

**PENNSYLVANIA INFRASTRUCTURE INVESTMENT AUTHORITY  
PENNVEST APPLICATION FORMS**

**City of Philadelphia  
Philadelphia - Lead - Linear Assets Drinking Water Line  
Replacement  
512033052107-CW  
09/20/2021**

## DESCRIPTION

### PROJECT DESCRIPTION

What is the project type?	Drinking Water
What is the project name?	Philadelphia - Linear Assets Drinking Water Line Replacement
What is the project's Primary County?	Philadelphia
What is the project's Primary Municipality?	Philadelphia City
What is the application type?	Lead Removal
What is the project stage?	Construction
Is this related to a previous advanced funding application through PENNVEST?	No
If yes, enter the project name or number.	

### COMMENTS

## SYSTEM

### SYSTEM DESCRIPTION

What type of system is this?	Existing System
What is your NPDES number?	PA-0026689 PA-0026662 PA-0026671 PA-0054712
What is your PWSID number?	1510001
Do you own the system?	Yes
If no, explain	
Do you operate the system?	Yes
if no, explain	
Do you maintain the system?	Yes
If no, explain	
Will you construct the system?	Yes

If no, explain

Does this project include costs associated with the purchase of system capacity from another entity (i.e. capital contribution)? No

If yes, explain

Does this project include costs associated with the construction of capacity in your system for use and/or purchase by other entity (ies) (i.e. capital contribution)? No

If yes, explain

Is, or does the Applicant intend to be, a party to any inter-municipal agreements which affect this project or your system? Yes

Has the applicant issued debt or borrowed money, or does the applicant intend to issue debt or borrow money, under a trust indenture (i.e. Bonds)? Yes

Do you charge residential or commercial user fees? Yes

#### COMMENTS

### FUNDING

#### REQUESTED PENNVEST AMOUNT

This is your requested PENNVEST amount. \$40,355,602.00

#### COMMITTED OTHER SOURCES OF FUNDS

Source Type	Source Name	Source Amount	Funding Comments
		\$	
	<b>Total:</b>	\$0.00	

#### ESTIMATED TOTAL PROJECT COST

This is your estimated total project cost. \$40,355,602.00

#### COMMENTS

PROJECT CONTACTS

<b>City of Philadelphia</b>		Legal Entity	
<b>Address:</b> 1401 John F. Kennedy Boulevard Philadelphia, PA 19107		<b>Email:</b> <b>Phone:</b> 2156854948	
<b>SAP Vendor Number:</b> 177575013	<b>DUNS:</b> 133889241	<b>Federal ID/FIN:</b> 236003047	

<b>Allen, Valarie</b>	Borrower Legal		
Ballard Spahr, LLP	<b>Email:</b>	allenv@ballardspahr.com	
	<b>Phone:</b>	2157041422	
	<b>Phone Ext:</b>		

<b>Bowman, Matthew</b>	Borrower		
City of Philadelphia	<b>Email:</b>	matthew.bowman@phila.gov	
	<b>Phone:</b>		
	<b>Phone Ext:</b>		

<b>Breen, Joseph</b>	Borrower Financial		
	<b>Email:</b>	breenj@pfm.com	
	<b>Phone:</b>	2159542683	
	<b>Phone Ext:</b>		

<b>Clarkin, Megan</b>	Engineer PE		
	<b>Email:</b>	Megan.Clarkin@phila.gov	
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	<b>Phone Ext:</b>		

<b>Davis-Montague, Michele</b>	DEP Project Manager		
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	<b>Phone Ext:</b>		

<b>Dobbins, William</b>	Engineer PE		
	<b>Email:</b>	William.Dobbins@phila.gov	
	<b>Phone:</b>	2156856300	
	<b>Phone Ext:</b>		

<b>Dunn, Jackie</b>	Borrower		
	<b>Email:</b>	jacqueline.dunn@phila.gov	

	<b>Phone:</b> 2153008648
	<b>Phone Ext:</b>

<b>Giffear, James</b>	Borrower
Philadelphia Water Department	<b>Email:</b> jim.giffear@phila.gov
	<b>Phone:</b> 2153802132
	<b>Phone Ext:</b>

<b>Gupta, Tuhin</b>	Engineer Admin
	<b>Email:</b> tgupta@cedarvilleeng.com
	<b>Phone:</b>
	<b>Phone Ext:</b>

<b>Hayden, Rebecca</b>	Project Specialist
	<b>Email:</b> rhayden@pa.gov
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	<b>Phone Ext:</b>

<b>Hovsepian, Vahe</b>	Borrower
Philadelphia Water Department	<b>Email:</b> vahe.hovsepian@phila.gov
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	<b>Phone Ext:</b>

<b>Jameson, Jerry</b>	Engineer Admin
Cedarville Engineering Group	<b>Email:</b> jjameson@cedarvilleeng.com
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	<b>Phone Ext:</b>

<b>Linn, Chris</b>	Guest
	<b>Email:</b> clinn@dvrpc.org
	<b>Phone:</b> 2158705889
	<b>Phone Ext:</b>

<b>Musti, Jessica</b>	Borrower's Admin
	<b>Email:</b> Jessica.Musti@phila.gov
	<b>Phone:</b> 2156856300
	<b>Phone Ext:</b>

<b>Primiani, Teresa</b>	Engineer Admin
	<b>Email:</b> tprimiani@cedarvilleeng.com

	<b>Phone:</b>
	<b>Phone Ext:</b>

<b>Reitbauer, Amanda</b>	Engineer Admin
Cedarville Engineering Group	<b>Email:</b> areitbauer@cedarvilleeng.com
	<b>Phone:</b> 6107802949
	<b>Phone Ext:</b>

<b>Rich, Lawrence</b>	Borrower Financial
	<b>Email:</b> Lawrence.Rich@phila.gov
	<b>Phone:</b> 2155129588
	<b>Phone Ext:</b>

<b>Rogalski, Patricia</b>	Borrower
	<b>Email:</b> Patricia.rogalski@phila.gov
	<b>Phone:</b> 2672307084
	<b>Phone Ext:</b>

<b>Seymour, Barry</b>	Guest
Delaware Valley Regional Planning Commission	<b>Email:</b> bseymour@dvrpc.org
	<b>Phone:</b> 2155921800
	<b>Phone Ext:</b>

<b>Strubilla, Andrew</b>	DEP Chief
	<b>Email:</b> anstrubill@pa.gov
	<b>Phone:</b> 5051
	<b>Phone Ext:</b>

<b>Yangalay, Lawrence</b>	Borrower
Philadelphia Water Department	<b>Email:</b> Lawrence.yangalay@phila.gov
	<b>Phone:</b>
	<b>Phone Ext:</b>

**PROJECT SITE(S)**

<b>City of Philadelphia</b>	Primary Site
<b>Address:</b>	<b>Latitude:</b> 39.9540966

1401 John F Kennedy Boulevard Philadelphia, PA 19102	<b>Longitude:</b> -75.1644793
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**20481 Midvale Ave., Arnold - Vaux - Henry - McMichael**

<b>Address:</b> 3434 Midvale Avenue Philadelphia, PA 19129	<b>Latitude:</b> 40.014739 <b>Longitude:</b> -75.190824
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**20484 Springfield / Wilton / Upland / etal**

<b>Address:</b> 1401 South 54th Street Philadelphia, PA 19143	<b>Latitude:</b> 39.940697 <b>Longitude:</b> -75.224100
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**20532 Addison / Cedar / Walton / Webster**

<b>Address:</b> 5801 Cedar Avenue Philadelphia, PA 19143	<b>Latitude:</b> 39.951962 <b>Longitude:</b> -75.238816
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**20540 Fairview / Rowland / Welsh etal**

<b>Address:</b> 8035 Moro Street Philadelphia, PA 19136	<b>Latitude:</b> 40.043451 <b>Longitude:</b> -75.027726
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**20549 24th / Fitzgerald**

<b>Address:</b> 2201 South 24th Street Philadelphia, PA 19145	<b>Latitude:</b> 39.925568 <b>Longitude:</b> -75.186195
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**20572 Braddock/Lehigh/Oakdale/Harold/Albert**

<b>Address:</b> 2661 Emerald Street Philadelphia, PA 19125	<b>Latitude:</b> 39.987543 <b>Longitude:</b> -75.124157
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**20574 Green / Dupont / Martin / Rector**

<b>Address:</b> 554 Martin Street Philadelphia, PA 19128	<b>Latitude:</b> 40.032974 <b>Longitude:</b> -75.212049
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**20585 Ashton Rd / Maxwell St / Tolbut St**

<b>Address:</b> 2765 Maxwell Street Philadelphia, PA 19136	<b>Latitude:</b> 40.061345 <b>Longitude:</b> -75.023699
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**20589 Norcom / Newberry / Normandy**

<b>Address:</b> 2829 Nightingale Road Philadelphia, PA 19154	<b>Latitude:</b> 40.102924 <b>Longitude:</b> -74.995306
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**20608 Ferndale / Hartel / Lansing / Bingham**

<b>Address:</b> 950 Hartel Avenue Philadelphia, PA 19111	<b>Latitude:</b> 40.068039 <b>Longitude:</b> -75.077662
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**20616 Haldeman / Southampton / Verree**

<b>Address:</b> 2097 Red Lion Road Philadelphia, PA 19116	<b>Latitude:</b> 40.097152 <b>Longitude:</b> -75.018136
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**20526 18th / Jackson / Lambert / Woodstock**

<b>Address:</b> 2246 South Lambert Street Philadelphia, PA 19145	<b>Latitude:</b> 39.923395 <b>Longitude:</b> -75.180861
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**20495 Bustleton / Cottman Area**

<b>Address:</b> 7200 Eastwood Street Philadelphia, PA 19149	<b>Latitude:</b> 40.046554 <b>Longitude:</b> -75.062821
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**20592 Blair / Susquehanna / Tulip / Norris**

<b>Address:</b> 2001 Tulip Street Philadelphia, PA 19125	<b>Latitude:</b> 39.978018 <b>Longitude:</b> -75.129442
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**20468 Brookhaven / Woodbine / Drexel / Haverford**

<b>Address:</b> 7430 Haverford Avenue Philadelphia, PA 19151	<b>Latitude:</b> 39.976960 <b>Longitude:</b> -75.265039
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## PROJECT PLAN

### PROJECT PLAN

Planning Consultation Date	06/28/2021
Planning Completion Date	07/01/2021
Design Start Date	05/31/2020
Design Completed Date	08/04/2021
Date Obtained All Needed DEP Permits	08/04/2021
Anticipated Construction Start Date	05/18/2022
Anticipated Construction End Date	06/02/2023

Letter of No Prejudice Issued by PENNVEST

### PROJECT PHASE

Phase Name	Design Complete	Obtain All Permits	Start Construction	End Construction
Group 1	08/04/2021	08/04/2021	05/18/2022	02/02/2023
Group 2	08/04/2021	08/04/2021	07/17/2022	04/03/2023
Group 3	08/04/2021	08/04/2021	08/16/2022	06/02/2023

### COMMENTS

The City is requesting \$40,355,602 to be disbursed in one (1) settlement. Fifteen projects will be bid by the City in three (3) groups of five (5); all to take place within 2022 with closing targeted for mid-August 2022. To accommodate the City's bidding and construction schedule a Pre-closing letter may be requested for the initially bid projects.

Projects selected from the City's Linear Asset Management Plan are:

*Group 1 (\$12,347,922; to be bid and awarded within 6 months of PV Board loan approval - April 2022)*

*1.1 W-20481-D Midvale Ave., Arnold - Vaux - Henry – McMichael (1.24 miles)*

*1.2 W-20484-D Springfield/ Wilton/ Upland/ etal (1.15 miles)*

*1.3 W-20532-D Addison/ Cedar/ Walton/ Webster (1.36 miles)*

*1.4 W- 20540-D Fairview/ Rowland/ Welsh/ etal (1.07 miles)*

*1.5 W-20549-D along 24th/ Fitzgerald (1.05 miles)*

*Group 2 (\$13,616,211; to be bid and awarded within 8 months of PV Board loan approval - June 2022)*

*2.1 W-20572-D Braddock/ Lehigh/ Oakdale/ Harold/ Albert (1.20 miles)*

*2.2 W-20574-D Green/ Dupont/ Martin/ Rector (1.46 miles)*

*2.3 W-20585-D Ashton Rd./ Maxwell St./ Tolbut St. (1.22 miles)*

*2.4 W-20589-D Norcom/ Newberry/ Normandy (1.95 miles)*

*2.5 W-20608-D Ferndale/ Hartel/ Lansing/ Bingham (1.12 miles)*

*Group 3 (\$13,616,211; to be bid and awarded within 10 months of PV Board Approval - August 2022)*

*3.1 W-20616-D Haldeman/ Southhampton/ Verree (0.75 miles)*

*3.2 W-20526-D 18th/ Jackson/ Lambert/ Woodstock (0.72 miles)*

*3.3 W-20495-D Bustleton/ Cottman Area (2.27 miles)*

*3.4 W-20592-D Blair/ Susquehanna/ Tulip/ Norris (1.34 miles)*

*3.5 W-20468-D Brookhaven/ Woodbine/ Drexel/ Haverford (1.73 miles)*

As of June 30, 2020, the Water System served approximately 490,000 active customer accounts using approximately 3,100 miles of mains and approximately 25,000 fire hydrants. As such, due to the sheer magnitude of the system its not practicable to detail every main replacement in their capital program. The City's approved Capital Improvement Plan includes a line item authorization for linear water asset replacements. The City's replacement programming is informed by a Linear Asset Management Program ("LAMP") that evaluates the Water Department's water assets. LAMP leverages several information systems, existing programs and statistical tools to evaluate an asset's useful life and assess the risk of pipeline failure for the water distribution system, the costs of replacement, ancillary damages and operations and maintenance history. With this information, PWD develops its plan for water pipeline renewal.

## NARRATIVE DESCRIPTIONS

Describe the problem that this project will correct or resolve. Please be specific and include such discussion points as the cause and impact of the problem, permit exceedances or compliance related problems, if any and/or any additional operational issues caused or contributed by the identified problem(s).

Philadelphia has one of the oldest water systems in the country. The cast-iron water mains pumping in clean and safe water have an average age of over 80 years with about 15% of the system being installed prior to 1900. The goal of the PWD Linear Asset Project is to ensure a high level of water service and system reliability by replacing water main that has exceeded its useful life.

The Philadelphia Water Department (PWD) owns 3,200 miles of water main throughout the City and is proposing replacement of approximately 20 miles of high risk water main utilizing PENNVEST funding. Two types of projects are identified for replacement – Leadite jointed and end of useful life. Leadite jointed pipes have been found to break catastrophically caused by a difference in thermal expansion rates of the cast iron and the leadite material used to seal the outside of the joints. Leadite jointed water mains were installed in the years 1940 – 1960. The second type of water main replacement are water mains that have reach the end of their useful life. These pipes a exhibit higher rates of failure when compared to the mains of a younger age. Both types (leadite jointed and end of useful life) of projects exhibit high rate of breakage when compared to American Water Works Associated Distribution System Optimization Program.

PWD water main replacement comprises of water main installation, hydrants and valves replacement, relay of water services to the curb stop, and surface restoration. In addition, any lead service lines encountered will be replaced with copper lines from the water main to the customer's meter located inside the home.

Main selected for this project are among the City's oldest and were selected using PWD's water main asset management prioritization system. PWD's main replacement program uses a scoring system to prioritize replacement and provide a systematic approach to the management of assets. Generally, the older the main and the more frequently it has experienced breaks, the higher the priority for its replacement.

The average age of the line in the City leads to PWD is correcting leaks and breaks at a much higher rate than suggested by industry standards. PWD assesses its water main break rate against the optimal level of 15 breaks per 100 miles/year as defined by the Distribution System Optimization Program under the American Water Works Association Partnership for Safe Water. Currently the PWD five-year average breaks per 100 miles is 25.7 per year.

Main breaks can cause a loss of water pressure and temporary loss of service as the main is shut down to isolate the emergency. Replacement of these mains will reduce the frequency of water main breaks, which will minimize the risk to public health caused by the resulting potential exposure to infectious diseases and will reduce the impact of unplanned water outages and street closures required due to emergency repairs. The replacement of older, leak-prone mains will also provide for more efficient management of water resources by reducing the amount of treated water that is lost from the system.

Replacement and modernization of the aged mains will elevate the resilience and reliability of the City's water infrastructure to provide more reliable service to minimize pipeline failures and related disruptions in service.

Describe the scope of the project. List in quantitative terms what is planned to be constructed, rehabilitated and decommissioned. For Example: 'The 12,000 feet of 8-inch waterline will be replace, one 200,000 gallon standpipe will be constructed, the current Market Street Pump Station will be decommissioned, a new 250 gallon per minute duplex pump station will be constructed on Leisure Street, 44 hydrants will be replaced...'

The project encompasses the replacement of 19.63 miles of water main piping along roadway within 15 sections of the City of Philadelphia. Locations selected for PENNVEST funding are:

Group 1

- 1.1 W-20481-D Midvale Ave., Arnold - Vaux - Henry – McMichael (1.24 miles)
- 1.2 W-20484-D Springfield/ Wilton/ Upland/ etal (1.15 miles)
- 1.3 W-20532-D Addison/ Cedar/ Walton/ Webster (1.36 miles)
- 1.4 W- 20540-D Fairview/ Rowland/ Welsh/ etal (1.07 miles)
- 1.5 W-20549-D along 24th/ Fitzgerald (1.05 miles)

Group 2

- 2.1 W-20572-D Braddock/ Lehigh/ Oakdale/ Harold/ Albert (1.20 miles)
- 2.2 W-20574-D Green/ Dupont/ Martin/ Rector (1.46 miles)
- 2.3 W-20585-D Ashton Rd./ Maxwell St./ Tolbut St. (1.22 miles)
- 2.4 W-20589-D Norcom/ Newberry/ Normandy (1.95 miles)
- 2.5 W-20608-D Ferndale/ Hartel/ Lansing/ Bingham (1.12 miles)

Group 3

- 3.1 W-20616-D Haldeman/ Southhampton/ Verree (0.75 miles)
- 3.2 W-20526-D 18th/ Jackson/ Lambert/ Woodstock (0.72 miles)
- 3.3 W-20495-D Bustleton/ Cottman Area (2.27 miles)
- 3.4 W-20592-D Blair/ Susquehanna/ Tulip/ Norris (1.34 miles)
- 3.5 W-20468-D Brookhaven/ Woodbine/ Drexel/ Haverford (1.73 miles)

Describe the cost effectiveness of this project. List physical and administrative alternatives and selected alternatives and justify proposed alternative. Include all issues discussed in Planning Consultation related to cost effectiveness.

Program Level Alternative Analysis

These projects are to replace existing aging water mains. There is no alternative to replacement. The mains selected for replacement have the highest rate of historic or probable failure.

Site Scale Alternatives Analysis

No site scale alternatives were evaluated. A new water main is proposed in the same street adjacent to the existing main. The existing main will remain in service until the new main is installed and new service lines are connected to it. Each project is coordinated with the other utility companies in the street as well as the City's Street's department paving program.

Water Main Break History at Project Locations

Work #	Identified by	Water Main Breaks	Average	Project Pipe Age	breaks per Length	100 miles
20468	Water Leadite	31	87	1.7		1,794
20481	End of Useful Life	43	103	1.3		3,419
20484	End of Useful Life	56	113	1.2		4,867
20495	Water Leadite	25	72	2.3		1,099
20526	End of Useful Life	32	122	0.7		4,470
20532	End of Useful Life	49	112	1.4		3,613
20540	End of Useful Life	5	82	1.1		467
20549	End of Useful Life	28	112	1.1		2,657
20572	End of Useful Life	30	121	1.2		2,493
20574	End of Useful Life	48	96	1.5		3,285
20585	End of Useful Life					
	/Water Leadite	25	64	1.2		2,053
20589	Water Leadite	18	66	1.9		925
20592	End of Useful Life	27	141	1.3		2,008
20608	End of Useful Life	11	68	1.1		986
20616	End of Useful Life	10	66	0.8		1,325

Grand Total 438 93 19.7 2,229

**Project Useful Life**

The project service life of the PWD Linear Assets Projects is anticipated to be 105 years which exceeds the PennVEST loan duration. PWD Water mains typically have a service life that exceeds 80 years. It is anticipated that new ductile iron pipes will last 80-200 years. The City's useful / depreciable life for water mains is approximately 50 years.

**Cost Effective Analysis**

Main selected for this project are among the City's oldest and were selected using PWD's water main asset management prioritization system. PWD's main replacement program uses a scoring system to prioritize replacement and provide a systematic approach to the management of assets. Generally, the older the main and the more frequently it has experienced breaks, the higher the priority for its replacement.

The average age of water mains in the City leads to PWD is correcting leaks and breaks at a much higher rate than suggested by industry standards. PWD assesses its water main break rate against the optimal level of 15 breaks per 100 miles/year as defined by the Distribution System Optimization Program under the American Water Works Association Partnership for Safe Water. Currently the PWD five-year average breaks per 100 miles is 25.7 per year.

Main breaks can cause a loss of water pressure and temporary loss of service as the main is shut down to isolate the emergency. Replacement of these mains will reduce the frequency of water main breaks, which will minimize the risk to public health caused by the resulting potential exposure to infectious diseases and will reduce the impact of unplanned water outages and street closures required due to emergency repairs. The replacement of older, leak-prone mains will also provide for more efficient management of water resources by reducing the amount of treated water that is lost from the system.

**Conclusion**

Replacement and modernization of the aged mains will elevate the resilience and reliability of the City's water infrastructure to provide more reliable service to minimize pipeline failures and related disruptions in service.

**COMMENTS**

**NARRATIVE : DRINKING WATER SUPPORTING PROJECT INFORMATION**

**DRINKING WATER SUPPORTING PROJECT INFORMATION**

Category/Subcategory	Total
Distribution / Replace Pipe Length (Feet)	103,488

PROBLEM DESCRIPTION

Unfiltered Water Source:	No
Ground water source under influence of Surface Water:	No
Insufficient pressure in distribution system:	No
Inadequate water storage volume in system:	No
Insufficient yeild of the existing water source:	No
Additional Capacity required due to service area growth and development:	No
Antiquated, undersized, or leaky distribution lines:	Yes
Contamination of existing wells:	No
If applicable, surveyed malfunction rate of on-lot septic systems(%):	0
Treatment plant does not meet current or future treatment standards:	No
Deterioration or disrepair of existing facilities:	Yes

COMMENTS

PROJECT SPECIFIC DATA : LAND USE

LAND USE

Has the area served by this project been covered by an adopted municipal comprehensive plan?	Yes
Is this project located in an area where there is an adopted county comprehensive plan?	Yes
Is there an adopted multi-municipal or multi-county comprehensive plan for the area(s) covered by this project?	No
Is there an adopted county or municipal zoning ordinance or a joint municipal zoning ordinance for the area covered by this project?	Yes
Is the proposed project consistent with these comprehensive plans and/or zoning ordinances?	Yes

Is the project consistent with county agricultural preservation efforts.

No

COMMENTS

PROJECT SPECIFIC DATA : DRINKING WATER SUPPORTING PROJECT INFORMATION

DRINKING WATER COST BREAKDOWN

Planning & Design Only :	\$0.00	0.00%
Source Development Amount:	\$0.00	0.00%
Transmission Amount:	\$0.00	0.00%
Treatment Amount:	\$0.00	0.00%
Finished Water Storage Amount:	\$0.00	0.00%
Distributed System Amount:	\$40,355,602.00	100.00%
Pump Stations Amount:	\$0.00	0.00%
Meters Amount:	\$0.00	0.00%
Safety/Security Amount:	\$0.00	0.00%
Purchase of Systems Amount:	\$0.00	0.00%
Restructing Amount:	\$0.00	0.00%
Land Acquisiton Amount:	\$0.00	0.00%
Total:	\$40,355,602.00	

## DRINKING WATER COMPLIANCE

Does the project help to bring the facility back into compliance with existing or future State or Federal regulatory requirements?

No

If yes, enter what percentage of the project meets that criteria:

Does the project help the facility to maintain current compliance?

No

If yes, enter what percentage of the project meets that criteria:

Does the project help the facility to achieve compliance with upcoming requirements?

No

If yes, enter what percentage of the project meets that criteria

Does the project assist the facility with other non-compliance related activities?

If yes, enter what percentage of the project meets that criteria:

## DRINKING WATER ENHANCEMENT

Does the project help enhance well capacity? (source development/upgrade)

No

If yes, the impact is:

Does the project enhance treatment plant capacity?

No

If yes, the impact is:

Does the project enhance security measures at the drinking water facility?

No

If yes, the impact is:

Does project enhance public safety? (Fire hydrants and related)

Yes

If yes, the impact is:

Direct

## COMMENTS

### DRINKING WATER BENEFITS

#### COMMUNITY HEALTH (DRINKING WATER)

Explain any existing environmental condition that will be addressed with the project (example: sludge handling facility).

How will this project improve the quality of life for the system customers?

#### SOURCE WATER PROTECTION (DRINKING WATER)

If this project WILL increase the available water, please explain.

If this project promotes water conservation, please explain.

If this project includes or promotes water system consolidation, please explain efforts to consolidate/regionalize.

#### PUBLIC SAFETY (DRINKING WATER)

Will this project address replacement or major rehabilitation of an unsafe water supply storage tank? No

Does this project include installation or replacement of fire hydrants? Yes

Does this project include work to address workplace safety standards? No

Will this project address issues related to water source and/or system security? No

Will this project allow the system to meet fire codes - quantity/pressure for fire protection? Yes

## PUBLIC HEALTH (DRINKING WATER)

Will this project eliminate critical or chronic health hazards? No

Violation of Primary Maximum Contaminant Level (MCL)? List the contaminant along with the exceedance and frequency of exceedance, if applicable.

Presence of coliform or fecal coliform? No

No water available at the tap? No

Giardia or Cryptosporidium Cysts in the filtered water? No

## DEP COMPLIANCE (DRINKING WATER)

If this project satisfies a compliance order or to address a problem with acute health or safety hazards (example Primary MCL violation), please explain.

If this project satisfies compliance with issues where a compliance order has not been issued or that are not an acute health or safety hazard, please explain.

If this project has components that take proactive steps to maintain compliance and ensure adequate operation and maintenance of the water system, please explain?

In addition to causing street or property flooding, a break in a water main creates potentially unsafe drinking water both during the break and for a short time after repairs fix the break.

PWD water treatment plants work to provide water containing safe levels of contaminations. Traveling through older mains, the water remains relatively unchanged — picking up some materials in the pipes due to the aging materials and joints; but still meeting water quality guidelines for consumption. When a water main breaks, debris from the broken pipes and surrounding area may flow into the pipes and water.

Water main breaks result in more than dirt and discoloration in tap water. Some problems found in water following water main breaks include microbial contaminants; pathogens capable of causing disease outbreaks and gastroenteritis disorders.

After completing repairs to broken mains, water often continues to have contamination and PWD continues to check for leaks and monitor the water for contamination while flushing the pipes. The types of contamination caused by breaks may make the water undrinkable until lines are completely flushed; PWD policy is to flush pipes until tests show no more danger of breaks and contamination.

## COMMENTS

## KEYSTONE BENEFITS

If any of the communities served by this project have been granted special economic designation by the Department of Community and Economic Development or by the Governor's Action Team, please identify the program and the municipality(ies) and county(ies).

Not applicable to the City of Philadelphia.

If any of the communities served by this project have been designated as distressed under the Municipalities Financial Recovery Act 47 of 1987, please identify the municipality(ies) and county(ies).

Not applicable to the City of Philadelphia.

If this project directly serves a Brownfield site as designated by the PA Department of Environmental Protection, please identify the site.

Not applicable to this project.

If this project serves a City, Borough or 1st Class Township, please identify.

Yes. The City of Philadelphia, Pennsylvania, a corporation, body politic and city of the first class existing under the laws of the Commonwealth of Pennsylvania.

## COMMENTS

## GREEN INFRASTRUCTURE COMPONENTS

### GREEN INFRASTRUCTURE

If the project results in reduced (minimum 20%) water use, please explain.

Not applicable.

If the project recycles water, please explain.

Not applicable.

If the project reduces (minimum 20%) infiltration of water into sewer pipes being repaired/replaced, please explain.

Not applicable.

If the project reduces (minimum 20%) leakage from the water pipes being repaired/replaced, please explain.

In 2000, Philadelphia became the first U.S. city to adopt a water audit program that is now considered the gold standard. Today crews survey a third of the city's 3,000+ miles of water pipes every year. Though the city is considered a national leader in assessing water losses and finding leaks, old pipes mean the water department can only reduce the water loss through maintenance by so much. Most of the city's water loss comes from smaller leaks, many of which could send water into the ground for years without anyone noticing.

Despite replacing about one percent of water line per year, the City has some of the oldest water infrastructure in the country. Given the fundamentals of an old system, the City faces significant challenges in lowering its leakage and pipe break rates.

Every day, the Philadelphia Water Department treats about 220 million gallons. 90 million gallons of that production is non-revenue water. A major component of the non-revenue water are real losses which are leaks in the distribution system.

In addition to unnecessary treatment costs and energy wastes, leaking pipes and frequent pipe bursts can result in:

- Impact to customer service
- Damage to property and other utilities
- Intrusion of contaminants into the distribution system
- Affect the physical integrity of pipes resulting in further leaks, main breaks, and premature failure
- Impact fire flow within the local circuit

Will this project reduce facility and/or better manage energy consumption?

No

If the project saves energy (minimum 20%), please explain.

Not applicable.

If this project generates energy, what percent?

Not applicable.

If the project infiltrates evapo-transpires or controls stormwater, please explain.

Not applicable.

If the project implements Ag BMP's, Low-Impact Development, wetland restoration or construction, greenhouse gas reduction, or applies differential uses of water treated to varying levels, please explain.

Not applicable.

## COMMENTS

**INCOME**

**COUNTY MUNICIPALITY & APPLICATION LEGISLATIVE**

Primary	County	Municipality	System Served	Project Served	Households Served	Bulk
<input checked="" type="checkbox"/>	Philadelphia	Philadelphia City	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	490,000	<input type="checkbox"/>
					<b>Total:</b> 490000	
Primary	District	Congress Name	District	House Name	District	Senate Name
<input checked="" type="checkbox"/>	2	Boyle, Brendan	152	Guenst, Nancy	1	Saval, Nikil

**BILLING**

	Last Completed Audited Year	First Full Year After Project is Completed
	2020	2024
Estimate Population	1,584,064	1,584,064
Households served by System	490,000	490,000
Total EDUs served by system		0
Residential EDUs served by system	0	0
Average annual Residential bill	\$801.00	\$801.00
Total residential bills levied	\$0.00	\$0.00
Total residential bills collected	\$676,498,000.00	\$676,498,000.00
Total Commercial/Industrial bills levied	\$0.00	\$0.00
Total Commercial/Industrial bills collected	\$43,164,000.00	\$43,164,000.00

**INCOME FOR GOVERNMENT ENTITY**

	Last Completed Fiscal Year	First Full Year After Project Completed
	2020	2024
Total Bills Collected	\$719,662,000.00	\$719,662,000.00
Other Charges Collected	\$13,656,000.00	\$13,656,000.00
Total Operating Revenues	\$733,318,000.00	\$733,318,000.00
Non-Operating Revenues	\$23,717,000.00	\$23,717,000.00
Total Income	\$757,035,000.00	\$757,035,000.00

**INCOME FOR PROFIT ENTITY**

	Last Completed Fiscal Year	First Full Year After Project Completed
	2020	2024

Sales of Products	\$0.00	\$0.00
Investment Income	\$0.00	\$0.00
Rental Income	\$0.00	\$0.00
Other Income	\$0.00	\$0.00
Total Income	\$0.00	\$0.00

#### INCOME FOR NON-PROFIT ENTITY

	Last Completed Fiscal Year	First Full Year After Project Completed
	2020	2024
Provisions of Services	\$0.00	\$0.00
Government Grants Subsidies	\$0.00	\$0.00
Program Services	\$0.00	\$0.00
Investment Income	\$0.00	\$0.00
Contribution from Donors	\$0.00	\$0.00
Rental Income	\$0.00	\$0.00
Other Income	\$0.00	\$0.00
Total Income	\$0.00	\$0.00

#### OPERATING EXPENSES

	Last Completed Fiscal Year	First Full Year After Project Completed
	2020	2024
Labor Salaries Benefits	\$299,356,000.00	\$299,356,000.00
Utilities	\$0.00	\$0.00
Rent	\$0.00	\$0.00
Materials/Supplies	\$38,465,000.00	\$38,465,000.00
Cost of Goods Sold	\$0.00	\$0.00
Program Expenses	\$0.00	\$0.00
Administration Expenses	\$3,189,000.00	\$3,189,000.00
Professional Fees	\$125,163,000.00	\$125,163,000.00
Depreciation Expense	\$125,834,000.00	\$125,834,000.00
Other Expenses	\$0.00	\$0.00
Outside Services	\$0.00	\$0.00
Total (Minus Depreciation Expense)	\$466,173,000.00	\$466,173,000.00

#### NON-OPERATING EXPENSES

	Last Completed Fiscal Year	First Full Year After Project Completed
	2020	2024
Annual Debt Service Excluding This Project	\$87,106,000.00	\$87,106,000.00

Other Non-Operating Expenses	\$32,237,000.00	\$32,237,000.00
Total	\$119,343,000.00	\$119,343,000.00

## NET CASH

	Last Completed Fiscal Year	First Full Year After Project Completed
	2020	2024
Total Cash	\$757,035,000.00	\$757,035,000.00
Total Cash Expenses	\$585,516,000.00	\$585,516,000.00
Total Cash (Minus Total Cash Expenses)	\$171,519,000.00	\$171,519,000.00

## COMMENTS

Explain other charges, non-operating revenues and identify sources of the above information:

Bulk Agreements with FY20= Revenues totaling \$43.164.000 million and is listed as total commercial.  
Other Operating Revenue FY20 = interest income + small grant

Other Non-Operating Expense FY20 = items removed from fixed assets of the system.

All Water and Wastewater Revenue Bonds (other than Subordinated Bonds) are equally and ratably secured under the General Ordinance. No Subordinated Bonds are Outstanding under the General Ordinance.

Pursuant to the General Ordinance, the City pledges and assigns to the Fiscal Agent, in trust, for the security and payment of all Water and Wastewater Revenue Bonds (other than Subordinated Bonds) issued under or subject to the General Ordinance, and grants to the Fiscal Agent, in trust, a lien on and security interest in all Project Revenues and amounts on deposit in or standing to the credit of the Water and Wastewater Funds (other than the Rebate Fund).

The Fiscal Agent must hold and apply the security interest in and lien on Project Revenues and funds and accounts, in trust, for the equal and ratable benefit and security of all present and future holders of Water and Wastewater Revenue Bonds (other than Subordinated Bonds). The General Ordinance provides that such pledge also may be for the benefit of the provider of a Credit Facility or a Qualified Swap (as defined therein), or any other person who undertakes to provide monies for the account of the City for the payment of principal or redemption price of and interest on any series of Water and Wastewater Revenue Bonds (other than Subordinated Bonds), on an equal and ratable basis with the holders of Water and Wastewater Revenue Bonds (other than Subordinated Bonds).

The Water Department initiated a general rate increase proceeding (the "2021 Rate Proceeding") for Fiscal Year 2022 and Fiscal Year 2023 by filing an advance notice with the Rate Board and City Council on January 15, 2021 and then filing its formal notice on February 16, 2021 with the Rate Board and Department of Records. The Water Department and Public Advocate negotiated a partial settlement of the 2021 Rate Proceeding (the "Partial Settlement"), which is detailed in a Joint Settlement Petition. The hearing officer issued her report recommending the approval of the Partial Settlement on May 18, 2021. The Rate Board delivered its decision on June 16, 2021 to approve the Partial Settlement set forth in the Joint Settlement Petition.

Residential Monthly Water and Sewer Rate Charges

The table below shows monthly water and sewer bills for Fiscal Years 2018 through 2021 and is based, in each case, on a typical residential customer with a 5/8-inch meter using 500 cubic feet per month.

Typical Residential  
Monthly Water and Sewer Rate Charges

	Effective Date											
					Water							
					Sewer							
					Stormwater							
					Service Charge							
					Total							
					Percentage							
					Change							
9/1/2021	23.34	16.85	16.86	12.10	\$69.15	3.6%	5/8" Meter Residential					
500 Cu. Ft. Monthly	10/1/2020	\$22.69	\$16.02	\$15.80	\$12.22	66.73	-0.4	9/1/2019	22.76	16.21	15.80	12.22
	66.99	1.0	9/1/2018	22.76	15.88	15.53	12.16	66.33	-0.3			

DEBT

DEBT

Note Holder                      Date of Loan / Issued              Original Principal              Interest Rate              Term Months

\$

COMMENTS

As of June 30, 2021, \$2,279,749,157 aggregate principal amount of Water and Wastewater Revenue Bonds is outstanding.

BUDGET INFORMATION

PROJECT BUDGET

Administrative Cost:	\$0.00
Legal Fees:	\$0.00
Financial/Accounting Charges:	\$0.00
Interest During Construction:	\$0.00
Engineering/Architecture Fees:	\$0.00
Permits:	\$0.00
Land	\$0.00
Construction	\$38,433,907.00
Contingency	\$1,921,695.00
Other Costs:	\$0.00
Total:	\$40,355,602.00

COMMENTS

RATES

RATES

Metered:	Monthly
Flat:	Not Selected Yet
Other:	Not Selected Yet

Explain special rate structure or agreement. Indicate if no rates apply for this project.

Special rates with partial discounts are established pursuant to the Water Department's Rates and Charges for the following customers: (1) public and private schools which provide instruction up to or below the twelfth grade; (2) institutions of "purely public charity;" (3) places used for religious worship; (4) residences of eligible senior citizens; (5) universities and colleges; and (6) public housing properties of the Philadelphia Housing Authority. In addition, the Rate Board approved discounts of 100% on stormwater rates for eligible community gardens in 2016 and an exemption from water, sewer and stormwater rates for unoccupied properties of the Philadelphia Land Bank in 2018. Some real estate also is exempt from stormwater charges, including, cemeteries, residential sideyards, City-owned or City-controlled vacant lots or improvements, portions of Fairmount Park, streets, medians, sidewalks, and rights-of-way. Water and sewer charges, including stormwater charges, terminate when any vacant or unoccupied premises are acquired by the City and when property is acquired by the Philadelphia Housing Development Corporation or the Philadelphia Redevelopment Authority under provisions of the Philadelphia Code pertaining to vacant properties.

In addition to the special rates referenced above, the Water Department offers additional assistance and incentive programs to customers, which constitute either an Operating Expense of the Water Department or contra-revenue in the form of credits or reductions to customers' bills.

The Tiered Assistance Program ("TAP") program was launched on July 1, 2017 and assists low-income households at or below 150% of the federal poverty level ("FPL") and those experiencing a special hardship, as discussed herein. Under the TAP program bills are tied to household income and do not fluctuate based on actual consumption.

Under the TAP program, monthly bills for water, sewer, and stormwater usage and service charges are as follows:

Income Fixed Charge %\*

50% of FPL or lower at 2% of the household income \$12.00 minimum bill

Above 50% and at or below 100% At 2.5% of the household income

Above 100% and at or below 150% FPL 3% of the household income

Above 150% FPL, with proof of hardship 4% of the household income A special hardship can be increase in household size, loss of a job lasting more than 4 months, serious illness lasting more than 9 months, death of primary wage earner, domestic violence, other circumstances that threaten household's access to necessities of life.

## COMMENTS