



working for clean rivers

# PORTLAND BUREAU OF ENVIRONMENTAL SERVICES



## Capital Improvement Program (CIP)

The Bureau of Environmental Services (BES) serves the Portland community by protecting public health, water quality, and the environment. We provide sewage, stormwater collection, and treatment services to accommodate Portland's current and future needs. BES combines asset-management, risk management and programmatic planning to recommend the most effective mix of capital projects. BES is implementing significant improvements to these and other processes and is evaluating structural and organizational changes to further enable increases to capital project delivery output to address the backlog of infrastructure needs.

### Program Summaries

The BES Capital Improvement Program delivered \$122M of project work in FY19, the most since FY11 and the completion of the CSO 'Big Pipe' work.

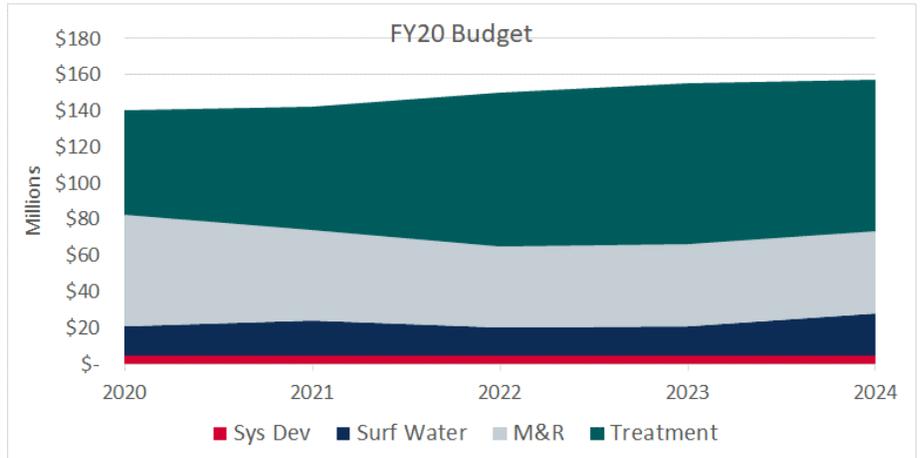
#### Maintenance & Reliability

A number of Large-Scale Sewer Rehab projects were completed in FY19. The objective on these projects is to restore service life to the asset efficiently and with minimal disruption. The most significant projects included:

- Powell Sewer Rehab replaced 29,000 ft of 8" to 36" combination and sanitary sewer pipe in the I-84 corridor between SE 42th Ave SE 68th Ave.
- Woodlawn, located in N/NE, replaced approximately 23,000 ft of poor condition pipe; this included over 100 spot repairs, upsizing 5,700 ft of pipe with inadequate hydraulic capacity, and 2,300 ft of new pipe.
- Concordia Sewer Rehab replaced 13,700 ft of severely deteriorated small diameter pipe, as well as manhole replacements plus public lateral replacements in the Concordia neighborhood.
- Richmond South Tabor involved work in over 30 different City blocks scattered throughout the neighborhood and 15,300 ft of pipe. The sewers were suffering severe deterioration and were at the end of their useful life.

Significant ongoing work with anticipated construction delivery later this fiscal year and into next fiscal year include the following.

- Structural Rehabilitation Taggart Outfall 30
- Sunnyside North Greenstreets
- Slabtown Sewer Replacement.
- Portsmouth-University Park Sewer Rehab
- Caruthers-Mill Sewer Rehab
- Hillsdale South Sewer Rehab
- S Portland - Burlingame Sewer Rehab Ph1



Larger projects starting in FY20 that will continue for 3-5 years includes:

Project Name	Overall Project Start	Overall Project Finish	Current Budget
Boise-Eliot Recon & Green Streets	2/3/2020	9/2/2025	\$11,648,422.00
DTOT Market-Main Sewer Rehab	2/3/2020	11/28/2023	\$ 9,959,900.00
Vermont RDII Reduction	3/2/2020	2/3/2023	\$ 6,719,000.00
Slabtown North Sewer Reconstruction	10/7/2019	2/29/2024	\$ 6,220,900.00
Woods Trunk WZ-01 Rehab	12/31/2019	1/11/2024	\$ 5,955,000.00
Stark Trunk WZ-01 Rehab/OF37 Relief	11/4/2019	6/26/2023	\$ 5,258,000.00

**Surface Water**

The two largest projects delivered in Surface Water in FY19 were Slough Outfall 104b and work on the Beaverton Hillsdale Highway. Treatment facilities were constructed to help address the City's regulatory obligations for suspended solids and phosphorous.

- Fanno Beaverton Hillsdale Hwy addressed stormwater into Fanno Creek from the 2.6-mile section of Beaverton-Hillsdale Hwy running from SW Sunset Blvd to City limits at SW 65th Ave.
- Slough Outfall 104b included the implementation of over fifty green street facilities for the purpose of stormwater enhancement into the Columbia Slough Watershed.

Significant ongoing work with anticipated construction delivery later this fiscal year and into next includes:

- SW Shattuck Rd Culvert Replacement
- Basin3/Tryon Headwaters in-water work

Larger projects starting in FY20 and continuing for 3-5 years include:

Project Name	Overall Project Start	Overall Project Finish	Current Budget
Oak Basin A - Collectors	6/26/2020	10/10/2022	\$10,000,000.00
LTIC Street and Stormwater Improvements	9/18/2019	8/29/2025	\$ 4,515,925.00
Tryon SS Protection: 1A TCWTP to Hwy 43	7/1/2019	3/24/2021	\$ 4,310,000.00

**Sewage Treatment Systems**

The largest projects completed in this program included:

- Airport Way 1 Pump Station improvements replaced obsolete equipment with current/latest generation BES and industry standard equipment.
- CBWTP Digester 1&2 Diffuser Piping project replaced 1,000ft of piping for gas diffusers from CBWTP Digester Pump House (DIPU) to the diffusers in Digesters 1 & 2. Piping in digesters was badly corroded; several had holes and were falling apart.
- Inverness PS 20-inch Force Main Repairs project replaced existing air/vac valves and improved accessibility to air release valves. The project also repaired concrete abutments at both approaches to the bridge and replaced bridge approaches to current standards.

Significant ongoing work with anticipated construction later this year and into next includes:

- CBWTP Lagoon Ph 3 & 4 Cell 1 & 2
- CBWTP WASH & HYPO TNL Piping REPLC
- NE Broadway & 94th PS Upgrade

The Secondary Treatment Expansion Program (STEP) suite of projects reached the 20% design milestone this year and is proceeding to 30%. Activities are underway to establish the construction trailers, parking and laydown areas. Initial demolition of structures is scheduled to begin in summer 2020. STEP is on-schedule for completion in 2024 and will meet regulatory milestones.

Larger projects starting in FY20 include:

Project Name	Overall Project Start	Overall Project Finish	Current Budget
CBWTP WWCL Rehabilitation	3/2/2020	3/26/2030	\$34,577,400.00
CBWTP Blower System\Building Imps	5/14/2020	4/20/2027	\$12,056,330.00
TCWTP Disinfection Imps	4/1/2020	2/1/2025	\$ 9,600,000.00

**Systems Development**

Much of BES’s system development work is ongoing city-wide. Large single projects are not common. North Buckman non-conforming sewer upgrades were completed in FY 19 and included the construction of 1,220 ft of sanitary sewer connecting twenty-three nonconforming sewers. This project included coordination with several other agencies including PBOT, PWB, and Parks.

Significant ongoing work with anticipated construction later this year and into next include the following:

- NE Portland non-conforming sewer (NCS) Extensions
- SE Portland NCS Extensions
- NW 20th: Raleigh-Upshur LID Green Streets

Other projects scheduled to start this year include:

Project Name	Overall Project Start	Overall Project Finish	Current Budget
NE MASON NCS SSE	7/31/2019	7/15/2020	\$ 722,696.00
SW Menefee Drive Sanitary Sewer	11/12/2019	3/29/2021	\$ 655,000.00
NE 47th Ave LID, BES Storm Cost Share	4/1/2020	7/1/2020	\$ 500,000.00

**Challenges**

Unknown conditions across asset classes. For example, we have over 300 miles of pipe in fair to poor condition (since last inspection, often >10 years ago) and over 150 miles in unknown condition. We also know we have significant surface and stormwater condition issues across the system that have not been quantified.

Scope and cost growth on identified projects. As we start projects and complete early planning and more detailed site investigations, contractors often find additional problems to address that were not previously identified, resulting in increased project scope and cost. For example, on STEP, the contracting team has discovered a number of additional repairs, improvements and enabling work that must be completed to meet project requirements.

Resource Needs. We need more resources to do more work! We need more employees and contract and professional staff. We currently have almost 40 projects totaling \$83M with no one assigned to work on them. We are hampered by hiring limits which we try to offset through bringing on additional contract staff which is a less efficient, temporary solution and doesn’t address long-term needs.

Regulatory changes. We are currently negotiating renewal of our NPDES permit which may result in additional requirements. Potential impacts on the CIP are unknown.

Resiliency. We know that climate and seismic resiliency is impacting our project work. As we further develop our policies on these topics, we will have a better understanding of additional impacts.