



# The Pittsburgh Water and Sewer Authority

2020 – 2024 Capital Improvement Plan





# The Pittsburgh Water and Sewer Authority Board of Directors

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Pittsburgh  
Water & Sewer  
Authority

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## Introduction

The Pittsburgh Water and Sewer Authority (“**the Authority**”) 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.

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 and facilities for generating surplus power.

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

PWSA’s Capital Improvement Program focuses on sustaining cost-effective operations, while optimizing the system’s asset performance and life expectancy. The 2020-2024 Capital Improvement Program invests in programs which consider risk and consequence of asset failure and levels of service benefits.

### Development and Approval Process

PWSA’s CIP process begins each year in January when project nominations are solicited from the entire organization. At the completion of the nomination period, the Planning Department screens and evaluates the nominated projects using

a predefined scoring system and recommends which projects should be considered for further planning. 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 development of a preliminary 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:

- Safety - Potential health and safety risks to personnel and the public if action is not taken
- Regulatory Compliance – Regulatory compliance schedule and potential fines for non-compliance
- Reliability/Operational Flexibility – Location, age, and condition of infrastructure and risk if action is not taken
- Capacity – Meets community health needs and growth, as needed
- Operations and Maintenance Efficiency – Potential for operating cost savings
- Regional Cooperation/Stewardship – Coordination with external stakeholders or meeting the communities needs
- Level of Service – Improvement to customer service
- 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, PWSA Future Capital Bond Authorizations, cost shares with other utilities, and grants. PWSA is dedicated to identifying and pursuing funding from all potential sources to offset planned capital investments.

### **Capital Improvement Plan Organization**

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

- Water Treatment Plant
- Water Pumping and Storage
- Water Distribution System, which includes lead service line replacements
- Wastewater System
- Stormwater System
- 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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The following information is provided for each project:

**Project Class** – Type of project.

**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.

**Neighborhood/Ward** – Project location(s) based within the City of Pittsburgh.

**Status** – Phase in the project life-cycle (i.e. assessment/design/construction).

**Priority** – Criteria utilized to prioritize the 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.

**Risk(s)** - Outlines the risk(s) to PWSA if the project is delayed or is not selected.

**Impact on Operations** – Describes the anticipated impact to PWSA's operations when the project is completed.

**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.

\*The Cash Flow Summary includes contingencies.

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## 2020-2024 Capital Improvement Program

The figures below illustrate the proposed breakdown of the project classes, funding sources, and yearly cash flows for the 2020 to 2024 CIP.

Figure 1. Proposed Yearly Capital Cash Flow by Project Class

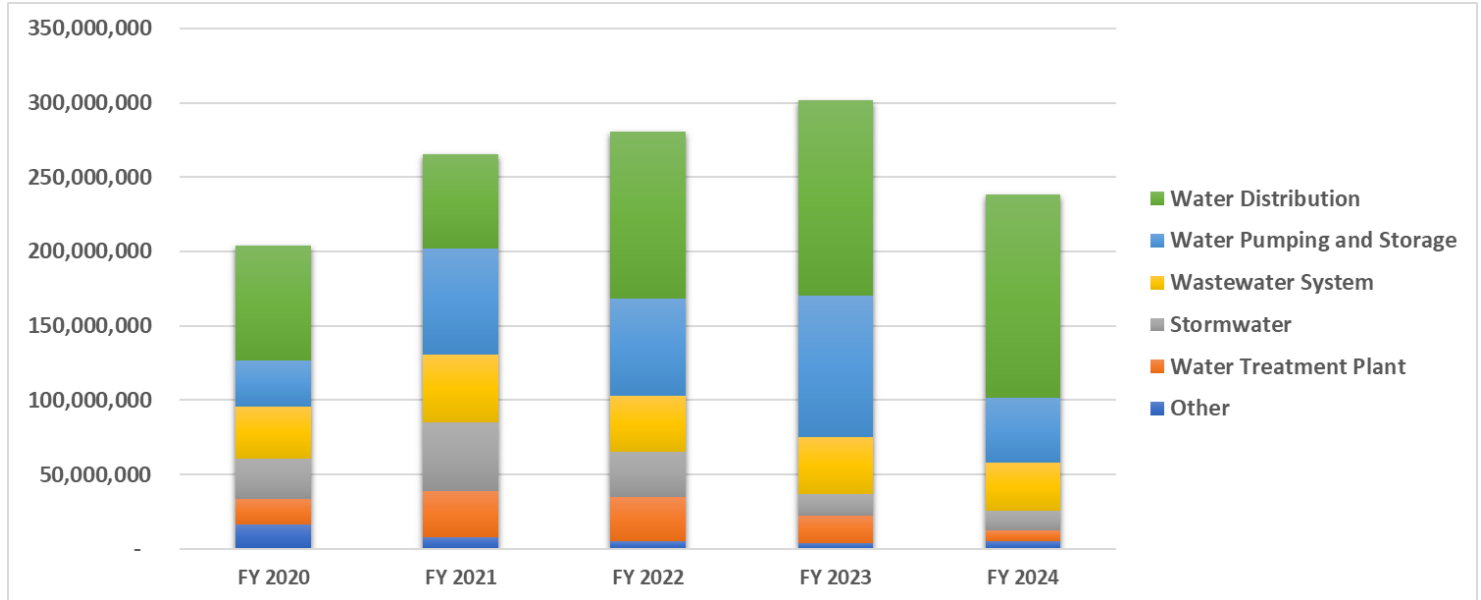


Figure 2. Capital Requirements

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total
Water Treatment Plant	\$ 16,884,025	31,260,131	29,455,887	18,164,003	7,054,471	\$ 102,818,518
Water Pumping and Storage	31,065,447	71,377,720	65,541,850	94,750,016	44,069,562	306,804,594
Water Distribution	77,597,135	63,277,796	112,385,623	131,689,581	136,347,581	521,297,717
Wastewater System	35,140,573	46,010,731	37,623,291	38,191,236	32,042,104	189,007,936
Stormwater	26,927,774	46,008,174	30,591,717	14,881,563	13,453,392	131,862,619
Other	16,650,000	7,634,500	5,200,000	4,000,000	5,200,000	38,684,500
<b>Total Capital Requirements</b>	<b>\$ 204,264,954</b>	<b>265,569,052</b>	<b>280,798,368</b>	<b>301,676,400</b>	<b>238,167,110</b>	<b>\$ 1,290,475,883</b>

Figure 3. Funding Sources

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total
Debt (Revenue Bonds)	\$ 149,026,299	238,835,405	254,699,574	273,541,635	211,491,887	\$ 1,127,594,800
Cash (PAYGO)	26,977,306	26,733,647	26,098,794	28,134,765	26,675,223	134,619,734
PENNVEST	28,261,349	-	-	-	-	28,261,349
Federal Funds	-	-	-	-	-	-
Other Grants	-	-	-	-	-	-
<b>Total Funding Sources</b>	<b>\$ 204,264,954</b>	<b>265,569,052</b>	<b>280,798,368</b>	<b>301,676,400</b>	<b>238,167,110</b>	<b>\$ 1,290,475,883</b>



# 2020 Project Summary



Page	Project Name	2020 Budget
<b>Project Class: Water Treatment Plant</b>		
9	Aspinwall and Membrane Filtration Plant Fiberglass Reinforced Plastic Chemical Tank Inspections	4,691
10	Aspinwall Water Treatment Plant Raw Water Intakes	2,304,856
11	Aspinwall Treatment Plant Pretreatment Chemical System and Clarification Improvements	4,596,583
12	Aspinwall Water Treatment Plant Electrical and Backup Power Improvements	1,082,568
13	Clearwell Emergency Response Project	4,800,000
14	Corrosion Control Chemical Storage & Feed Systems	390,748
15	Aspinwall Water Treatment Plant Security Fence, Lighting, and Surveillance	300,000
16	Highland Park Membrane Filtration Plant UV System	2,100,000
17	Highland Park Membrane Filtration Module Replacement Program	1,132,731
18	Membrane Filtration Plant Assessment and Critical Process Improvements	171,848
<b>Total: Water Treatment Plant</b>		<b>16,884,025</b>
<b>Project Class: Pumping and Storage</b>		
20	Ross Pump Station	2,184,432
21	Clearwell Improvements	3,159,375
22	Aspinwall Pump Station to Lanpher Reservoir Rising Main	4,468,239
23	Bruecken Pump Station Valve Vault	31,485
24	Aspinwall Water Treatment Plant High Service Pumping	2,794,262
25	Chlorine Booster Station Improvements	1,090,090
26	Highland Reservoir Pump Station and Rising Main	1,563,260
27	Inline Pump Station (Coral and Pacific) Improvements	53,000
28	Lanpher Reservoir Improvements	3,716,026
29	Highland No. 2 Reservoir Improvements	4,965,756
30	Herron Hill Reservoir Improvements	3,864,000
31	Garfield Tank Improvements	-
32	Lincoln Tank Improvements	-
33	Spring Hill Tank Improvements	-
34	Mission Pump Station Improvements	-
35	Herron Hill Tank Pump Station Improvements	-
36	Herron Hill Pump Station Improvements	-
37	Howard Pump Station Improvements	-
38	Lincoln Pump Station Improvements	331,061
39	Saline Pump Station Improvements	359,848
40	2019 Large Diameter Water Main Improvements - Rising Mains 3 & 4	2,484,612
<b>Total: Pumping and Storage</b>		<b>31,065,447</b>
<b>Project Class: Water Distribution</b>		
42	Lead Service Line Replacement	36,780,128
43	Lead Service Identification Program	3,000,000
44	Private Lead Service Line Reimbursement Program	1,000,000
45	Small Diameter Water Main Replacement	13,459,161
46	Large Diameter Water Main Replacement	1,292,197
47	Curb Box Inspections	278,081
48	Water Relay	2,317,816
49	Valve Replacement	3,888,977
50	Hydrant Replacement	1,899,892
51	Small Meter Replacement	785,775
52	Large Meter Replacement	847,000
53	Unmetered and Flat Rate Properties	3,078,419
54	Surface Restoration (Capital Only)	3,564,474
55	Low Pressure Area Remediation	1,029,259

Page	Project Name	2020 Budget
<b>Project Class: Water Distribution (Con't)</b>		
56	Bus Rapid Transit (BRT) Water Distribution	700,000
57	Bates Street Waterline Relay	160,000
58	District Water and Pressure Meters	1,731,143
59	West Ohio Street Bridge Replacement	289,250
60	Fort Duquesne Bridge Water Air Release Valve Repair	1,495,563
<b>Total: Water Distribution</b>		<b>77,597,135</b>
<b>Project Class: Wastewater System</b>		
62	Small Diameter Sewer Rehabilitation	13,469,310
63	Sewers Under Structures	7,251,959
64	Sewer Reconstruction	1,700,668
65	Large Diameter Sewer Rehabilitation	3,847,000
66	31st Ward Sewer System	4,000,000
67	Maytide Storm and Sanitary Sewer System Improvements	3,013,907
68	Browns Hill Road Sewer Pump Station Replacement	-
69	Larimer Avenue Sewer and 28th Street Slope Stabilization	583,400
70	Mellon Terrace Sewer System Improvements	340,000
71	M-29 Outfall Improvements	934,329
<b>Total: Wastewater System</b>		<b>35,140,573</b>
<b>Project Class: Stormwater</b>		
73	Catch Basin and Inlet Replacement	5,689,061
74	Saw Mill Run MS4 Compliance Projects	-
75	Tide Gate Installations	-
76	Overbrook Middle School Pollution and Flood Reduction	2,625,058
77	Queenston Stormwater Infrastructure Improvements	750,000
78	Volunteer's Field Stormwater Infrastructure Improvements	854,185
79	Saw Mill Run Stream Bank Restoration Stormwater Infrastructure Improvements	876,204
80	Lawn and Ophelia	275,375
81	Wightman Park Stormwater Infrastructure Improvements	2,515,715
82	Woods Run Stream Removal Stormwater Infrastructure Improvements	2,570,000
83	Maryland Avenue Stormwater Infrastructure Improvements - Phase 1	2,401,200
84	Four Mile Run Stormwater Infrastructure Improvements	3,000,000
85	Woodland Drive Stormwater Infrastructure Improvements	-
86	Thomas and McPherson Stormwater Infrastructure Improvements - Phase 1	250,000
87	Southside Stormwater Infrastructure Improvements	590,180
88	St. Johns Stormwater Infrastructure Improvements	2,973,230
89	Spring Garden Stream Stormwater Infrastructure Improvements	-
90	Martin Luther King Field Stormwater Infrastructure Improvements	1,200,000
91	AMG Capital Funds - As-Needed Sewer Flow Monitoring	102,500
92	Bus Rapid Transit (BRT) Stormwater Infrastructure Improvements	255,065
<b>Total: Stormwater</b>		<b>26,927,774</b>
<b>Project Class: Other</b>		
94	Computerized Maintenance Management System	1,250,000
95	Enterprise Resource Planning	1,250,000
96	Property Acquisition / Facility Upgrades	9,000,000
97	Park Maintenance / Upgrades	1,000,000
98	GIS System Upgrades: Water	800,000
99	Facility Standby Power	750,000
100	Utility Cost Shares	500,000
101	Vehicle and Major Equipment	2,100,000
<b>Total: Other</b>		<b>16,650,000</b>

# Water Treatment Plant



# Water Treatment Plant

## Aspinwall and Membrane Filtration Plant Fiberglass Reinforced Plastic Chemical Tank Inspections and Repairs/Replacement

PROJECT NUMBER: 2017-322-102-0  
NEIGHBORHOOD/WARD: Systemwide

<b>PHASE:</b> Assessment/Construction
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility
<b>PROJECT DESCRIPTION:</b> Inspection and rehabilitation and/or replacement of the fiberglass reinforced plastic chemical tanks
<b>PROJECT JUSTIFICATION:</b> Based on the age, service, and visual observations of the tanks, rehabilitation is needed to maintain the integrity of the tanks. Known repairs include the replacement of the 300 gallon sodium hypochlorite day tank and repair/modification of the vent piping on the caustic tank.
<b>RISK(S):</b> Failure of a chemical storage tank poses a significant health and safety risk to personnel. Failure exposes the Authority and the Highland No. 1 Service Area to a potentially deficient or non-complaint water supply, where emergency/unplanned repairs will typically add 30% to 50% to the capital expenses required.
<b>IMPACT ON OPERATIONS:</b> Increased flexibility and reliability and improved safety conditions for staff.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	<b>\$294,000</b>	<b>4,691</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$4,691</b>	

\*Includes contingencies

# Water Treatment Plant

## Aspinwall Water Treatment Plant Raw Water Intakes

PROJECT NUMBER: 2018-322-100-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Preliminary 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):**  
Only one gate is operational. Failure of the East Gate would result in a major disruption to the supply of water for the City of Pittsburgh.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$45,000,000</b>	<b>2,304,856</b>	<b>7,435,574</b>	<b>12,421,380</b>	<b>11,921,380</b>	<b>7,054,471</b>	<b>\$41,137,661</b>	

\*Includes contingencies

# Water Treatment Plant

## Aspinwall Treatment Plant Pretreatment Chemical System and Clarification Improvements

PROJECT NUMBER: 2017-322-101-0/-1/-2/-3/-4/-5/-6

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance 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 a critical component to producing safe drinking water. Components of the chemical treatment systems can no longer be operated in a safe, effective, or reliable manner to meet water quality requirements. Many bulk water treatment chemicals present safety hazards to staff. The storage and pumping systems associated with these chemicals have reached the end of their useful life. Failures resulting in dust creation and chemical spills can place operators in unsafe working conditions and can cause physical damage to equipment and structures, as well as environmental contamination.

**RISK(S):**  
Inefficient operation of chemical systems results in increased operating costs, including chemical consumption, labor, solids generation and disposal, and wear on equipment. Failure of a chemical system poses a significant health and safety risk to personnel as well as an increased risk to water quality compliance.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$28,505,990</b>	<b>4,596,583</b>	<b>5,623,596</b>	<b>8,763,546</b>	<b>0</b>	<b>0</b>	<b>\$18,983,725</b>	

\*Includes contingencies

# Water Treatment Plant

## Aspinwall Water Treatment Plant Electrical and Backup Power Improvements

PROJECT NUMBER: 2017-322-100-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**

Design

**PRIORITY:**

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

**PROJECT DESCRIPTION:**

Improvements to electrical systems at 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. Electrical panels do not meet current safety standards, including lack of arc flash protection. Additionally, the Water Treatment Plant does not have redundant power systems or a means for stand-by power for critical pumping and treatment systems.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$26,520,000</b>	<b>1,082,568</b>	<b>8,270,961</b>	<b>8,270,961</b>	<b>6,242,623</b>	<b>0</b>	<b>\$23,867,114</b>	

\*Includes contingencies



# Water Treatment Plant

## Clearwell Emergency Response Project

PROJECT NUMBER: 2017-323-100-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Preliminary 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):**  
Clearwell failure will cease all potable water delivery to all the Authority's customers (residential, commercial, industrial, institutional, bulk rate customers, public health and safety providers, fire protection, governmental facilities, other water distributors, etc.), creating a public health emergency. Existing temporary bypass measures could cause failure of the existing pumps due to insufficient suction pressure.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$27,670,000</b>	<b>4,800,000</b>	<b>9,700,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$14,500,000</b>	

\*Includes contingencies

# Water Treatment Plant

## Corrosion Control Chemical Storage & Feed Systems

PROJECT NUMBER: 2017-322-107-0

NEIGHBORHOOD/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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$9,142,035</b>	<b>390,748</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$390,748</b>	

\*Includes contingencies

# Water Treatment Plant

## Aspinwall Water Treatment Plant Security Fence, Lighting, and Surveillance

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Systemwide

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
Total	\$530,000	300,000	230,000	0	0	0	\$530,000	

\*Includes contingencies

# Water Treatment Plant

## Highland Park Membrane Filtration Plant UV System

PROJECT NUMBER: 2017-322-106-0/-1

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Construction

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

**PROJECT DESCRIPTION:**  
Installation of a UV treatment system and appurtenances at the Membrane Filtration Plant to comply with the 1 log inactivation of Giardia cysts and the PA DEP Administrative Order dated October 25, 2017.

**PROJECT JUSTIFICATION:**  
PA DEP determined that additional disinfection was required.

**RISK(S):**  
Membrane Filtration Plant cannot operate without additional disinfection measures.

**IMPACT ON OPERATIONS:**  
Membrane Filtration Plant cannot operate without this project.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Construction of a clearwell in lieu of a UV system, eliminate Membrane Filtration Plant and provide additional potable water storage. Neither of these options are viable in the timeframe that is needed to provide adequate supply to the system.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$6,697,381</b>	<b>2,100,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$2,100,000</b>	

\*Includes contingencies

# Water Treatment Plant

## Highland Park Membrane Filtration Module Replacement Program

PROJECT NUMBER: 2017-322-105-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Construction

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

**PROJECT DESCRIPTION:**  
Replace membrane modules. The Membrane Filtration Plant includes a total of 10 racks, each with 80 modules.

**PROJECT JUSTIFICATION:**  
Membrane modules have reached the end of their useful life and are beginning to fail at an increasing rate.

**RISK(S):**  
Exposes the Authority to higher costs to address emergency facility failures, and the Highland No. 1 Service Area to a potentially deficient or non-complaint water supply.

**IMPACT ON OPERATIONS:**  
Increase operating flexibility and reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
There are no short term practical alternatives to the recommended action. Long term alternative is providing covered finished water storage for the Highland No. 1 Service Area and eliminating the Membrane Filtration Plant.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Cash (PAYGO)</u>
<b>Total</b>	<b>\$2,289,711</b>	<b>1,132,731</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$1,132,731</b>	

\*Includes contingencies

# Water Treatment Plant

## Membrane Filtration Plant Assessment and Critical Process Improvements

PROJECT NUMBER: 2017-322-104-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Construction

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

**PROJECT DESCRIPTION:**  
Complete a condition assessment of systems supporting the treatment process and perform critical improvements to maintain water treatment and allow full warranty of replacement modules. Improvements may include electrical, chemical feed, strainers, and other support systems.

**PROJECT JUSTIFICATION:**  
Membrane module failure rate has continually increased over the last several years and are more than 5 years beyond the manufacturer’s recommended replacement cycle. To allow module membrane manufacturers to extend a full warranty, a system condition assessment is needed. A detailed condition assessment is needed to address other critical worker safety and degradation of equipment that are essential to maintain the water treatment process. Improvements to the plan are required in order to restart the Membrane Filtration Plant.

**RISK(S):**  
Exposes the Authority to higher costs to address emergency failures and exposes the Highland No. 1 Service Area to a potentially deficient or non-complaint water supply.

**IMPACT ON OPERATIONS:**  
Increase operating flexibility and reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Provide covered system storage for the Highland No. 1 Service Area and eliminate the microfiltration plant.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Cash (PAYGO)</u>
<b>Total</b>	<b>\$2,417,622</b>	<b>171,848</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$171,848</b>	

\*Includes contingencies

# Water Pumping and Storage



# Water Pumping and Storage

## Ross Pump Station

PROJECT NUMBER: 2018-323-101-0

NEIGHBORHOOD/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, and exposes customers to a potentially deficient water supply. Staff members may be exposed to electrical arc flashes due to the age of the electrical systems.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$43,000,000</b>	<b>2,184,432</b>	<b>5,653,015</b>	<b>8,632,569</b>	<b>12,438,916</b>	<b>10,438,916</b>	<b>\$39,347,848</b>	

\*Includes contingencies



# Water Pumping and Storage

## Clearwell Improvements

PROJECT NUMBER: Unidentified

NEIGHBORHOOD/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):**  
Clearwell failure will cease all water delivery to all the Authority's customers (residential, commercial, industrial, institutional, wholesale customers, public health and safety providers, fire protection, governmental facilities, other water distributors, etc.), creating a public health emergency.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$67,062,343</b>	<b>3,159,375</b>	<b>4,134,375</b>	<b>3,359,102</b>	<b>31,229,284</b>	<b>25,180,207</b>	<b>\$67,062,343</b>	

\*Includes contingencies

# Water Pumping and Storage

## Aspinwall Pump Station to Lanpher Reservoir Rising Main

PROJECT NUMBER: 2018-323-100-0

NEIGHBORHOOD/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-inch 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-inch supply main.

**RISK(S):**

Failure of the rising main could impact up to half of the Authority's customers, including St. Margaret's Hospital, and other wholesale customers, including Aspinwall, Blawnox, Etna, Sharpsburg, Fox Chapel, and Shaler.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$49,454,000</b>	<b>4,468,239</b>	<b>11,463,520</b>	<b>8,730,659</b>	<b>8,036,963</b>	<b>0</b>	<b>\$32,699,381</b>	

\*Includes contingencies

# Water Pumping and Storage

## Bruecken Pump Station Valve Vault

PROJECT NUMBER: 2013-323-175-0/1/2

NEIGHBORHOOD/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. Staff members may be exposed to electrical arc flashes due to the age of the electrical systems.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$9,697,952</b>	<b>31,485</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$31,485</b>	

\*Includes contingencies

# Water Pumping and Storage

## Aspinwall Water Treatment Plant High Service Pumping

PROJECT NUMBER: Unidentified

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Not Started

**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:**  
Both pump stations are 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. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	\$53,620,000	2,794,262	10,653,269	18,303,263	21,869,206	0	\$53,620,000	

\*Includes contingencies

# Water Pumping and Storage

## Chlorine Booster Station Improvements

PROJECT NUMBER: 2019-323-101-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**

Planning

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$10,090,000</b>	<b>1,090,090</b>	<b>6,117,915</b>	<b>2,556,409</b>	<b>0</b>	<b>0</b>	<b>\$9,764,414</b>	

\*Includes contingencies

# Water Pumping and Storage

## Highland Reservoir Pump Station and Rising Main

PROJECT NUMBER: 2017-323-101-0

NEIGHBORHOOD/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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$37,130,000</b>	<b>1,563,260</b>	<b>3,614,929</b>	<b>11,731,087</b>	<b>10,320,724</b>	<b>0</b>	<b>\$27,230,000</b>	

\*Includes contingencies

# Water Pumping and Storage

## Inline Pump Station (Coral and Pacific) Improvements

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Bloomfield/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. Staff members may be exposed to electrical arc flashes due to the age of the electrical systems.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$600,000</b>	<b>53,000</b>	<b>487,833</b>	<b>59,167</b>	<b>0</b>	<b>0</b>	<b>\$600,000</b>	

\*Includes contingencies

# Water Pumping and Storage

## Lanpher Reservoir Improvements

PROJECT NUMBER: 2017-323-105-0/1/2/3

NEIGHBORHOOD/WARD: North Side/25

**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 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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	\$30,890,182	3,716,026	6,465,302	0	0	0	\$10,181,328	

\*Includes contingencies



# Water Pumping and Storage

## Highland No. 2 Reservoir Improvements

PROJECT NUMBER: 2019-323-102-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**

Planning

**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. Upgrade of 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 upgraded 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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$27,510,000</b>	<b>4,965,756</b>	<b>11,743,206</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$16,708,962</b>	

\*Includes contingencies

# Water Pumping and Storage

## Herron Hill Reservoir Improvements

PROJECT NUMBER: 2019-323-100-0

NEIGHBORHOOD/WARD: Upper Hill/5

**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 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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$5,520,000</b>	<b>3,864,000</b>	<b>1,656,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$5,520,000</b>	

\*Includes contingencies

# Water Pumping and Storage

## Garfield Tank Improvements

PROJECT NUMBER: Unidentified

NEIGHBORHOOD/WARD: Garfield/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 catastrophic failure of the tank. Postpone replacement or full rehabilitation until a later date through short-term rehabilitation.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Cash (PAYGO)</u>
<b>Total</b>	<b>\$4,050,000</b>	<b>0</b>	<b>0</b>	<b>528,235</b>	<b>2,026,807</b>	<b>1,462,605</b>	<b>\$4,017,647</b>	

\*Includes contingencies

# Water Pumping and Storage

## Lincoln Tank Improvements

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Lincoln-Lemington/12

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability, Capacity, Level of Service
<b>PROJECT DESCRIPTION:</b> Rehabilitation or replacement of the existing tank.
<b>PROJECT JUSTIFICATION:</b> 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.
<b>RISK(S):</b> Exposes the Authority's customers to poor water quality from coating problems or a potentially deficient water supply in the event of tank failure.
<b>IMPACT ON OPERATIONS:</b> Increased flexibility and reliability and system compliance.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Rehabilitation of the existing tank, which may be a larger investment than replacement.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Cash (PAYGO)</u>
<b>Total</b>	<b>\$4,195,000</b>	<b>0</b>	<b>0</b>	<b>1,215,910</b>	<b>2,327,815</b>	<b>332,255</b>	<b>\$3,875,980</b>	

\*Includes contingencies

# Water Pumping and Storage

## Spring Hill Tank Improvements

PROJECT NUMBER:

Unidentified

NEIGHBORHOOD/WARD:

City View, Spring Hill, Spring Garden, Troy Hill/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 may require rehabilitation due to corrosion. The existing shell ladder, ladder cage, and rolling roof ladder do not meet current OSHA dimensional requirements.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Cash (PAYGO)</u>
<b>Total</b>	<b>\$2,125,000</b>	<b>0</b>	<b>0</b>	<b>164,545</b>	<b>642,154</b>	<b>1,233,541</b>	<b>\$2,040,241</b>	

\*Includes contingencies

# Water Pumping and Storage

## Mission Pump Station Improvements

**PROJECT NUMBER:** Unidentified  
**NEIGHBORHOOD/WARD:** Sheradan, Elliott, West End, Westwood, Ridgemont, Duquesne Heights, South Shore, Mount Washington, Allentown, Southside Slopes/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. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	<b>\$16,865,000</b>	<b>0</b>	<b>0</b>	<b>995,714</b>	<b>1,054,286</b>	<b>2,202,270</b>	<b>\$4,252,270</b>	

\*Includes contingencies

# Water Pumping and Storage

## Herron Hill Tank Pump Station Improvements

PROJECT NUMBER: Unidentified

NEIGHBORHOOD/WARD: Upper Hill/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. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	<b>\$1,110,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>115,152</b>	<b>366,189</b>	<b>\$481,340</b>	

\*Includes contingencies

# Water Pumping and Storage

## Herron Hill Pump Station Improvements

**PROJECT NUMBER:** Unidentified  
**NEIGHBORHOOD/WARD:** Squirrel Hill, Regent Square, Point Breeze, Greenfield/14

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> 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.
<b>PROJECT JUSTIFICATION:</b> 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.
<b>RISK(S):</b> Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and customers to a potentially deficient water supply. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.
<b>IMPACT ON OPERATIONS:</b> Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Construction of a new facility to replace the existing pump station.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	\$10,960,000	0	0	0	891,429	1,574,532	\$2,465,961	

\*Includes contingencies



# Water Pumping and Storage

## Howard Pump Station Improvements

**PROJECT NUMBER:** Unidentified  
**NEIGHBORHOOD/WARD:** Brighton Heights, California Kirkbride, Marshall- Shadeland, Northview Heights, Perry, Pineview, Spring Garden, Summer Hill/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. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Cash (PAYGO)</u>
<b>Total</b>	<b>\$18,650,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>404,762</b>	<b>1,279,048</b>	<b>\$1,683,810</b>	

\*Includes contingencies

# Water Pumping and Storage

## Lincoln Pump Station Improvements

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Lincoln-Lemington/12

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> 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.
<b>PROJECT JUSTIFICATION:</b> 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.
<b>RISK(S):</b> Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and customers to a potentially deficient water supply. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.
<b>IMPACT ON OPERATIONS:</b> Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Construction of a new facility to replace the existing pump station.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,374,898</b>	<b>331,061</b>	<b>1,043,838</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$1,374,898</b>	

\*Includes contingencies

# Water Pumping and Storage

## Saline Pump Station Improvements

**PROJECT NUMBER:** Unidentified  
**NEIGHBORHOOD/WARD:** Glen Hazel, Hazelwood, Squirrel Hill South, Swisshelm Park/14, 15

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> 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.
<b>PROJECT JUSTIFICATION:</b> 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.
<b>RISK(S):</b> Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.
<b>IMPACT ON OPERATIONS:</b> Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Construction of a new facility to replace the existing pump station.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,491,995</b>	<b>359,848</b>	<b>1,132,147</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$1,491,995</b>	

\*Includes contingencies

# Water Pumping and Storage

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

PROJECT NUMBER: 2019-325-103-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**

Planning

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$23,550,000</b>	<b>2,484,612</b>	<b>7,212,370</b>	<b>9,265,188</b>	<b>3,392,519</b>	<b>0</b>	<b>\$22,354,689</b>	

\*Includes contingencies

# Water Distribution



# Water Distribution System

## 2018-2019 Lead Service Line Replacement Program

PROJECT NUMBER: 2018-325-100-0/1/2/3/4/5, WSI9-325-100-0/1/2/3  
NEIGHBORHOOD/WARD: Systemwide

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Safety, Regulatory Compliance
<b>PROJECT DESCRIPTION:</b> Replacement of 7% of lead service lines per year.
<b>PROJECT JUSTIFICATION:</b> 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.
<b>RISK(S):</b> Failure to comply will result in regulatory fines and poses a public health risk.
<b>IMPACT ON OPERATIONS:</b> Reduction in service line failure due to replacing with new infrastructure, reducing demands on operations repair crews.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds) &amp; PENNVEST</u>
<b>Total</b>	<b>\$90,460,234</b>	<b>36,780,128</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$36,780,128</b>	

\*Includes contingencies

# Water Distribution System

## 2019-2021 Lead Service Line Identification Program

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
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 efficiently replace all lead service lines.

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

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

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$13,434,666</b>	<b>3,000,000</b>	<b>3,138,667</b>	<b>4,737,334</b>	<b>2,558,667</b>	<b>0</b>	<b>\$13,434,667</b>	

\*Includes contingencies

# Water Distribution System

## 2020-2024 Private Lead Service Line Reimbursement Program

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Systemwide

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance
<b>PROJECT DESCRIPTION:</b> Reimbursement of private line lead service line costs.
<b>PROJECT JUSTIFICATION:</b> Replacing both private and public lead service lines is required to eliminate lead in the water system.
<b>RISK(S):</b> Failure to replace private lead service lines poses a public health risk.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$5,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>\$5,000,000</b>	

\*Includes contingencies



# Water Distribution System

## 2018-2024 Small Diameter Water Main Replacement Program

PROJECT NUMBER: 2017-325-103-0, 2019-325-101-0, 2019-325-102-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Reliability/Operational Flexibility, Regional Cooperation/Stewardship, 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-inch and 6-inch 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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$430,410,000</b>	<b>13,459,161</b>	<b>32,788,975</b>	<b>79,928,673</b>	<b>99,429,521</b>	<b>100,527,383</b>	<b>\$326,133,714</b>	

\*Includes contingencies

# Water Distribution System

## 2020-2024 Large Diameter Water Main Replacement Program

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Not Started

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

**PROJECT DESCRIPTION:**  
Strategic replacement or rehabilitation of large diameter water mains (16-inch 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. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus resulting in cost savings. Typically, large diameter pipe is not readily available and has a 6 to 8 week lead time for delivery. A large percentage of the Authority's large diameter mains are riveted steel, which cannot be easily repaired without the use of field fabricated specialty fittings

**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. This is especially true for the Highland No. 1 Pressure District and all districts fed by the Highland No. 1 reservoir.

**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 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	\$70,763,030	1,292,197	3,790,379	6,990,879	14,120,545	20,299,809	\$46,493,809	

\*Includes contingencies

# Water Distribution System

## 2018 Curb Box Inspections

PROJECT NUMBER: 2017-325-106-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Non-Construction

**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 efficiently replace all lead service lines.

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

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

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$2,980,174</b>	<b>278,081</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$278,081</b>	

\*Includes contingencies

# Water Distribution System

## 2018-2024 Water Relay

PROJECT NUMBER: 2018-325-101-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Construction

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$14,595,767</b>	<b>2,317,816</b>	<b>1,727,500</b>	<b>1,757,000</b>	<b>1,869,000</b>	<b>1,880,000</b>	<b>\$9,551,316</b>	

\*Includes contingencies

# Water Distribution System

## 2017-2024 Valve Replacement Program

PROJECT NUMBER: 2017-325-104-0, 2018-325-105-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Construction

**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 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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$25,209,208</b>	<b>3,888,977</b>	<b>3,230,652</b>	<b>2,995,000</b>	<b>3,208,198</b>	<b>4,993,997</b>	<b>\$18,316,824</b>	

\*Includes contingencies

# Water Distribution System

## 2017-2024 Hydrant Replacement Program

PROJECT NUMBER: 2017-325-102-0, 2018-325-104-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Construction

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

**PROJECT DESCRIPTION:**  
Replacement of broken hydrants throughout the water distribution system. The goal of the program is to replace a minimum of 100 hydrants per year, excluding hydrants replaced during waterline relays.

**PROJECT JUSTIFICATION:**  
Increasing the number of operational hydrants provides better fire protection for the City of Pittsburgh.

**RISK(S):**  
Customers will be subject to inadequate pressure for firefighting activities.

**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 in operating expenses for both personnel and equipment.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$10,007,574</b>	<b>1,899,892</b>	<b>1,539,725</b>	<b>1,450,000</b>	<b>1,524,314</b>	<b>1,575,000</b>	<b>\$7,988,931</b>	

\*Includes contingencies

# Water Distribution System

## 2019-2024 Small Meter Replacement Program

PROJECT NUMBER: Unidentified

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Not Started

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

**PROJECT DESCRIPTION:**  
Annual replacement of water meters one inch 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 system management.

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	<b>\$4,985,915</b>	<b>785,775</b>	<b>857,000</b>	<b>867,000</b>	<b>877,000</b>	<b>887,000</b>	<b>\$4,273,775</b>	

\*Includes contingencies

# Water Distribution System

## 2019-2024 Large Meter Replacement Program

PROJECT NUMBER: Unidentified

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Not Started

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

**PROJECT DESCRIPTION:**  
Annual replacement of water meters larger than one inch.

**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 system management.

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	<b>\$5,190,000</b>	<b>847,000</b>	<b>857,000</b>	<b>867,000</b>	<b>877,000</b>	<b>887,000</b>	<b>\$4,335,000</b>	

\*Includes contingencies



# Water Distribution System

## 2019-2021 Unmetered and Flat Rate Properties

PROJECT NUMBER: 2019-325-104-0, Unidentified

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**

Design

**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 system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	<b>\$8,840,000</b>	<b>3,078,419</b>	<b>3,266,087</b>	<b>1,744,698</b>	<b>527,947</b>	<b>0</b>	<b>\$8,617,151</b>	

\*Includes contingencies

# Water Distribution System

## 2019-2024 Surface Restoration

PROJECT NUMBER: 2019-325-106-0, Unidentified

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Operations and Maintenance Efficiency

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$25,911,333</b>	<b>3,564,474</b>	<b>4,158,926</b>	<b>4,097,387</b>	<b>4,197,390</b>	<b>4,297,393</b>	<b>\$20,315,569</b>	

\*Includes contingencies

# Water Distribution System

## Low Pressure Area Remediation

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Systemwide

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Fix chronically low pressure areas by either extending neighboring higher pressure districts into the area, booster pump stations, or household booster pumps.
<b>PROJECT JUSTIFICATION:</b> This project is in response to the low pressure monitors required by the October 2017 Administrative Order.
<b>RISK(S):</b> Customers may experience temporary service outages as a result of the work on this project.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$2,393,358</b>	<b>1,029,259</b>	<b>1,193,445</b>	<b>170,654</b>	<b>0</b>	<b>0</b>	<b>\$2,393,358</b>	

\*Includes contingencies

# Water Distribution System

## Bus Rapid Transit (BRT) Water Distribution

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Uptown & Oakland/ 1 & 4

**PHASE:**  
Not Started

**PRIORITY:**  
Regional Cooperation/ Stewardship and Level of Service

**PROJECT DESCRIPTION:**  
The City 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 system management.

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$11,730,000</b>	<b>700,000</b>	<b>3,750,000</b>	<b>5,780,000</b>	<b>1,500,000</b>	<b>0</b>	<b>\$11,730,000</b>	

\*Includes contingencies

# Water Distribution System

## Bates Street Waterline Relay

PROJECT NUMBER: 2019-325-111-0

NEIGHBORHOOD/WARD: Oakland/4

**PHASE:**  
Not Started

**PRIORITY:**  
Regional Cooperation/ Stewardship and Level of Service

**PROJECT DESCRIPTION:**  
PennDOT is repaving this critical road in 2020. The existing 8-inch and 12-inch mains have had multiple breaks which cause significant delays to traffic. This line must be replaced prior to repaving.

**PROJECT JUSTIFICATION:**  
This main will continue to break and must be replaced before final paving by PennDOT.

**RISK(S):**  
Replacement of a high-risk main would result in less frequent loss of water service due to breaks.

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

**ALTERNATIVES TO THE RECOMMENDED ACTION:**  
Delay the replacement of the watermain and risk the increased change of breaks.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,151,000</b>	<b>160,000</b>	<b>991,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$1,151,000</b>	

\*Includes contingencies

# Water Distribution System

## District Water and Pressure Meters

PROJECT NUMBER: 2017-325-114-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Procurement

**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 system management.

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	<b>\$2,835,000</b>	<b>1,731,143</b>	<b>985,524</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$2,716,667</b>	

\*Includes contingencies

# Water Distribution System

## West Ohio Street Bridge Replacement

PROJECT NUMBER: 2019-325-112-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Not Started

**PRIORITY:**  
Reegional Cooperation/Stewardship, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Relocate and upgrade water infrastructure attached to the West Ohio Street Bridge as part of the City of Pittsburgh's plan to relocate the bridge.

**PROJECT JUSTIFICATION:**  
This project provides for a cost share opportunity to relocate water infrastrucuture attached to the West Ohio Street Bridge.

**RISK(S):**  
Unforseen costs could be required in relocating the water infrastructure.

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

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$289,250</b>	<b>289,250</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$289,250</b>	

\*Includes contingencies

# Water Distribution System

## Fort Duquesne Bridge Water Air Release Valve Repair

**PROJECT NUMBER:** 2017-325-100-0  
**NEIGHBORHOOD/WARD:** North Shore & Central Business District/1,22

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Reliability/Operational Flexibility, Regional Cooperation/Stewardship, Level of Service

**PROJECT DESCRIPTION:**  
Perform transient analysis along existing 30-inch water main that is suspended from the Fort Duquesne Bridge. Design and construct new pipe supports and thrust restraint based on the results of the analysis. Includes the replacement of the existing air-release valve on the 30-inch water main, including insulation or heat tracing to reduce the potential for freezing and cracking of the valve.

**PROJECT JUSTIFICATION:**  
A recent PENNDOT inspection of the Fort Duquesne Bridge identified priority code 1 defects in the support of the existing 30-inch diameter water main. Additionally, the existing 2-inch diameter air-release valve located on the main has a history of failure. The water main is located below the lower deck of the Fort Duquesne Bridge and serves as an emergency interconnection between pressure gradients and is a vital component to the system operation.

**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:**  
There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$2,850,000</b>	<b>1,495,563</b>	<b>2,916</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$1,498,479</b>	

\*Includes contingencies



# Wastewater System



# Wastewater System

## 2018-2024 Small Diameter Sewer Rehabilitation

PROJECT NUMBER: 2018-424-100-0, 2019-424-100-0/1, Unidentified  
NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Construction

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

**PROJECT DESCRIPTION:**  
Proactive, trenchless rehabilitation of sewer mains with less than 36-inch diameter 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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$111,170,000</b>	<b>13,469,310</b>	<b>21,359,629</b>	<b>19,300,000</b>	<b>20,300,000</b>	<b>21,300,000</b>	<b>\$95,728,939</b>	

\*Includes contingencies

# Wastewater System

## 2018-2023 Sewers Under Structures

PROJECT NUMBER: 2017-424-110-0, Unidentified

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Construction

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$52,790,000</b>	<b>7,251,959</b>	<b>10,394,090</b>	<b>8,036,803</b>	<b>7,651,474</b>	<b>7,925,668</b>	<b>\$41,259,993</b>	

\*Includes contingencies

# Wastewater System

## 2018-2024 Sewer Reconstruction

PROJECT NUMBER: 2017-424-111-0, 2019-424-102-0, Unidentified  
NEIGHBORHOOD/WARD: Systemwide

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Reconstruction of existing sewers, manholes, catch basins, and inlets due to emergency situations or pipe failures.
<b>PROJECT JUSTIFICATION:</b> The existing sewer system is aging and immediate repairs are required to address failures that could be significant public safety hazards.
<b>RISK(S):</b> 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.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Utilize Authority staff and equipment to perform all repairs. This would result in an increase to labor, equipment, and related operating expenses.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$12,100,000</b>	<b>1,700,668</b>	<b>2,274,105</b>	<b>1,751,488</b>	<b>1,834,762</b>	<b>1,859,167</b>	<b>\$9,420,190</b>	

\*Includes contingencies

# Wastewater System

## 2020-2024 Large Diameter Sewer Rehabilitation

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Not Started

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

**PROJECT DESCRIPTION:**  
Proactive, trenchless rehabilitation of 36-inch 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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$21,320,000</b>	<b>3,847,000</b>	<b>4,529,000</b>	<b>4,320,000</b>	<b>4,054,000</b>	<b>397,270</b>	<b>\$17,147,270</b>	

\*Includes contingencies

# Wastewater System

## 31st Ward Sewer System

PROJECT NUMBER: 2017-424-100-0

NEIGHBORHOOD/WARD: Lincoln Place/31

**PHASE:**

Design

**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):**

The Authority may be subject to fines due to sanitary sewer overflows caused by pump station system failures or excessive infiltration and inflow in the system.

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$13,730,000</b>	<b>4,000,000</b>	<b>1,300,000</b>	<b>4,215,000</b>	<b>4,115,000</b>	<b>0</b>	<b>\$13,630,000</b>	

\*Includes contingencies

# Wastewater System

## Maytide Storm and Sanitary Sewer System Improvements

PROJECT NUMBER: 2017-424-109-0

NEIGHBORHOOD/WARD: Carrick/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-inch 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-inch 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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$6,520,000</b>	<b>3,013,907</b>	<b>3,013,907</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$6,027,814</b>	

\*Includes contingencies

# Wastewater System

## Browns Hill Road Sewer Pump Station Replacement

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Glen Hazel, Hazelwood/ 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-inch 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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,500,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>236,000</b>	<b>560,000</b>	<b>\$796,000</b>	

\*Includes contingencies



# Wastewater System

## Larimer Avenue Sewer and 28th Street Slope Stabilization

PROJECT NUMBER: 2016-424-102-0

NEIGHBORHOOD/WARD: Strip District/2

**PHASE:**

Planning

**PRIORITY:**

Safety, Reliability/Operational Flexibility, Level of Service

**PROJECT DESCRIPTION:**

Evaluation of rerouting storm laterals, sewer televising, geotechnical investigations, and slope stabilization to address a structurally deficient 18-inch combined sewer that has severely eroded the ground surface on the slope below Brereton Street and above the Port Authority of Allegheny County's East Busway.

**PROJECT JUSTIFICATION:**

Provides a solution to sufficiently reroute infrastructure while stabilizing the slope in the applicable area.

**RISK(S):**

The slope may continue to erode prior to the completion of this project.

**IMPACT ON OPERATIONS:**

Increased operating flexibility and reliability.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$695,901</b>	<b>583,400</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$583,400</b>	

\*Includes contingencies

# Wastewater System

## Mellon Terrace Sewer System Improvements

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Highland Park/11

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Reliability/Operational Flexibility, Regional Cooperation/ Stewardship, Level of Service
<b>PROJECT DESCRIPTION:</b> Realignment of approximately 665 linear feet of 24-inch combined sewer main on Mellon Terrace.
<b>PROJECT JUSTIFICATION:</b> Repairs were issued on previous annual contracts; however, were not performed due to depth and soil conditions. Additionally, the City of Pittsburgh's Department of Public Works is planning to repair/rebuild the roadway.
<b>RISK(S):</b> 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.
<b>IMPACT ON OPERATIONS:</b> Increased operating reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Utilize Authority staff and equipment to perform the repairs. This would result in an increase to labor, equipment, and related operating expenses.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$2,030,000</b>	<b>340,000</b>	<b>1,690,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$2,030,000</b>	

\*Includes contingencies

# Wastewater System

## M-29 Outfall Improvements

PROJECT NUMBER: 2018-424-103-0

NEIGHBORHOOD/WARD: Hazelwood/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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,868,659</b>	<b>934,329</b>	<b>1,450,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$2,384,329</b>	

\*Includes contingencies

# Stormwater



# Stormwater System

## 2018-2024 Catch Basin and Inlet Replacement

PROJECT NUMBER: 2018-424-101-0/1, 2019-424-107-0, Unidentified  
NEIGHBORHOOD/WARD: Systemwide

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Strategic replacement of catch basins and storm inlets throughout the system to replace failed units, stormwater control reliability, and minimize disturbance to the community.
<b>PROJECT JUSTIFICATION:</b> By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost.
<b>RISK(S):</b> 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. Exposes Authority to potential fines and penalties for not meeting the annual requirements listed in the Minimum Control Measures under the NPDES permit.
<b>IMPACT ON OPERATIONS:</b> Increased operating reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Continue to extend utility component life until a high failure rate justifies replacement.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds) &amp; Cash (PAYGO)</u>
<b>Total</b>	<b>\$67,687,500</b>	<b>5,689,061</b>	<b>11,651,535</b>	<b>8,953,599</b>	<b>9,453,594</b>	<b>9,953,392</b>	<b>\$45,701,180</b>	

\*Includes contingencies

# Stormwater System

## Saw Mill Run MS4 Compliance Projects

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Overbrook, Carrick/32&29

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance
<b>PROJECT DESCRIPTION:</b> Identifying and completing projects related to MS4 compliance.
<b>PROJECT JUSTIFICATION:</b> This project is necessary to become compliant with MS4 regulatory requirements.
<b>RISK(S):</b> The timeline to complete the MS4 compliance projects could take longer than expected.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<b>Debt (Revenue Bonds)</b>
<b>Total</b>	<b>\$8,500,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,000,000</b>	<b>2,500,000</b>	<b>\$3,500,000</b>	

\*Includes contingencies

# Stormwater System

## Tide Gate Installations

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Systemwide

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service
<b>PROJECT DESCRIPTION:</b> Installation of tide gates at 44 combined sewer overflow diversion chamber locations to assist in preventing river water intrusion.
<b>PROJECT JUSTIFICATION:</b> Will prevent the intrusion of sewage into river water during heavy wet weather events.
<b>RISK(S):</b> The length of time to install the tide gates could result in sewage overflowing into river water prior to the completion of the project.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$4,500,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,000,000</b>	<b>\$1,000,000</b>	

\*Includes contingencies

# Stormwater System

## Overbrook Middle School Pollution and Flood Reduction

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Overbrook/32

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> 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.
<b>PROJECT JUSTIFICATION:</b> This project will help to comply with regulatory obligations by reducing pollutants and controlling CSO/SSO's.
<b>RISK(S):</b> It may be difficult to comply with certain regulatory obligations prior to the completion of the project.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$6,500,000</b>	<b>2,625,058</b>	<b>3,874,942</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$6,500,000</b>	

\*Includes contingencies



# Stormwater System

## Queenston Stormwater Infrastructure Improvements

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Overbrook/32

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service
<b>PROJECT DESCRIPTION:</b> Development of alternatives, selection, design and construction of preferred alternative to address flooding issues impacting residents on Yale Drive, Lucina Street, Queenston Street, and Walton Avenue due to collapsed storm sewers.
<b>PROJECT JUSTIFICATION:</b> This project will help to mitigate flooding issues resulting from collapsed storm sewers.
<b>RISK(S):</b> Flooding issues will continue until the project is completed.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,500,000</b>	<b>750,000</b>	<b>750,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$1,500,000</b>	

\*Includes contingencies

# Stormwater System

## Volunteer's Field Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-104-0

NEIGHBORHOOD/WARD: Carrick/29

<b>PHASE:</b> Procurement
<b>PRIORITY:</b> Safety, Regulatory Compliance, Regional Cooperation/Stewardship
<b>PROJECT DESCRIPTION:</b> Project is located in the Carrick neighborhood of the City of Pittsburgh and is tributary to Saw Mill Run. Installation of GI BMPs within the Park to reduce sediment and other pollutant loads along with stormwater volume and peak flow reduction.
<b>PROJECT JUSTIFICATION:</b> Required for compliance with the MS4 permit and EPA TMDL requirements. Project will also detain stormwater to reduce downstream flooding in Saw Mill Run.
<b>RISK(S):</b> It may be difficult to comply with certain regulatory obligations prior to the completion of the project.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,714,942</b>	<b>854,185</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$854,185</b>	

\*Includes contingencies

# Stormwater System

## Saw Mill Run Stream Bank Restoration Stormwater Infrastructure Improvements

**PROJECT NUMBER:** 2018-GI-107-0  
**NEIGHBORHOOD/WARD:** Overbrook, Carrick/32&29

<b>PHASE:</b> Procurement
<b>PRIORITY:</b> Safety, Regulatory Compliance, Regional Cooperation/Stewardship
<b>PROJECT DESCRIPTION:</b> Stream restoration of approximately 1,500 linear feet of the Saw Mill Run Creeks to reduce pollutants in the impaired waterway. This project is required to comply with the MS4 NPDES permit application submitted to the PA DEP.
<b>PROJECT JUSTIFICATION:</b> This is required in order to comply with certain regulatory obligations.
<b>RISK(S):</b> It may be difficult to comply with certain regulatory obligations prior to the completion of the project.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$1,385,000</b>	<b>876,204</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$876,204</b>	

\*Includes contingencies

# Stormwater System

## Lawn and Ophelia

**PROJECT NUMBER:** 2017-424-104-0

**NEIGHBORHOOD/WARD:** Oakland/4

<b>PHASE:</b> Design
<b>PRIORITY:</b> Safety, Regulatory Compliance, Regional Cooperation/Stewardship
<b>PROJECT DESCRIPTION:</b> 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.
<b>PROJECT JUSTIFICATION:</b> It is anticipated that 1.9 impervious acres from neighboring roads and roofs can be managed.
<b>RISK(S):</b> Customers within the service area of this project may experience stormwater related issues prior to the completion of this project.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)& ALCOSAN Grow Grant
<b>Total</b>	<b>\$785,000</b>	<b>275,375</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$275,375</b>	

\*Includes contingencies

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

# Stormwater System

## Wightman Park Stormwater Infrastructure Improvements

PROJECT NUMBER: 2017-424-105-0

NEIGHBORHOOD/WARD: Squirrel Hill/14

**PHASE:**

Design

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)& ALCOSAN Grow Grant
<b>Total</b>	<b>\$4,332,000</b>	<b>2,515,715</b>	<b>1,047,025</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$3,562,740</b>	

\*Includes contingencies

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

# Stormwater System

## Woods Run Stream Removal Stormwater Infrastructure Improvements

PROJECT NUMBER: 2017-424-108-0

NEIGHBORHOOD/WARD: Woodsrun/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-inch diameter PWSA combined sewer on Mairdale Avenue

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)& ALCOSAN Grow Grant
<b>Total</b>	<b>\$10,476,000</b>	<b>2,570,000</b>	<b>525,641</b>	<b>2,816,929</b>	<b>3,739,430</b>	<b>0</b>	<b>\$9,652,000</b>	

\*Includes contingencies

\*\*\$412,300 ALCOSAN GROW grant funding secured

# Stormwater System

## Maryland Avenue Stormwater Infrastructure Improvements - Phase 1

PROJECT NUMBER: 2017-424-101-0

NEIGHBORHOOD/WARD: Point Breeze/7

<b>PHASE:</b> Design
<b>PRIORITY:</b> Safety, Regulatory Compliance, Operations and Maintenance Efficiency
<b>PROJECT DESCRIPTION:</b> Permeable paver based GSI project to manage approximately 7 acres of impervious acres for 1.5" runoff event.
<b>PROJECT JUSTIFICATION:</b> 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.
<b>RISK(S):</b> Progress to CSO compliance goals (with targets of reducing volume and frequency of overflows and water quality impacts) and continued flooding in A-22 sewershed.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Implementing stormwater management projects at less cost-effective locations.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
Total	\$2,658,000	2,401,200	0	0	0	0	\$2,401,200	

\*Includes contingencies

# Stormwater System

## Four Mile Run Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-102-0

NEIGHBORHOOD/WARD: Hazelwood/15

**PHASE:**

Design

**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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$30,000,000</b>	<b>3,000,000</b>	<b>13,500,000</b>	<b>13,500,000</b>	<b>0</b>	<b>0</b>	<b>\$30,000,000</b>	

\*Includes contingencies



# Stormwater System

## Woodland Drive Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-108-0  
NEIGHBORHOOD/WARD: Squirrel Hill/14

<b>PHASE:</b> Design
<b>PRIORITY:</b> Safety, Regulatory Compliance, Operations and Maintenance Efficiency
<b>PROJECT DESCRIPTION:</b> Bioretention based GSI project to manage appx. 3 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 Rd. Design activities include field investigations (site survey, geotech), development of design documents for construction and pre-construction flow monitoring.
<b>PROJECT JUSTIFICATION:</b> 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.
<b>RISK(S):</b> Progress to CSO compliance goals (with targets of reducing volume and frequency of overflows and water quality impacts) and continued flooding in A-22 sewershed.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Implementing stormwater management projects at less cost-effective locations.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	<b>\$1,965,000</b>	<b>0</b>	<b>1,695,395</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$1,695,395</b>	

\*Includes contingencies

# Stormwater System

## Thomas and McPherson Stormwater Infrastructure Improvements - Phase 1

PROJECT NUMBER: 2018-GI-106-0

NEIGHBORHOOD/WARD: Point Breeze/7

<b>PHASE:</b> Design
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility
<b>PROJECT DESCRIPTION:</b> 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.
<b>PROJECT JUSTIFICATION:</b> This project will help slow or reduce runoff into the the combined sewer system during wet weather events.
<b>RISK(S):</b> 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.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)& ALCOSAN Grow Grant
<b>Total</b>	<b>\$4,901,000</b>	<b>250,000</b>	<b>4,651,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$4,901,000</b>	

\*Includes contingencies

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

# Stormwater System

## Southside Stormwater Infrastructure Improvements

**PROJECT NUMBER:** 2019-GI-100-0  
**NEIGHBORHOOD/WARD:** Southside, St. Clair/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 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 and downstream through the S. 21st Street corridor and to the outfall at the Monongahela River. The project will look at separating the stormwater runoff from the park and road right-of-way areas through a new storm sewer discharge to the Monongahela, and detaining and slowly returning the stormwater runoff to the combined sewer system.

**PROJECT JUSTIFICATION:**

This project will help with complying with the Consent Order Agreement (COA) by reducing CSOs.

**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 system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)& ALCOSAN Grow Grant
<b>Total</b>	<b>\$6,155,000</b>	<b>590,180</b>	<b>1,994,000</b>	<b>2,877,500</b>	<b>0</b>	<b>0</b>	<b>\$5,461,680</b>	

\*Includes contingencies

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

# Stormwater System

## St. Johns Stormwater Infrastructure Improvements

PROJECT NUMBER: 2019-424-101-0  
NEIGHBORHOOD/WARD: Brighton Heights/27

<b>PHASE:</b> Design
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility
<b>PROJECT DESCRIPTION:</b> Evaluating cost-effective opportunities for managing stormwater runoff from the surrounding drainage area around the St. John's site and implementing appropriate stormwater mitigation practices.
<b>PROJECT JUSTIFICATION:</b> This project will help to improve stormwater mitigation around the St. John's site.
<b>RISK(S):</b> Flooding issues could continue until the project is completed.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	<b>\$5,309,000</b>	<b>2,973,230</b>	<b>1,803,665</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$4,776,895</b>	

\*Includes contingencies

# Stormwater System

## Spring Garden Stream Stormwater Infrastructure Improvements

PROJECT NUMBER: 2019-GI-101-0

NEIGHBORHOOD/WARD: Woodsrn/26

<b>PHASE:</b> Design
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility
<b>PROJECT DESCRIPTION:</b> Construct a stormwater storage BMP to be located near the Spring Garden direction stream inflow along with approximately 11,000-ft of separate storm sewer system to convey flow from the BMP to the Allegheny River.
<b>PROJECT JUSTIFICATION:</b> This project will help to improve stormwater mitigation near the Spring Garden.
<b>RISK(S):</b> Flooding issues could continue until the project is completed.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	<b>\$13,752,000</b>	<b>0</b>	<b>1,000,000</b>	<b>479,000</b>	<b>0</b>	<b>0</b>	<b>\$1,479,000</b>	

\*Includes contingencies

# Stormwater System

## Martin Luther King Field Stormwater Infrastructure Improvements

**PROJECT NUMBER:** 2019-GI-104-0  
**NEIGHBORHOOD/WARD:** Schenley Heights, Oakland/4&5

<b>PHASE:</b> Design
<b>PRIORITY:</b> Safety, Regulatory Compliance, Reliability/Operational Flexibility
<b>PROJECT DESCRIPTION:</b> Installation of regenerative step pools, rain gardens, 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. This project will also explore retrofitting 100' of an abandoned 60-inch sewer to be utilized as a detention and slow release system.
<b>PROJECT JUSTIFICATION:</b> This project will help slow or reduce runoff into the the combined sewer system during wet weather events.
<b>RISK(S):</b> 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.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved sytem management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)& ALCOSAN Grow Grant
<b>Total</b>	<b>\$3,348,276</b>	<b>1,200,000</b>	<b>2,148,276</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$3,348,276</b>	

\*Includes contingencies

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

# Stormwater System

## AMG Capital Funds - As-Needed Sewer Flow Monitoring

PROJECT NUMBER: 2019-424-105-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Non-Construction

**PRIORITY:**  
Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**  
Pre-construction flow monitoring services through the existing As-Needed Sewer Flow Monitoring contract with AMG Environmental. Pre-construction flow monitoring services are capitalized and budgeted under each individual stormwater / sewer project.

**PROJECT JUSTIFICATION:**  
This project will be used as needed for pre-construction flow monitoring services.

**RISK(S):**  
The demand for as-needed flow monitoring services could be greater than the amount that was budgeted.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$102,500</b>	<b>102,500</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$102,500</b>	

\*Includes contingencies

# Stormwater System

## Bus Rapid Transit (BRT) Stormwater Infrastructure Improvements

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Uptown,Oakland/1&4

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Safety, Regional Cooperation/Stewardship, Reliability/Operational Flexibility
<b>PROJECT DESCRIPTION:</b> A cost share with the City’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.
<b>PROJECT JUSTIFICATION:</b> This project will help slow or reduce runoff into the the combined sewer system during wet weather events.
<b>RISK(S):</b> 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.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved sytem management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$4,274,988</b>	<b>255,065</b>	<b>1,366,695</b>	<b>1,964,689</b>	<b>688,539</b>	<b>0</b>	<b>\$4,274,988</b>	

\*Includes contingencies



# Other



# Other

## Computerized Maintenance Management System

PROJECT NUMBER: Unidentified

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Not Started

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

**PROJECT DESCRIPTION:**  
Implement a new computerized maintenance system that will maintain a database of information about the Authority's maintenance operations.

**PROJECT JUSTIFICATION:**  
The implementation of a computerized maintenance management system is required to improve Authority operations.

**RISK(S):**  
The Authority staff will have additional responsibilities during implementation to ensure all workflows are properly designed.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	<b>\$2,500,000</b>	<b>1,250,000</b>	<b>1,250,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$2,500,000</b>	

\*Includes contingencies

# Other

## Enterprise Resource Planning

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Systemwide

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Reliability/Operational Flexibility, Operations and Maintenance Efficiency
<b>PROJECT DESCRIPTION:</b> Implement a new enterprise resource planning system that will enable more efficient Authority operations.
<b>PROJECT JUSTIFICATION:</b> The implementation of a enterprise resource planning system is required to improve Authority operations.
<b>RISK(S):</b> The Authority staff will have additional responsibilities during implementation to ensure all workflows are properly designed.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> There are no practical alternatives to the recommended action.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Cash (PAYGO)</u>
<b>Total</b>	<b>\$2,500,000</b>	<b>1,250,000</b>	<b>1,250,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$2,500,000</b>	

\*Includes contingencies

# Other

## 2020-2024 Property Acquisition / Facility Upgrades

PROJECT NUMBER: Unidentified

NEIGHBORHOOD/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 acquired 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.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$13,000,000</b>	<b>9,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>\$13,000,000</b>	

\*Includes contingencies

# Other

## 2020-2024 Park Maintenance / Upgrades

PROJECT NUMBER: Unidentified

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Not Started

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

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

**PROJECT JUSTIFICATION:**  
The water and sewer infrastructure 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 system management.

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$5,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>\$5,000,000</b>	

\*Includes contingencies

# Other

## GIS System Upgrades: Water

PROJECT NUMBER: 2019-325-107-0

NEIGHBORHOOD/WARD: Systemwide

**PHASE:**

Planning

**PRIORITY:**

Reliability/Operational Flexibility, Operations and Maintenance Efficiency

**PROJECT DESCRIPTION:**

Rescan water record books, input material, update valve layer, and pipe age into geographic information system.

**PROJECT JUSTIFICATION:**

Having this information updated and readily available improves the efficiency of operations.

**RISK(S):**

Some of the records that need updated could be unreadable or missing.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved system management.

**ALTERNATIVES TO THE RECOMMENDED ACTION:**

Delay upgrading the information within the geographic information system, which could have a negative impact on operations.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Cash (PAYGO)</u>
<b>Total</b>	<b>\$1,400,000</b>	<b>800,000</b>	<b>600,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$1,400,000</b>	

\*Includes contingencies

# Other

## Facility Standby Power

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Systemwide

**PHASE:**  
Not Started

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

**PROJECT DESCRIPTION:**  
This project will fund future standby power needs at the Water Treatment Plant and potentially other facilities.

**PROJECT JUSTIFICATION:**  
Standby power must be installed at all facilities to ensure continued functions in all operations.

**RISK(S):**  
Facilities without standby power could be at risk if a power outage occurs.

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

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Cash (PAYGO)</u>
<b>Total</b>	<b>\$750,000</b>	<b>750,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$750,000</b>	

\*Includes contingencies

# Other

## Utility Cost Shares

PROJECT NUMBER: 2017-424-112-0, 2018-WS-103-0, 2018-WS-102-0, 2013-424-220-0, 2013-424-162-0  
NEIGHBORHOOD/WARD: Systemwide

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

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Total</b>	<b>\$4,300,000</b>	<b>500,000</b>	<b>800,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>1,000,000</b>	<b>\$4,300,000</b>	

\*Includes contingencies



# Other

## 2020-2024 Vehicle and Major Equipment

PROJECT NUMBER: Unidentified  
NEIGHBORHOOD/WARD: Systemwide

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Reliability/Operational Flexibility, Operations and Maintenance Efficiency
<b>PROJECT DESCRIPTION:</b> Replacement of vehicles and other major equipment.
<b>PROJECT JUSTIFICATION:</b> Vehicles and major equipment must be replaced after the useful life to ensure reliable operations without large maintenance costs.
<b>RISK(S):</b> Failure to properly replace vehicles and major equipment could result in interruptions to operations and increase costs.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.
<b>ALTERNATIVES TO THE RECOMMENDED ACTION:</b> Delay the purchase of vehicle and major equipment, which could have a negative impact on operations.

		<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>Total Budget (Prior Years Included)</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Total</u>	Cash (PAYGO)
<b>Total</b>	<b>\$9,234,500</b>	<b>2,100,000</b>	<b>1,734,500</b>	<b>2,200,000</b>	<b>1,000,000</b>	<b>2,200,000</b>	<b>\$9,234,500</b>	

\*Includes contingencies