The Pittsburgh Water and Sewer Authority

2021 – 2025 Capital Improvement Plan

Approved on September 25, 2020

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Pittsburgh Water & Sewer Authority

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Introduction

The Pittsburgh Water and Sewer Authority ("**the Authority**" or "**the PWSA**") is a body corporate and politic organized and existing under the Act pursuant to Resolution No. 36 of the Council of the City of Pittsburgh (the "**City**"), duly enacted on February 6, 1984, approved by the Mayor on February 8, 1984, and effective February 16, 1984. The Secretary of the Commonwealth of Pennsylvania approved the Authority's Articles of Incorporation and issued a Certificate of Incorporation on February 17, 1984. Articles of Amendment were approved and a Certificate of Amendment was issued by the Pennsylvania Department of State on December 11, 1989, to include, among authorized projects, low head dams and facilities for generating surplus electric power. Articles of Amendment were approved and a Certificate of Amendment was issued by the Pennsylvania Department of State on May 9, 2008, to extend the term of existence of the Authority to May 21, 2045. Articles of Amendment were approved and a Certificate of Amendment was issued by the Pennsylvania Department of State on March 19, 2020, to extend the term of existence of the Authority to March 13, 2070 and to include stormwater systems.

Under its Articles of Incorporation, the Authority is specifically authorized to acquire, hold, construct, finance, improve, maintain, operate, own and lease, either as lessor or lessee, projects of the following kinds and character: sewers, sewer systems or parts thereof, waterworks, water supply works, and water distribution systems, low head dams, facilities for generating surplus power, and stormwater systems.

The System provides water to approximately 81,000 customers or 84% of the total population in the geographic boundaries of the City. The Authority provides wastewater collection and transmission service to almost the entire City, estimated at 306,000 residents. The System does not include wastewater treatment facilities; such facilities are the responsibility of Allegheny County Sanitary Authority ("**ALCOSAN**"), a separate and distinct legal entity.

The Authority operates and maintains a 117 million gallon per day (MGD) rapid sand type water treatment plant, a 26 MGD microfiltration plant, approximately 964 miles of water mains, over 32,000 valves and fire hydrants, 1 raw water pump station, 10 finished water pump stations, 4 in-ground reservoirs, 10 storage tanks, approximately 1,220 miles of sanitary, storm and combined sewers, 29,000 manholes, 30,000 catch basins and inlets, 38 combined sewer overflow outfalls, 185 storm outfalls, and four wastewater pump stations.

Pennsylvania Public Utility Commission Oversight of the Authority

On December 21, 2017, the Pennsylvania legislature enacted Act 65 of 2017 ("**Act 65**"), placing the Authority under the jurisdiction of the Pennsylvania Public Utility Commission ("**PUC**") pursuant to the Pennsylvania Public Utility Code (the "**Public Utility Code**"). Act 65 applies most of the provisions of the Public Utility Code to the Authority in the same manner as a "public utility," resulting in regulation of the Authority's rate making, its operating effectiveness, debt issuances and other aspects of conducting its business similar to the way the PUC regulates investor-owned utilities. Act 65 includes provisions that allow the Authority to impose, charge or collect rates or charges as necessary to permit the Authority to comply with its covenants with the holders of any bonds or other financial obligations of the Authority, and prohibits the PUC from requiring the Authority to take any action that would cause the interest on the Authority's financial obligations to be includible in gross income of the holders of such obligations for federal income tax purposes.

Capital Improvement Program

Overview

The PWSA's Capital Improvement Program focuses on sustaining cost-effective operations, while optimizing the system's asset performance and life expectancy. The 2021-2025 Capital Improvement Program invests in programs which consider risk and consequence of asset failure and levels of service benefits.

Development and Approval Process

The PWSA's CIP process begins each year in May when project nominations are solicited from the entire organization. At the completion of the nomination period, the Finance Department screens and evaluates the nominated projects to determine the projects that should be included in the CIP. Further planning efforts consist of the preparation of a Project Sheet, which provides more detailed information on a project's potential scope options, risks, schedule, and the cost

estimate. This process lasts several months and culminates with the presentation of the updated CIP to PWSA's Board of Directors. Projects that are not selected for execution at any stage will be re-assessed during the next year's CIP development process.

Capital Project Prioritization

Due to funding limitations and the need to renew/replacing a significant amount of aging infrastructure, the following criteria are used to evaluate and prioritize capital projects:

- Capacity – Meets community health needs and growth, as needed
- Level of Service – Improvement to customer service
- Operations and Maintenance Efficiency – Potential for operating cost savings
- Regulatory Compliance – Regulatory compliance schedule and potential fines for non-compliance
- Regional Cooperation/Stewardship – Coordination with external stakeholders and local communities
- Reliability/Operational Flexibility – Location, age, and condition of infrastructure and risk if action is not taken
- Safety - Potential health and safety risks to personnel and the public if action is not taken
- Sustainability – Energy efficiency and "green" approach to improving water quality

Funding Sources

The PWSA Capital Improvement Program is funded through several primary sources to which specific programs and projects are allocated. These funding sources include, but are not limited to, Debt, Distribution System Improvement Charge ("**DSIC**"), cost shares with other utilities, and federal and state funding programs.

Capital Improvement Plan Organization

The CIP is organized into six project classes (types):

- Water Treatment Plant
- Water Pumping and Storage
- Water Distribution
- Wastewater System
- Stormwater
- Other

Each project class is then made up of individual projects. Projects are defined based upon current information, which range from annual allowances for asset renewal and/or replacement activities, to major, multiple phase facility renewal projects.

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Project Information

The following information is provided for each project:

- ***Alternatives to the Recommended Action*** – Lists the alternatives that were considered or evaluated.
- ***Cash Flow Summary*** – Estimated five-year cash flow for the project.
- ***Funding Source(s)*** – Proposed funding source(s) for the project.
- ***Impact on Operations*** – Describes the anticipated impact to the PWSA's operations when the project is completed.
- ***Phase*** – Phase in the project life-cycle (i.e. assessment/design/construction).
- ***Priority*** – Criteria utilized to prioritize the project.
- ***Project Class*** – Type of project.
- ***Project Description*** - A basic understanding of the project's intent and scope of work.
- ***Project Justification*** - A detailed explanation to why the project is needed.
- ***Project Name*** – Descriptive name assigned to the project.
- ***Project Number*** – Unique number(s) assigned to track the project from inception to completion. This number is established once a project is approved.
- ***Risk(s)*** - Outlines the risk(s) to the PWSA if the project is delayed or is not selected.
- ***Ward*** – Project location(s) based within the City of Pittsburgh.

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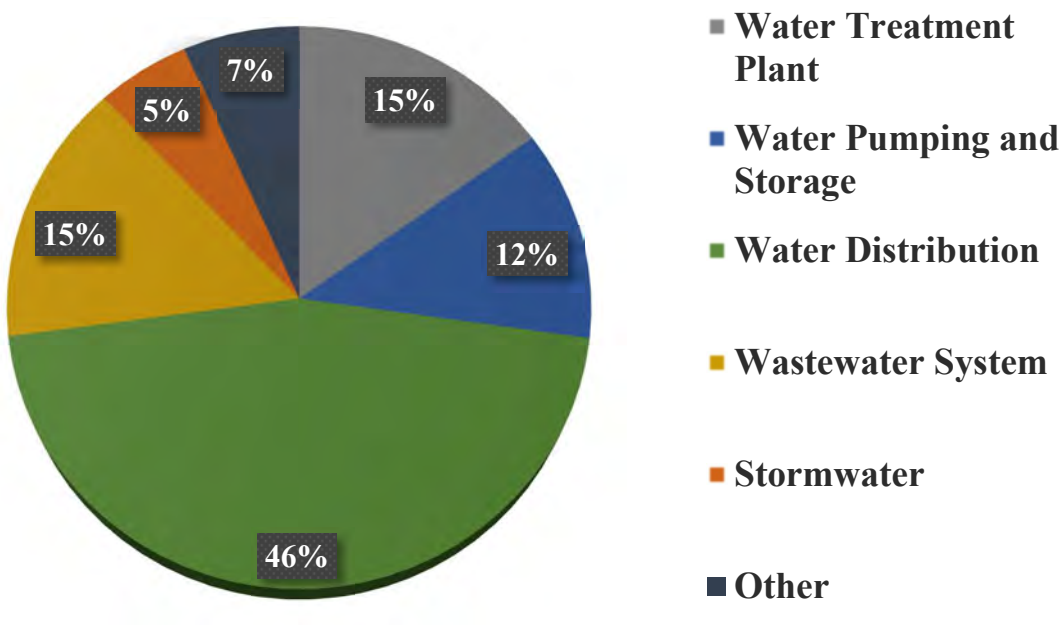
Historical and Forecasted Capital Expenditures

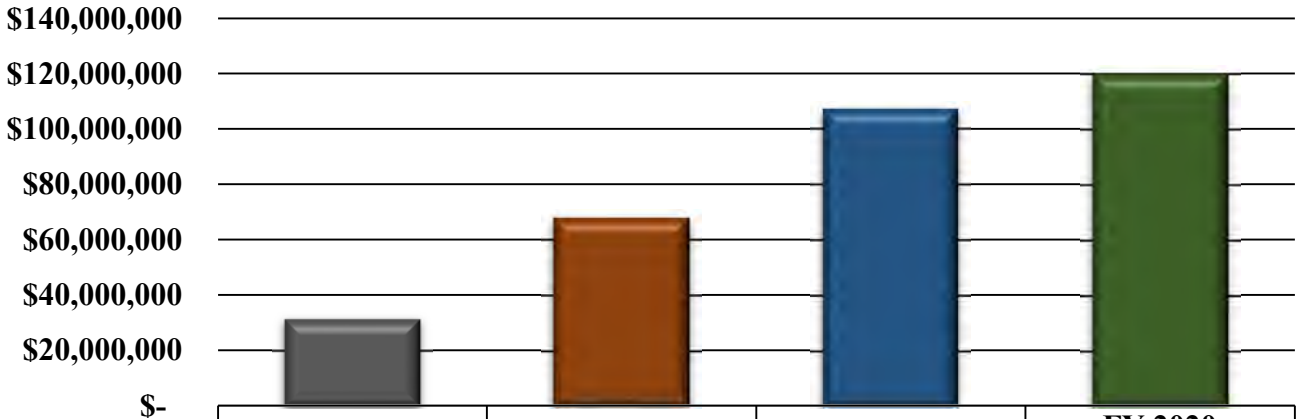
The figures below illustrate the historical capital expenditures by project class for FY 2017 – FY 2019 as well as the historical and forecasted capital expenditures for FY 2017 – FY 2020.

Figure 1. Historical Capital Expenditures by Project Class: FY 2017 – FY 2019



	FY 2017 - Actual	FY 2018 - Actual	FY 2019 - Actual	Total
Water Treatment Plant	$ 8,156,719	7,275,878	15,665,185	$ 31,097,782
Water Pumping and Storage	3,562,479	11,732,850	9,667,165	24,962,494
Water Distribution	11,113,101	27,185,518	55,588,889	93,887,508
Wastewater System	6,768,668	9,225,987	15,152,656	31,147,310
Stormwater	953,003	3,156,175	6,901,255	11,010,434
Other	521,500	9,141,347	4,023,798	13,686,645
Total	**$ 31,075,471**	**$ 67,717,755**	**106,998,948**	**$ 205,792,173**

Figure 2. Historical and Forecasted Capital Expenditures: FY 2017 – FY 2020



	FY 2017 Actual	FY 2018 Actual	FY 2019 Actual	FY 2020 Forecast
Capital Expenditures	**$31,075,470**	**67,717,755**	**106,998,948**	**119,867,887**

2021-2025 Capital Improvement Program

The figures below illustrate the proposed breakdown of the project classes, funding sources, and yearly cash flows for the 2021 to 2025 CIP.

Figure 3. Proposed Yearly Capital Cash Flow by Project Class

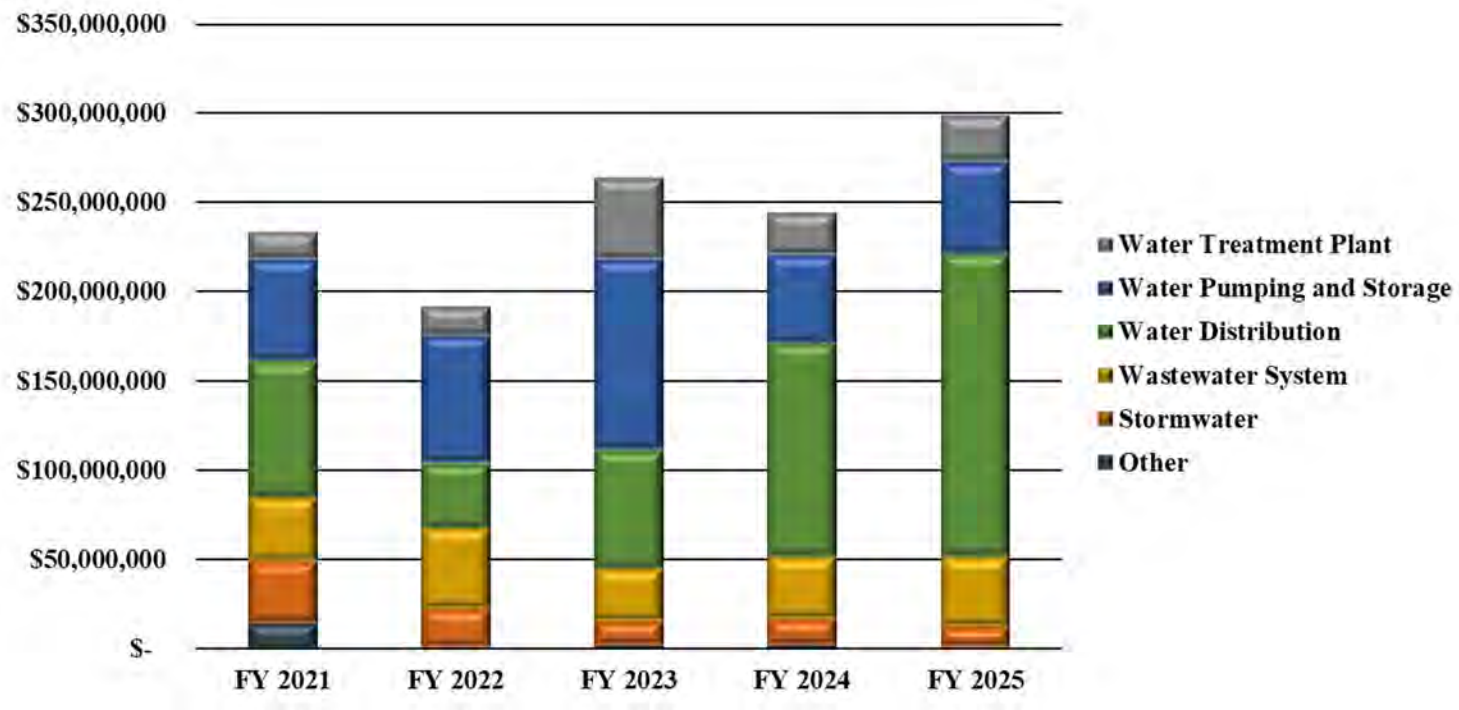


Figure 4. Capital Requirements

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total
Water Treatment Plant	$ 15,112,066	16,422,149	45,559,717	23,358,443	26,105,966	$ 126,558,340
Water Pumping and Storage	56,863,770	70,939,529	106,366,346	49,645,737	51,176,787	334,992,169
Water Distribution	76,245,552	36,345,826	66,150,837	119,049,668	169,246,024	467,037,906
Wastewater System	35,741,675	45,109,155	29,580,401	34,664,259	38,980,692	184,076,182
Stormwater	34,696,272	21,721,607	13,237,377	14,764,949	11,479,750	95,899,955
Other	14,670,000	1,100,000	2,500,000	2,500,000	1,500,000	22,270,000
Total Capital Requirements	**$ 233,329,335**	**191,638,266**	**263,394,678**	**243,983,056**	**298,489,218**	**$ 1,230,834,553**

Figure 5. Funding Sources

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total
Debt (Revenue Bonds)	$ 169,262,753	173,670,904	249,823,825	233,482,080	287,988,242	$ 1,114,227,804
Debt (Project Fund)	17,219,270	7,466,387	3,069,877	-	-	27,755,534
DSIC - Water	4,904,302	5,250,488	5,250,488	5,250,488	5,250,488	25,906,253
DSIC - Sewer	4,904,302	5,250,488	5,250,488	5,250,488	5,250,488	25,906,254
PENNVEST	37,038,708	-	-	-	-	37,038,708
Total Funding Sources	**$ 233,329,335**	**191,638,266**	**263,394,678**	**243,983,056**	**298,489,218**	**$ 1,230,834,553**

2021-2025 Project Summary

Page	Project Name	2021 Budget	2022 Budget	2023 Budget	2024 Budget	2025 Budget	Total
Project Class: Water Treatment Plant							
11	Aspinwall Treatment Plant Pretreatment Chemical System and Clarification Improvements	$ 3,343,250	1,655,000	3,853,059	3,853,059	3,353,059	$ 16,057,427
12	Aspinwall Utility Water Improvements - Electrical	210,000	-	-	-	-	210,000
13	Aspinwall Utility Water Improvements - General/Mechanical	1,068,750	-	-	-	-	1,068,750
14	Aspinwall Water Treatment Plant Electrical and Backup Power Improvements	2,337,500	4,250,000	13,732,500	5,482,500	-	25,802,500
15	Aspinwall Water Treatment Plant Raw Water Intakes	1,228,500	1,228,500	9,850,500	9,850,500	2,457,000	24,615,000
16	Aspinwall Water Treatment Plant Security Fence, Lighting, and Surveillance	308,659	-	-	-	-	308,659
17	Clearwell Emergency Response Project	1,986,316	8,406,316	16,606,316	-	-	26,998,948
18	Corrosion Control Chemical Storage & Feed Systems	600,404	-	-	-	-	600,404
19	Emergency Clarifier Repairs - Clarifiers No. 1, 2 & 4	258,662	-	-	-	-	258,662
20	Hydraulic Valve Replacement Program	-	-	199,334	1,618,744	1,431,922	3,250,000
21	Instrumentation Upgrade	1,040,000	-	-	-	-	1,040,000
22	Lime Slurry System Improvements	1,412,017	882,333	-	-	-	2,294,350
23	Ross Pump Station	1,318,008	-	1,318,008	2,553,640	18,863,985	24,053,641
Total: Water Treatment Plant		**$ 15,112,066**	**$ 16,422,149**	**$ 45,559,717**	**$ 23,358,443**	**$ 26,105,966**	**$ 126,558,340**
Project Class: Water Pumping and Storage							
25	2019 Large Diameter Water Main Improvements - Rising Mains 3 & 4	$ 11,000,000	11,552,785	6,025,215	-	-	$ 28,578,000
26	Aspinwall Pump Station Improvements	2,135,526	8,490,526	18,090,526	-	-	28,716,578
27	Aspinwall Pump Station to Lanpher Reservoir Rising Main	5,000,000	16,661,613	34,338,387	-	-	56,000,000
28	Bruecken Pump Station Improvements	1,668,553	6,182,033	16,600,073	-	-	24,450,659
29	Chlorine Booster Station Improvements	2,698,491	3,523,793	3,261,896	-	-	9,484,180
30	Clearwell Improvements	200,000	200,000	1,502,024	29,842,950	25,264,517	57,009,491
31	Disinfection By-Products Mitigation	1,455,000	-	1,155,000	-	-	2,610,000
32	Garfield Tank Improvements	-	-	465,517	1,792,241	1,792,241	4,049,999
33	Herron Hill Pump Station Improvements	-	-	1,259,770	4,850,115	4,850,115	10,960,000
34	Herron Hill Reservoir Improvements	2,751,211	-	-	-	-	2,751,211
35	Herron Hill Tank Pump Station Improvements	-	-	127,586	491,207	491,207	1,110,000
36	Highland No. 2 Reservoir Improvements	17,893,400	8,946,700	-	-	-	26,840,100
37	Highland Reservoir Pump Station and Rising Main	10,000,000	10,670,664	12,926,750	-	-	33,597,414
38	Howard Pump Station Improvements	-	-	-	2,143,678	8,253,161	10,396,839
39	Inline Pump Station (Coral and Pacific) Improvements	-	-	68,966	265,517	265,517	600,000
40	Lanpher Reservoir Improvements	1,000,000	3,879,693	7,879,693	-	-	12,759,386
41	Lincoln Pump Station Improvements	171,489	660,233	-	-	-	831,722
42	Lincoln Pump Station: Bypass Pump Station Project	890,100	-	-	-	-	890,100
43	Lincoln Tank Improvements	-	-	482,184	1,856,408	1,856,408	4,195,000
44	Mission Pump Station Improvements	-	-	1,938,506	7,463,247	7,463,247	16,865,000
45	Saline Pump Station Improvements	-	171,489	-	-	-	171,489
46	Spring Hill Tank Improvements	-	-	244,253	940,374	940,374	2,125,001
Total: Water Pumping and Storage		**$ 56,863,770**	**70,939,529**	**106,366,346**	**49,645,737**	**51,176,787**	**$ 334,992,169**

Page	Project Name	2021 Budget	2022 Budget	2023 Budget	2024 Budget	2025 Budget	Total
Project Class: Water Distribution							
48	Bus Rapid Transit (BRT) Water Distribution	$ 9,200,000	2,300,000	-	-	-	$ 11,500,000
49	District Metering	-	-	3,190,000	3,280,000	3,380,000	9,850,000
50	District Water and Pressure Meters	485,135	-	1,455,404	-	-	1,940,539
51	Duck Hollow	-	-	3,000,270	-	-	3,000,270
52	Herron Hill - Squirrel Hill Boundary Adjustments	-	-	-	-	830,000	830,000
53	Highland Park MFP Improvements Project	225,000	1,732,500	-	-	-	1,957,500
54	Intermediate Main Replacement Program	-	-	2,847,356	12,768,391	22,965,287	38,581,035
55	Intermediate Meters	75,000	80,000	82,000	85,000	87,000	409,000
56	Large Diameter Water Main Replacement	5,500,000	-	2,248,276	11,366,207	21,966,552	41,081,035
57	Large Meter Replacement	1,512,919	1,709,414	1,546,031	1,585,000	587,000	6,940,364
58	Lead Service Identification Program	1,500,000	1,500,000	2,558,667	-	-	5,558,667
59	Lead Service Line Replacement	3,111,200	-	-	-	-	3,111,200
60	Low Pressure Area Remediation	1,029,259	1,093,445	170,654	-	-	2,293,358
61	North Side Boundary Adjustments	-	-	-	-	1,200,000	1,200,000
62	Private Lead Service Line Reimbursement Program	500,000	375,000	375,000	375,000	135,287	1,760,287
63	Regulator Valve and Vault Replacement	2,000,000	1,000,000	3,000,000	4,500,000	3,000,000	13,500,000
64	Small Diameter Water Main Replacement	45,838,708	19,950,643	38,645,977	75,436,736	103,691,564	283,563,628
65	Small Meter Replacement	1,357,684	1,796,385	1,721,106	1,650,000	500,000	7,025,175
66	South Side Slopes Boundary Adjustments	-	-	-	-	1,200,000	1,200,000
67	Unmetered and Flat Rate Properties	1,548,564	1,744,689	527,947	-	-	3,821,199
68	Valve Replacement	1,498,333	1,300,000	2,942,149	6,123,334	7,823,333	19,687,149
69	Water Relay	863,750	1,763,750	1,840,000	1,880,000	1,880,000	8,227,500
Total: Water Distribution		**$ 76,245,552**	**36,345,826**	**66,150,837**	**119,049,668**	**169,246,024**	**$ 467,037,906**
Project Class: Wastewater System							
71	31st Ward Sewer System	$ 2,904,302	348,961	450,000	150,000	2,360,776	$ 6,214,039
72	Browns Hill Road Sewer Pump Station Replacement	-	-	187,700	1,030,967	281,333	1,500,000
73	Large Diameter Sewer Rehabilitation	2,211,492	6,391,140	3,517,000	4,437,190	4,692,667	21,249,489
74	M-29 Outfall Improvements	3,473,539	-	-	-	-	3,473,539
75	Maytide Storm and Sanitary Sewer System Improvements	2,000,000	1,500,000	1,096,798	-	-	4,596,798
76	Queenston Sewer Improvements	1,601,450	185,600	-	-	-	1,787,050
77	Sewer Reconstruction	970,175	999,979	1,841,144	1,880,000	1,880,000	7,571,297
78	Sewers Under Structures	3,081,151	11,080,611	5,642,667	5,440,122	8,713,821	33,958,372
79	Small Diameter Sewer Rehabilitation	19,499,567	24,602,865	16,845,092	21,725,979	21,052,095	103,725,599
Total: Wastewater System		**$ 35,741,675**	**45,109,155**	**29,580,401**	**34,664,259**	**38,980,692**	**$ 184,076,182**

Page	Project Name	2021 Budget	2022 Budget	2023 Budget	2024 Budget	2025 Budget	Total
Project Class: Stormwater							
81	Bus Rapid Transit (BRT) Stormwater Infrastructure Improvements	$ 685,000	1,000,000	350,000	-	-	$ 2,035,000
82	Catch Basin and Inlet Replacement	8,137,621	1,987,720	8,317,500	9,964,949	10,479,750	38,887,540
83	Fleury Way Stormwater Infrastructure Improvements	730,141	-	-	-	-	730,141
84	Four Mile Run Stormwater Infrastructure Improvements	7,000,000	12,800,000	-	-	-	19,800,000
85	Lawn and Ophelia	600,000	-	-	-	-	600,000
86	Martin Luther King Field Stormwater Infrastructure Improvements	2,008,966	1,339,310	-	-	-	3,348,276
87	Maryland Avenue Stormwater Infrastructure Improvements	2,610,000	330,000	-	-	-	2,940,000
88	Nobles Lane Stormsystems Improvements	343,322	-	-	-	-	343,322
89	Saw Mill Run MS4 Compliance Projects	-	-	1,000,000	2,500,000	-	3,500,000
90	Saw Mill Run PWSA & PennDOT Watershed Improvements	-	200,000	500,000	300,000	-	1,000,000
91	Southside Flats Sewer Separation	-	335,365	3,069,877	-	-	3,405,242
92	Southside Stormwater Infrastructure Improvements	2,156,746	2,156,746	-	-	-	4,313,492
93	Thomas and McPherson Stormwater Infrastructure Improvements	4,319,899	1,387,466	-	-	-	5,707,365
94	Tide Gate Installations	-	-	-	2,000,000	1,000,000	3,000,000
95	Volunteer's Field Stormwater Infrastructure Improvements	1,000,000	-	-	-	-	1,000,000
96	Wightman Park Stormwater Infrastructure Improvements	1,750,000	-	-	-	-	1,750,000
97	Winchester Drive at Grovemount Stormsystem Improvements	554,577	-	-	-	-	554,577
98	Woodland Road Stormwater Infrastructure Improvements	1,550,000	185,000	-	-	-	1,735,000
99	Woods Run Stream Removal Stormwater Infrastructure Improvements	1,250,000	-	-	-	-	1,250,000
Total: Stormwater		**$ 34,696,272**	**21,721,607**	**13,237,377**	**14,764,949**	**11,479,750**	**$ 95,899,955**
Project Class: Other							
101	Park Maintenance / Upgrades	$ 700,000	1,000,000	1,000,000	1,000,000	1,000,000	$ 4,700,000
102	Property Acquisition / Facility Upgrades	700,000	-	1,000,000	1,000,000	-	2,700,000
103	Reconstruction of the Facade at the Central Warehouse	70,000	-	-	-	-	70,000
104	Roof Replacment Brilliant Yard Warehouse	160,000	-	-	-	-	160,000
105	Roof Replacement Herron Hill Pump Station	90,000	-	-	-	-	90,000
106	Surface Restoration (Capital Only)	12,500,000	-	-	-	-	12,500,000
107	Utility Cost Shares	450,000	100,000	500,000	500,000	500,000	2,050,000
Total: Other		**$ 14,670,000**	**1,100,000**	**2,500,000**	**2,500,000**	**1,500,000**	**$ 22,270,000**

Water Treatment Plant

Aspinwall Treatment Plant Pretreatment Chemical System and Clarification Improvements

PROJECT NUMBER: 2017-322-101-0
WARD: Systemwide

PHASE:
Design

PRIORITY:
Safety, Regultory Compliance, Reliability/Operational Flexibility, Operations and Maitenance Efficiency

PROJECT DESCRIPTION:
Improvements to pretreatment chemical and clarification systems to provide improved water treatment capabilities. This project is the parent project for all of the clarification and pre-treatment related projects.

PROJECT JUSTIFICATION:
Chemical treatment systems are critical to producing safe drinking water. The storage and pumping component of the systems have reached the end of their useful life and need to be replaced.

RISK(S):
Inefficient operation of chemical systems results in increased operating costs, including chemical consumption, labor, solids generation and disposal, and wear on equipment.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, reliability, and life expectancy and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$19,333,383	3,343,250	1,655,000	3,853,059	3,853,059	3,353,059	$16,057,427	Debt (Revenue Bonds)

Aspinwall Utility Water Improvements - Electrical

PROJECT NUMBER: 2017-322-101-5
WARD: Systemwide

PHASE: Construction
PRIORITY: Safety, Reliability/Operational Flexibility, Operations and Maitenance Efficiency
PROJECT DESCRIPTION: Electrical work related to installation of heaters and SCADA.
PROJECT JUSTIFICATION: Electrical systems at the Water Treatment Plant have reached the end of their useful life and need to be repalced.
RISK(S): Failure of critical electrical systems at the Water Treatment Plant.
IMPACT ON OPERATIONS: Increased operating efficiency, flexibility, reliability, and life expectancy and improved safety conditions for staff.
ALTERNATIVES TO THE RECOMMENDED ACTION: There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Revenue Bonds)
Total	**$210,000**	**210,000**	**0**	**0**	**0**	**0**	**$210,000**	

Aspinwall Utility Water Improvements - General/Mechanical

PROJECT NUMBER: 2017-322-101-4
WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maitenance Efficiency

PROJECT DESCRIPTION:
Pipe demolition, pipe and appurtenance installation for the Water Treatment Plant's potable and non-potable water line system.

PROJECT JUSTIFICATION:
Water piping throughout the Water Treatment Plant has come to the end of it's service life. Failure of this piping would result in interruptions in the ability to feed treatment chemicals.

RISK(S):
Potable and non-potable water piping throughout the plant has come to the end of it's service life. This piping system is critical to the operations at the Water Treatment Plant.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, reliability, and life expectancy and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$1,068,750**	**1,068,750**	**0**	**0**	**0**	**0**	**$1,068,750**	**Debt (Revenue Bonds)**

Aspinwall Water Treatment Plant Electrical and Backup Power Improvements

PROJECT NUMBER: 2017-322-100-0
WARD: Systemwide

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Improvements to electrical systems at the Water Treatment Plant, including provisions for stand-by or backup power systems, upgrades to existing electrical distribution system, replacement of motor control centers, and associated panels, conduit, wiring, and systems.

PROJECT JUSTIFICATION:
Electrical systems at the Water Treatment Plant have generally met the end of their useful lives and spare/replacement parts are unavailable.

RISK(S):
Electrical power is critical to maintain pumping and treatment of water. Failure of these systems will result in the inability to produce water to meet demand and/or quality requirements.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Revenue Bonds)
Total	**$26,561,635**	**2,337,500**	**4,250,000**	**13,732,500**	**5,482,500**	**0**	**$25,802,500**	

Aspinwall Water Treatment Plant Raw Water Intakes

PROJECT NUMBER: 2018-322-100-0
WARD: Systemwide

PHASE:
Design

PRIORITY:
Water Quality/Regulatory

PROJECT DESCRIPTION:
Project will include condition assessment, renewing or replacing the existing West and East Raw Water Intake Gate House buildings and associated systems, including gates, screens, and associated mechanical equipment as well as the addition of SCADA. Influent piping through the Ross Pump Station will also be addressed.

PROJECT JUSTIFICATION:
The West Gate is 90% closed and inoperable. Both gate houses are in need of rehabilitation or replacement. The West Gatehouse is 100 years old, and the East Gate is almost 90 years old.

RISK(S):
Both gates have reach the end of their useful life and need replaced. Failure of the East Gate would cause a disruption to the supply of water.

IMPACT ON OPERATIONS:
Modernization of systems will require less time spent in operations and maintenance of these facilities.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$24,847,854**	**1,228,500**	**1,228,500**	**9,850,500**	**9,850,500**	**2,457,000**	**$24,615,000**	**Debt (Revenue Bonds)**

Aspinwall Water Treatment Plant Security Fence, Lighting, and Surveillance

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE: Not Started
PRIORITY: Safety
PROJECT DESCRIPTION: Install new fencing, lighting, and surveillance around the Water Treatment Plant.
PROJECT JUSTIFICATION: The fencing and security infrastructure around the Water Treatment Plant is in need of upgrades.
RISK(S): Increases the likelood of security issues.
IMPACT ON OPERATIONS: Increased security around the Water Treatment Plant.
ALTERNATIVES TO THE RECOMMENDED ACTION: Delay the implementation of the security upgrades.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Project Fund)
Total	**$308,659**	**308,659**	**0**	**0**	**0**	**0**	**$308,659**	

Clearwell Emergency Response Project

PROJECT NUMBER: 2017-323-100-0
WARD: Systemwide

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Long-term bypass of the existing 108 year old clearwell (finished water structure) including the construction of pump wetwells at the Aspinwall and Bruecken Pump Stations, modifications to the clearwell inlet and outlet gate house, and the construction of a bypass line around the clearwell to the outlet gate house.

PROJECT JUSTIFICATION:
The clearwell was constructed in 1908 and has not undergone any major modifications or upgrades since. The clearwell has two main functions: providing equalization storage that allows the filters to operate independently of potential fluctuations in system demands and providing sufficient contact time for disinfection agents to meet the requirements of the Surface Water Treatment Rule and Long-Term 2 Enhanced Surface Water Treatment Rule. In order to replace the clearwell, a long-term bypass is required in order to provide adequate suction pressure for the pump stations.

RISK(S):
Failure of the Clearwell would cause a disruption to the supply of water.

IMPACT ON OPERATIONS:
Ability to meet system reliability and water quality regulations.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Revenue Bonds)
Total	**$28,132,103**	**1,986,316**	**8,406,316**	**16,606,316**	**0**	**0**	**$26,998,948**	

Corrosion Control Chemical Storage & Feed Systems

PROJECT NUMBER: 2017-322-107-0
WARD: Systemwide

PHASE:
Construction

PRIORITY:
Water Quality/Regulatory

PROJECT DESCRIPTION:
Installation of three phosphoric acid storage and feed systems located at Aspinwall Pump Station, Bruecken Pump Station, and the Membrane Filtration Plant to provide corrosion control in the distribution system.

PROJECT JUSTIFICATION:
Required in order to lower lead levels in water.

RISK(S):
The existing corrosion control system was not adequate to maintain lead levels below the PA DEP action limit.

IMPACT ON OPERATIONS:
In order to prevent algae growth in the open Highland No. 1 Reservoir, treatment must occur at three major locations with 6 injection points. This requires additional maintenance of treatment facilities at satellite locations.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Abandon Membrane Filtration Plant and the Highland No. 1 Reservoir and add orthophosphate at the Water Treatment Plant or use another less effective corrosion control method.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$9,346,377**	**600,404**	**0**	**0**	**0**	**0**	**$600,404**	**Debt (Revenue Bonds)**

Emergency Clarifier Repairs - Clarifiers No. 1, 2 & 4

PROJECT NUMBER: 2017-322-101-6
WARD: Systemwide

PHASE:
Construction

PRIORITY:
Water Quality, Reliability/Operational Flexibility, Operations and Maitenance Efficiency

PROJECT DESCRIPTION:
Replacement of mechanical equipment in Clarifier basin #2, concrete repairs in basins #2 and #4, replacement of sluice gate stem and actuator in basin #1.

PROJECT JUSTIFICATION:
Having two clarifier basins inoperable at the same time would likely result in inadequate turbidity removal which is a critical treatment process.

RISK(S):
The clarifier basins have come to the end of their useful life and are nearly inoperable. Failure of these basins would negatively impact the treatment of water.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, reliability, and life expectancy of equipment.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$778,082	258,662	0	0	0	0	$258,662	Debt (Revenue Bonds)

Hydraulic Valve Replacement Program

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
This project is retrofitting the various hydraulic valve actuators primarily in the filters to electric valve actuators.

PROJECT JUSTIFICATION:
The intent is to improve operational control while modernizing the facility to better align with industry standard practices.

RISK(S):
None.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$3,250,000	0	0	199,334	1,618,744	1,431,922	$3,250,000	Debt (Revenue Bonds)

Instrumentation Upgrade

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintanence Efficiency

PROJECT DESCRIPTION:
This project standardizes the key instrumentation at the remote sites. This project provides a methodical approach to replacement. It includes a study to document all equipment by tag number, location, condition, make and model number. The study would include recommendations for standardization by device type (pressure sensor, flowmeter, etc.) along with replacement costs for work done by a contractor. This project does not include any upgrades to water quality analyzers (turbidimeters, DO, Conductivity, or the like).

PROJECT JUSTIFICATION:
At present, devices were added under various projects with no standardization. This has resulted in increased maintenance cost as each brand requires different spare parts, different training, and in most cases different tools for maintenance purposes. Most of the equipment is beyond useful life and due for replacement.

RISK(S):
Failure to upgrade systems will cause loss of signal and possible loss of control of systems.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Project Fund)
Total	$1,040,000	1,040,000	0	0	0	0	$1,040,000	

Lime Slurry System Improvements

PROJECT NUMBER: 2017-322-101-7
WARD: Systemwide

PHASE:
Design

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maitenance Efficiency

PROJECT DESCRIPTION:
Lime slurry system capacity expansion improvements to include demolition, installation of additional tanks, chemical feed equipment, minor revisions to the existing lime slurry system, and SCADA communications equipment and SCADA interface.

PROJECT JUSTIFICATION:
Adequate lime storage is mandated by PADEP. New system will be more efficient/require less labor to operate and maintain.

RISK(S):
The extra storage for liquid lime is critical to the reliable operation of the Water Treatment Plant.

IMPACT ON OPERATIONS:
Adequate storage, increased reliability and efficiency, less housekeeping labor (for spillage).

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Revenue Bonds)
Total	**$2,294,350**	**1,412,017**	**882,333**	**0**	**0**	**0**	**$2,294,350**	

Ross Pump Station

PROJECT NUMBER: 2018-323-101-0
WARD: Systemwide

PHASE:
Design

PRIORITY:
Water Quality/Regulatory

PROJECT DESCRIPTION:
Replacement of aged pump and valve equipment, meters, SCADA, electrical equipment, HVAC, auxiliary systems, as well as the rehabilitation of the building architectural and energy management systems.

PROJECT JUSTIFICATION:
Pump station is in need of rehabilitation. Pumps and ancillary systems are beyond their design life.

RISK(S):
Exposes the Authority to higher capital costs to address emergency failures.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, reliability, life expectancy, and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$24,266,869**	**1,318,008**	**0**	**1,318,008**	**2,553,640**	**18,863,985**	**$24,053,641**	**Debt (Revenue Bonds)**

Water Pumping and Storage

2019 Large Diameter Water Main Improvements - Rising Mains 3 & 4

PROJECT NUMBER: 2019-325-103-0
WARD: Systemwide

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Condition assessment and rehabilitation or replacement of Rising Mains 3 and 4. Replacement or rehabilitation depending upon existing condition of rising mains.

PROJECT JUSTIFICATION:
Rising Mains 3 and 4 feed the Highland 2 Pump Station. The capacity of these rising mains may need to be increased to accommodate additional flow during the bypass of the clearwell. These mains will need to accommodate demand from both Highland No. 1 and Highland No. 2 reservoirs during the bypass of the clearwell as well as to supply a redundant feed to the Highland No. 1 reservoir.

RISK(S):
The consequences of failure for larger mains are much greater than for smaller distribution mains. Consequences typically include significant service outages (larger area and longer time frame impacts), as well as property and roadway damage.

IMPACT ON OPERATIONS:
Increased system reliability and improved system management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Continue to extend utility component life until a high failure rate justifies replacement.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$28,929,495	11,000,000	11,552,785	6,025,215	0	0	$28,578,000	Debt (Revenue Bonds)

Aspinwall Pump Station Improvements

PROJECT NUMBER: 2017-323-104-0
WARD: Systemwide

PHASE:
Design

PRIORITY:
Safety, Reliability/Operational Flexibility, Capacity, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems at the Bruecken and Aspinwall Pump Stations or replacement with a single high service pump station at the Water Treatment Plant.

PROJECT JUSTIFICATION:
The pump Station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff. Additionally, installation of variable frequency drives will reduce water pressure surges during start-up, and allow the pumps to operate over a wide range of flow, allow the pumps to operate while the clearwell is being replaced. Alternately, a new high service pump station to replace the existing pump stations is also being investigated.

RISK(S):
Exposes the Authority to higher capital costs to address emergency failures and customers to a potentially deficient water supply.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$28,720,269	2,135,526	8,490,526	18,090,526	0	0	$28,716,578	Debt (Revenue Bonds)

Aspinwall Pump Station to Lanpher Reservoir Rising Main

PROJECT NUMBER: 2018-323-100-0
WARD: Systemwide

PHASE:
Design

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Construction of a new, redundant rising main from Aspinwall Pump Station to Lanpher Reservoir.

PROJECT JUSTIFICATION:
The existing 60" rising main that supplies the Lanpher Reservoir is a 150 year old riveted steel pipe, has several tap connections to critical and bulk customers, and has experienced recent pipe failures. The new proposed rising main would serve as a primary supply source for the Lanpher Reservoir during the Clearwell Replacement Project and a redundant supply line in case of a failure or planned cleaning and rehabilitation of the existing 60" supply main.

RISK(S):
Failure of the rising main could impact up to half of the Authority's customers.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Rehabilitation of the existing 60-inch supply main and construction of a parallel main in sections that cannot currently be isolated to clean, inspect, or rehabilitate.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$58,107,771	5,000,000	16,661,613	34,338,387	0	0	$56,000,000	Debt (Revenue Bonds)

Bruecken Pump Station Improvements

PROJECT NUMBER: 2017-323-106-0
WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Reliability/Operational Flexibility, Capacity, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems.

PROJECT JUSTIFICATION:
The pump station was constructed in 1931. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff. Additionally, installation of variable frequency drives will reduce water pressure surges during start-up, allow the pumps to operate more efficiently over a wide range of flow demands, and will reduce the required size of the new clearwell.

RISK(S):
Exposes the Authority to higher capital costs to address emergency facility failures and its customers to a potentially deficient water supply.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, reliability, and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$24,456,425	1,668,553	6,182,033	16,600,073	0	0	$24,450,659	Debt (Revenue Bonds)

Chlorine Booster Station Improvements

PROJECT NUMBER: 2019-323-101-0
WARD: Systemwide

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability

PROJECT DESCRIPTION:
Replacement of existing chlorine injection facilities at reservoirs and tanks for chlorine residual.

PROJECT JUSTIFICATION:
The Authority boosts chlorine residual at a majority of its storage facilities. Recent changes to PA DEP regulations require an increase in minimum chlorine residual levels in the distribution system. All chlorine booster facilities need to be upgraded in order to meet these requirements.

RISK(S):
Exposes the Authority's customers to poor water quality.

IMPACT ON OPERATIONS:
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$9,732,913	2,698,491	3,523,793	3,261,896	0	0	$9,484,180	Debt (Revenue Bonds)

Clearwell Improvements

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Replacement of the existing 108 year old clearwell (finished water structure) with multi-celled clearwell to allow for maintenance.

PROJECT JUSTIFICATION:
The clearwell was constructed in 1908 and has not undergone any major modifications or upgrades since. It has two main functions: providing equalization storage that allows the filters to operate independently of potential fluctuations in system demands, and providing sufficient retention contact time for disinfection agents to meet the requirements of the Surface Water Treatment Rule and Long-Term 2 Enhanced Surface Water Treatment Rule. Considering the age and condition of the clearwell, it is the water system's weakest link as there are no practical means to deliver water by bypassing the clearwell, while maintaining the required volume, quality, and contact time.

RISK(S):
Failure of the Clearwell would cause a disruption to the supply of water.

IMPACT ON OPERATIONS:
Ability to meet system reliability and water quality regulations.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$57,009,491**	**200,000**	**200,000**	**1,502,024**	**29,842,950**	**25,264,517**	**$57,009,491**	**Debt (Revenue Bonds)**

Disinfection By-Products Mitigation

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Replacement of existing trihalomethane (THM) removal systems at Allentown tanks, Squirrel Hill Tank, and Brashears Tanks.

PROJECT JUSTIFICATION:
Repair of the existing system is exceeding the value of the system. When the system fails, water is sprayed outside the tank facility leading to customer complaints.

RISK(S):
Delaying the replacement of the existing systems will result in increased downtime of the existing systems for repairs. This will lead to possible regulatory violations for exceeding THM levels.

IMPACT ON OPERATIONS:
Decrease in yearly maintenance for the existing system.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Continue to make costly repairs to existing DBP mitigation equipment. Failure of existing equipment has resulted in loss of water and numerous customer complaints as well as possible failure to meet DEP regulations.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$2,610,000**	**1,455,000**	**0**	**1,155,000**	**0**	**0**	**$2,610,000**	**Debt (Revenue Bonds)**

Garfield Tank Improvements

PROJECT NUMBER: Unidentified
WARD: 9

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

PROJECT DESCRIPTION:
Rehabilitation or replacement of the existing tank. Increase of tank capacity may be necessary.

PROJECT JUSTIFICATION:
The Garfield Elevated Storage Tank was constructed in 1959 and last rehabilitated in 1992. The existing tank does not have sufficient capacity to meet PA DEP's requirements for sizing, which states that a tank must have sufficient capacity to meet average day demand plus fire flow demand. This project will provide adequate storage through system redundancy to meet the pressure district's demand and fire flow conditions.

RISK(S):
Exposes the Authority's customers to poor water quality from coating problems or a potentially deficient water supply.

IMPACT ON OPERATIONS:
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Do nothing and risk a failure of the tank. Postpone replacement or full rehabilitation until a later date through short-term rehabilitation.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$4,049,999	0	0	465,517	1,792,241	1,792,241	$4,049,999	Debt (Revenue Bonds)

Herron Hill Pump Station Improvements

PROJECT NUMBER: Unidentified
WARD: 14

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

PROJECT JUSTIFICATION:
The pump station was originally constructed in the late 1890's. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff.

RISK(S):
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and customers to a potentially deficient water supply.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$10,960,000	0	0	1,259,770	4,850,115	4,850,115	$10,960,000	Debt (Revenue Bonds)

Herron Hill Reservoir Improvements

PROJECT NUMBER: 2019-323-100-0
WARD: 5

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

PROJECT DESCRIPTION:
Replacement of existing reservoir liner and cover and associated reservoir rehabilitation. Replacement of existing chlorine injection system.

PROJECT JUSTIFICATION:
The existing cover has reached the end of its useful life and must be replaced. Existing chlorine feed systems are beyond their useful life and must be replaced.

RISK(S):
Exposes the Authority's customers to poor water quality from reservoir failure and inadequate booster disinfection.

IMPACT ON OPERATIONS:
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Revenue Bonds)
Total	$4,739,281	2,751,211	0	0	0	0	$2,751,211	

Herron Hill Tank Pump Station Improvements

PROJECT NUMBER: Unidentified
WARD: 5

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

PROJECT JUSTIFICATION:
The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff.

RISK(S):
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and customers to a potentially deficient water supply.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$1,110,000	0	0	127,586	491,207	491,207	$1,110,000	Debt (Revenue Bonds)

Highland No. 2 Reservoir Improvements

PROJECT NUMBER: 2019-323-102-0
WARD: Systemwide

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

PROJECT DESCRIPTION:
Replacement of existing reservoir liner and cover and associated reservoir rehabilitation. Replacement of existing chlorine injection system and an upgrade of the reservoir outlet structure.

PROJECT JUSTIFICATION:
The Highland No. 2 Reservoir will be used as a temporary clearwell while the new clearwell is being constructed. Existing chlorine feed facilities must be ugraded to meet PA DEP regulatory requirements for distribution chlorine residual. Existing reservoir outlet structure must be upgraded to accommodate new Highland Reservoir Pump Station.

RISK(S):
Exposes the Authority's customers to poor water quality from reservoir failure and inadequate booster disinfection.

IMPACT ON OPERATIONS:
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$27,252,938	17,893,400	8,946,700	0	0	0	$26,840,100	Debt (Revenue Bonds)

Highland Reservoir Pump Station and Rising Main

PROJECT NUMBER: 2017-323-101-0
WARD: Systemwide

PHASE:
Design

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Capacity, Level of Service

PROJECT DESCRIPTION:
Construction of a new finished water pump station and transmission main to supply water to the Highland No. 1 Service Area from Highland No. 2 Reservoir.

PROJECT JUSTIFICATION:
All compliant water supply for the Highland No. 1 Service Area currently flows through the Highland No. 1 Reservoir and the Membrane Filtration Plant. There is no other source water supply for the Highland No. 1 Service Area. In addition to providing alternate supply, this project is to temporarily provide finished water that meets the chlorine disinfection rules to the Highland No. 1 Service Area during the Clearwell Replacement Project. Additionally, this new facility could also be designed to service the Garfield pressure district, thus eliminating the rehabilitation of the Highland Pump Station.

RISK(S):
Failure of the two rising mains (No. 1 or No. 2), Membrane Filtration Plant, or Bruecken Pump Station would result in the loss of compliant water supply to approximately 40% of the Authority's customer base.

IMPACT ON OPERATIONS:
Increased operation and maintenance labor and expenses. Increased operating flexibility in the future.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new clearwell at the site of the existing west sedimentation basin. However, a previous study still recommended the addition of these assets as part of the Clearwell Replacement project.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$36,056,903	10,000,000	10,670,664	12,926,750	0	0	$33,597,414	Debt (Revenue Bonds)

Howard Pump Station Improvements

PROJECT NUMBER: Unidentified
WARD: 21, 24, 25, 26, 27

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

PROJECT JUSTIFICATION:
The pump station was originally constructed between 1900 and 1904. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for the staff.

RISK(S):
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$10,396,839**	**0**	**0**	**0**	**2,143,678**	**8,253,161**	**$10,396,839**	**Debt (Revenue Bonds)**

Inline Pump Station (Coral and Pacific) Improvements

PROJECT NUMBER: Unidentified
WARD: 8

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

PROJECT JUSTIFICATION:
The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff.

RISK(S):
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, reliability, and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$600,000**	**0**	**0**	**68,966**	**265,517**	**265,517**	**$600,000**	**Debt (Revenue Bonds)**

Lanpher Reservoir Improvements

PROJECT NUMBER: 2017-323-105-0
WARD: 25

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

PROJECT DESCRIPTION:
Replacement of existing reservoir liner and cover and associated reservoir rehabilitation. Replacement of existing chlorine injection system.

PROJECT JUSTIFICATION:
The existing cover failed and had to be replaced on an emergency basis as part of the PA DEP October 2017 Administrative Order. Existing chlorine feed systems are beyond their useful life and must be replaced.

RISK(S):
Exposes the Authority's customers to poor water quality from reservoir failure and inadequate booster disinfection.

IMPACT ON OPERATIONS:
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$16,859,005	1,000,000	3,879,693	7,879,693	0	0	$12,759,386	Debt (Revenue Bonds)

Lincoln Pump Station Improvements

PROJECT NUMBER: Unidentified
WARD: 12

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Replacement of aged pump and valve equipment, electrical equipment, HVAC, and auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

PROJECT JUSTIFICATION:
The pump station was originally constructed in 1952. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff.

RISK(S):
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and customers to a potentially deficient water supply.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$831,772	171,489	660,233	0	0	0	$831,722	Debt (Revenue Bonds)

Lincoln Pump Station: Bypass Pump Station Project

PROJECT NUMBER: 2020-323-100-0
WARD: 12

PHASE:
Design

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Construction of a temporary bypass pump station that will be used at the Lincoln Pump Station and Saline pump station. This pump station will allow for the existign pump station to be taken off line completely for rehabilitation.

PROJECT JUSTIFICATION:
Repair of existing pump station while trying to keep it online increases the cost and construction time. This is a cost effective way to provide temporary pumping.

RISK(S):
Delaying the construction of this pump station will delay the renewal of existing pump stations that are in need of upgrades.

IMPACT ON OPERATIONS:
Decrease in yearly maintenance for the existing system.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Attempt to rehabilitate/repair existing pump stations while they are in service.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$890,100	890,100	0	0	0	0	$890,100	Debt (Revenue Bonds)

Lincoln Tank Improvements

PROJECT NUMBER: Unidentified
WARD: 12

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

PROJECT DESCRIPTION:
Rehabilitation or replacement of the existing tank.

PROJECT JUSTIFICATION:
Constructed in 1939, this tank is nearing the end of its useful life. The last inspection, which was performed in 2018, noted deficiencies that need to be addressed to ensure water quality standards are met.

RISK(S):
Exposes the Authority's customers to poor water quality from coating problems or a potentially deficient water supply in the event of tank failure.

IMPACT ON OPERATIONS:
Increased flexibility and reliability and system compliance.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Rehabilitation of the existing tank, which may be a larger investment than replacement.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$4,195,000	0	0	482,184	1,856,408	1,856,408	$4,195,000	Debt (Revenue Bonds)

Mission Pump Station Improvements

PROJECT NUMBER: Unidentified
WARD: 16, 17, 18, 20

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

PROJECT JUSTIFICATION:
The Mission Pump Station is the only pumping station located south of the Monongahela River and was originally constructed between 1910 and 1912. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff.

RISK(S):
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$16,865,000	0	0	1,938,506	7,463,247	7,463,247	$16,865,000	Debt (Revenue Bonds)

Saline Pump Station Improvements

PROJECT NUMBER: Unidentified
WARD: 14 & 15

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

PROJECT JUSTIFICATION:
The pump station was originally constructed in 1935. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for staff.

RISK(S):
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply.

IMPACT ON OPERATIONS:
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$171,489	0	171,489	0	0	0	$171,489	Debt (Revenue Bonds)

Spring Hill Tank Improvements

PROJECT NUMBER: Unidentified
WARD: 24 & 26

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

PROJECT DESCRIPTION:
Perform a comprehensive inspection of the existing storage tanks and rehabilitation or replacement of the existing tanks.

PROJECT JUSTIFICATION:
Constructed in 1929 of riveted steel, the coatings and structure of these tanks need to be rehabilitated due to corrosion.

RISK(S):
Exposes the Authority's customers to poor water quality from coating problems or a potentially deficient water supply in the event of tank failure. Additionally, it exposes the Authority's staff and contractors to safety issues.

IMPACT ON OPERATIONS:
Increased flexibility and reliability and system compliance.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Rehabilitation of the existing tank, which may be a larger investment than replacement.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$2,125,001	0	0	244,253	940,374	940,374	$2,125,001	Debt (Revenue Bonds)

Water Distribution

Bus Rapid Transit (BRT) Water Distribution

PROJECT NUMBER: 2020-325-102-0
WARD: 1 & 4

PHASE:
Design

PRIORITY:
Regional Cooperation/ Stewardship and Level of Service

PROJECT DESCRIPTION:
The City of Pittsburgh is making roadway improvements on Fifth Ave and Forbes Ave from downtown through Oakland, with full depth reconstruction planned on Forbes from Crosstown Blvd to Craft Ave and on Fifth between Crosstown Blvd and the Birmingham Bridge. The City's work, in partnership with the Port Authority, will include signal pole upgrades, traffic redesign, sidewalk bumpouts, and new bus shelters. The full depth reconstruction portion of the project has the potential to affect existing 15-inch, 16-inch, 20-inch, and 6-inch mains that are 80-100+ years old. The full depth replacement of the roadway along with lowering of the roadway could result in damage to these mains. These mains should be replaced as part of this project. However, first a study should be completed to ensure proper size of these mains as they could be oversized.

PROJECT JUSTIFICATION:
The full depth replacement of the roadway along with lowering of the roadway could result in damage to these mains.

RISK(S):
Replacement of water mains along the Fifth and Forbes corridor reduces the risk of service outages due to breaks, reduces the potential for inadequate capacity for firefighting activities, and improves water quality.

IMPACT ON OPERATIONS:
Increased system reliability, reliability, and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Delay the replacement of the required watermains and risk damange to the water system resulting from the project.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$11,697,747	9,200,000	2,300,000	0	0	0	$11,500,000	Debt (Revenue Bonds)

2023-2025 District Metering

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Installation of system flow meters to track the flow of water and compare to area consumption to determine where leaks are the greatest.

PROJECT JUSTIFICATION:
The district metering is intended to gather additional information on areas with suspected leakage and then prioritize areas for rehabilitation and repalcement.

RISK(S):
Failure to track water loss will result in loss of revenue.

IMPACT ON OPERATIONS:
Decreased water loss.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$9,850,000**	**0**	**0**	**3,190,000**	**3,280,000**	**3,380,000**	**$9,850,000**	
2023 District Metering		0	0	3,190,000	0	0	$3,190,000	Debt (Revenue Bonds)
2024 District Metering		0	0	0	3,280,000	0	$3,280,000	
2025 District Metering		0	0	0	0	3,380,000	$3,380,000	

District Water and Pressure Meters

PROJECT NUMBER: 2017-325-114-0
WARD: Systemwide

PHASE:
Construction

PRIORITY:
Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Installation of water meters and pressure monitors in the distribution system to determine water usage and loss, and pressure loss.

PROJECT JUSTIFICATION:
This project will help determine areas of water loss in the water system. This information can then be used to develop an action plan to mitigate water loss.

RISK(S):
Customers may experience temporary service outages as a result of the work on this project.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$2,004,204**	**485,135**	**0**	**1,455,404**	**0**	**0**	**$1,940,539**	**DSIC - Water**

Duck Hollow

PROJECT NUMBER: Unidentified
WARD: 14

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Either repair the existing failed 16" main or abandon and provide interconnections with the Squirrel Hill system.

PROJECT JUSTIFICATION:
The Duck Hollow 16" main failed as a result of a landslide in 2018. The main will need to either be abandoned and replaced with emergency interconnections or replaced. Rehabilitation of the failed slope may be required.

RISK(S):
Existing failed 16" main does not provide any backup water supply leading to a loss of resiliency.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$3,000,270	0	0	3,000,270	0	0	$3,000,270	Debt (Revenue Bonds)

Herron Hill - Squirrel Hill Boundary Adjustments

PROJECT NUMBER: Unidentified
WARD: 5

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Main and valve adjustments to move the boundary between the Herron Hill Reservoir and Squirrel Hill pressure districts.

PROJECT JUSTIFICATION:
Herron Hill and Squirrel Hill operate on similar hydraulic gradients. There are areas where these two systems intertwine, which has lead to long dead end lines as well as frequent opening and altering of dividing pressure valves. Moving the boundary of the two zones to incorporate more of the Herron Hill system into the Squirrel Hill system will alleviate these issues as well as alleviate demand on the Herron Hill Reservoir.

RISK(S):
Existing long dead ends can cause water quality issues.

IMPACT ON OPERATIONS:
Decreased leakage between pressure districts.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$830,000**	**0**	**0**	**0**	**0**	**830,000**	**$830,000**	**Debt (Revenue Bonds)**

Highland Park MFP Improvements Project

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Rehabilitation of the backwash recovery system; repairs to deteriorated areas of the reinforced concrete metal floor deck slab that comprises the second floor of the MFP building; repair of the deteriorated concrete floor and containment wall of the acid room; replacement of the pipe insulation in the pump room; and, repainting walls, ceiling, exposed structural steel framing, ferrous metal and pipe insulation on the first floor of the MFP building.

PROJECT JUSTIFICATION:
Repair of the backwash water recovery system will reclaim up to 400,000 GPD of waste discharge to the public sanitary sewer system. Repairs to the composite floor deck and concrete floor in the acid room are required to preclude potential loss of structural integrity if not mitigated. Replacement of damaged or removed pipe insulation is required to mitiage pipe sweating and dripping onto equipment and walkways below.

RISK(S):
Delaying the rehab of the backwash recovery system sends unnecessary wastewater flow to the public sewer system, stressing downstream sewer capacity.

IMPACT ON OPERATIONS:
Increased system reliability and improved system management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$1,957,500**	**225,000**	**1,732,500**	**0**	**0**	**0**	**$1,957,500**	**Debt (Project Fund)**

2023-2025 Intermediate Main Replacement Program

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Strategic replacement of water mains to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. Program will focus on 16" to 36" diameter mains.

PROJECT JUSTIFICATION:
By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality will also improve by removing tuberculated mains.

RISK(S):
Customers may be subject to service outages or the potential for inadequate pressure for firefighting activities.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability, decrease in non-revenue water due to leaks.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$38,581,035**	**0**	**0**	**2,847,356**	**12,768,391**	**22,965,287**	**$38,581,035**	
2023 Intermediate Main Replacement		0	0	2,847,356	9,836,322	9,836,322	$22,520,000	Debt (Revenue Bonds)
2024 Intermediate Main Replacement		0	0	0	2,932,069	10,128,966	$13,061,035	
2025 Intermediate Main Replacement		0	0	0	0	3,000,000	$3,000,000	

2021-2025 Intermediate Meters

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Replacement of customer meters size 1.5" to 2".

PROJECT JUSTIFICATION:
Ensure capture of all revenue. As meters age, they typically underestimate the amount of water consumed.

RISK(S):
Failure to replace meters annually could result in lost revenue or violate regulatory requirements.

IMPACT ON OPERATIONS:
Increased system reliability, reliability, and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$409,000**	**75,000**	**80,000**	**82,000**	**85,000**	**87,000**	**$409,000**	
2021 Intermediate Meters		75,000	0	0	0	0	$75,000	Debt (Revenue Bonds)
2022 Intermediate Meters		0	80,000	0	0	0	$80,000	
2023 Intermediate Meters		0	0	82,000	0	0	$82,000	
2024 Intermediate Meters		0	0	0	85,000	0	$85,000	
2025 Intermediate Meters		0	0	0	0	87,000	$87,000	

2020, 2023-2025 Large Diameter Water Main Replacement

PROJECT NUMBER: 2020-424-103-0 ,Unidentified
WARD: Systemwide

PHASE:
Construction / Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Strategic replacement or rehabilitation of large diameter water mains (16" and larger) and appurtenances to improve system reliability and hydraulics, including internal and external inspections.

PROJECT JUSTIFICATION:
The Authority's water system has approximately 122 miles of large diameter water mains. Maintaining a proactive approach to replacing large mains will ensure that large mains are replaced before the end of their useful life.

RISK(S):
The consequences of failure for larger mains are much greater than for smaller distribution mains, which typically include significant service outages (larger area and longer time frame impacts), as well as property and roadway damage.

IMPACT ON OPERATIONS:
Increased system reliability and improved system management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Continue to extend utility component life until a high failure rate justifies replacement.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$41,082,455**	**5,500,000**	**0**	**2,248,276**	**11,366,207**	**21,966,552**	**$41,081,035**	
2020 Large Diameter Main Replacement – Four Mile Run		5,500,000	0	0	0	0	$5,500,000	Debt (Revenue Bonds)
2023 Large Diameter Main Replacement		0	0	2,248,276	8,655,862	8,655,862	$19,560,000	
2024 Large Diameter Main Replacement		0	0	0	2,710,345	10,434,828	$13,145,173	
2025 Large Diameter Main Replacement		0	0	0	0	2,875,862	$2,875,862	

2020-2025 Large Meter Replacement

PROJECT NUMBER: 2020-325-101-0, Unidentified
WARD: Systemwide

PHASE:
Construction / Not Started

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Annual replacement of water meters larger than 1".

PROJECT JUSTIFICATION:
Ensure capture of all revenue. As meters age, they typically underestimate the amount of water consumed.

RISK(S):
Failure to replace meters annually could result in lost revenue.

IMPACT ON OPERATIONS:
Increased system reliability, reliability, and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$7,061,587**	**1,512,919**	**1,709,414**	**1,546,031**	**1,585,000**	**587,000**	**$6,940,364**	
2020 Large Meter Replacement		335,235	0	0	0	0	$335,235	DSIC - Water
2021 Large Meter Replacement		1,177,684	639,207	0	0	0	$1,816,891	
2022 Large Meter Replacement		0	1,070,207	683,052	0	0	$1,753,259	
2023 Large Meter Replacement		0	0	862,979	500,000	0	$1,362,979	
2024 Large Meter Replacement		0	0	0	1,085,000	250,000	$1,335,000	
2025 Large Meter Replacement		0	0	0	0	337,000	$337,000	

2020-2021 Lead Service Identification Program

PROJECT NUMBER: 2020-325-100-0, Unidentified
WARD: Systemwide

PHASE:
Non Construction / Not Started

PRIORITY:
Safety, Regulatory Compliance

PROJECT DESCRIPTION:
Locating lead service lines allows the Authority to identify both individual service lines to replace and waterlines that have a particularly high amount of lead service lines that can be replaced to facilitate the lead service line replacements.

PROJECT JUSTIFICATION:
Understanding where the lead service lines are within the water system will allow the Authority to more efficently replace all lead service lines.

RISK(S):
Failure to indentify all lead service lines could slow the rate in which they are replaced.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$5,858,328**	**1,500,000**	**1,500,000**	**2,558,667**	**0**	**0**	**$5,558,667**	
2020 Lead Service Identification Program		1,500,000	0	0	0	0	$1,500,000	Debt (Revenue Bonds)
2022 Lead Service Identification Program		0	1,500,000	2,558,667	0	0	$4,058,667	

Lead Service Line Replacement

PROJECT NUMBER: 2018-325-100-0/1/2/3/4/5
WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance

PROJECT DESCRIPTION:
Replacement of 7% of lead service lines per year.

PROJECT JUSTIFICATION:
Due to the exceedance of the action levels from compliance tests for lead and copper, the PA DEP required the Authority to perform additional distribution system water quality monitoring, and the optimization of corrosion control treatment, public education, and lead service line replacement.

RISK(S):
Failure to comply will result in regulatory fines and poses a public health risk.

IMPACT ON OPERATIONS:
Reduction in service line failure due to replacing with new infrastructure, reducing demands on operations repair crews.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$29,931,717**	**3,111,200**	**0**	**0**	**0**	**0**	**$3,111,200**	**Debt (Revenue Bonds)**

Low Pressure Area Remediation

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Fix chronically low pressure areas by either extending neighboring higher pressure districts into the area, booster pump stations, or household booster pumps.

PROJECT JUSTIFICATION:
This project is in response to the low pressure monitors required by the October 2017 Administrative Order.

RISK(S):
Customers may experience temporary service outages as a result of the work on this project.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$2,393,358**	**1,029,259**	**1,093,445**	**170,654**	**0**	**0**	**$2,293,358**	**Debt (Revenue Bonds)**

North Side Boundary Adjustments

PROJECT NUMBER: Unidentified
WARD: 21, 22, 23, 24, 25, 26, 27

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Main and valve installation to move some low pressure areas from the McNaugher Pressure District to the Brashears Pressure District.

PROJECT JUSTIFICATION:
Areas within the McNaugher Pressure District that are near the Brashears Pressure District could have increased pressure by moving the pressure zone boundary through main improvements and valve adjustments.

RISK(S):
Existing services are near or below minimum standards (20 psi).

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$1,200,000**	**0**	**0**	**0**	**0**	**1,200,000**	**$1,200,000**	**Debt (Revenue Bonds)**

2021-2025 Private Lead Service Line Reimbursement Program

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance

PROJECT DESCRIPTION:
Reimbusrement of private line lead service line costs.

PROJECT JUSTIFICATION:
Replacing both private and public lead service lines is required to eliminate lead in the water system.

RISK(S):
Failure to replace private lead service lines poses a public health risk.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$1,760,287**	**500,000**	**375,000**	**375,000**	**375,000**	**135,287**	**$1,760,287**	
2021 Private Lead Service Line Reimbursement		500,000	0	0	0	0	$500,000	Debt (Revenue Bonds)
2022 Private Lead Service Line Reimbursement		0	375,000	0	0	0	$375,000	
2023 Private Lead Service Line Reimbursement		0	0	375,000	0	0	$375,000	
2024 Private Lead Service Line Reimbursement		0	0	0	375,000	0	$375,000	
2025 Private Lead Service Line Reimbursement		0	0	0	0	135,287	$135,287	

2021-2025 Regulator Valve and Vault Replacement

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Replacement of pressure zone interconnection vaults including new pressure regulators, flow meters, pressure transmitters, and SCADA communications.

PROJECT JUSTIFICATION:
Existing regulator stations are in need of replacement. This will also aid in identification of non-revenue water.

RISK(S):
Failure to fix could result in catastrophic failure of the vault.

IMPACT ON OPERATIONS:
Decreased leakage will result in decrease of pumping energy.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$13,500,000**	**2,000,000**	**1,000,000**	**3,000,000**	**4,500,000**	**3,000,000**	**$13,500,000**	
2021 Regulator Valve and Vault Replacement		2,000,000	0	0	0	0	$2,000,000	Debt (Revenue Bonds)
2022 Regulator Valve and Vault Replacement		0	1,000,000	0	0	0	$1,000,000	
2023 Regulator Valve and Vault Replacement		0	0	3,000,000	0	0	$3,000,000	
2024 Regulator Valve and Vault Replacement		0	0	0	4,500,000	0	$4,500,000	
2025 Regulator Valve and Vault Replacement		0	0	0	0	3,000,000	$3,000,000	

2019-2025 Small Diameter Water Main Replacement

PROJECT NUMBER: 2019-325-101-0, 2019-325-102-0/1/2, 2020-325-106-0/1/2, Unidentified

WARD: Systemwide

PHASE:
Construction / Design / Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Strategic replacement of water mains to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. Program will initially focus on replacing existing 4" and 6" unlined cast iron mains and mains with a history of frequent breaks.

PROJECT JUSTIFICATION:
By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality will also improve by removing tuberculated mains.

RISK(S):
Customers may be subject to service outages or the potential for inadequate pressure for firefighting activities.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Continue to extend utility component life until a high failure rate justifies replacement.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$287,163,430**	**45,838,708**	**19,950,643**	**38,645,977**	**75,436,736**	**103,691,564**	**$283,563,628**	
2019 Small Main Replacement		11,918,082	0	0	0	0	$11,918,082	PENNVEST
2020 Small Main Replacement		25,120,626	0	0	0	0	$25,120,626	
2021 Small Main Replacement		7,300,000	10,950,643	0	0	0	$18,250,643	Debt (Revenue Bonds)
2022 Small Main Replacement		1,500,000	6,000,000	11,500,000	0	0	$19,000,000	
2023 Small Main Replacement		0	3,000,000	14,000,000	21,000,000	0	$38,000,000	
2024 Small Main Replacement		0	0	13,145,977	40,489,609	60,734,414	$114,370,000	
2025 Small Main Replacement		0	0	0	13,947,127	42,957,150	$56,904,277	

2020-2025 Small Meter Replacement

PROJECT NUMBER: 2020-325-107-0
WARD: Systemwide

PHASE:
Construction / Not Started

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Annual replacement of water meters 1" or less.

PROJECT JUSTIFICATION:
Ensure capture of all revenue. As meters age, they typically underestimate the amount of water consumed.

RISK(S):
Failure to replace meters annually could result in lost revenue or violate regulatory requirements.

IMPACT ON OPERATIONS:
Increased system reliability, reliability, and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$7,321,915**	**1,357,684**	**1,796,385**	**1,721,106**	**1,650,000**	**500,000**	**$7,025,175**	
2020 Small Meter Replacement		255,000	0	0	0	0	$255,000	DSIC - Water
2021 Small Meter Replacement		1,102,684	639,207	0	0	0	$1,741,891	
2022 Small Meter Replacement		0	1,157,178	683,052	0	0	$1,840,230	
2023 Small Meter Replacement		0	0	1,038,054	650,000	0	$1,688,054	
2024 Small Meter Replacement		0	0	0	1,000,000	250,000	$1,250,000	
2025 Small Meter Replacement		0	0	0	0	250,000	$255,000	

South Side Slopes Boundary Adjustments

PROJECT NUMBER: Unidentified
WARD: 16, 17

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Main and valve adjustments to move the boundary between the Highland No. 2 and Allentown Pressure Districts.

PROJECT JUSTIFICATION:
Areas within the Highland No. 2 pressure district that are near the Allentown pressure district could have increased pressure by moving the pressure zone boundary through main improvements and valve adjustments.

RISK(S):
Existing services are near or below minimum standards (20 psi).

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$1,200,000**	**0**	**0**	**0**	**0**	**1,200,000**	**$1,200,000**	**Debt (Revenue Bonds)**

2020-2021 Unmetered and Flat Rate Properties

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Metering unmetered and flat rate properties as required by regulations.

PROJECT JUSTIFICATION:
Required per the PUC regulations. The impact of not installing meters is the loss of revenue and lack of ability to accurately estimate water loss in the system.

RISK(S):
Failure to comply with PUC regulations and the potential of lost revenue.

IMPACT ON OPERATIONS:
Increased system reliability, reliability, and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$4,307,553**	**1,548,564**	**1,744,689**	**527,947**	**0**	**0**	**$3,821,199**	
2020 Unmetered and Flat Rate Properties		1,441,278	879,992	0	0	0	$2,321,200	DSIC - Water
2021 Unmetered and Flat Rate Properties		107,286	864,767	527,947	0	0	$1,500,000	

2020-2025 Valve Replacement

PROJECT NUMBER: 2020-325-104-0, Unidentified
WARD: Systemwide

PHASE:
Construction / Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Replacement of defective or non-operational valves on transmission and distribution mains throughout the water distribution system, excluding valves replaced during waterline relays.

PROJECT JUSTIFICATION:
Increasing the number of operable valves in the system will reduce the number of valves that would need to be closed during emergency conditions, and therefore the number of customers that may be impacted.

RISK(S):
A larger number of customers may be subject to service outages.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Utilize Authority staff and equipment to perform all repairs. This would require an increase in operation expenses for both personnel and equipment.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$21,204,425**	**1,498,333**	**1,300,000**	**2,942,149**	**6,123,334**	**7,823,333**	**$19,687,149**	
2020 Valve Replacement		998,333	0	0	0	0	$998,333	Debt (Revenue Bonds)
2021 Valve Replacement		500,000	300,000	0	0	0	$800,000	
2022 Valve Replacement		0	1,000,000	708,816	0	0	$1,500,000	
2023 Valve Replacement		0	0	2,233,333	1,116,667	0	$3,350,000	
2024 Valve Replacement		0	0	0	5,006,667	2,503,333	$7,510,000	DISC – Water / Debt (Revenue Bonds)
2025 Valve Replacement		0	0	0	0	5,320,000	$5,320,000	

2021-2025 Water Relay

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations.

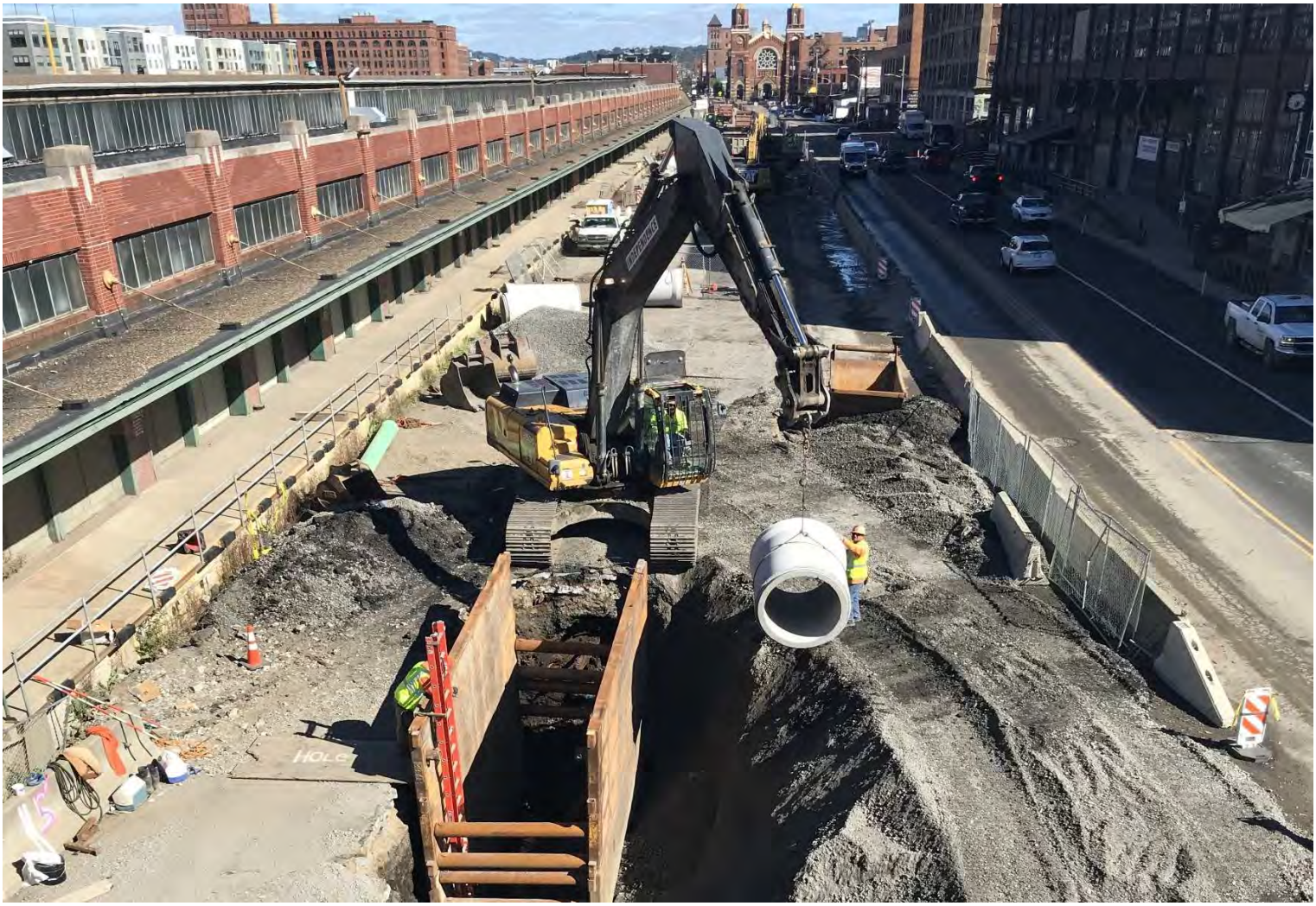
PROJECT JUSTIFICATION:
The existing water distribution system is aging and updates are required to address failures that could be significant public safety hazards.

RISK(S):
Customers will be subject to service outages or inadequate pressure for firefighting activities until break is addressed.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Utilize Authority staff and equipment to perform all upgrades. This would require an increase in operations expenses for both personnel and equipment.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$8,227,500**	**863,750**	**1,763,750**	**1,840,000**	**1,880,000**	**1,880,000**	**$8,227,500**	
2021 Water Relay		863,750	863,750	0	0	0	$1,727,500	Debt (Revenue Bonds)
2022 Water Relay		0	900,000	900,000	0	0	$1,800,000	
2023 Water Relay		0	0	940,000	940,000	0	$1,880,000	
2024 Water Relay		0	0	0	940,000	940,000	$1,880,000	
2025 Water Relay		0	0	0	0	940,000	$940,000	



Wastewater System

31st Ward Sewer System

PROJECT NUMBER: 2017-424-100-0
WARD: 31

PHASE:
Construction

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Regional Cooperation/ Stewardship, Level of Service

PROJECT DESCRIPTION:
Evaluation to identify and locate the source(s) of the infiltration and inflow (I/I), removal of public I/I sources, and rehabilitation/replacement of the Rogers Street and Mifflin Road Pump Station and force main.

PROJECT JUSTIFICATION:
Both sewage pump stations and the force main that convey flow to the Streets Run Sanitary Trunk Sewer were constructed in the late 1940's and are reaching the end of their useful life. Additionally, past studies suggest this sewershed may be significantly impacted by high levels of infiltration/inflow.

RISK(S):
Increased combined sewer overflows and pump station system failures.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Abandonment of the existing pump stations and installation of a new gravity main to convey flows to the West Mifflin Sanitary Authority.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$8,047,680	2,904,302	348,961	450,000	150,000	2,360,776	$6,214,039	Debt (Revenue Bonds) / DSIC - Sewer

Browns Hill Road Sewer Pump Station Replacement

PROJECT NUMBER: Unidentified
WARD: 15

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Construction of a replacement 160 GPM sanitary sewer pump station, including standby power, safer ingress and egress for routine maintenance, a water supply for equipment wash down and odor control facilities, if required. Additionally, perform a condition assessment of the 4" force main (approx. 790 l.f.) constructed in 2007, but was not utilized and confirm sanitary sewer separation occurred. Additional sewer separation may need to occur prior to modifying the existing diversion chamber.

PROJECT JUSTIFICATION:
The existing sanitary sewer pump station has reached the end of its useful life. The replacement station will provide increased operating efficiency and resiliency and improved safety conditions for staff.

RISK(S):
If the station is not replaced, pump or wet well failures could occur, which would result in sanitary sewer overflows. Sanitary sewer overflows could result in fines and notice of violations from regulating agencies.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Delay the construction and risk pump or wet well failures.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$1,500,000	0	0	187,700	1,030,967	281,333	$1,500,000	Debt (Revenue Bonds)

2020-2025 Large Diameter Sewer Rehabilitation

PROJECT NUMBER: 2020-424-101-0, Unidentified
WARD: Systemwide

PHASE:
Design / Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Proactive, trenchless rehabilitation of 36" diameter or greater sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow; including cleaning and pre and post construction CCTV inspections.

PROJECT JUSTIFICATION:
Provides the Authority with a means to address several moderate/major structural defects in pipe segments prior to complete failure. This trenchless pipe renewal method renews the asset, eliminates disruptive excavation, and is more cost effective than replacement.

RISK(S):
If moderate/major structural defects are not proactively addressed, complete failure will eventually occur and excavation will be required. Any complete failure that occurs will result in dramatically increased expenditures for repair.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Perform excavated point repairs to address defective sections of pipe, replace segment in its entirety, or continue to extend asset life until failure.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$21,249,489**	**2,211,492**	**6,391,140**	**3,517,000**	**4,437,190**	**4,692,667**	**$21,249,489**	
2020 Large Diameter Sewer Rehabilitation		1,187,158	2,443,473	0	0	0	$3,630,632	Debt (Revenue Bonds)
2021 Large Diameter Sewer Rehabilitation		1,024,333	3,105,667	0	0	0	$4,130,000	
2022 Large Diameter Sewer Rehabilitation		0	842,000	2,430,000	0	0	$3,272,000	
2023 Large Diameter Sewer Rehabilitation		0	0	1,087,000	3,293,000	0	$4,380,000	
2024 Large Diameter Sewer Rehabilitation		0	0	0	1,144,190	3,495,810	$4,640,000	
2025 Large Diameter Sewer Rehabilitation		0	0	0	0	1,196,857	$1,196,857	

M-29 Outfall Improvements

PROJECT NUMBER: 2018-424-103-0
WARD: 15

PHASE:
Design

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Modifying diversion chamber, rehabilitating culvert, constructing an endwall, and installing flapgate associated with the M-29 outfall structure.

PROJECT JUSTIFICATION:
The M-29 outfall structure is critical infrastructure that has been in jeopardy of failing for several years due to significant structural defects in the existing culvert.

RISK(S):
The M-29 outfall structure could fail prior to completion of the project.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$3,614,643**	**3,473,539**	**0**	**0**	**0**	**0**	**$3,473,539**	**Debt (Revenue Bonds)**

Maytide Storm and Sanitary Sewer System Improvements

PROJECT NUMBER: 2017-424-109-0
WARD: 29

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Reconstruction of storm infrastructure from Merritt Avenue to the storm interceptor on Ravilla Avenue and the realignment of the 10" sanitary sewer on Maytide (Sanderson to Valline).

PROJECT JUSTIFICATION:
Localized property and street flooding has been well-documented for several years at this location and the undeveloped right-of-way of Sanderson has significantly deteriorated. Additionally, an inspection of the 10" sanitary sewer on Maytide Street revealed structural and construction defects.

RISK(S):
Continual degradation to a steep slope could result in property damage and an increased cost to stabilize. Customers may be subject to basement backups, or overflows may occur due to collapsed pipes.

IMPACT ON OPERATIONS:
Increased operating reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$5,235,035	2,000,000	1,500,000	1,096,798	0	0	$4,596,798	Debt (Revenue Bonds) / DSIC - Sewer

Queenston Sewer Improvements

PROJECT NUMBER: 2019-424-103-2
WARD: 32

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Removal of a combined sewer diversion chamber and installation of new sewer infrastructure, which will result in the separation of the sewershed.

PROJECT JUSTIFICATION:
The existing sewer infrastructure (both storm and sanitary) have signficant structural defects, which are located under a large structure in a paper street over 40 feet deep. Additionally, several customers experience sewer backups that are connected to the combined sewer in a mostly separated area.

RISK(S):
Customers may be subject to basement backups or overflows may occur due to collapsed pipes.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Reroute the infrastructure (laterals and catch basins) connected to the failed mains; however, this may result in additional basement backups for the customers and may not be feasible due to the existing depth of the existing infrastructure.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$1,927,040**	**1,601,450**	**185,600**	**0**	**0**	**0**	**$1,787,050**	**Debt (Revenue Bonds)**

2019 -2025 Sewer Reconstruction

PROJECT NUMBER: 2019-424-102-0, 2020-424-102-0, Unidentified
WARD: Systemwide

PHASE:
Construction / Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Reconstruction of existing sewers, manholes, catch basins, and inlets due to emergency situations or pipe failures.

PROJECT JUSTIFICATION:
The existing sewer system is aging and immediate repairs are required to address failures that could be significant public safety hazards.

RISK(S):
Customers may be subject to basement backups or overflows may occur due to collapsed pipes. The Authority may be subject to related fines due to sewer overflows or for non-compliance as outlined in the Consent Order and Agreement.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Utilize Authority staff and equipment to perform all repairs. This would result in an increase to labor, equipment, and related operating expenses.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$10,308,170**	**970,175**	**999,979**	**1,841,144**	**1,880,000**	**1,880,000**	**$7,571,297**	
2019 Sewer Reconstruction		51,290	0	0	0	0	$51,290	Debt (Revenue Bonds)
2020 Sewer Reconstruction		918,244	0	0	0	0	$918,244	
2022 Sewer Reconstruction		0	999,979	750,021	0	0	$1,750,000	
2023 Sewer Reconstruction		0	0	1,091,123	805,080	0	$1,896,203	DSIC - Sewer
2024 Sewer Reconstruction		0	0	0	1,074,920	805,080	$1,880,000	Debt (Revenue Bonds)
2025 Sewer Reconstruction		0	0	0	0	1,074,920	$1,074,920	

2018-2025 Sewers Under Structures

PROJECT NUMBER: 2017-424-110-0, 2020-424-104-0, 2020-424-104-1, Unidentified

WARD: Systemwide

PHASE:
Design / Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes.

PROJECT JUSTIFICATION:
In recent years, there has been an increasing rate of failure of this asset type due to limited accessibility and pipe age. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost.

RISK(S):
Failure of this asset type could result in significant property/structure damage, increased replacement cost, and increased service outages or bypass pumping.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Continue to extend utility component life until a high failure rate justifies replacement.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$34,379,243**	**3,081,151**	**11,080,611**	**5,642,667**	**5,440,122**	**8,713,821**	**$33,958,372**	
2018 Sewers Under Structures		1,833,151	3,333,405	519,444	0	0	$5,686,000	Debt (Revenue Bonds)
2020 Sewers Under Structures		1,248,000	7,555,635	4,159,365	0	0	$12,963,000	DSIC – Sewer/ Debt (Revenue Bonds)
2022 Sewers Under Structures		0	191,571	766,286	4,445,408	2,431,333	$7,834,598	
2023 Sewers Under Structures		0	0	197,571	790,286	5,250,488	$6,238,345	
2024 Sewers Under Structures		0	0	0	204,429	817,714	$1,022,143	Debt (Revenue Bonds)
2025 Sewers Under Structures		0	0	0	0	214,286	$214,286	

2019-2025 Small Diameter Sewer Rehabilitation

PROJECT NUMBER: 2019-424-100-0 / 2019-424-108-0 / 2020-424-100-0/1/2, 2020-424-106-0/1/2, Unidentified

WARD: Systemwide

PHASE:
Design/Construction/Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Proactive, trenchless rehabilitation of sewer mains (36" diameter and less) to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow; including cleaning and pre and post construction CCTV inspections.

PROJECT JUSTIFICATION:
Provides the Authority with a means to address several moderate/major structural defects in pipe segments prior to complete failure. This trenchless pipe renewal method renews the asset, eliminates disruptive excavation, and is more cost effective than replacement.

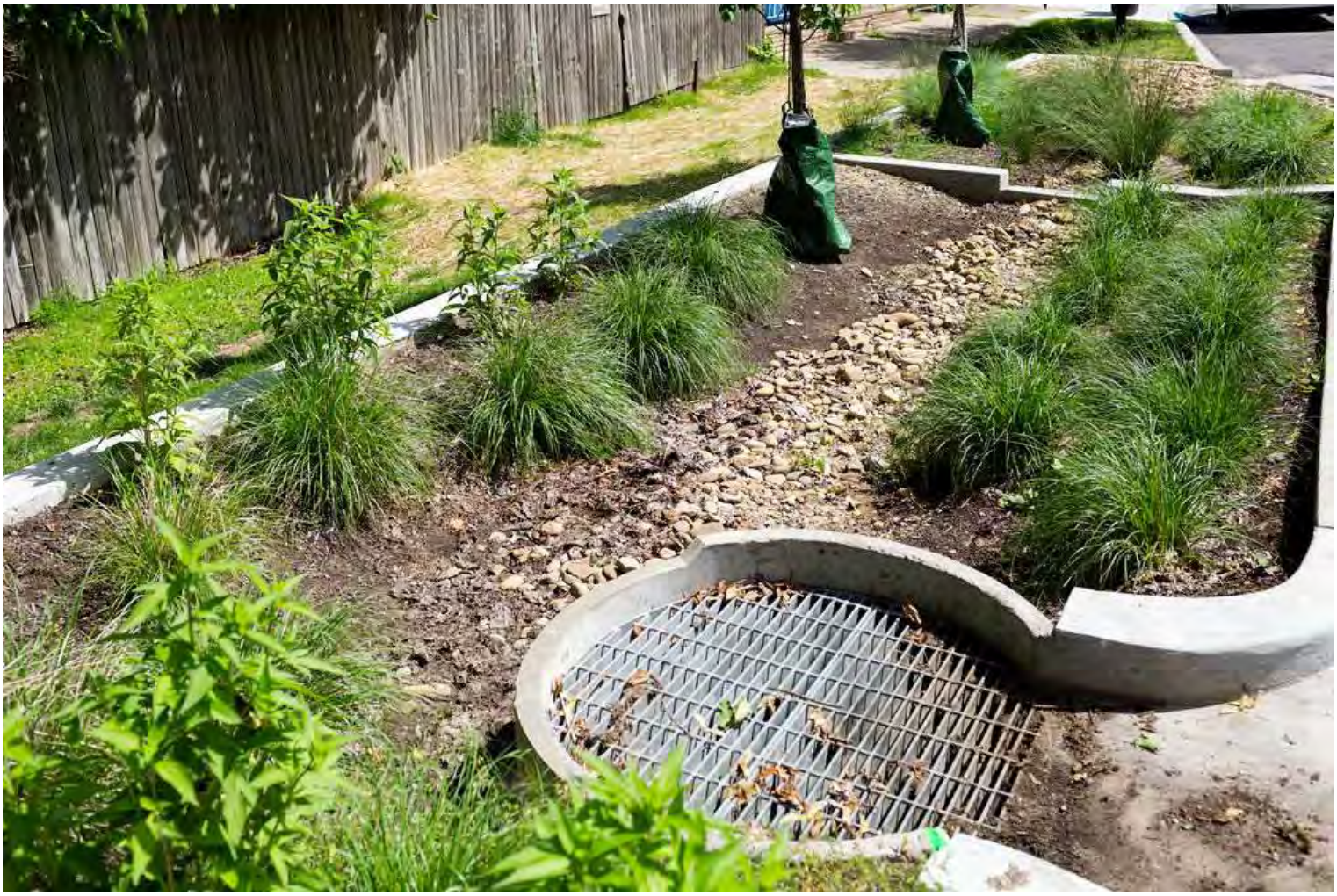
RISK(S):
If moderate/major structural defects are not proactively addressed, complete failure will eventually occur and excavation will be required. Any complete failure that occurs will result in dramatically increased expenditures for repair.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Perform excavated point repairs to address defective sections of pipe, replace segment in its entirety, or continue to extend asset life until failure.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$105,187,934**	**19,499,567**	**24,602,865**	**16,845,092**	**21,725,979**	**21,052,095**	**$103,725,599**	
2019 Small Diameter Rehabilitation		482,961	0	0	0	0	$482,961	Debt (Revenue Bonds)
2020 Small Diameter Rehabilitation		11,493,705	2,916,832	0	0	0	$14,410,538	
2021 Small Diameter Rehabilitation		6,582,901	12,081,232	0	0	0	$18,664,133	
2022 Small Diameter Rehabilitation		940,000	8,150,000	2,750,000	0	0	$11,840,000	
2023 Small Diameter Rehabilitation		0	1,454,800	12,554,292	6,990,908	0	$21,000,000	
2024 Small Diameter Rehabilitation		0	0	1,540,800	13,133,472	7,325,728	$22,000,000	
2025 Small Diameter Rehabilitation		0	0	0	1,601,600	13,726,367	$15,327,967	

**$941,800 ALCOSAN GROW grant funding secured.



Stormwater

Bus Rapid Transit (BRT) Stormwater Infrastructure Improvements

PROJECT NUMBER: 2020-GI-100-0
WARD: 1 & 4

PHASE:
Design

PRIORITY:
Safety, Regional Cooperation/Stewardship, Reliability/Operational Flexibility

PROJECT DESCRIPTION:
A cost share with the City of Pittsburgh's Department of Mobility and Infrastructure on the redesign of Forbes Avenue and Fifth Avenue to accommodate bus rapid transit from downtown to Birmingham Bridge.This project will include the installation of permeable paving, underground storage, and bioretention plantings and is tributary to the M-05 and M-19 outfall.

PROJECT JUSTIFICATION:
This project will help slow or reduce runoff into the the combined sewer system during wet weather events.

RISK(S):
Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could in issues during wet weather events.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$2,255,882	685,000	1,000,000	350,000	0	0	$2,035,000	Debt (Revenue Bonds)

2020-2025 Catch Basin and Inlet Replacement

PROJECT NUMBER: 2020-424-105-0/1, Unidentified
WARD: Systemwide

PHASE:
Procurement / Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Strategic replacement of catch basins and storm inlets throughout the system to replace failed units, stormwater control reliability, and minimize disturbance to the community.

PROJECT JUSTIFICATION:
By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost.

RISK(S):
Overland and street flooding could occur due to a defective or undersized catch basin or storm inlet, creating a public health and safety hazard during wet weather events.

IMPACT ON OPERATIONS:
Increased operating reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Continue to extend utility component life until a high failure rate justifies replacement.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$38,887,540**	**8,137,621**	**1,987,720**	**8,317,500**	**9,964,949**	**10,479,750**	**$38,887,540**	
2020 Catch Basin and Inlet Replacement		8,121,621	914,643	0	0	0	$9,036,264	Debt (Revenue Bonds)
2021 Catch Basin and Inlet Replacement		16,000	1,000,000	200,000	0	0	$1,216,000	
2022 Catch Basin and Inlet Replacement		0	73,077	8,044,423	962,500	0	$9,080,000	
2023 Catch Basin and Inlet Replacement		0	0	73,077	8,141,923	985,000	$9,200,000	
2024 Catch Basin and Inlet Replacement		0	0	0	860,526	8,634,224	$9,494,750	
2025 Catch Basin and Inlet Replacement		0	0	0	0	860,526	$860,526	

Fleury Way Stormwater Infrastructure Improvements

PROJECT NUMBER: Unidentified
WARD: 12

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Construction of storm sewer infrastructure to address persistent and severe street flooding and roadway damage. Project will include installing approximately 500 ft of 18" storm sewers and 4 new catch basins as well as inverting the crown of the road and adding proper curbing for optimal drainage.

PROJECT JUSTIFICATION:
After field assessment and review, the stormwater group ranked this issue as a "high priority" because of the severity of road degradation and persistent street flooding caused by lack of stormwater infrastructure and improper road design. This issue is located in the A-42 Green First sewershed. This project is also a good opportunity to coordinate and share costs with DOMI.

RISK(S):
Poor level of service and safety risks.

IMPACT ON OPERATIONS:
4 additional inlets operations will need to add to the cleaning schedule.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$730,141**	**730,141**	**0**	**0**	**0**	**0**	**$730,141**	**Debt (Revenue Bonds)**

**$123,000 will be reimbursed as part of a cost share agreement between the PWSA and the City of Pittsburgh.

Four Mile Run Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-102-0
WARD: 15

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

PROJECT DESCRIPTION:
Sewer separation, stream restoration, stream daylighting, bioretention, and underground storage to remove the existing stream base and wet weather flow currently discharging into the combined sewer located in M-29.

PROJECT JUSTIFICATION:
This project will separate wet weather flow being directly discharged into the Authority's combined sewer system.

RISK(S):
Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could in issues during wet weather events.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$25,400,720	7,000,000	12,800,000	0	0	0	$19,800,000	Debt (Revenue Bonds)

Lawn and Ophelia

PROJECT NUMBER: 2017-424-104-0
WARD: 4

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

PROJECT DESCRIPTION:
Project is located in the South Oakland neighborhood in the City of Pittsburgh and is tributary to the M-19B outfall. This project is intended to be a community gathering space combined with stormwater management features.

PROJECT JUSTIFICATION:
It is anticipated that 1.9 impervious acres from neighboring roads and roofs can be managed.

RISK(S):
Customer within the service area of this project may experience stormwater related issues prior to the completion of this project.

IMPACT ON OPERATIONS:
Increased system reliability and improved system management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Revenue Bonds)
Total	$768,341	600,000	0	0	0	0	$600,000	

**$313,900 ALCOSAN GROW grant funding secured.

Martin Luther King Field Stormwater Infrastructure Improvements

PROJECT NUMBER: 2019-GI-104-0
WARD: 4 & 5

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility

PROJECT DESCRIPTION:
Installation of regenerative bio-swale and underground detention facilities to capture and detain impervious acres from the adjacent streets and upstream separate storm sewers, which currently discharging into the combined sewer located in M-19.

PROJECT JUSTIFICATION:
This project will help slow or reduce runoff into the the combined sewer system during wet weather events.

RISK(S):
Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could in issues during wet weather events.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Project Fund)
Total	$3,654,970	2,008,966	1,339,310	0	0	0	$3,348,276	

**$855,270 ALCOSAN GROW grant funding secured.

Maryland Avenue Stormwater Infrastructure Improvements

PROJECT NUMBER: 2017-424-101-0
WARD: 7

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Permeable paver based GSI project to manage approximately 5.3 acres of impervious acres for 1.5" runoff event.

PROJECT JUSTIFICATION:
The project purpose is to reduce combined sewer overflows at the downstream A-22 outfall while also improving performance of the local combined sewer system that has experienced surcharge and flooding during intense rain events in downstream areas of Shadyside.

RISK(S):
Continued flooding risk unmitigated, which has contributed to frequent reports of basement backups in this area of the PWSA system.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Implementing stormwater management projects at less cost-effective locations.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$4,454,383	2,610,000	330,000	0	0	0	$2,940,000	Debt (Project Fund)

Nobles Lane Stormsystems Improvements

PROJECT NUMBER: Unidentified
WARD: 29

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Construction of strategically placed basins and storm sewers to reduce or eliminate overland flooding from roadway onto private property.

PROJECT JUSTIFICATION:
After field assessment and review, the stormwater group ranked this issue as a "high priority" because of flooding severity and its location in the Saw Mill Run sewershed.This project seeks to install new catch basins and a new storm sewer to help appropriately manage runoff. This area of the Carrick neighborhood does not have any stormwater infrastructure.

RISK(S):
Poor level of service.

IMPACT ON OPERATIONS:
The proposed basins will include green filters to add water quality benefits to Saw Mill Run. These will need to be routinely cleaned via the green infrastructure maintenance contractor and will be a minimal impact to this particular operations budget.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$343,322**	**343,322**	**0**	**0**	**0**	**0**	**$343,322**	**Debt (Revenue Bonds)**

**$65,551 will be reimbursed as part of a cost share agreement between the PWSA and the City of Pittsburgh.

Saw Mill Run MS4 Compliance Projects

PROJECT NUMBER: Unidentified
WARD: 32 & 29

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance

PROJECT DESCRIPTION:
Identifying and completing projects related to MS4 compliance.

PROJECT JUSTIFICATION:
This project is necessary to become compliant with MS4 regulatory requirements.

RISK(S):
The timeline to complete the MS4 compliance projects could take longer than expected.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$3,500,000	0	0	1,000,000	2,500,000	0	$3,500,000	Debt (Revenue Bonds)

Saw Mill Run PWSA & PennDOT Watershed Improvements

PROJECT NUMBER: Unidentified
WARD: 32

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Implementation of stormwater treatment and reconnection of streams to vegetated floodplains to help mitigate stormwater peak flows and reduce sediment and other pollutant loads. This project will demonstrate the effectiveness of green infrastructure in reducing pollutants, controlling CSO/SSOs, and restoring the health of the aquatic ecosystems in the Saw Mill Run watershed to comply with regulatory obligations.

PROJECT JUSTIFICATION:
This project will help to comply with regulatory obligations by reducing pollutants and controlling CSO/SSO's.

RISK(S):
It may be difficult to comply with certain regulatory obligations prior to the completion of the project.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$1,000,000	0	200,000	500,000	300,000	0	$1,000,000	Debt (Revenue Bonds)

**Future cost share agreement will be negotiated with PennDOT.

Southside Flats Sewer Separation

PROJECT NUMBER: Unidentified
WARD: 16 & 17

PHASE:
Not Started

PRIORITY:
Safety, Regional Cooperation/Stewardship, Reliability/Operational Flexibility

PROJECT DESCRIPTION:
Separation of 17 acres of combined sewer through the construction of stormdrain along Wharton Street to 18th Street.

PROJECT JUSTIFICATION:
This project will help slow or reduce runoff into the the combined sewer system during wet weather events.

RISK(S):
Community members are concerned about disruptions during construction and potential rooftop disconnect costs.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$3,405,242	0	335,365	3,069,877	0	0	$3,405,242	Debt (Project Fund)

Southside Stormwater Infrastructure Improvements

PROJECT NUMBER: 2019-GI-100-0
WARD: 16 & 17

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

PROJECT DESCRIPTION:
The Southside Green / Stormwater project is located in the M-16 sewershed, which discharges approximately 103MG of combined sewer overflows (CSOs) in typical year as it is defined in the current system model. Additionally, there are 15 known surface streams/seeps within the park that appear to connect into the combined sewer system. The project will focus on stormwater management source control opportunities within Southside Park. The project will look at separating the stormwater runoff from the park and road right-of-way areas. It will connect through a new storm sewer discharge to be built under South 21st Street to the Monongahela. The project will detain and slowly return the stormwater runoff to the combined sewer system.

PROJECT JUSTIFICATION:
This project will help with complying with the Consent Order Agreement by reducing CSO's.

RISK(S):
It may be difficult to comply with certain regulatory obligations prior to the completion of the project.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Project Fund)
Total	$4,970,325	2,156,746	2,156,746	0	0	0	$4,313,492	

**$1,489,900 ALCOSAN GROW grant funding secured.

Thomas and McPherson Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-106-0
WARD: 7

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility

PROJECT DESCRIPTION:
Installation of roadside bioretention features to capture and detain impervious road runoff in the North Point Breeze neighborhood of the City of Pittsburgh, which is tributary to the A-42 combined sewer outfall.

PROJECT JUSTIFICATION:
This project will help slow or reduce runoff into the the combined sewer system during wet weather events.

RISK(S):
Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could in issues during wet weather events.

IMPACT ON OPERATIONS:
Increased system reliability and improved system management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Project Fund)
Total	$2,671,222	4,319,899	1,387,466	0	0	0	$5,707,365	

**$1,517,800 ALCOSAN GROW grant funding secured.

Tide Gate Installations

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Installation of tide gates at 44 combined sewer overflow diversion chamber locations to assist in preventing river water intrusion.

PROJECT JUSTIFICATION:
Will prevent the intrusion of sewage into river water during heavy wet weather events.

RISK(S):
The length of time to install the tide gates could result in sewage overflowing into river water prior to the completion of the project.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$3,000,000	0	0	0	2,000,000	1,000,000	$3,000,000	Debt (Revenue Bonds)

Volunteer's Field Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-104-0
WARD: 29

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

PROJECT DESCRIPTION:
Project is located in the Carrick neighborhood of the City of Pittsburgh and is tributary to Saw Mill Run. Installation of green infrastrucutre within the Park to reduce sediment and other pollutant loads.

PROJECT JUSTIFICATION:
Required for compliance with the MS4 permit and EPA TMDL requirements. Project will also detain stormwater to reduce downstream flooding in Saw Mill Run.

RISK(S):
It may be difficult to comply with certain regulatory obligations prior to the completion of the project.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$1,641,976	1,000,000	0	0	0	0	$1,000,000	Debt (Revenue Bonds)

Wightman Park Stormwater Infrastructure Improvements

PROJECT NUMBER: 2017-424-105-0
WARD: 14

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

PROJECT DESCRIPTION:
Project is located in the Squirrel Hill neighborhood of the City of Pittsburgh and is tributary to the M-29 outfall. Stormwater management within the park itself as well as the necessary piping or inlet work to direct up to 3.25 impervious acres from the adjacent streets into the park. The Wightman Park project along with future street bioswale projects are expected to increase the impervious acres captured as well as alleviate reported sewer basement backups in the neighborhood around Wightman Park.

PROJECT JUSTIFICATION:
2.24 million gallons of stormwater runoff will be managed through this project in a typical year, producing downstream CSO reduction. The project will also improve the performance of adjacent, downstream sewers through peak flow reduction.

RISK(S):
Customers may be subject to basement backups or overflows may occur due to collapsed pipes. The Authority may be subject to related fines due to sewer overflows or for non-compliance as outlined in the Consent Order and Agreement.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Delay construction which will increase the risk of sewer basement backups.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Project Fund)
Total	$3,521,825	1,750,000	0	0	0	0	$1,750,000	

**$368,300 ALCOSAN GROW grant funding secured.

Winchester Drive at Grovemount Stormsystem Improvements

PROJECT NUMBER: Unidentified
WARD: 20

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Construction of storm system and roadway improvements to address right of way flooding and damage (hillside erosion and road undercutting) caused by stormwater.

PROJECT JUSTIFICATION:
After field assessment and review, the stormwater group ranked this issue as a "high priority" because of the severity of safety issues caused by lack of inlets and curbing as well as a failing outlet structure. Due to improper basin placement as well as poor road design the intersection at Winchester Drive and Grovemount Road is being undercut by overland stormwater runoff, causing the road to start to fail and collapse. This project seeks to install new catch basins and a new storm sewer as well as stabilize the existing outfall to help appropriately manage runoff.

RISK(S):
Poor level of service, safety risks.

IMPACT ON OPERATIONS:
10 new basins operations will have to add to the cleaning schedule.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Revenue Bonds)
Total	**$554,577**	**554,577**	**0**	**0**	**0**	**0**	**$554,577**	

**$42,193 will be reimbursed as part of a cost share agreement between the PWSA and the City of Pittsburgh.

Woodland Road Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-108-0
WARD: 14

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Bioretention based GSI project to manage approximately 7 acres of impervious acres for 1.5" runoff event. Project location is in A-22 sewershed on the campus of Chatham University adjacent to Woodland Road. Design activities include field investigations (site survey, geotech), development of design documents for construction and pre-construction flow monitoring.

PROJECT JUSTIFICATION:
The project purpose is to reduce combined sewer overflows at the downstream A-22 outfall while also improving performance of the local combined sewer system that has experienced surcharge and flooding during intense rain events in downstream areas of Shadyside.

RISK(S):
Continued flooding risk unmitigated, which has contributed to frequent reports of basement backups in this area of the PWSA system.

IMPACT ON OPERATIONS:
Increased system reliability and improved system management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Implementing stormwater management projects at less cost-effective locations.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$2,073,559	1,550,000	185,000	0	0	0	$1,735,000	Debt (Project Fund)

Woods Run Stream Removal Stormwater Infrastructure Improvements

PROJECT NUMBER: 2017-424-108-0
WARD: 26

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

PROJECT DESCRIPTION:
This project will redirect an existing stream inflow location into a detain and slow release subsurface storage facility. The stream base and wet weather flow currently discharge directly into the 36" diameter the PWSA combined sewer on Mairdale Avenue.

PROJECT JUSTIFICATION:
This project will separate wet weather flow being directly discharged into the PWSA's combined sewer system.

RISK(S):
Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could in issues during wet weather events.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	Debt (Project Fund)
Total	$2,619,086	1,250,000	0	0	0	0	$1,250,000	

**$1,224,300 ALCOSAN GROW grant funding secured.

Other

2021-2025 Park Maintenance / Upgrades

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Reliability/Operational Flexibility, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
This project will fund water and sewer infrastrucutre upgrades within City of Pittsburgh parks.

PROJECT JUSTIFICATION:
The water and sewer infrastrucutre within City of Pittsburgh parks is in need of upgrades.

RISK(S):
Deferred maintenance of water and sewer infrastructure could have negative impacts on the functionality of City of Pittsburgh parks.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$4,700,000**	**700,000**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**$4,700,000**	**Debt (Revenue Bonds)**

2021-2025 Property Acquisition / Facility Upgrades

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Reliability/Operational Flexibility, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
This project will fund all future property/building acquisitions and facility upgrades.

PROJECT JUSTIFICATION:
The current facilities of the Authority are in need of upgrades. In addition, new properties may be aquired to fill the need of increased staffing and equipment levels.

RISK(S):
Deferred maintenance on current facilities and limited space will impact operations.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$2,700,000	700,000	0	1,000,000	1,000,000	0	$2,700,000	Debt (Revenue Bonds)

Reconstruction of the Facade at the Central Warehouse

PROJECT NUMBER: Unidentified
WARD: 9

PHASE: Not Started
PRIORITY: Safety
PROJECT DESCRIPTION: Reconstruction of the facade at the Central Warehouse.
PROJECT JUSTIFICATION: The existing facade is failing and in danger of falling and causing injury to employees or pedistrians.
RISK(S): Employee safety.
IMPACT ON OPERATIONS: Increased system reliability and improved sytem management.
ALTERNATIVES TO THE RECOMMENDED ACTION: There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$70,000**	**70,000**	**0**	**0**	**0**	**0**	**$70,000**	**Debt (Revenue Bonds)**

Roof Replacment Brilliant Yard Warehouse

PROJECT NUMBER: Unidentified
WARD: 12

PHASE:
Not Started

PRIORITY:
Safety, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Roof replacment at Brilliant Yard warehouse.

PROJECT JUSTIFICATION:
Existing roof leaking and causing structural damage.

RISK(S):
Employee safety.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$160,000**	**160,000**	**0**	**0**	**0**	**0**	**$160,000**	**Debt (Revenue Bonds)**

Roof Replacement Herron Hill Pump Station

PROJECT NUMBER: Unidentified
WARD: 5

PHASE:
Not Started

PRIORITY:
Safety, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Replace existing roof and gutters at the Herron Hill Pump Station.

PROJECT JUSTIFICATION:
Existing roof is leaking and causing structural damage to building.

RISK(S):
Employee safety.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$90,000**	**90,000**	**0**	**0**	**0**	**0**	**$90,000**	**Debt (Revenue Bonds)**

Surface Restoration (Capital Only)

PROJECT NUMBER: 2020-325-105-0/1
WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Operations and Maintenance Efficieny

PROJECT DESCRIPTION:
Resurfacing of streets as a result of other capital projects.

PROJECT JUSTIFICATION:
Adequately restoring street surface conditions is a requirement for all applicable capital projects.

RISK(S):
Customers could experience temporary street closures as a result of street resurfacing work.

IMPACT ON OPERATIONS:
Increased system reliability and improved system management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	$14,328,141	12,500,000	0	0	0	0	$12,500,000	Debt (Revenue Bonds)

Utility Cost Shares

PROJECT NUMBER: Unidentified
WARD: Systemwide

PHASE: Not Started
PRIORITY: Regional Cooperation/ Stewardship
PROJECT DESCRIPTION: This project will fund future cost sharing projects.
PROJECT JUSTIFICATION: Cost sharing projects can provide a savings to the Authority.
RISK(S): Cost sharing projects have the potential to be delayed due to coordination issues.
IMPACT ON OPERATIONS: Increased operating flexibility and reliability.
ALTERNATIVES TO THE RECOMMENDED ACTION: Complete projects without cost sharing agreements.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Total	
Total	**$2,050,000**	**450,000**	**100,000**	**500,000**	**500,000**	**500,000**	**$2,050,000**	**Debt (Revenue Bonds)**