2019-2022
- Procurement: 2022-2023
- Final Design/Construction: 2023-2030
- Manage 500 impervious acres to the 1.2” retention standard

- First project in each sewershed will be constructed by 2019

- Perform 1 year of post construction monitoring

- Results of monitoring will determine whether remainder of GI is constructed or if gray CSO controls will be constructed
III. b. Upcoming Work – Blue Plains AWTP
Program Manager for Blue Plains

- Request for Proposals issued 4/14/2019
- Proposals due 6/12/2019
- Three and a half years tapering to transition routine services (design management, construction management, program controls) to DC Water staff
Flood wall Segment C

- 2nd of 5 segments plan to protect Blue Plains from 500-year flood elevation
- 650 feet long
- Increases current lowest elevation by 2 feet
- Construction estimate of $3 million
- NTP for Design-Build Contract November 2019
- Request for Qualifications, Technical and Price Proposals June 9, 2019
Upcoming Construction

- **Miscellaneous Facilities Upgrades 7**
  - $20M construction
  - Advertise Construction September 2019
  - Replacement of Sludge and Scum Lines at Blue Plains
  - Stormwater and Sewer Collection Pump Station Refurbishment

- **Miscellaneous Facilities Upgrades 8**
  - $20M construction
  - Advertise Construction January 2020
  - Refurbishment of facilities at sewer and stormwater pump stations and Blue Plains.
Headworks Influent Structures Rehabilitation

- Rehabilitate deteriorated concrete structures upstream of raw water pump stations and in grit chamber effluent channels
- Construction estimate at $9 million
- Construction start July 2020
**COF Switchgear Replacement**
- Replace obsolete switchgear in COF building
- Switchgear has reached the end of its useful lives
- Maintenance complicated by lack of spare parts
- Construction estimate at $12 million
  - Advertise Construction August 2020

**High and Low Pressure PSW Pump Systems**
- Upgrade the High and Low Pressure Process Service Water pumping systems
- Upgrades necessary to meet projected demand, to provide redundancy in the system and to correct pump intake hydraulics
- Pumps have reached the end of their useful lives and are prone to failure.
  - Construction estimate of $10 million
  - Advertise Construction July 2020

**Screens, Grit and Primary Facilities Upgrades (aka Headworks Electrical Upgrades)**
- Upgrades and improvements to power distribution and instrument and control
- Equipment has reached the end of useful life due to continuous exposure in corrosive environment
  - Cost Estimate at $15 million
  - Construction Start - April 2021
III. c. Upcoming Work – Water System
Projects in the Drinking Water System

- **Small-Diameter Water Main Rehab**
  - Engineer’s Estimate: $40-$50M per year
  - Schedule: Ongoing

- **Large-Diameter WM Rehab & Valve Replacement**
  - Engineer’s Estimate: $50-$60M - 5 year total
  - Schedule: Ongoing

- **Drinking Water Storage (Upgrades & New)**
  - Engineer’s Estimate: $25-$35M - 5 year total
  - Schedule: Ongoing

- **Drinking water pumping station upgrades**
  - Engineer’s Estimate: $15-$25M - 5 year total
  - Schedule: 1st project construction starts in 2020
III. d. Upcoming Work – Sewer System
本地污水管道修复
- 工程师估计：50M-$75M - 5年总费用
- 时间表：年度合同，2020年起

大型污水管道修复
- 工程师估计：70M-$100M – 5年总费用
- 时间表：持续进行

靠近溪床的污水管道修复
- 工程师估计：20M-$30M - 5年总费用
- 时间表：第一个项目施工启动，2019年结束
Potomac Interceptor and Stormwater PS’s

- **Potomac Interceptor Rehab**
  - Engineer’s Estimate: $50M - 5 year total
  - Schedule: Construction estimated starts:
    - LZ07 PI Rehab at Fairfax Tunnel (*DB Project) – early 2020
    - LZ09 PI Rehab at Clara Barton Parkway & I495 – fall 2021
    - LZ06 PI Rehab at Fairfax & Loudon County – fall 2021
    - LZ03 PI Rehab at Clara Barton Parkway – end 2021

- **Stormwater PS Upgrades**
  - Engineer’s Estimate: $25M – 5 year total
  - Schedule: 1st project construction starts, 2019
III. Looking into the Future
- CIP funding constraints
- Retail customer’s affordability concerns
- Complex permitting processes
- Competing demands for investments across our seven (7) service areas
- Qualified construction contractor and subcontractor availability
- Mega, court-mandated projects impacting cash flow needs
- Emergency repair needs
- Aging asset inventory
- Easement and right-of-way issues
- High project implementation costs
- Long project implementation schedules
Current Areas of Focus

- Meeting CSO Consent Decree
- Stabilizing CIP funding, particularly for sewer
- Integrating Asset Management concepts and practices into our CIP planning and delivery processes
- Improving or streamlining permitting
- Collaborating with other agencies
- Reducing costs
- Improving project delivery process and schedules
- Optimizing energy uses and sources
- Generating alternative sources of revenue
Vendor Registration Information
Register online to receive solicitations, amendments, and contract awards via email

To become a registered vendor:
- Go to: [www.dcwater.com/procurement](http://www.dcwater.com/procurement)
- Review the vendor portal updates and registration instructions.

Solicitations are published on
- DC Water’s website: [https://vendor.dcwater.com/](https://vendor.dcwater.com/)
  Click: Solicitations (Under Business opportunities- left column)
- The Washington Post,
  Afro-American,
  Washington Hispanic,
  Engineering News Record
Thank You!!

QUESTIONS & ANSWERS?

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