



Baltimore City Department of Public Works

FY 2022 Capital Improvement Program Presentation, Bureau of Water & Wastewater

January 14, 2021



Department of Public Works

Mission

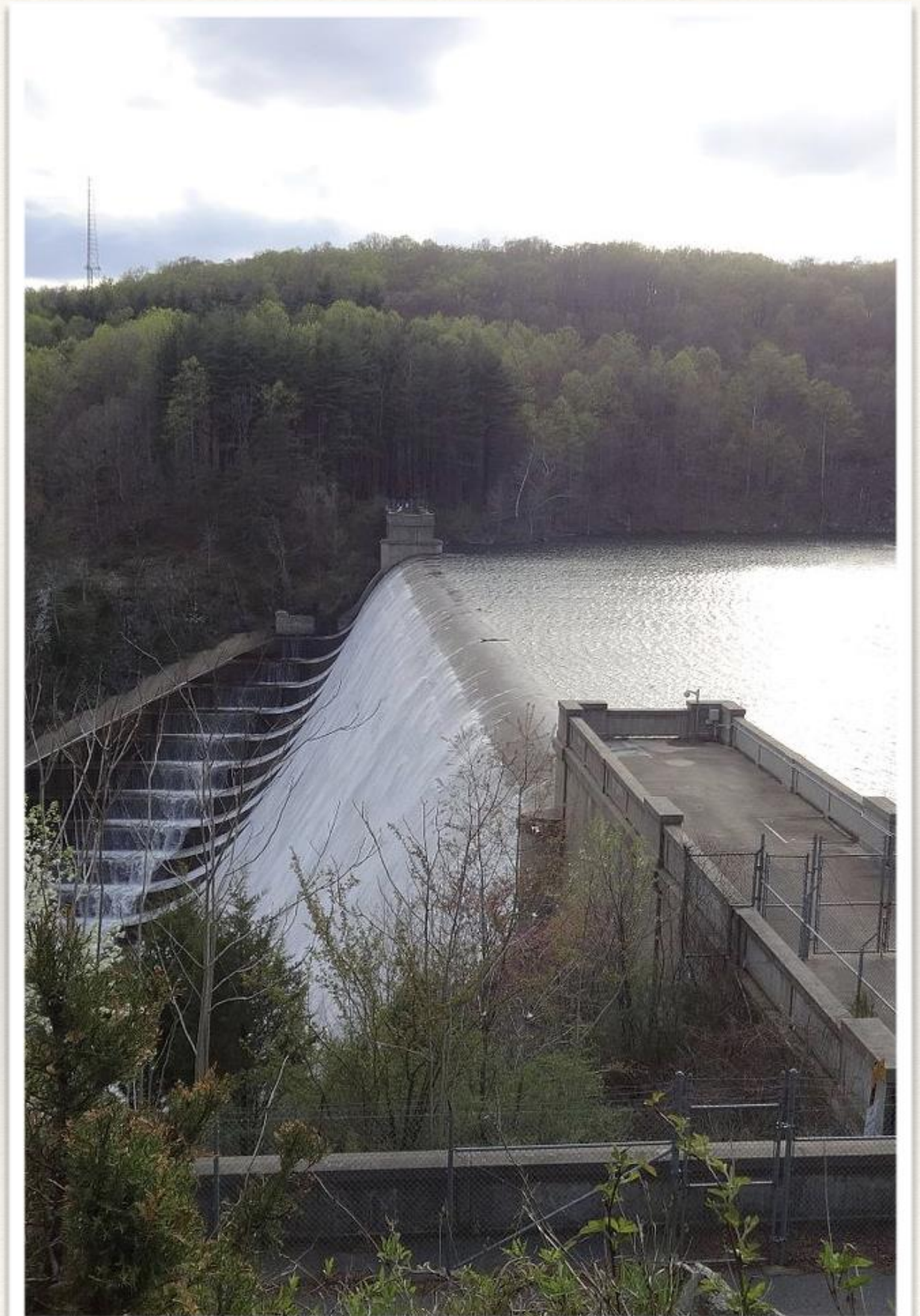
We support the health, environment, and economy of our City and the region by providing customers with safe drinking water and keeping neighborhoods and waterways clean.



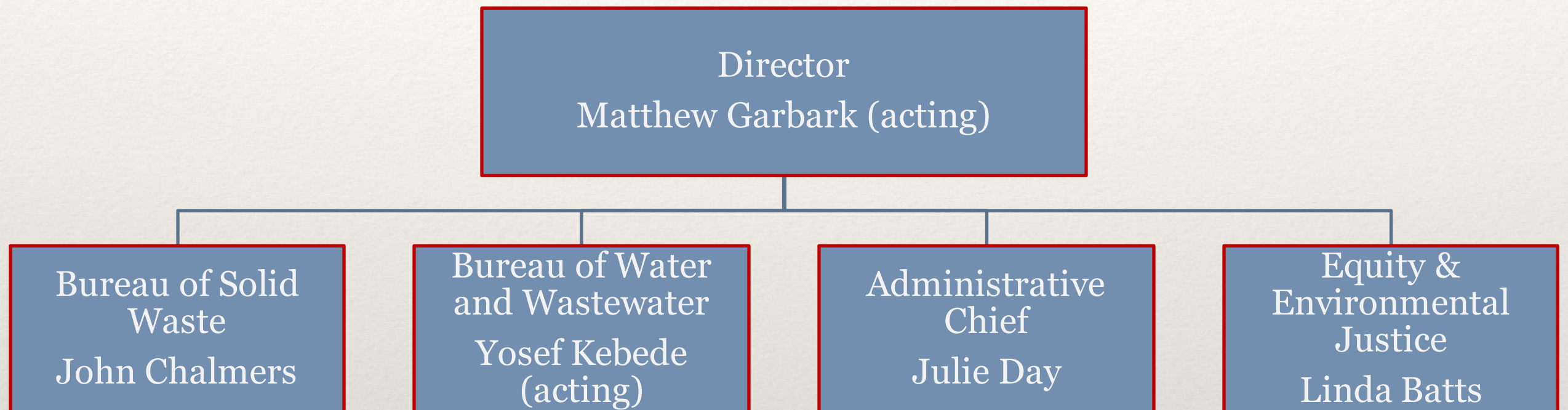
Department of Public Works

Vision

To be a strong proponent and protector of our environment and the health and vitality of our communities.

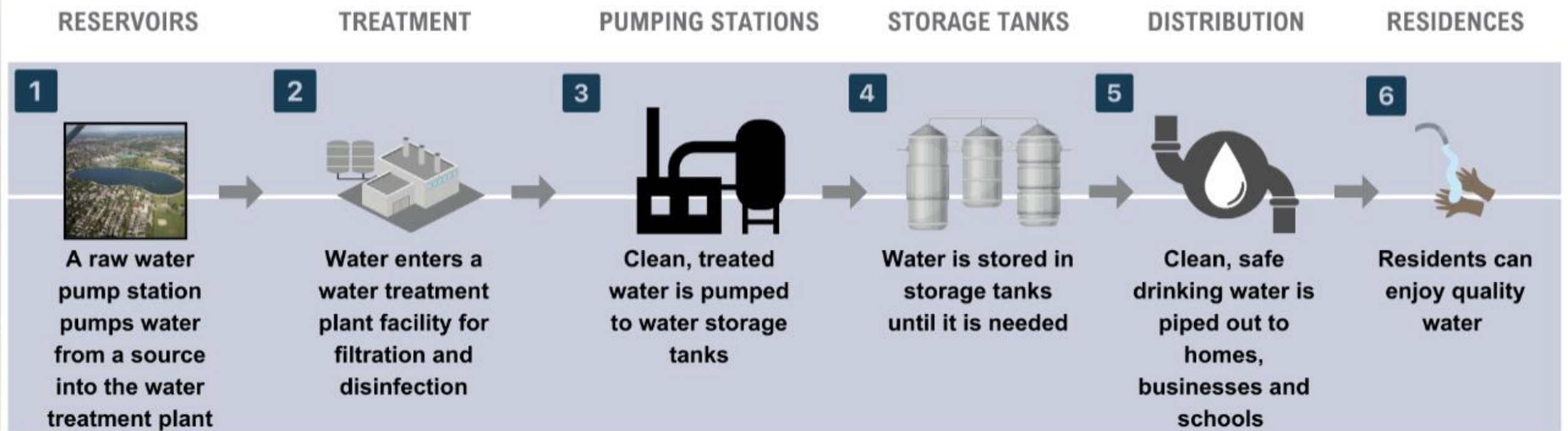


Office of the Director - Organizational Chart



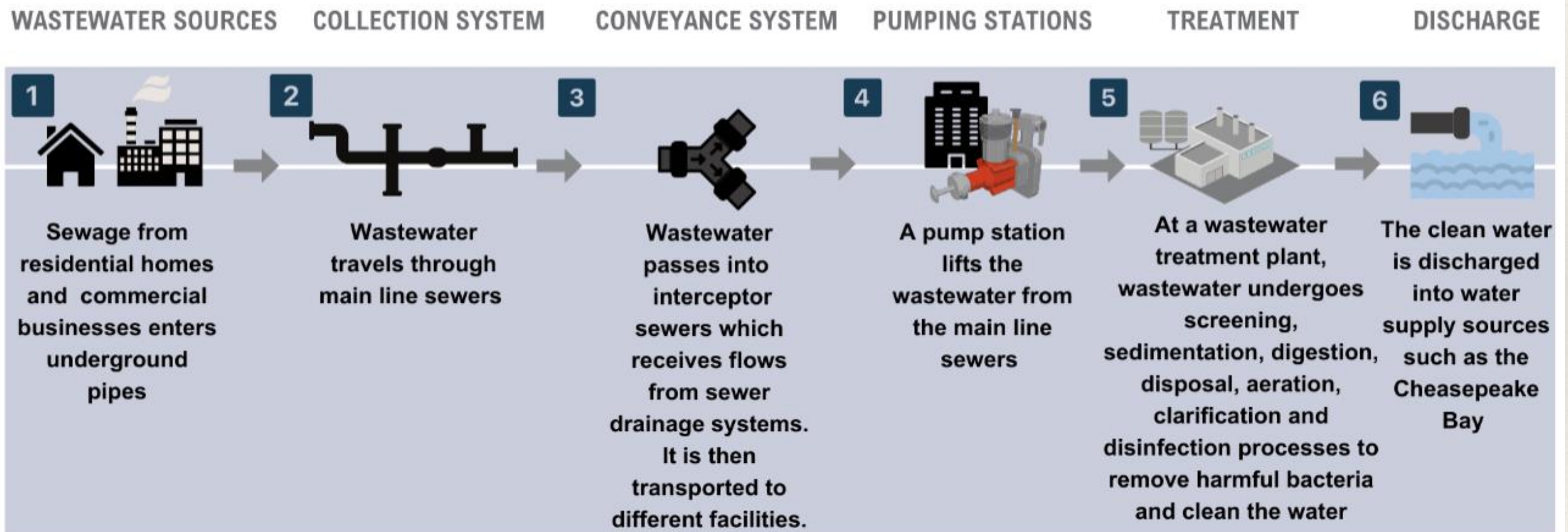
Drinking Water System

Baltimore City Drinking Water System

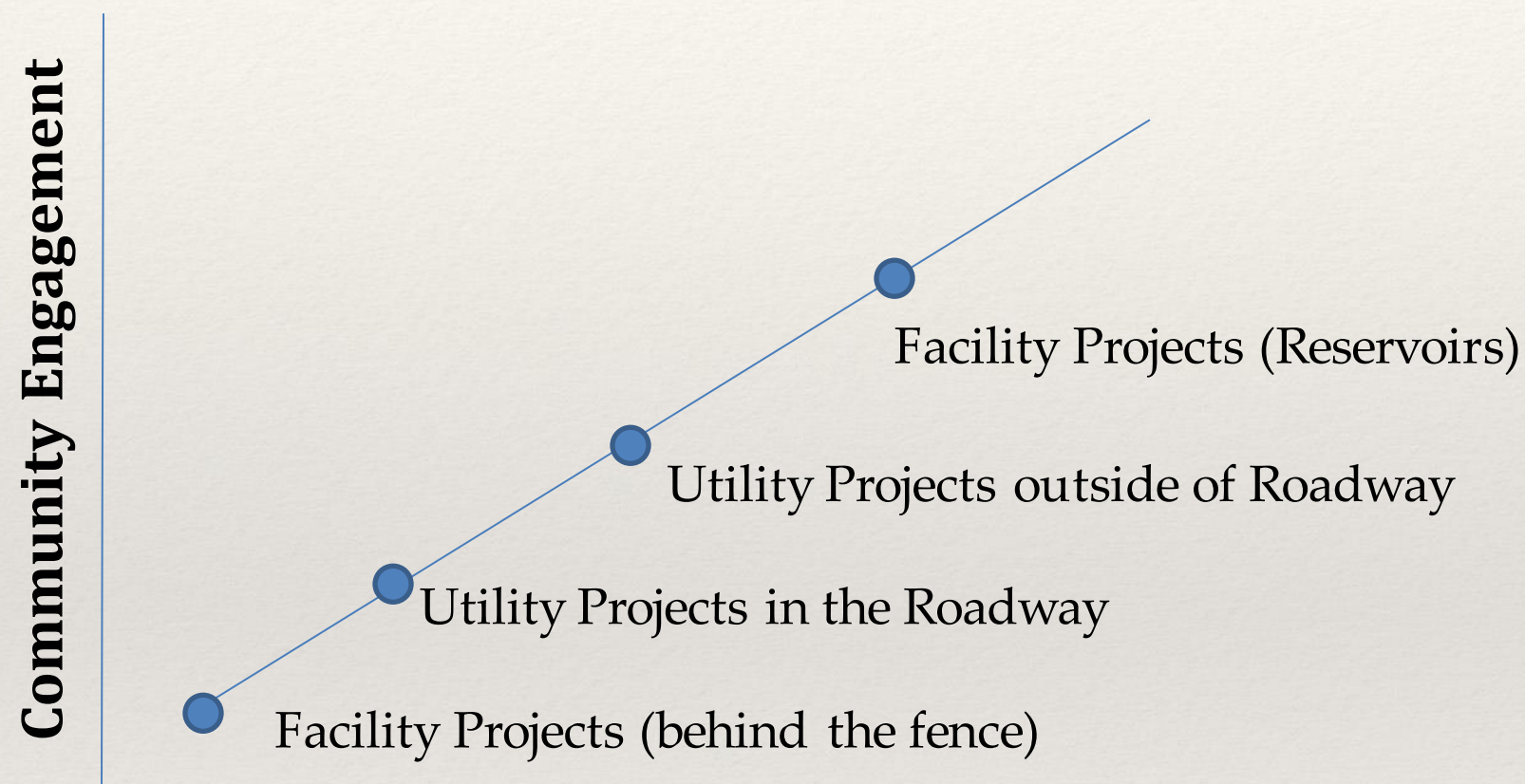


Wastewater Treatment System

Baltimore City Wastewater Treatment System



OEC Community Engagement



Impact to Community During and After Construction



DPW's Routine Community Engagement

- ◉ DPW in the Community Meetings
- ◉ Consent Decree Annual Meeting
- ◉ Staff Dedicated to Routine Engagement and Outreach
- ◉ Programs
- ◉ Events
- ◉ Publications
- ◉ Social Media



Objectives

1. Improve Visibility and Impact of Equity in DPW Decision-Making

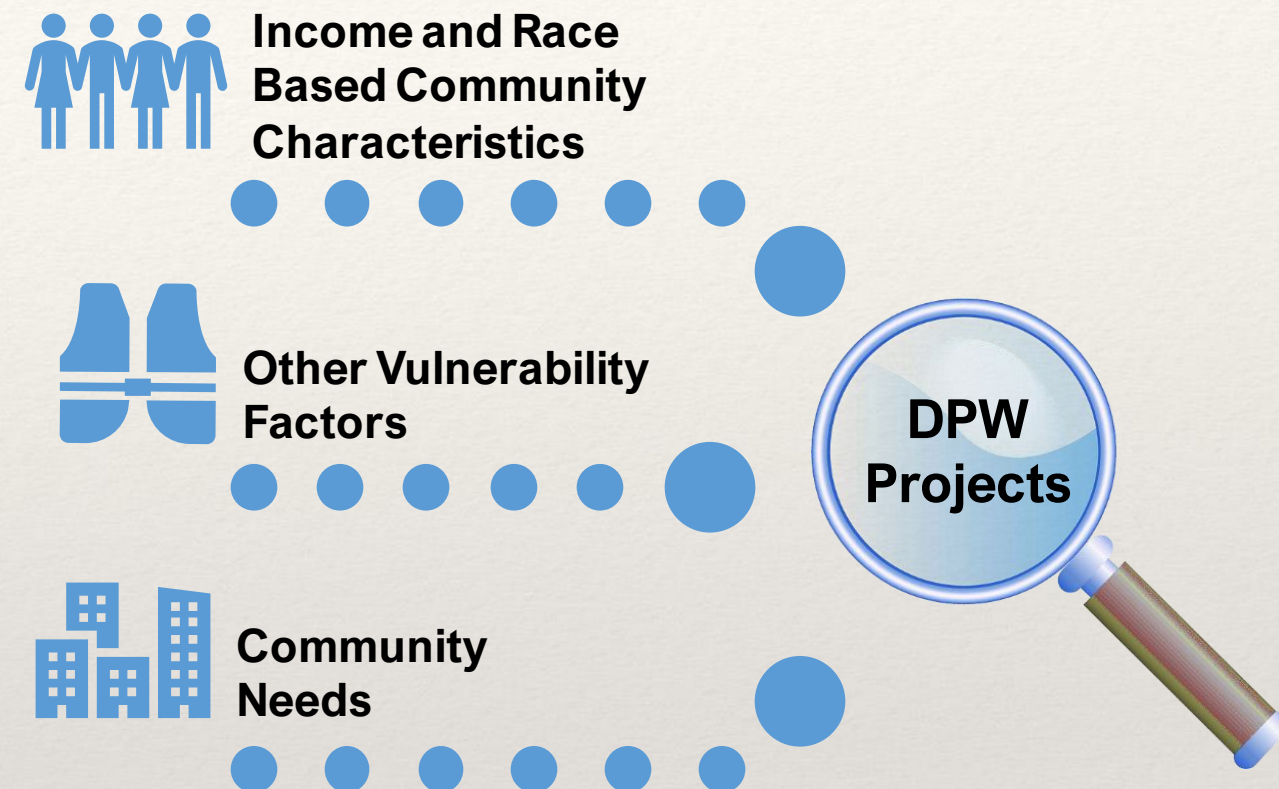
Develop an 'Equity Lens' for projects and CIP Project Bundles that highlight how Equity has been incorporated and considered. Increase the Role of Equity in scoring projects.

2. Make Equity Considerations More Comprehensive

Bake-In Equity in all social, environmental, economic, and operational criteria and incorporate co-benefits for disadvantaged communities.

3. Improve Equity Analysis and Insights

Incorporate a data-driven methodology that more accurately captures spatial and demographic context for projects and impacts.

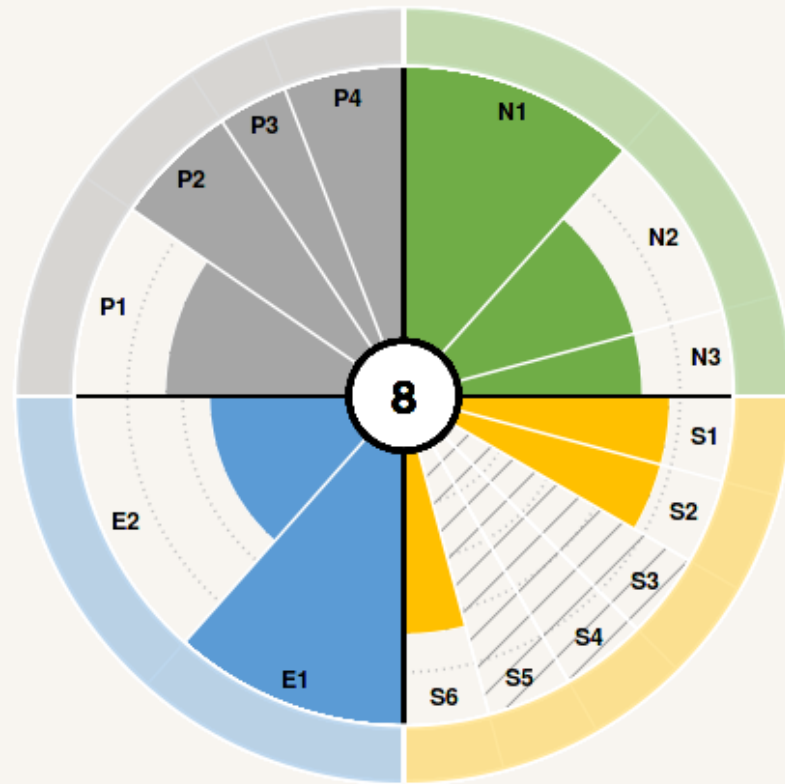


Data Sources – 1) US Census;
2) US EPA EJScreen;
3) Baltimore Neighborhood Indicators Alliance (BNIA) Vital Signs Report

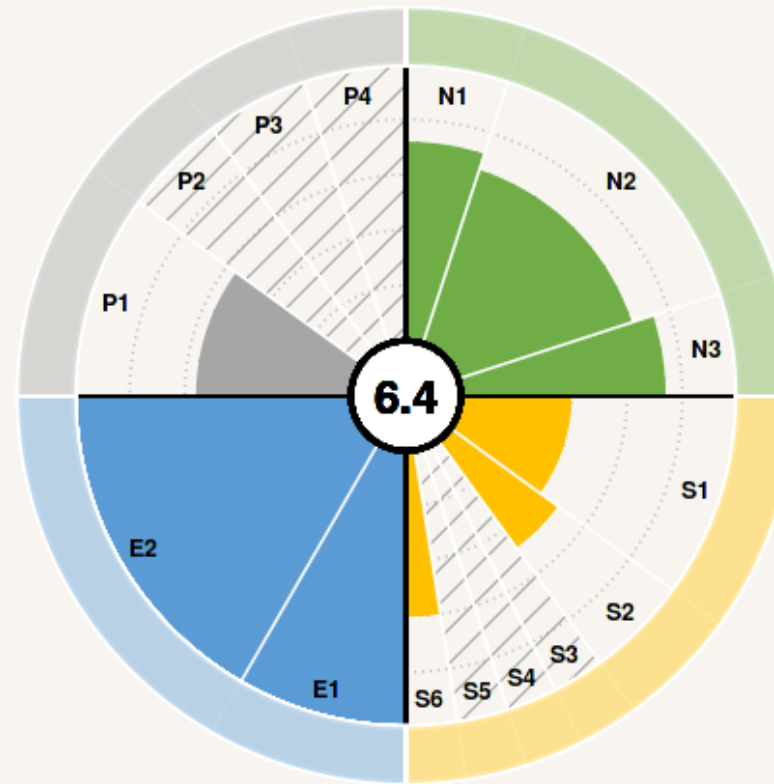


The Three Lens Scorecard

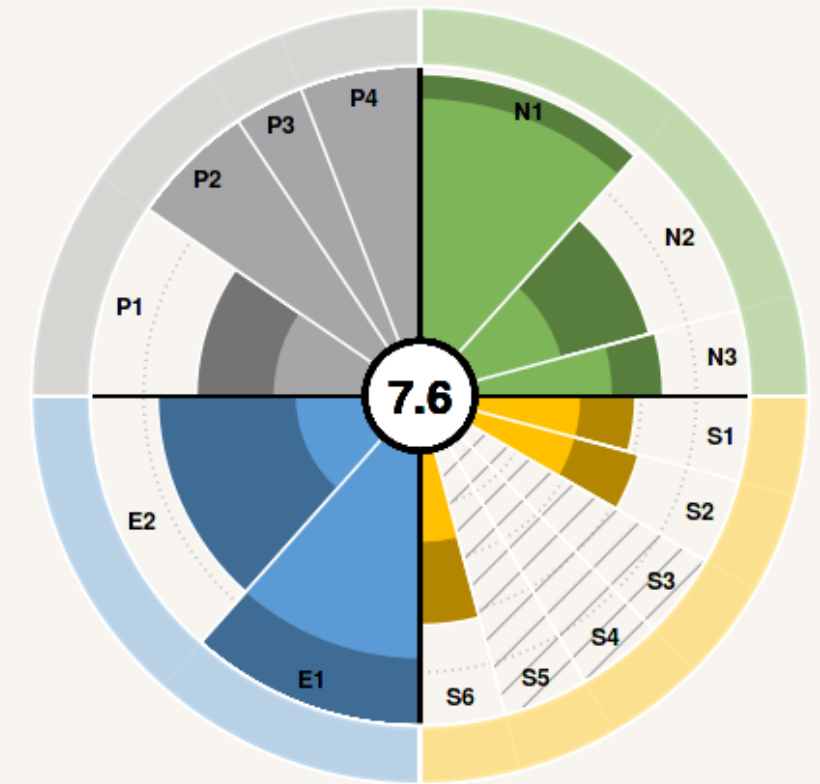
PERFORMANCE LENS



EQUITY LENS



COMBINED LENS



ENVIRONMENTAL	
N1	Regulatory Driven Projects
N2	Sewage Overflows
N3	Surface Water Quality




SOCIAL	
S1	Health and Safety
S2	Improve Quality of Life
S3	Drinking Water Quality
S4	Potable Water Leakage
S5	Drinking Water Service
S6	Customer Satisfaction

ECONOMIC	
E1	Alternative Funding Source
E2	Economic Benefit

PROJECT IMPLEMENTATION	
P1	Service Life and Consequence of Failure
P2	Better Performance of System
P3	Time Component
P4	Systems Impact

DPW CIP Program Summary FY-22

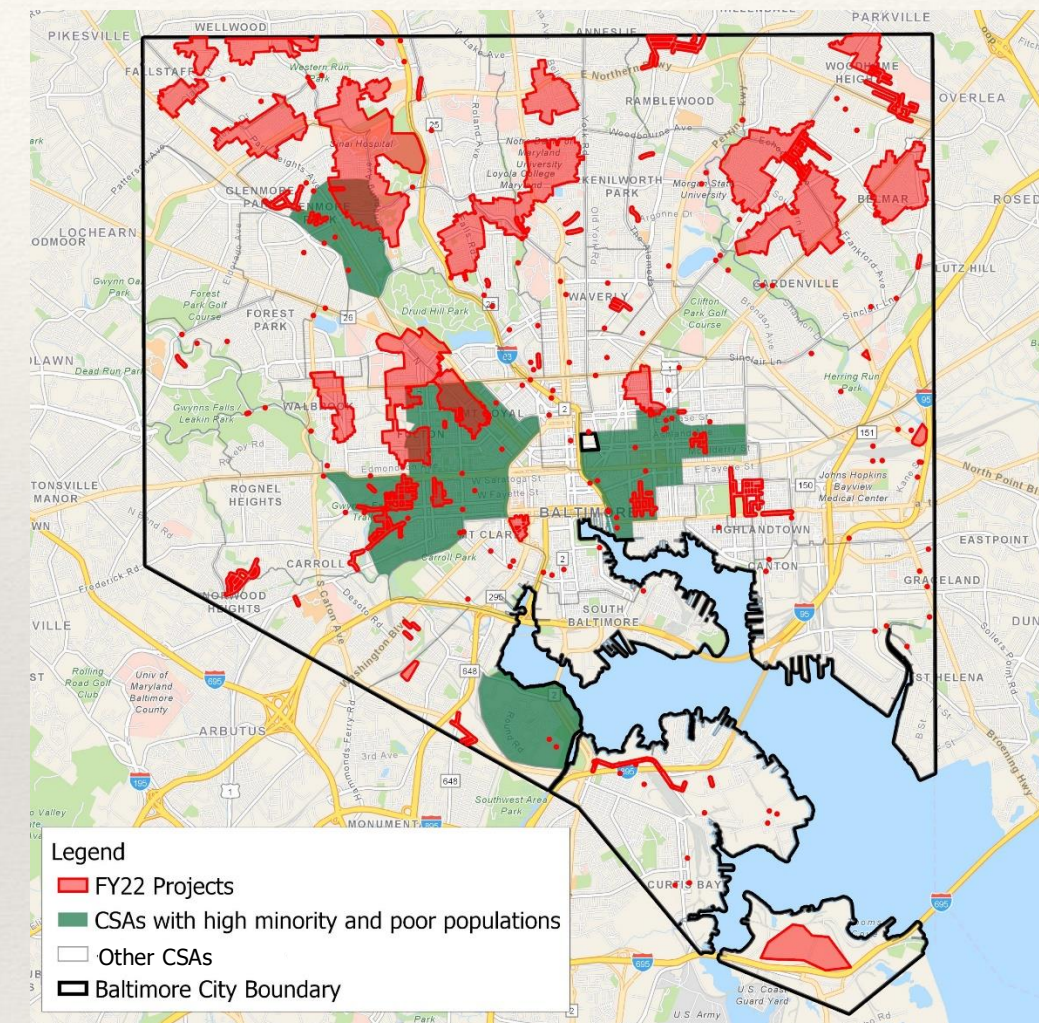
Program Summary

	TOTAL PROJECTS 39
	TOTAL CITYWIDE PROJECTS 17
	TOTAL COSTS \$253 million

Program Type

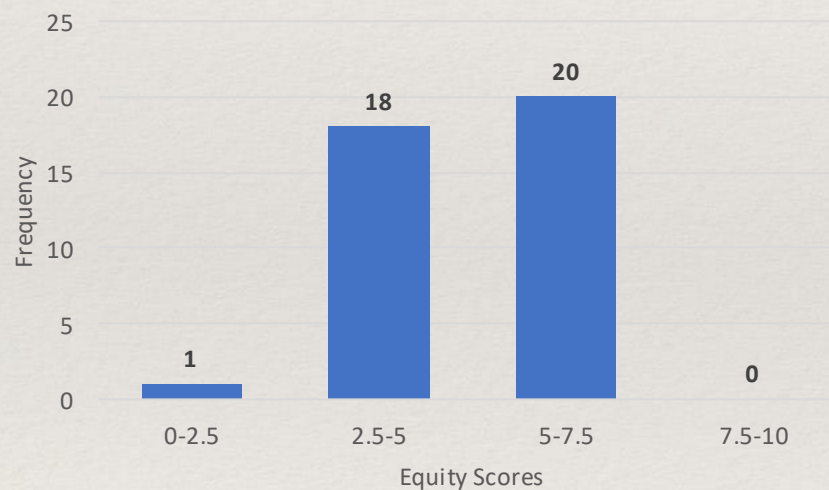
Drinking Water	25
Solid Waste	3
Stormwater	2
Wastewater	9

Projects in FY22



The map excludes city wide projects

Equity Score



Average Equity Score: 4.8

Average Performance Score: 5.6

Average Combined Score: 5.3

Impacted Areas

8 projects with localized impacts

14 projects with impacts on service areas

17 projects with impacts across the city

FY 2022-2027

Capital Improvement Program Summary

CIP #	Program	(\$ in Millions)
520 & 525	Stormwater & Environmental	\$ 248
551	Wastewater	\$ 1,198
557	Water	\$ 666

FY 2022 - FY 2027 Total = \$ 2.1 Billion



FY 2022

Capital Improvement Program Summary

CIP #	Program	(\$ in Millions)
520 & 525	Stormwater & Environmental	\$ 1.5
551	Wastewater	\$ 96
557	Water	\$ 171

FY 2022 Total = \$269 Million



Stormwater & Environmental Programs

FY 2022 Request

CIP #	Program	(\$ in Millions)
520-069	ER-4123 SDC-7769 North Point Road	0.5
525-035	ER -4123 Tree Mitigation	1.0
FY 2021 Total = \$ 1.5 Million		



Stormwater Program 520

Long Term Capital Needs



Chronic flooding problems

**Aging Infrastructure
Repair on 66" Storm Drain**



Stormwater Program 520

Recent CIP Accomplishments

SC947 & SC980 - Construction of Twin 10-inch diameter Sewer Main Crossing the Gwynns Fall.



Before



After



Stormwater Program 520

Recent CIP Accomplishments

SC980 - Emergency Repair of 84” Pressure Sewer at Kent Street



Before



After

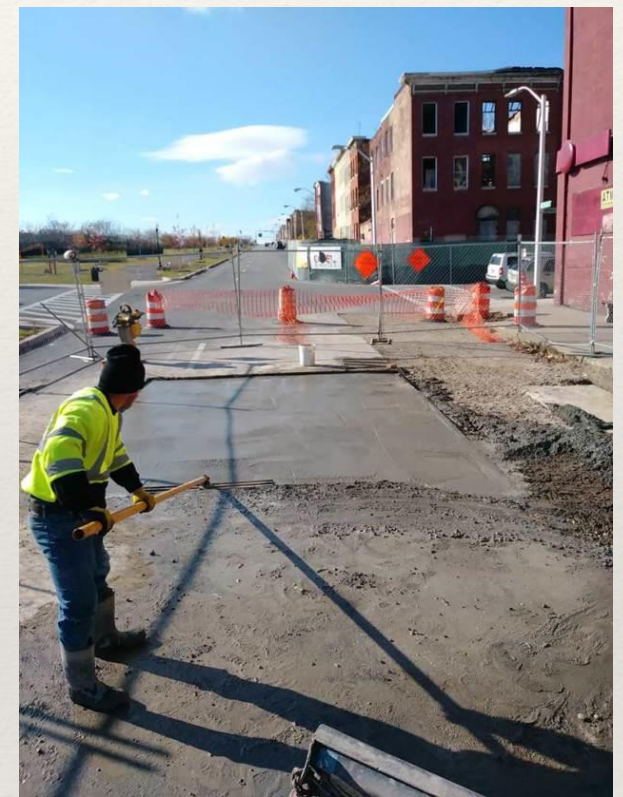
Stormwater Program 520

Recent CIP Accomplishments

Repair of 8' wide x 6' high brick and stone storm drain culver at West Franklin Street



Before



After



Stormwater Program 520

Recent CIP Accomplishments

SDC7777 Jones Falls Drift Catcher Cleaning



Before



After



Stormwater Program 520

Ongoing CIP Accomplishments

SC955 Powder Mill Run Stream Restoration Project



Before



After



Stormwater Program 520

Ongoing CIP Accomplishments

Current Condition
Missing Mortar and Bricks



SDC-7768 Storm drain Design in Harris Creek Watershed - Addressing Structural Deficiencies



Structural Design to Prevent Future Failures

Wastewater Program 551

FY 2022 Utilities Request

CIP #	Project	(\$ in Millions)
551-132	SC-1014 Jones Falls Sewershed Inflow and Infiltration Reduction - Project 01	\$17.5
551-609	SC-866 SW Diversion Pressure Sewer Imp	\$14.4
551-158	SC-1017 Inflow and infiltration reduction in various locations in the Baltimore City – Project 01	\$12.9
551-115	SC-1005 Herring Run Sewershed Inflow and Infiltration Reduction - Project 01	\$4.1
551-065	SC-TBD Future Wet Weather Flow Monitoring for PCM	\$3.2
551-116	SC-1006 Herring Run Sewershed Inflow and Infiltration Reduction - Project 02	\$3.0
	Other Utility Projects	\$3.3
FY 2022 Total = \$ 58.6 Million		



Wastewater Program 551

FY 2022 Facilities Request

CIP #	Project	(\$ in Millions)
551- 526	SC 992 Back River Egg-Shaped Digester Rehab.	\$ 37.6
FY 2022 Total = \$37.6 Million		



Wastewater Program 551

Long Term Capital Needs

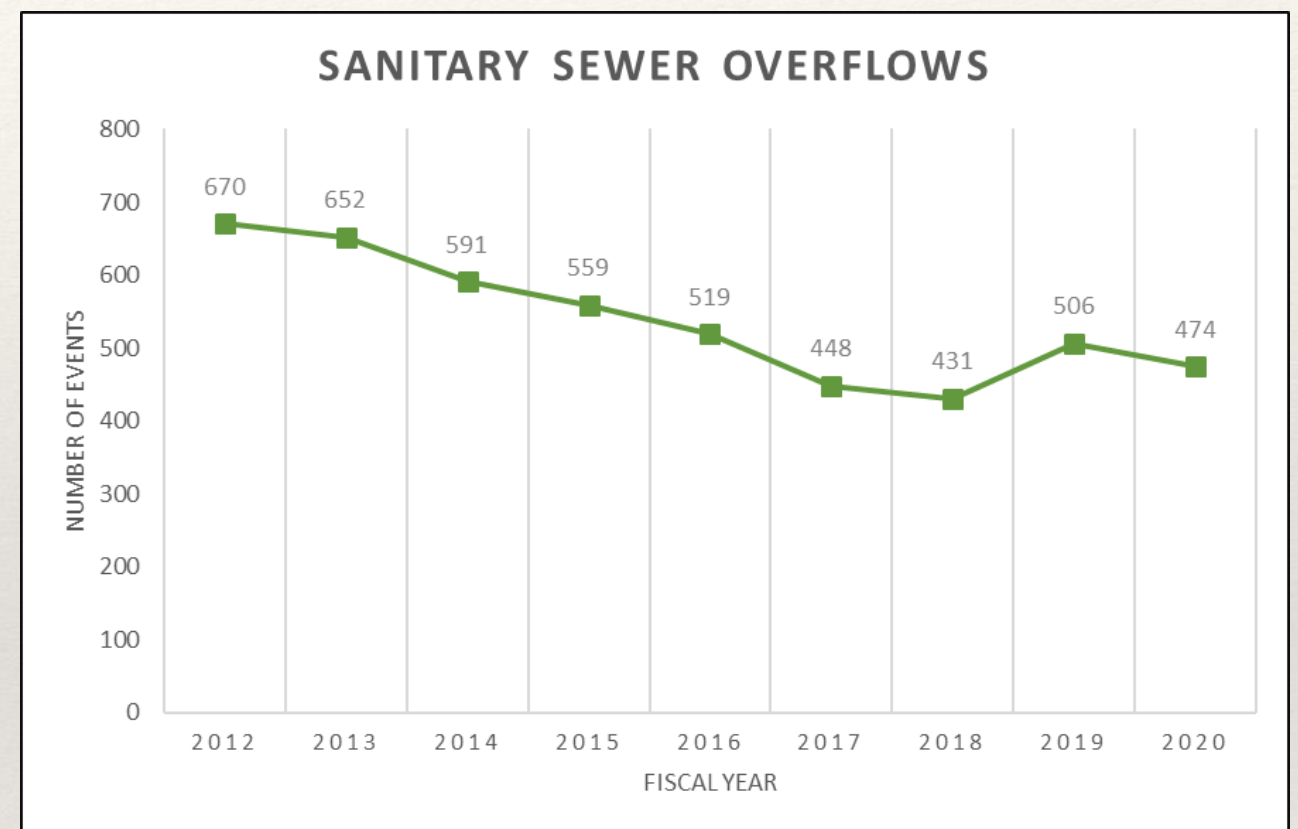
- Ongoing Federally mandated Consent Decree Anticipated > \$2.6 Billion cost (FY 2002 through FY 2030).
- Ongoing City support for capital improvements for Power Reliability, Pump Station, WWTP Security, Biosolids Upgrades & Patapsco WWTP Headworks requiring ~ \$0.7 Billion.



Wastewater Program 551

Modified Consent Decree

- ◉ Consent Decree entered in September 2002
 - ◉ Addresses sanitary sewer overflows (SSOs) from the City's collection system
- ◉ Modified Consent Decree was entered in October 2017.
 - ◉ The City is doing more
 - ◉ The City is working smarter
- ◉ Phase I deadline – January 1, 2021
- ◉ Phase II deadline – December 31, 2030

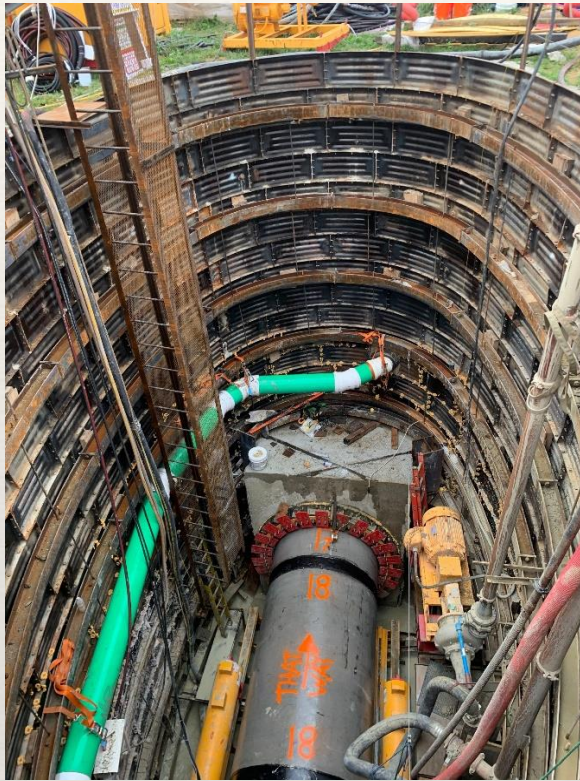


29% decrease from 2012 to 2020!



Wastewater Program 551

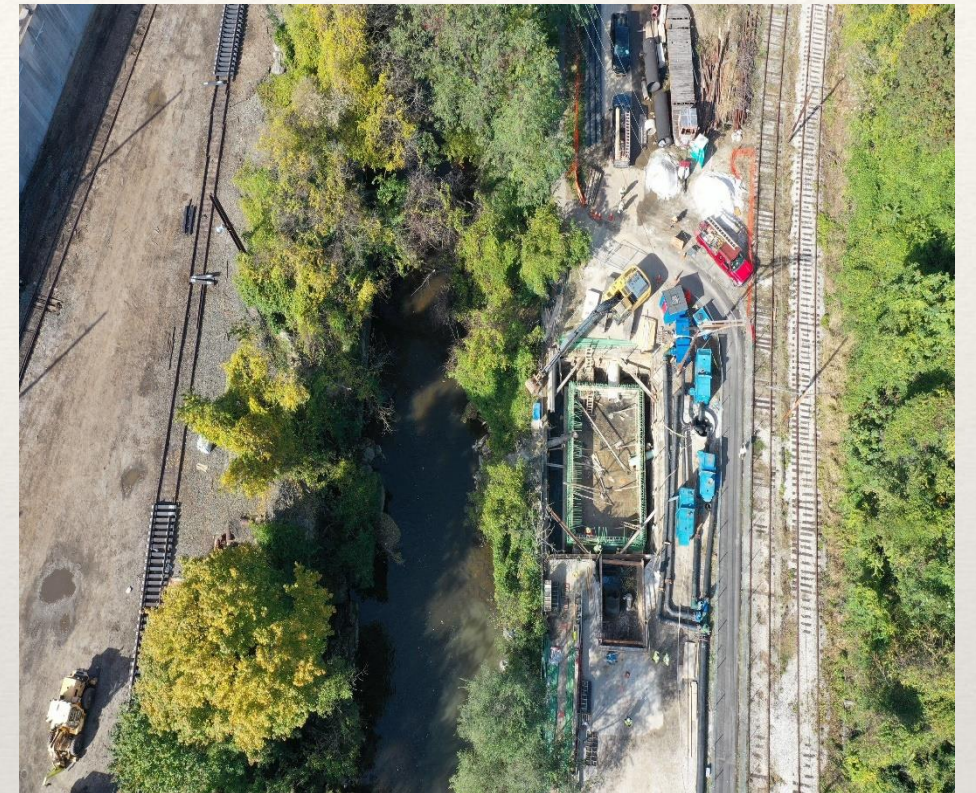
Recent CIP Accomplishments



**Microtunneling across
Liberty Heights Ave**



**Microtunneling across
Perring Parkway**



**Siphon Construction along
Falls Road**

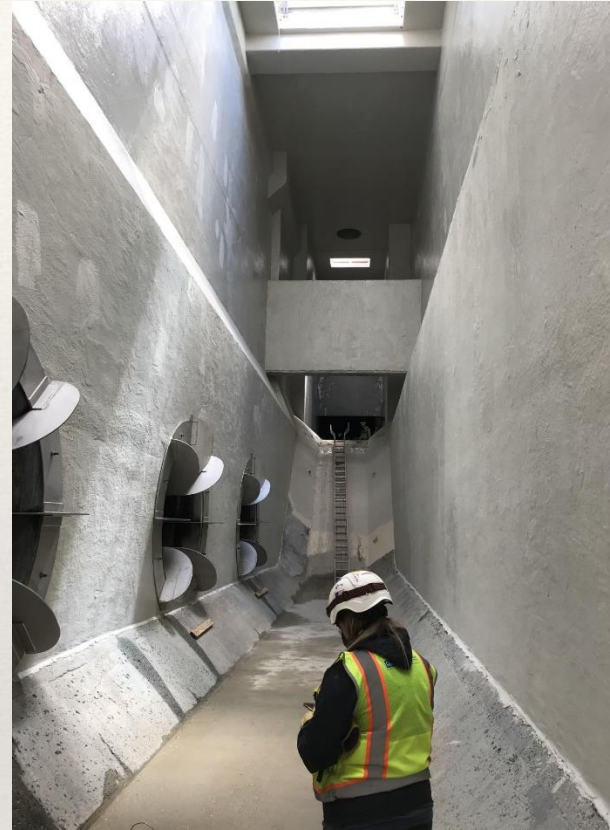


Wastewater Program 551

Recent CIP Accomplishments



**Headworks facility at
BRWWTP**



**Wet well facility at
BRWWTP**



**GRT Facility at
BRWWTP**



Wastewater Program 551

Recent CIP Accomplishments

Back River & Patapsco Projects

- ◉ **SC-845R & SC-852R ENR Upgrades**
 - ◉ Combined Project Costs ~ \$ 320 Million
 - ◉ Patapsco WWTP Construction & Testing complete and meeting NPDES Permit.
- ◉ **SC-877 & SC-882 ENR Upgrades**
 - ◉ Combined Project Costs ~ \$ 715 Million
 - ◉ Back River WWTP Construction 98% complete.
- ◉ **SC-918 Headworks & Flow Equalization**
 - ◉ Combined Project Costs ~ \$558 Million
 - ◉ Back River WWTP Construction 90% complete



Wastewater Program 551

Recent CIP Accomplishments - Utilities

SC 876	SC 879	SC 894	SC 920
SC 897R	SC 898	SC 899	SC 902
SC 905	SC 906	SC 907	SC 934
SC 911	SC 912	SC 913	SC 937
SC 931	SC 932	SC 933	SC 922R
SC 909	SC 895	SC 900	SC 944R
SC 942	SC 943	SC 973	SC 974

28 PROJECTS COMPLETED
\$404 million

SC 903	SC 941	SC 964
SC 910	SC 953	SC 965
SC 914	SC 955	SC 967
SC 919	SC 956	SC 968
SC 921	SC 962	SC 976
SC 940	SC 963	SC 977
SC 997	SC 998	SC 999

22 CONSTRUCTION PROJECTS
\$384 million

SC 1006	SC 1010	SC 978
SC 1005	SC 1012	SC 969
SC 1014	SC 1006	SC 946
SC 1017	SC 1007	SC 945
SC 866	SC 1008	SC 985
	SC 1009	

FY 22 REQUEST
\$211 million

DESIGN PROJECTS
\$130 million



Wastewater Program 551

Recent CIP Accomplishments - Facilities

SC 829	SC 841	SC 846	SC 847
SC 848	SC 8526	SC 854	SC 855
SC 857	SC 859	SC 863	SC 868
SC 869	SC 870	SC 884	SC 886R
SC 888	SC 889	SC 901R	SC 915
SC 918S	SC 923	SC 924	SC 961

24 PROJECTS COMPLETED
\$47 Million

SC 845R	SC 852R	SC 877
SC 882	SC 890	SC 892R
SC 918H	SC 925	SC 948
SC 927	SC 961	

**11 CONSTRUCTION
PROJECTS**
\$1.426 Billion

SC 992

**FY 22
REQUEST**
\$38 million

SC 926	SC 930	SC 935
SC 938	SC 948	SC 949
SC 950	SC 951	SC 954
SC 957	SC 982	SC 983
SC 987	SC 988	SC 989
SC 990	SC 991	SC 993
	SC 994	SC 995

20 STUDY/DESIGN PROJECTS
\$563 Million



Water Program 557

FY 2022 Utilities Requests

CIP #	Project	(\$ in Millions)
557-175	WC-1282 Water Main Rehab at Franklin Square	14.9
557-126	WC-1283 Water Main Rehab at Reistertown Road	12.6
557-074	WC-1258 Water Main Rehab at Lambeth Road	10.9
557-233	Urgent Need Infrastructure Rehab FY 22 Phase I	10.2
557-234	Urgent Need Infrastructure Rehab FY 22 Phase II	10.2
557-235	Urgent Need Infrastructure Rehab FY 22 Phase III	10.2
	Other Water Utility Projects	22.5
FY 2022 Utilities Total = \$ 91.5 Million		



Water Program 557

FY 2022 Facilities Requests

CIP #	Project	(\$ in Millions)
557-051	WC-1413 Montebello Lake Dredging	23.3
557-036	WC-1327 Chlorine Handling Safety Improv.	18.4
557-139	WC-1384 Earthen Dam Rehabilitation	10.8
557-011	Washington Blvd Pump Station Rehabilitation	7.7
557-036	Curtis Bay Tank Rehabilitation	7.2
	Other Water Facility Projects	12.7
FY 2022 Facilities Total = \$ 80.2 Million		



Water Program 557

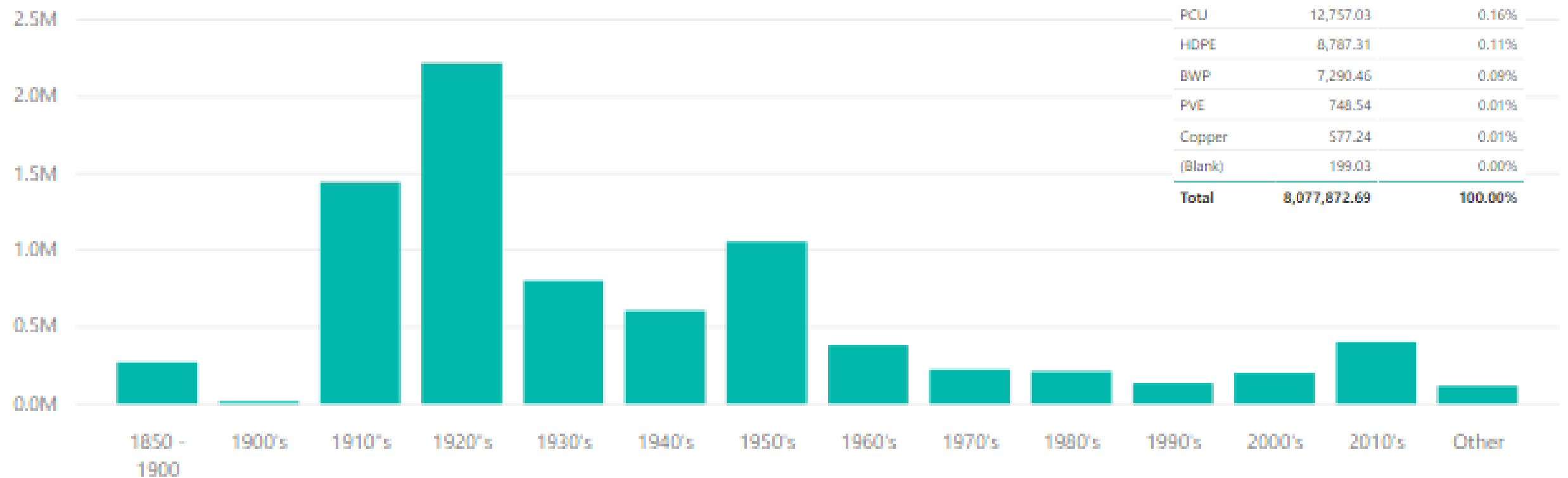
Long Term Capital Needs

Average Age of Water Main Assets Approximately 80 Years

Length of Active Baltimore City Water Mains Installed by Decade
Average Age is Approximately 80 Years Old

Material Type	Length	% of Length to Total
Cast Iron	6,833,836.49	84.60%
Ductile Iron	846,358.00	10.48%
Concrete	314,745.84	3.90%
Steel	30,838.67	0.38%
Unknown	21,734.09	0.27%
PCU	12,757.03	0.16%
HDPE	8,787.31	0.11%
BWP	7,290.46	0.09%
PVE	748.54	0.01%
Copper	577.24	0.01%
(Blank)	199.03	0.00%
Total	8,077,872.69	100.00%

Water Main Installation by Decade



Water Program 557

Long Term Capital Needs



Water Program 557

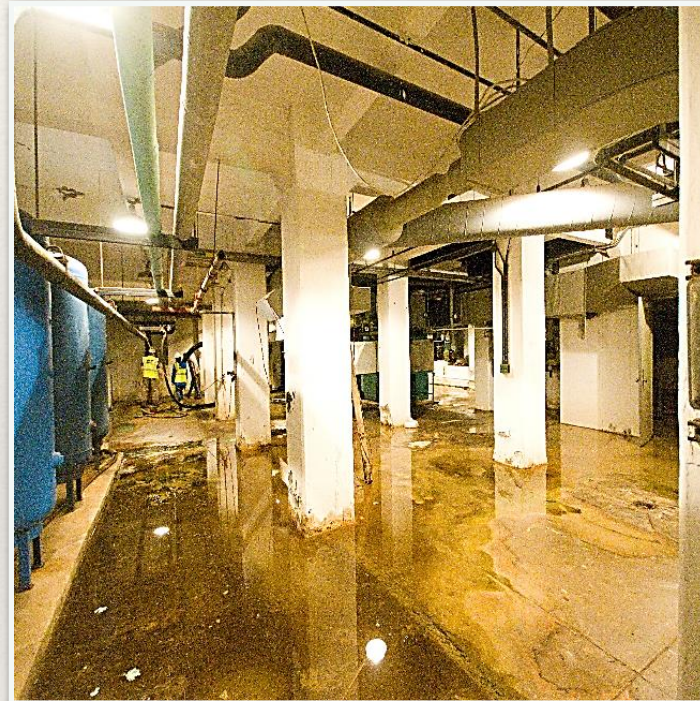
Long Term Capital Needs

Montebello WFP 1 & 2 Renovations

Mechanical/Structural/Electrical/Controls/Filter Upgrade Work
Appropriations > \$ 125 Million



Hydraulic Valve Actuator
Corroded Leakage



Ground Water Leakage



Existing Filter Piping
Conditions



Water Program 557

Recent CIP Accomplishments - Utilities

WC 1202	WC 1203	WC 1217	WC 1224	WC 1225 R
WC 1226	WC 1234	WC 1240	WC 1244	WC 1245
WC 1246	WC 1254 R	WC 1255	WC 1256	WC 1260
WC 1261	WC 1262	WC 1263	WC 1264	WC 1266 R
WC 1268	WC 1269	WC 1270	WC 1276	WC 1278
WC 1294	WC 1330	WC 1337	WC 1342	WC 1343
WC 1346	WC 1351	WC 1355	WC 1359	WC 1366
WC 1369	WC 1302			

37 PROJECTS COMPLETED

\$160 Million

WC 1272	WC 1286
WC 1293	WC 1301 R
WC 1302	WC 1314
WC 1339	WC 1340
WC 1363	WC 1365
WC 1406	

11 CONSTRUCTION PROJECTS

\$94 Million

WC-1258	WC-1418	WC 1241	WC 1252	WC 1257	
WC-1282	WC-TBD	WC 1271	WC 1274	WC 1275	
WC-1283	WC-TBD	WC 1277	WC 1279	WC 1281	
WC-1349	WC-TBD	WC 1284	WC 1285	WC 1287	
WC-1416	WC-TBD	WC 1288	WC 1290	WC 1291	
WC-1417	WC-TBD	WC 1292	WC 1312	WC 1313	
WC-TBD	WC-TBD	WC 1315	WC 1316	WC 1317	WC 1318
WC-TBD	WC-TBD	WC 1320	WC 1321	WC 1367	WC 1391

FY 22 REQUEST

42 DESIGN PROJECTS

\$367 Million



Water Program 557

Recent CIP Accomplishments - Facilities

WC 1137 R	WC 1143	WC 1160 R	WC 1164
WC 1168	WC 1178	WC 1183	WC 1194
WC 1228 R	WC 1233	WC 1242	WC 1295
WC 1306	WC 7607	WC 8652	WC 1190
WC 1230	WC 1362		

WC 1120	WC 1173	
WC 1204	WC 1211	WC 1228
WC 1305	WC 1328	

WC 1327	WC 1376	TR 11003	TR 11013 R
WC 1380	WC 1382	WC 1199	WC 1207
WC 1384	WC 1395	WC 1229	WC 1243
WC 1413	WC TBD	WC 1326	WC 1396
WC TBD		WC 1397	WC 1406

FY 22 REQUEST

18 PROJECTS COMPLETED
\$130 Million

**7 CONSTRUCTION
PROJECTS**
\$515 Million

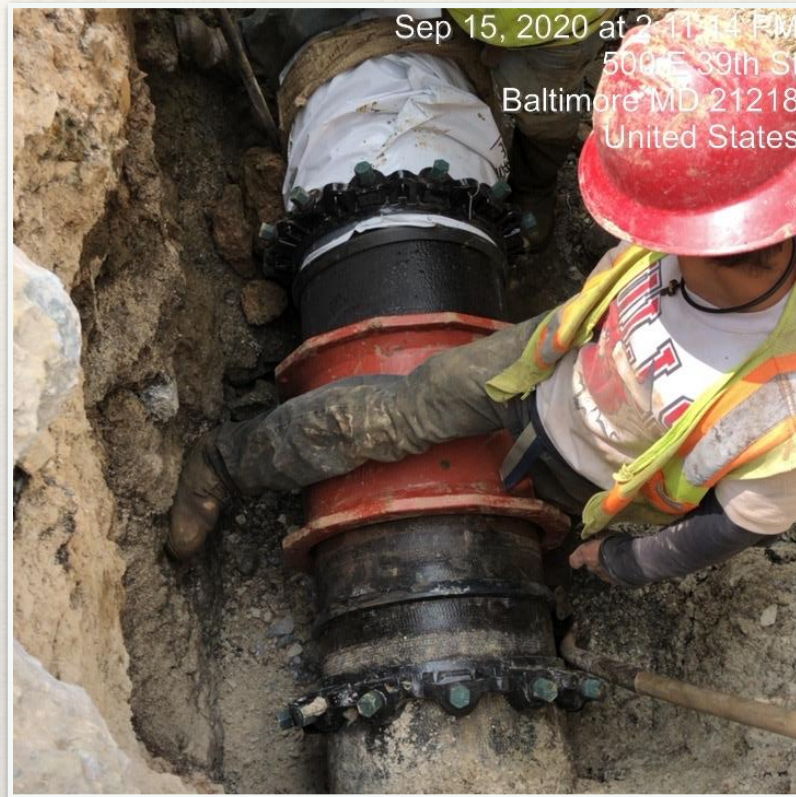
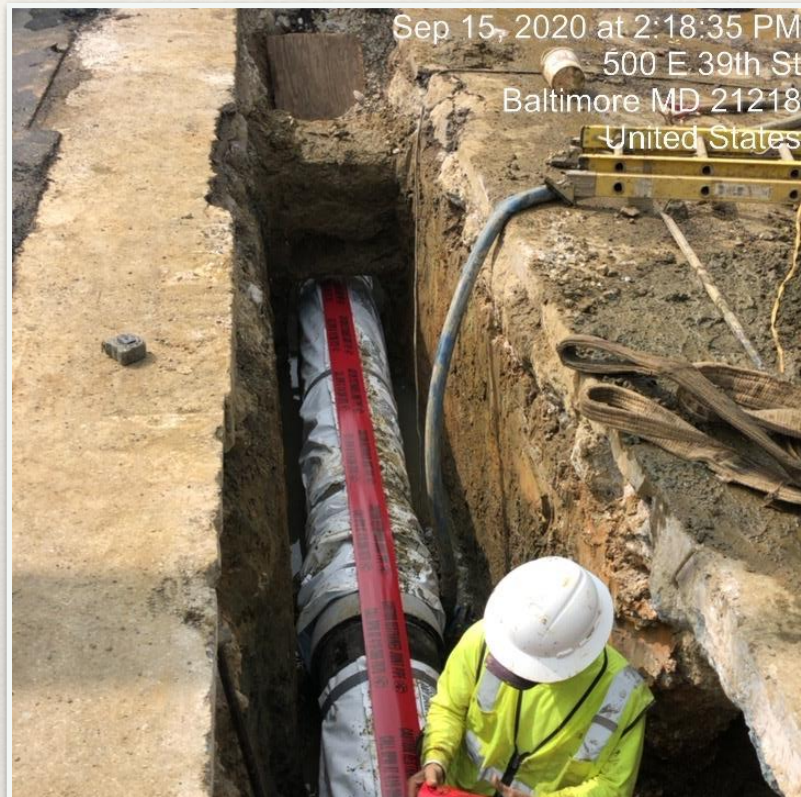
19 DESIGN PROJECTS
\$318 Million



Water Program 557

Recent CIP Accomplishments - Utilities

16" DIP water main replacement at E. 39th St. under WC-1407



DIP water main replacement on W. Hoffman St. and Druid Hill Ave. under WC-1339



Water Program 557

Recent CIP Accomplishments - Utilities

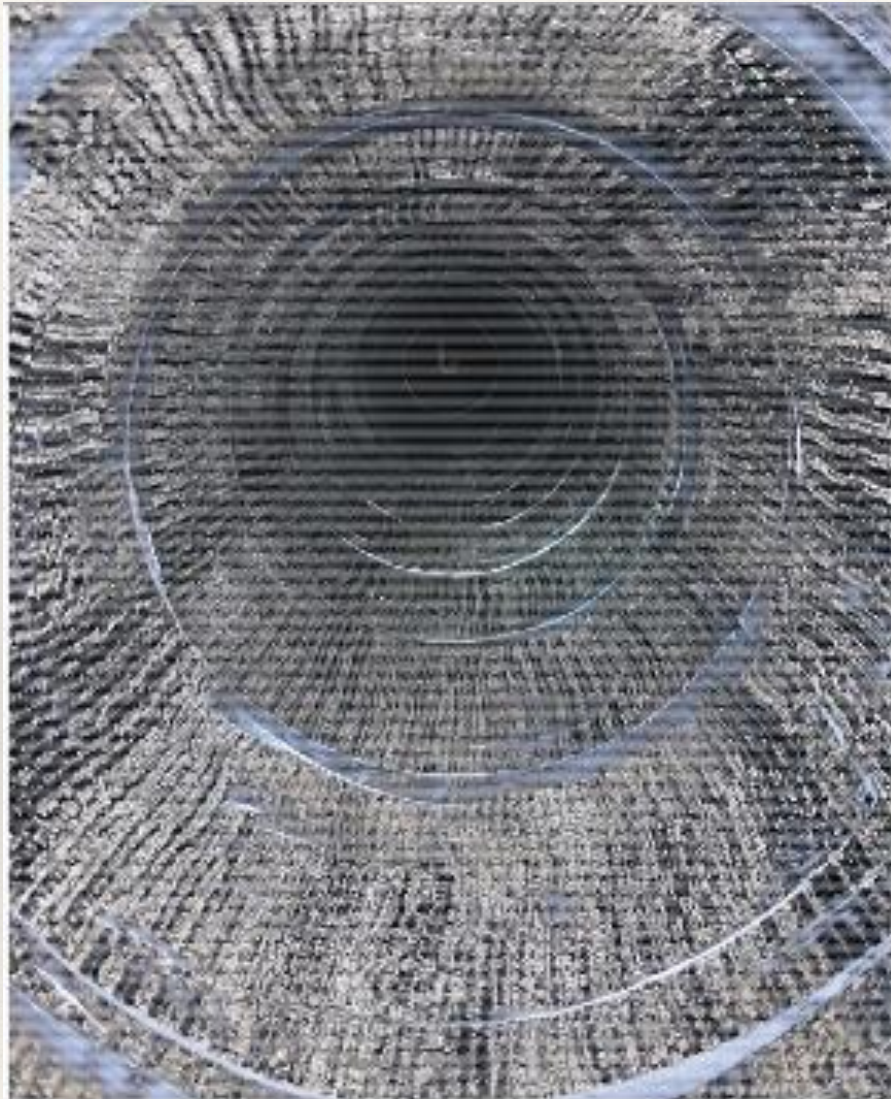


Figure 1 – First Cured Layer of CFRP.



Figure 1 – Second Cured Layer of CFRP.

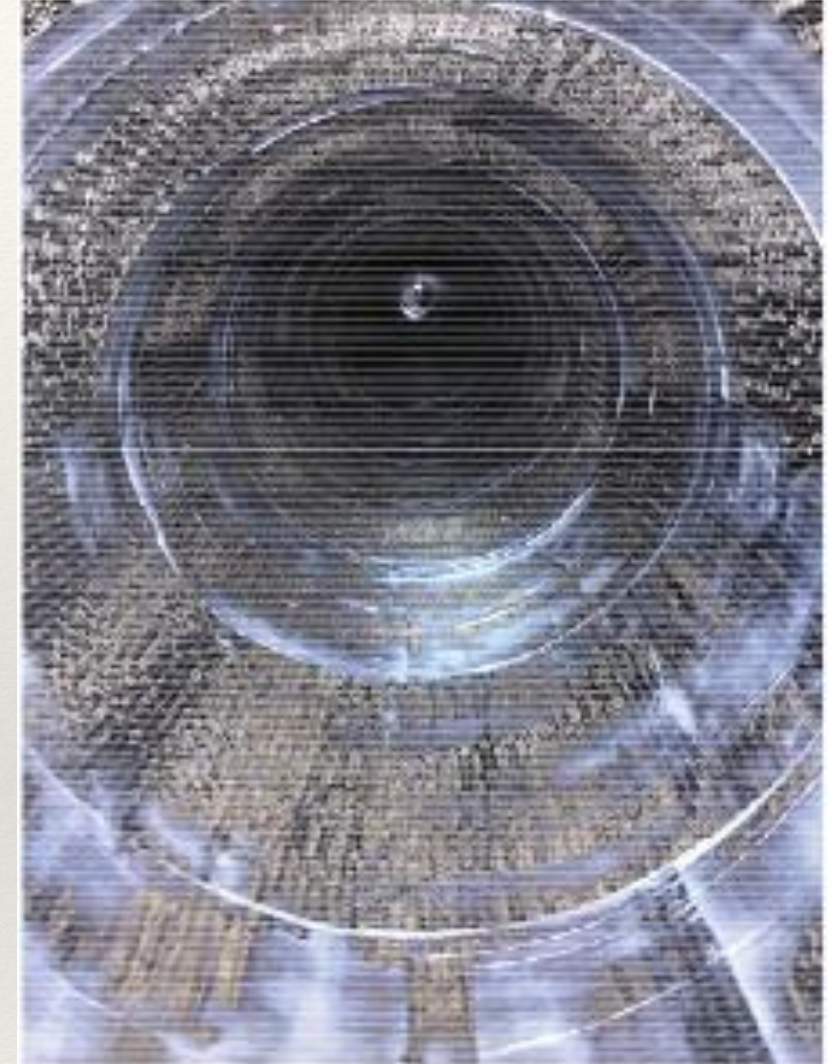


Figure 1 – Final Cured Layer of CFRP.

Proactive Internal Carbon-Fiber Repair of 36" PCCP



Water Program 557

Recent CIP Accomplishments - Facilities

**WC 1173R Guilford Finished Water Reservoir Project Costs ~ \$ 70 Million
Construction at 95% Complete**



**WC 1204 Druid Lake Finished Water Reservoir
Project Costs ~ \$212 Million
Construction at 90% Complete**



**WC 1211 Ashburton Lake Finished Water Reservoir
Project Costs ~ \$178 Million
Construction at 35% Complete**





FY 2022 Capital Improvement Program Presentation



Questions?