LEHIGH COUNTY AUTHORITY

LCA Main Office:
1053 Spruce Road
Wescosville, PA 18106
610-398-2503

Agendas & Minutes Posted:
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BOARD MEETING AGENDA – February 22, 2021 – 12:00 p.m.

Notice of COVID-19 Pandemic Meeting Format: Effective March 23, 2020 and until further notice, meetings of the LCA Board of Directors will be held virtually using the Zoom Meetings application, to avoid risk of infection during the national COVID-19 pandemic emergency. Public participation is welcomed via Zoom, and instructions for joining the meeting online or by phone are posted on the LCA website in the morning on the day of the meeting, prior to the start of each meeting. You may also issue comment to LCA via email to LCABoard@lehighcountyauthority.org in advance of any meeting, or view the meeting at a later time by visiting the LCA website. Please visit https://www.lehighcountyauthority.org/about/lca-board-meeting-videos/ for specific instructions to join the meeting.

1. Call to Order
   - NOTICE OF MEETING RECORDINGS

     Meetings of Lehigh County Authority's Board of Directors that are held at LCA's Main Office at 1053 Spruce Road, Wescosville, PA, may be recorded for viewing online at lehighcountauthority.org. Recordings of LCA meetings are for public convenience and internal use only and are not considered as minutes for the meeting being recorded, nor are they part of public record. Recordings may be retained or destroyed at LCA's discretion.
   - *Public Participation Sign-In Request*
2. Review of Agenda / Executive Sessions
3. Approval of Minutes
   - *February 8, 2021 Board meeting minutes*
4. Public Comments
5. Action / Discussion Items:

   FINANCE AND ADMINISTRATION
   - *Board of Directors – Nomination of Officers (Approval)*
   - *Resolution 02-2021-01 – Destruction of Authority Documents (Approval)* ***(pink)*** *(digital Board packet, page 8-10)*
   - *2022-2026 Capital Plan - Suburban Division (digital Board packet, page 11-72) and Administration (digital Board packet, page 73-93) (Presentation & Discussion)* ***(white)***

   WATER

   WASTEWATER
   - *Kline's Island Sewer System (KISS) – Regional Sewer Capacity & Wet-Weather Planning: 2021 KISS Model Expansion & Calibration and 2022 City of Allentown RDII (Rain Derived Inflow and Infiltration) Analysis (Approval)* ***(yellow)*** *(digital Board packet, page 94-111)*
6. Monthly Project Updates / Information Items (1st Board meeting per month)
7. Monthly Financial Review (2nd Board meeting per month) – **December report attached** (digital Board packet, page 112-121)
8. Monthly System Operations Overview (2nd Board meeting per month) – **January report attached** (digital Board packet, page 122)
9. Staff Comments
10. Solicitor's Comments

11. Public Comments / Other Comments
12. Executive Sessions
13. Adjournment

UPCOMING BOARD MEETINGS		
March 8, 2021	March 22, 2021	April 12, 2021

PUBLIC PARTICIPATION POLICY

In accordance with Authority policy, members of the public shall record their name, address, and discussion item on the sign-in sheet at the start of each meeting; this information shall also be stated when addressing the meeting. During the Public Comment portions of the meeting, members of the public will be allowed 5 minutes to make comments/ask questions regarding non-agenda items, but time may be extended at the discretion of the Chair; comments/questions regarding agenda items may be addressed after the presentation of the agenda item. Members of the public may not request that specific items or language be included in the meeting minutes.

REGULAR MEETING MINUTES
February 8, 2021

The Regular Meeting of the Lehigh County Authority Board of Directors was called to order at 12:03 p.m. on Monday, February 8, 2021, Chairman Brian Nagle presiding. The meeting was held via video and audio advanced communication technology ("ACT"), using the Zoom internet application including telephone option, due to the COVID-19 pandemic emergency. Each Board member and other attendees of the meeting were able to hear each other attendee and be heard by each other attendee. The public could also participate in the meeting via ACT, using the Zoom internet application including telephone option. A Roll Call of Board members present was taken. Chairman Brian Nagle, Scott Bieber, Richard Bohner, Norma Cusick, Ted Lyons, Kevin Baker, Linda Rosenfeld, Jeff Morgan, and Amir Famili were present for the duration of the meeting.

Solicitor Michael Gaul of KingSpry was present along with Authority Staff, Liesel Gross, Ed Klein, John Parsons, Chris Moughan, Chuck Volk, Susan Sampson, Andrew Moore, Phil DePoe, Mark Bowen, Lisa Miller, and Todd Marion.

Chairman Nagle announced that the Board received their packets electronically and a hardcopy was not mailed out due to the snowstorm. He also noted that Liesel Gross sent an email to the Board further explaining the cash flows associated with the Customer Hardship Fund that was approved at the last meeting.

REVIEW OF AGENDA

Liesel Gross stated there are no changes to the published agenda. However, there will be an Executive Session after the regular meeting to discuss matters of personnel. Chairman Nagle announced there will also be a meeting of the Board's Strategic Planning Subcommittee after the Executive Session.

APPROVAL OF MINUTES

January 25, 2021 Meeting Minutes

Richard Bohner noted a grammatical error. On a motion by Richard Bohner, seconded by Norma Cusick, the Board approved the minutes of the January 25, 2021 Board meeting as corrected (7-0). Scott Bieber and Ted Lyons abstained.

PUBLIC COMMENTS

None.

ACTION AND DISCUSSION ITEMS

LCA 2020 Action Plan Status Update & Vision for 2021

Liesel Gross gave a PowerPoint presentation to review the 2020 goals and vision for 2021. She explained that the goals for 2020 were set around the Effective Utility Management (EUM) framework that was established by the US Environmental Protection Agency (USEPA) and the American Water Works Association (AWWA), and several other industry leader associations. The EUM framework establishes the ten attributes for an effectively managed utility. In 2017, the Authority completed an internal assessment, and four goal categories were outlined: 1) Product Quality, 2) Financial Viability, 3) Infrastructure Stability, and 4) Employee and Leadership

Development. These combined goals make up the “LCA 2020 Action Plan.” The list of 2020’s most critical goals were reviewed, highlighting the status of those goals and their level of progress. The settlement agreement with the City of Allentown and the Regional Sewer Capacity Plan were two important goals that were completed in 2020. Other goals on the list were either partially completed or not completed, primarily due to adjusting the Authority’s priorities during the COVID-19 pandemic. She highlighted other noteworthy events of 2020, including the completion of the Park Pump Station rehabilitation project, the connection of a new large customer to the system, operational emergencies and main breaks, response to Tropical Storm Isaias in August, and the COVID-19 pandemic emergency response.

Ms. Gross then reviewed five of the Authority’s top Key Performance Indicators (KPIs). In 2020, the KPIs were adjusted to match the criteria established by the AWWA utility benchmarking program, where applicable. The KPIs reviewed including Preventive Maintenance, Financial Performance, Compliance, Employee Statistics, and Safety. She highlighted various drivers for performance in each KPI area.

Ms. Gross then reviewed the goals established for 2021. An organizational goal has been established for this year to update the Authority’s strategic plan. The next steps in the strategic planning effort include convening the Board subcommittee today, the selection of a consultant, conceptual plan development, and development of an implementation plan with sufficient detail to be included in the 2022 budget process. Other internal organizational initiatives for 2021 include providing more support, guidelines and training for managers, employee re-engagement, and a process improvement program.

Scott Bieber asked for examples of a large and small process improvement that the staff might undertake. Liesel Gross stated that an example of a large process improvement would be to redevelop the method used to generate sewer bills for the municipal signatories. The current process includes collection of data from many different entities, and processing the billing documents through the use of very old spreadsheets that are linked together and require manual data entry. An example of a small process improvement that was recently completed includes the development of an electronic system for recording customer service inquiries, replacing a paper-based system.

Ms. Gross also reviewed the highlights of the top 15 departmental goals for 2021. Scott Bieber asked for an example of corrective maintenance and a description of projects that would fall into the corrective maintenance category. Chris Moughan explained that any work that is not scheduled is tracked as corrective maintenance, as well as work that required more than 90 minutes of time to complete. Some additional Board discussion followed.

Suburban Division – Fixed Base Meter Reading Stations – Design Phase

Chuck Volk gave an overview of the project to install the Fixed Base Meter Reading Stations necessary to implement the Advanced Metering Infrastructure (AMI) system in the Suburban Division. Mr. Volk explained he is seeking approval of the design phase of the project that involves design and permit approval of eight towers to be erected at various locations throughout the service area. The towers are needed to transmit meter reading data back to the Authority main office, which will eliminate the need for Authority personnel to drive around and collect the meter data each month. Amy Kunkel described the consultant selection process and the recommendation of award to Maser Consulting. While not the lowest cost proposal, Maser Consulting was chosen because of their extensive background in equipment and tower installations and cellular site projects. Chuck Volk added that the Authority’s meter equipment provider, Sensus, has already performed

propagation studies for the Authority to determine the location and height of antenna structures and the signal coverage of the eight sites to be further explored in the design phase. Some of the recommended tower sites are owned by the Authority, and others will require additional exploration regarding easements, township permits and height limitations.

Scott Bieber asked how tall the towers are proposed to be. Amy Kunkel explained tower heights will vary from 45 feet to 105 feet depending on location. Mr. Bieber also asked if there will be Authority personnel attending the municipal meetings along with the consultant. Amy Kunkel replied that there will be Authority personnel, engineers, and a solicitor present and noted that Maser Consulting was chosen because of their experience with the process of permitting and installation of telecommunications towers for other utilities. Solicitor Gaul noted that each municipality will have their own zoning rules and regulations regarding the towers.

Kevin Baker asked if the cost of the project had any offsetting cost reductions or other benefits that could be quantified. Chuck Volk stated that a detailed cost-benefit analysis was not completed but explained that having an automated process to collect meter readings would result in reduced staff time associated with meter reading. In addition, other benefits of the system would be available to streamline customer service and billing functions. Richard Bohner commented that the cost of obtaining individual meter readings when a customer moves in or out of the service area should also be considered as an efficiency of this system, as employees would not be driving out to obtain a single meter reading each time.. Liesel Gross noted that the Authority processes approximately 150 final bills every month.

Jeff Morgan asked if the Authority could rent space on its towers to other entities who need similar capabilities, which could be an additional source of revenue for the Authority. Amy Kunkel noted that leasing of tower space is a common practice and the Authority could explore this as part of this project. In addition, she noted Sensus has indicated that the towers could possibly be used to read water meters for neighboring utilities and municipalities, which could result in some cost-sharing benefit.

Amir Famili commented that this is a productivity project and part of the proposal should show the equal balance of benefit to investment. He said it would be difficult to vote on a project like this without knowing the productivity value for the project. Chairman Nagle suggested each project presented to the Board should have some form of cost analysis included in it, although most of the Authority’s projects are required due to aging infrastructure or regulatory requirements. Chairman Nagle also asked for further explanation regarding the reason for selection of Maser Consulting, who was not the lowest bidder. Chuck Volk explained that Maser Consulting is the most qualified for this work because they have worked on a significant number of similar projects and have dedicated staff with experience in seeking the necessary permit approvals.

Amir Famili suggested that along with providing a cost-benefit analysis, the Authority should investigate whether other towers can be rented prior to starting the design of towers. Liesel Gross commented that a complete cost-benefit analysis cannot be completed without more accurate cost information. The work in the design phase would provide the Authority with a more defined review of the tower locations, options for rental fees or revenue, and cost for construction.

Chairman Nagle noted that the Board has questions that need more time to be answered and suggested that they table this project until further information can be provided and a cost benefit analysis is completed. Jeff Morgan commented that the majority of projects approved by the Board are regulatory driven and a cost-benefit analysis is not necessary, but in this case the Authority

should have additional information available to provide the analysis. Scott Bieber stated that he has no problem with approving Maser Consulting for this project.

The Board tabled this project until further information regarding cost-benefit analysis is provided.

MONTHLY PROJECT UPDATES / INFORMATION ITEMS

Liesel Gross gave an overview of the items listed for the February 22, 2021 meeting, noting that the agenda will be full.

Scott Bieber asked if the feasibility study is still expected this month regarding the Trexlertown Wastewater storage facility project. Phil DePoe reported that HDR will provide the report soon with more information to follow.

STAFF COMMENTS

Liesel Gross informed the Board that she will be attending the Lehigh County Commissioners' General Services Committee meeting on Wednesday, February 10, 2021 to provide an update on the Authority's achievements in 2020. The meeting will be held virtually via Zoom if anyone wishes to attend.

SOLICITOR'S COMMENTS

None.

PUBLIC COMMENTS / OTHER COMMENTS

Jennifer McKenna, City of Allentown Office of Compliance, complemented the Board and Staff regarding the presentation of the 2020 Action Plan and the measures related to the Authority's maintenance program. She asked if the equipment and material costs can be added to the maintenance measurement in the future. Liesel Gross stated that the Authority's system already captures equipment and materials costs, but the measure presented is based on personnel hours dedicated to corrective and preventive maintenance so that it is aligned with the AWWA's standard format for utility performance benchmarking. Mark Bowen explained that the hours, equipment, materials, and all vehicles in the various categories are captured in the Authority's maintenance management system. Ms. McKenna followed up asking if this information is part of the Capital Plan decision-making process. Chris Moughan noted that maintenance spending for each asset group is available for purposes of further analysis.

EXECUTIVE SESSION

Chairman Nagle announced that an Executive Session will be held after the regular meeting to discuss matters of personnel.

ADJOURNMENT

There being no further business, the Chairman adjourned the meeting at 1:30 p.m.

Richard Bohner

Secretary

RESOLUTION NO. 02-2021-01

(Duly adopted 22 February 2021)

A RESOLUTION AUTHORIZING DISPOSITION OF CERTAIN RECORDS.

WHEREAS, by virtue of Resolution No. 11-2019-1, adopted November 11, 2019, Lehigh County Authority ("Authority") declared its intention to follow the *Municipal Records Manual – Retention and Disposition Schedule for Records of Pennsylvania Municipal Governments* (the "State Retention Schedule"), as currently published or as may be amended in the future, but with modifications that are no less stringent or not addressed by the State Retention Schedule in order to address special Authority circumstances or needs; and

WHEREAS, in accordance with the Pennsylvania Municipal Records Act, as amended, found at 53 Pa.C.S.A. 1381 et seq., each individual act of disposition shall be approved by resolution of the Authority's Board.

NOW THEREFORE, the Lehigh County Authority Board, pursuant to powers invested in it by the Pennsylvania Municipality Authorities Act, as amended, hereby resolves that:

1. In accordance with the State Retention Schedule, the Authority is authorized to dispose of the records contained in the Schedule "A" hereto ("Scheduled Records").

2. Authority staff members are authorized and directed to take such steps as are necessary or convenient to implement the disposition of the Scheduled Records.

3. This Resolution shall take effect immediately.

On motion of_____, seconded by _____, this Resolution was adopted the 22nd day of February, 2021.

Tally of Votes: Yeas _____ Nays _____

I, Michael A. Gaul, Esquire, of King, Spry, Herman Freund & Faul, LLC, Solicitor of Lehigh County Authority, do hereby certify that the foregoing is a true, correct and complete copy of a resolution which was duly adopted by the Authority at a public meeting of the Authority held on February 22, 2021, after notice thereof had been duly given as required by law, at which meeting a quorum was present and voting and which Resolution No. 02-2021-01 is now in full force and effect on the date of this certification.

Michael A. Gaul, Esquire Date
King, Spry, Herman Freund & Faul, LLC
Lehigh County Authority Solicitor

Attest:

Lisa J. Miller Date
Executive Administrative Support Specialist

SCHEDULE "A"
to
RESOLUTION NO. 02-2021-01

SCHEDULE OF RECORDS SUBJECT TO DISPOSITION

Document Date(s)	Description	Quantity	File Tag
1991	Public relations outreach information files	2 boxes	PO-5
1998	Miscellaneous folders with journal entries, wires, etc.	1 box	FN-2
2005-2006	Check Free Payments	1 box	FN-3
2006 & 2008	Suburban Sewer payment reports	5 legal size files w/cover	FN-3
2006 & 2008	Suburban Sewer billing reports	1 legal file w/cover	FN-2
2008	Suburban water payment reports	4 legal size files w/cover	FN-3
2009	Meter reading correction reports	1 box	WQ-6
May/June 2009	Suburban Customer Care payment slips	2 boxes	FN-3
2011	Cash receipts	1 box	FN-12
2012	Accounts payable files	5 boxes	FN-2
2012	Journal entries and month end close backup	1 box	FN-2
2013	Accounts payable files	4 boxes	FN-2
2013	Journal entries and month end close backup	1 box	FN-2
2013	Cash receipts	1 box	FN-12
2018	Payment slips (AL & SB UB Accts)	1 box	FN-3
Various	Outdated MUNIS manuals	1 box	FN-2
Various	Duplicate copies of various older years financial statements, CAFRs, Brinks Red Books	1 box	FN-4
Various	Outdated Miscellaneous Customer Care general info	1 box	AL-1
1986-2003	Aurel Arndt daytimer books	2 boxes	n/a

LEHIGH COUNTY AUTHORITY

ALLENTOWN, PA

DRAFT 5-YEAR CAPITAL PLAN

SUBURBAN DIVISION

2022-2026

JANUARY 2021

LEHIGH COUNTY AUTHORITY
5-YEAR CAPITAL PLAN
2022-2026

TABLE OF CONTENTS

2022-2026 Capital Plan

Glossary of Acronyms & Terms

The following is a listing of acronyms and terms used in the Capital Plan Summary and Project Detail Sheets.

LCA Water and/or Wastewater Divisions/Systems

LCA Water and/or Wastewater Divisions/Systems			
		Water	**Wastewater**
AD	Allentown Division	X	X
AWD	Arcadia West Division	X	X
BHD	Beverly Hills Division	X	
CLD	Central Lehigh Division	X	
CFD	Clear View Farms Division	X	
ECD	Emmaus Consecutive Division	X	
HHD	Heidelberg Heights Division	X	X
LLRI-1	Little Lehigh Relief Interceptor, Phase 1		X
LLRI-2	Little Lehigh Relief Interceptor, Phase 2		X
LTD	Lynn Township Division		X
MCD	Mill Creek Division	X	
MND	Madison Park Division	X	
NWD	North Whitehall Division	X	
PLD	Pine Lakes Division	X	
SSD	Sands Spring Division		X
UMD	Upper Milford Division	X	X
UMCD	Upper Central Milford Division (Buss Acres)	X	
WLI	Western Lehigh Interceptor		X
WTD	Washington Township Division	X	X
WWD	Wynnewood Division		X

Project Type

Project Type	Description
AO	Prior Administrative Order/Current Regional Flow Management Strategy
UW	Uncompleted Work [(1)]
S-7-MCI	Schedule-7 *(Lease Required)* Major Capital Improvement[(2)]
LCA-MCI	LCA Developed Major Capital Improvement[(2)]
COL	Change of Law[(3)]
Regular	A project that does not fit in any of the aforementioned special categories

(1) Uncompleted Work: City Projects that were supposed to be complete by the time of settlement. The City and LCA have reached an agreement for LCA to execute them.

(2) Major Capital Improvement: In accordance with the Lease, all Major Capital Improvements must be approved by the City.

(3) Change of Law: In accordance with the Change of Law Memorandum of Understanding

Project Funding

Project Funding	Description
LCA	Funded by LCA
100% Reimb	All costs are 100% reimbursable by fees charged
Fees & LCA	Costs partly recovered through fees charged and partly funded by LCA
Allentown	Funded by the City of Allentown
CCRC	Capital Cost Recovery Charge[(1)]; Applies only to City approved MCI

(1) *Capital Cost Recovery Charge: An on-going user fee that is above the rate caps set forth in the Lease to allow the recovery of the cost of an MCI. Rate payers are charged based upon usage.*

Project Category

Projects have been categorized to identify the primary and secondary reasons for the need. In some cases there is no secondary reason that would be applicable.

Project Category	Description
Regulatory	Required to meet Regulatory requirements
New Cust	New Customers
CA/OS	Concession Lease/Operating Standards
Master Plan	Master Plan
AM - Low	Asset Management - Low Risk
AM - Med	Asset Management - Medium Risk
AM - High	Asset Management - High Risk
AM - Varies	Asset Management - Varies[(1)]
Efficiency	Efficiency
Sys Imp	System Improvement
Rev Opprt	Revenue Opportunity
Planning	Planning
N/A	Not Applicable

(1) *Applies to Asset Management Projects, where there are multiple standalone sub-projects of varied levels of "risk".*

Approval Stage

Approval Stage	Description
A	Annual Project, no approvals required
S	Study/Planning Phase
D	Design Phase
C	Construction/Implementation Phase
E	Entire Project
V	Various Phases
P	Pending Board approval

WATER

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION
WATER
5-YEAR CAPITAL PLAN
2022–2026

CAPITAL FINANCING JUSTIFICATION

Capital additions to the Water System are justified by using six revenue sources: user charges, assessments or distribution tapping fees, supply tapping fees, contributions-in-aid of construction, reimbursements from the wastewater funds and grants. This would comprise the amount of cash available from operations for capital projects.

Beyond the operating cash available, remaining sources are project reserves from previous debt issuance and any new borrowing required.

The table below summarizes the capital project sourcing by year and each major financial sourcing category:

CAPITAL FINANCING SOURCES						
	2022	**2023**	**2024**	**2025**	**2026**	**TOTAL**
Project Costs	$6,297,000	$4,481,500	$3,850,000	$5,692,000	$3,650,000	$23,970,500
Sources of Funding:						
Operating Reserves	$1,159,830	$1,068,382	$1,280,000	$2,662,764	$3,650,000	$9,820,976
Capital Reserves	$562,170	$283,118	$0	$3,029,236	$0	$3,874,524
New Borrowing	$4,575,000	$3,130,000	$2,570,000	$0	$0	$10,275,000
TOTAL FUNDING	**$6,297,000**	**$4,481,500**	**$3,850,000**	**$5,692,000**	**$3,650,000**	**$23,970,500**

Total spending on capital projects for the five-year period totals $23,970,500. Operating and capital reserves over the period will provide $13,695,500 for capital projects. New borrowing in the amount of $10,275,000 will provide the remaining funding required.

The $10,275,000 borrowing is to fund non-annual projects. To support the additional debt service worth 205,000 annually on the $10,275,000 borrowing and annual inflation on operating expenses, a revenue increase of 6.75% each year will be required.

CONDENSED CASH FLOW - SUBURBAN WATER					
US DOLLARS	**2022**	**2023**	**2024**	**2025**	**2026**
User Charges	12,682,517	13,665,412	14,724,481	15,865,628	17,095,214
Other Operating Revenues	29,124	29,124	29,124	29,124	29,124
Non-Operating Revenues	962,446	962,446	962,446	962,446	962,446
Operating expenses	(8,905,428)	(9,261,644)	(9,632,110)	(10,017,393)	(10,418,089)
Debt Service - Current Debt	(3,056,164)	(3,130,714)	(3,117,714)	(3,128,964)	(2,799,714)
Debt Service - NEW Debt	(205,000)	(205,000)	(205,000)	(205,000)	(205,000)
Investments Converting to Cash	-	-	1,000,000	2,136,930	-
Proceeds From NEW Debt	-	-	-	-	-
Capex - Admin Paygo	(550,000)	(525,000)	(512,500)	(362,500)	(87,500)
Capex - Paygo	(1,722,000)	(1,351,500)	(1,280,000)	(5,692,000)	(3,650,000)
Capex - NEW Borrowing	(4,575,000)	(3,130,000)	(2,570,000)	-	-
NET FUND FLOWS	**(5,339,505)**	**(2,946,876)**	**(601,273)**	**(411,729)**	**926,481**
Plan Volume Increase %	1.00%	1.00%	1.00%	1.00%	1.00%
User Charge Revenue Increase %	6.75%	6.75%	6.75%	6.75%	6.75%
Operating Cash Balance	4,391,718	4,567,386	4,750,082	4,940,084	5,137,688
Days on Hand	180	180	180	180	180
Project Reserve Balance	5,428,404	2,305,860	1,521,891	920,160	1,649,037
DEBT SERVICE COVERAGE RATIO	1.46	1.62	1.83	2.05	2.55
Total Capex	(6,847,000)	(5,006,500)	(4,362,500)	(6,054,500)	(3,737,500)

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION
2022-2026 CAPITAL PROGRAM
WATER

Project #	Name or Title of Proposal	Prj. Category	(1) Prj. Funding	Approval Stage (1)	Plan Total Cost*	This Capital Program							Prior Project Cost (2)	Future Project Cost (2)	Total Project Cost
						2021 *Budget Approved*	2022 Year 1	2023 Year 2	2024 Year 3	2025 Year 4	2026 Year 5	2022-2026 Total			
	Operating/Capital Reserve Funds														
SD-W-A	Annual Projects	AM - Varies	LCA	A	$ 8,601,000	$ 1,747,500	$ 1,722,000	$ 1,351,500	$ 1,280,000	$ 1,250,000	$ 1,250,000	$ 6,853,500	$ -	$ -	$8,601,000
SD-W-12	Water Main Replacement Projects	AM - Varies	LCA	P	$ 4,800,000	$ -	$ -	$ -	$ -	$ 2,400,000	$ 2,400,000	$ 4,800,000	$ -	$ -	$4,800,000
	Subtotal				**$ 13,401,000**	**$ 1,747,500**	**$ 1,722,000**	**$ 1,351,500**	**$ 1,280,000**	**$ 3,650,000**	**$ 3,650,000**	**$ 11,653,500**	**$ -**	**$ -**	**$ 13,401,000**
	New Borrowing Funds														
SD-W-12	Water Main Replacement Projects (3)	AM - Varies	LCA	P	$ 7,300,000	$ -	$ 2,500,000	$ 2,400,000	$ 2,400,000	$ -	$ -	$ 7,300,000	$ -	$ -	$7,300,000
SD-W-37	Additional *(Redundant)* Water Supply - Small Satellite Divisions	Sys Imp	LCA	V	$ 870,000	$ 100,000	$ 600,000	$ 170,000	$ -	$ -	$ -	$ 770,000	$ 186,000	$ -	$1,056,000
	Lower to Upper System	Sys Imp													$0
SD-W-50	Fixed Base Meter Reading System	Sys Imp	LCA	P	$ 1,010,000	$ 100,000	$ 400,000	$ 340,000	$ 170,000	$ -	$ -	$ 910,000	$ 13,000	$ -	$1,023,000
SD-W-51	North Whitehall Division Study	Sys Imp	LCA	P	$ 80,000	$ 50,000	$ 20,000	$ 10,000	$ -	$ -	$ -	$ 30,000	$ -	$ -	$80,000
SD-W-52	Arcadia Water Tank Replacement	AM - High	LCA	P	$ 1,200,000	$ 500,000	$ 550,000	$ 150,000	$ -	$ -	$ -	$ 700,000	$ 66,000	$ -	$1,266,000
SD-W-55	CLD Well Improvements Study	Sys Imp	LCA	S	$ 80,000	$ 60,000	$ 10,000	$ 10,000	$ -	$ -	$ -	$ 20,000	$ 10,500	$ -	$90,500
SD-W-56	CLD Distribution System Improvements Study	Sys Imp	LCA	S	$ 175,000	$ 50,000	$ 75,000	$ 50,000	$ -	$ -	$ -	$ 125,000	$ 74,000	$ -	$249,000
SD-W-57	Water Meter Replacement Program	AM - Med	LCA	P	$ 2,462,000	$ -	$ 420,000	$ -	$ -	$ 2,042,000	$ -	$ 2,462,000	$ 1,500,000	$ -	$3,962,000
	Subtotal				**$ 13,177,000**	**$ 860,000**	**$ 4,575,000**	**$ 3,130,000**	**$ 2,570,000**	**$ 2,042,000**	**$ -**	**$ 12,317,000**	**$ 1,849,500**	**$ -**	**$ 15,026,500**
	GRAND TOTAL				**$ 26,578,000**	**$ 2,607,500**	**$ 6,297,000**	**$ 4,481,500**	**$ 3,850,000**	**$ 5,692,000**	**$ 3,650,000**	**$ 23,970,500**	**$ 1,849,500**	**$ -**	**$ 28,427,500**

(1) Reference Glossary of Acronyms & Terms found immediately after the Table of Contents. All projects are LCA funded (except W-54, where a developer is sharing in the costs)
(2) If blank , cost is not applicable (annual project) or to be determined
(3) 2022 -2024 water main replacements are to be funded by new borrowing

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	ANNUAL PROJECTS						
Budget Area	Water	**Department**	Capital Works	**Date**	1/21/2021	**Project No.**	SD-W-A
Location	All LCA Suburban Divisions, Multiple Municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Efficiency	**Preparer**		JP/CEV

Purpose of Expenditure *(check all that apply)*			
X	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	N/A
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	N/A
Will the Project Require Obtaining Land Rights	N/A		

Varies by system.

Detailed Project Description

This is an annual project that in prior years appeared as separate recurring projects. This annual project includes the following: New Water Main Installation, Distribution Mains - Development & Service Connections, Distribution Mains - Upsizing/Contribution, Reservoir Rehabilitation/Maintenance, Water Company Acquisitions, Main Office/Operations Center Improvements, Mobile Equipment, Other Equipment, General Water System Improvements, Water Facilities Asset Management Improvements and new and replacement water meters.

Project Drivers and Needs to be Met by the Project

The primary drivers for these projects are asset management, operational efficiency and revenue generation. Annual items help maintain the operation and adequate level of service of existing water supply, distribution, and support facilities in the Suburban Division, and accommodate water distribution needs of growth.

Project Status - Describe what work, if any has been completed or underway for this project

This is an annual project, therefore, work is on-going.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	SD-W-A
Project Name	ANNUAL PROJECTS

Prior Project Cost		N/A
Estimated Project Costs:	**2021-2026**	
LCA Staff	$	700,000
Land Acquisition	$	-
Construction/Equipment	$	6,326,000
Professional Services	$	750,000
Other	$	200,000
Contingencies	$	550,000
Total Project Cost	**$**	**8,526,000**

Requested in this Capital Program	**$**	**6,853,500**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 1,672,500	service contract, planning, design & construction
1st Year	2022	$ 1,722,000	service contract, planning, design & construction
2nd Year	2023	$ 1,351,500	service contract, planning, design & construction
3rd Year	2024	$ 1,280,000	service contract, planning, design & construction
4th Year	2025	$ 1,250,000	service contract, planning, design & construction
5th Year	2026	$ 1,250,000	service contract, planning, design & construction

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WATER MAIN REPLACEMENT PROJECTS						
Budget Area	Water	**Department**	Capital Works	**Date**	1/21/2021	**Project No.**	SD-W-12
Location	Various LCA Divisions located in multiple municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Efficiency	**Preparer**		JMP

Purpose of Expenditure *(check all that apply)*			
X	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	N/A
Approx. No. of Customers Benefitted	**		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	N/A
Will the Project Require Obtaining Land Rights	No		

Varies by system - Main Replacements are located in multiple systems.

Detailed Project Description

Replacement of cast iron (CI) mains in water systems that are prioritized based on break history, geology (sinkholes), pipe condition, pipe age, and probability and consequence of failure. Year 2 of the Capital Plan (CP) (2023) will replace an approximate one-mile of main that, to date, has experienced a high rate of failure. Annual funding is provided on a prioritized as-needed basis for subsequent years in the CP - in the event that additional mains start to exhibit high failure rates, thereby justifying replacement.

Project Drivers and Needs to be Met by the Project

Replacing CI mains will reduce the frequency of breaks in the system thereby saving the Authority repair costs, customer outages and reducing the potential for damage which can occur to private property.

Project Status - Describe what work, if any has been completed or underway for this project

This is an annual project, therefore, work is on-going.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Replacement of aged cast iron mains will reduce the number of main breaks, thereby saving repair costs and reducing the possibility of ground subsidence and property damage. Exact savings to be determined.

Project No.	SD-W-12
Project Name	WATER MAIN REPLACEMENT PROJECTS

Prior Project Cost		N/A
Estimated Project Costs:		**2021-2026**
LCA Staff	$	380,000
Land Acquisition	$	-
Construction/Equipment	$	10,000,000
Professional Services	$	1,100,000
Other	$	120,000
Contingencies	$	500,000
Total Project Cost	**$**	**12,100,000**

Requested in this Capital Program	**$**	**12,100,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

			Need	**Phase of Work**
2021 Budget		$	-	design
1st Year	2022	$	2,500,000	design & construction
2nd Year	2023	$	2,400,000	design & construction
3rd Year	2024	$	2,400,000	design & construction
4th Year	2025	$	2,400,000	design & construction
5th Year	2026	$	2,400,000	design & construction

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	ADDITIONAL *(REDUNDANT)* WATER SUPPLY - MADISON PARK NORTH DIVISION						
Budget Area	Water	**Department**	Capital Works	**Date**	1/21/2021	**Project No.**	SD-W-37
Location	MND			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Rev Opp	**Preparer**		ALK

Purpose of Expenditure *(check all that apply)*			
X	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study	**X**	Other (explain): Provide redundancy in water supply

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2018
Approx. No. of Customers Benefitted	116		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2021
Will the Project Require Obtaining Land Rights	Yes		

Detailed Project Description

This project addresses the development of an additional well as a secondary water source. DEP regulations for new public water systems now require a backup or redundant source of supply. This was a developer system that was built prior to these regulations and acquired by LCA. The project includes the drilling of a well on private property adjacent to the Madison Park North subdivision, construction of a well house and piping to the existing treatment building.

Project Drivers and Needs to be Met by the Project

The Madison Park North water system is currently operating on one well and does not have a redundant water supply. The consequence of failure for the single well serving this satellite system is significant, as water storage for this system is approximately equal to two days average day demand and fire protection would not be available.

Project Status - Describe what work, if any has been completed or underway for this project

The property owner identified for the Madison Park North (MPN) backup well site executed a temporary easement agreement in 2018 to allow the development of an exploratory well on the property. Exploratory wells were drilled in late 2018 and 2020. Based on the yield and water quality data, a permanent well will be developed on this site at the second test well location. Design and permitting will occur in 2021, with construction continuing into 2022.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	$ -

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	SD-W-37
Project Name	ADDITIONAL (REDUNDANT) WATER SUPPLY - MADISON PARK NORTH DIVISION

Prior Project Cost	$ 186,000
Estimated Project Costs:	**2021-2026**
LCA Staff	$ 50,000
Land Acquisition	$ 50,000
Construction/Equipment	$ 600,000
Professional Services	$ 80,000
Other	$ 40,000
Contingencies	$ 50,000
Total Project Cost	**$ 1,056,000**

Requested in this Capital Program	**$ 770,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 100,000	Design/Permitting
1st Year	2022	$ 600,000	Construction
2nd Year	2023	$ 170,000	Construction
3rd Year	2024	$ -	
4th Year	2025	$ -	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	FIXED BASE METER READING SYSTEM						
Budget Area	Water	**Department**	Capital Works	**Date**	1/21/2021	**Project No.**	SD-W-50
Location	CLD			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Efficiency	**Preparer**		ALK

	Purpose of Expenditure *(check all that apply)*		
X	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2019
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2023
Will the Project Require Obtaining Land Rights	TBD		

Detailed Project Description

Development of a fixed base system for meter reading. A communication study by Sensus to evaluate the number and location of antenna towers for Suburban area coverage was performed in 2019 and updates to the study are performed as site locations are refined. Eight antennas are anticipated in order to provide adequate coverage of the Suburban system.

Project Drivers and Needs to be Met by the Project

The new system will allow for more efficient meter reading, consistent billing and faster dispute resolution. As meters are upgraded, the AMI system will allow us to monitor customer usage in real time and proactively address problems.

Project Status - Describe what work, if any has been completed or underway for this project

The radio transceiver units were upgraded in 2019/2020 and are now compatible with an AMI system. An engineer will be retained in 2021 to facilitate Township approvals for the antenna sites.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project to commence in 2020.

Project No.	SD-W-50
Project Name	FIXED BASE METER READING SYSTEM

Prior Project Cost	$ 13,000
Estimated Project Costs:	**2021-2026**
LCA Staff	$ 50,000
Land Acquisition	$ 50,000
Construction/Equipment	$ 700,000
Professional Services	$ 140,000
Other	$ 10,000
Contingencies	$ 60,000
Total Project Cost	**$ 1,023,000**

Requested in this Capital Program	**$ 910,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 100,000	Planning/Design
1st Year	2022	$ 400,000	Design/Construction
2nd Year	2023	$ 340,000	Design/Construction
3rd Year	2024	$ 170,000	Design/Construction
4th Year	2025	$ -	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	NORTH WHITEHALL DIVISION WATER SYSTEM STUDY						
Budget Area	Water	**Department**	Capital Works	**Date**	1/15/2021	**Project No.**	SD-W-51
Location	NWD			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Efficiency	**Preparer**		ELH

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2020
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	TBD
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

The first phase of this project consists of an engineering study to commence in 2021 to identify improvements in system reliability. The assumption is that an improvements plan will be prepared that may include interconnection with surrounding water systems, including a second interconnection with the NBMA water system. Most of the supply for the existing system is from the NBMA interconnection, and a critical main serves the southern portion of the system. Installation of a storage tank that would float on the system and looping of dead end lines may be identified as a study recommendation, along with identifying sources of high unaccounted-for water. The scope and cost of an improvements project is not known at this time.

Project Drivers and Needs to be Met by the Project

Inadequate looping of the distribution system affects system reliability and water quality, and will drive the need for modifications. LCA's objective is to be proactive and identify capital improvements required in order to adequately serve current and future customers.

Project Status - Describe what work, if any has been completed or underway for this project

The Phase 1 assessment study will be performed in 2021. The improvements project will be kicked off in 2022; however, since the scope of this effort is undefined at this time, a $20,000 placeholder was inserted for 2022 costs.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	SD-W-51
Project Name	NORTH WHITEHALL DIVISION WATER SYSTEM STUDY

Prior Project Cost		0
Estimated Project Costs:	**2021-2026**	
LCA Staff	$	16,000
Land Acquisition	$	-
Construction/Equipment	$	-
Professional Services	$	59,000
Other	$	-
Contingencies	$	5,000
Total Project Cost	**$**	**80,000**

Requested in this Capital Program	**$**	**30,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 50,000	study & planning
1st Year	2022	$ 20,000	planning
2nd Year	2023	$ 10,000	preliminary design
3rd Year	2024	$ -	
4th Year	2025	$ -	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	ARCADIA WATER TANK REPLACEMENT						
Budget Area	Water	**Department**	Capital Works	**Date**	1/21/2021	**Project No.**	SD-W-52
Location	Arcadia West			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM-High	**Secondary**	SYS Imp	**Preparer**		ALK

Purpose of Expenditure *(check all that apply)*			
	New Facility	**X**	Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
X	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	80	**Project inception date**	2019
Approx. No. of Customers Benefitted	25		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2022
Will the Project Require Obtaining Land Rights	Yes		

Detailed Project Description

The water tank at Arcadia West has developed numerous leaks and the interior and exterior coating systems have reached the end of their useful life. An engineering evaluation was done in 2019 to determine the best course of action for the future of the tank. The recommended option is to construct a new concrete tank adjacent to the existing tank, which would then be demolished. This will allow for continued water service and fire protection during construction.

Project Drivers and Needs to be Met by the Project

The tank is the only water storage facility and provides fire protection to the industrial customers in the Arcadia West system. The consequence of failure would be significant.

Project Status - Describe what work, if any has been completed or underway for this project

An engineering evaluation was completed in 2019. Design began in 2020 and bidding will occur in the spring of 2021.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project to commence in 2020.

Project No.	SD-W-52
Project Name	ARCADIA WATER TANK REPLACEMENT

Prior Project Cost	$ 66,000
Estimated Project Costs:	**2021-2026**
LCA Staff	$ 40,000
Land Acquisition	$ 15,000
Construction/Equipment	$ 950,000
Professional Services	$ 85,000
Other	$ 10,000
Contingencies	$ 100,000
Total Project Cost	**$ 1,266,000**

Requested in this Capital Program	**$ 700,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 500,000	Design
1st Year	2022	$ 550,000	Design/Construction
2nd Year	2023	$ 150,000	Construction
3rd Year	2024	$ -	
4th Year	2025	$ -	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	CLD WELL IMPROVEMENTS STUDY						
Budget Area	Water	**Department**	Capital Works	**Date**	1/21/2021	**Project No.**	SD-W-55
Location	CLD			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Regulatory	**Preparer**		ALK

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
X	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2019
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2022
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

This project consists of a detailed engineering evaluation of three large producing wells in the CLD system that are currently not being used because of water quality issues. Well 3 has a capacity of 1000 GPM but has high levels of manganese. Well 2 has a capacity of 200 GPM but must maintain a high chlorine residual to meet contact time. Well 12 has a capacity of 700 GPM but has high turbidity levels. An engineering study will be performed to determine upgrade options/costs to restore the wells to full service. The study will determine the value of having the wells as sources. The assumption is that a well station upgrade project(s) will be recommended in the study phase, which will result in conceptual design within the capital planning window of a to-be-determined upgrade.

Project Drivers and Needs to be Met by the Project

The wells, if rehabilitated/upgraded, could be used as additional sources to supplement flow should water demand increase due to development in the Western Lehigh service area or a potential large industrial user. The study will provide information which will allow us to prioritize and budget for the addition of the wells as sources of supply.

Project Status - Describe what work, if any has been completed or underway for this project

An engineering consultant was selected and work on the study began in 2019. Results of the study may lead to a future construction project.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project to commence in 2019.

Project No.	SD-W-55
Project Name	CLD WELL IMPROVEMENTS STUDY

Prior Project Cost	$ 10,500
Estimated Project Costs:	**2021-2026**
LCA Staff	$ 10,000
Land Acquisition	$ -
Construction/Equipment	$ -
Professional Services	$ 65,000
Other	$ -
Contingencies	$ 5,000
Total Project Cost	**$ 90,500**

Requested in this Capital Program	**$ 20,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 60,000	Study
1st Year	2022	$ 10,000	Study
2nd Year	2023	$ 10,000	Study/preliminary design
3rd Year	2024	$ -	
4th Year	2025	$ -	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	CLD DISTRIBUTION SYSTEM IMPROVEMENTS						
Budget Area	Water	**Department**	Capital Works	**Date**	1/15/2021	**Project No.**	SD-W-56
Location	CLD			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Efficiency	**Preparer**		ELH

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain): Provide capacity for future growth

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2018
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2022
Will the Project Require Obtaining Land Rights	Yes		

Detailed Project Description

The project consists of improvements to the CLD Upper System that is in general located north of I-78. The first phase of the project consisted of water modeling and an engineering study that was completed in 2020 to evaluate future water demand scenarios and alternatives for system improvements to provide adequate water supply and pressure to future customers. The study determined that normal growth in the Upper System can be met by the existing wells as augmented by the recently completed CLD auxiliary pumping station. However, a large water user has expressed interest in a site west of Fogelsville. Water modeling determined this area can best be served by an interconnection with the Lower System. This second phase of the project proposes to acquire an unused sewer casing pipe under I-78 from UMT, and to modify the casing and obtain a PennDOT highway occupancy permit for its use.

Project Drivers and Needs to be Met by the Project

The project will meet the supply needs of potential large industrial water users in the CLD Upper System, located in western Lehigh County north of I-78. Additional water modeling may be required to size the waterline to the large user. The design and construction of improvements to convey water to a large user, including an offsite waterline and booster pumping station, will depend upon execution of a DWSA with the potential large user. We anticipate that these improvement costs will be the responsibility of the large user. LCA's objective is to be proactive and identify capital improvements required in order to provide adequate water service to meet future demands. The scope of the capital improvements is not known at this time and is dependent upon approved development(s) in the Upper System.

Project Status - Describe what work, if any has been completed or underway for this project

The engineering study to evaluate supply capacity and distribution piping needs in the Upper System was completed in 2020. Acquisition of the casing pipe owned by UMT across I-78 is anticipated in 2021 (Cap Ex $50,000). In 2022 the casing pipe will be modified with a PVC liner to meet PennDOT requirements. Future distribution improvements schedule is dependent upon development demand.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	SD-W-56
Project Name	CLD DISTRIBUTION SYSTEM IMPROVEMENTS

Prior Project Cost		74,000
Estimated Project Costs:	**2021-2026**	
LCA Staff	$	20,000
Land Acquisition	$	-
Construction/Equipment	$	70,000
Professional Services	$	40,000
Other	$	30,000
Contingencies	$	15,000
Total Project Cost	**$**	**249,000**

Requested in this Capital Program	**$**	**125,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 50,000	acquire casing, permitting
1st Year	2022	$ 75,000	construction casing improvements
2nd Year	2023	$ 50,000	planning & preliminary design
3rd Year	2024	$ -	
4th Year	2025	$ -	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WATER METER REPLACEMENT PROJECT						
Budget Area	Water	**Department**	Capital Works	**Date**	1/21/2021	**Project No.**	SD-W-57
Location	All Suburban Divisions, located in various municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Med	**Secondary**	Efficiency	**Preparer**		ALK

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
X	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2022
Approx. No. of Customers Benefitted	6,183		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

The Project includes the replacement of ~139 each 1-1/2" and 2" water meters (2022) and 6,044 each 5/8" and 1" meters (2025) that have reached the end of their useful lives. All new meters will have radio-read (RR) capability.

Project Drivers and Needs to be Met by the Project

The probability of inaccuracies in meter readings increase with age and usage of the meters.The accuracy of the new meters should have the potential to increase user revenues. Secondly, RR technology will increase meter reading accuracy and efficiency that will allow operators to focus efforts in other critical technical areas.

Project Status - Describe what work, if any has been completed or underway for this project

Aging meters are periodically replaced as part of an on-going program. The construction of the 2018 Water Meter Replacement project included the installation of approximately 3,000 new meters.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	$ 100,000
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

An increase in revenue is anticipated as older meters are replaced. This is due to wear on internal parts that generally causes lower measurements. A 5% increase was assumed in the revenue gain reported above.

Project No.	SD-W-57
Project Name	WATER METER REPLACEMENT PROJECT

Prior Project Cost		$ 1,500,000
Estimated Project Costs:	**2021-2026**	
LCA Staff		$ 75,000
Land Acquisition		$ -
Construction/Equipment		$ 2,161,000
Professional Services		
Other		$ 10,000
Contingencies		$ 216,000
Total Project Cost		**$ 3,962,000**

Requested in this Capital Program	**$ 2,462,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ -	
1st Year	2022	$ 420,000	Design/Construction
2nd Year	2023	$ -	
3rd Year	2024	$ -	
4th Year	2025	$ 2,042,000	Design/Construction
5th Year	2026		

WASTEWATER

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION
WASTEWATER
5-YEAR CAPITAL PLAN
2022–2026

CAPITAL FINANCING JUSTIFICATION

Capital additions to the Wastewater System are justified by calculating the operating cash available based upon projections of revenues over the five-year period. Beyond the operating cash available, remaining sources are project reserves from previous debt issuance and any new borrowing required.

The table below summarizes the capital project sourcing by year and each major financial sourcing category:

CAPITAL FINANCING SOURCES						
	2022	**2023**	**2024**	**2025**	**2026**	**TOTAL**
Project Costs	$2,959,000	$6,648,000	$5,371,000	$2,391,000	$2,016,000	$19,385,000
Sources of Funding:						
Operating Reserves	$2,959,000	$3,736,575	$3,570,685	$2,391,000	$2,016,000	$14,673,260
Capital Reserves	-	$2,911,425	$1,800,315	-	-	$4,711,740
New Borrowing	$0	$0	$0	$0	$0	$0
TOTAL FUNDING	**$2,959,000**	**$6,648,000**	**$5,371,000**	**$2,391,000**	**$2,016,000**	**$19,385,000**

Total spending on capital projects for the five-year period totals $19,385,000. Operating and capital reserves over the period will provide $19,385,000 for capital projects. No new borrowing is required.

The $19,385,000 of new borrowing will provide funding for Act 537 Sewage Facilities Plan projects in WLI group, along with funding projects for LCA's satellite systems.

Revenue requirements will also be impacted by inflation for both the WLI group along with other users of the system. Signatory Revenue increases by year to support the capital plan are as follows:

Year 2022 3.0%

Year 2023 3.0%

Year 2024 3.0%

Year 2025 3.0%

Year 2026 3.0%

CONDENSED CASH FLOW - SUBURBAN WASTEWATER					
Dollars	**2022**	**2023**	**2024**	**2025**	**2026**
User Charges	17,342,874	17,569,812	17,803,558	18,044,316	18,292,297
Other Operating Revenues	43,823	43,823	43,823	43,823	43,823
Non-Operating Revenues	1,035,317	1,061,122	1,087,701	1,115,077	1,143,274
Operating expenses	(13,598,036)	(14,005,977)	(14,426,156)	(14,858,941)	(15,304,710)
Debt Service - Current Debt	(731,029)	(731,029)	(731,029)	(731,029)	(731,029)
Debt Service - NEW Debt	-	-	-	-	-
Investments Converting to Cash	-	1,000,000	1,200,000	-	-
Proceeds From NEW Debt	-	-	-	-	-
Capex - Admin Paygo	-	-	-	-	-
Capex - Paygo	(2,959,000)	(6,648,000)	(5,371,000)	(2,391,000)	(2,016,000)
Capex - NEW Borrowing	-	-	-	-	-
NET FUND FLOWS	**1,133,949**	**(1,710,249)**	**(393,103)**	**1,222,246**	**1,427,655**
User Charge Revenue Increase %	1.0%	1.3%	1.3%	1.4%	1.4%
Operating Cash Balance	6,705,881	6,907,057	7,114,269	7,327,697	7,547,528
Days on Hand	180	180	180	180	180
Project Reserve Balance	4,415,815	2,504,389	1,904,075	2,912,892	4,120,716
DEBT SERVICE COVERAGE RATIO	6.60	6.39	6.17	5.94	5.71

Sourcing of Projects and Debt Service related to various systems is as follows:

BY SYSTEM	PROJECTS	TOTAL	OPERATING RESERVES	CAPITAL RESERVES	NEW DEBT
Annual Projects	SA	$2,640,000	$2,640,000	-	-
Western Lehigh Interceptor	S3, S4, S9, S24, S28	$8,330,000	$3,618,260	$4,711,740	$0
LCA Wastewater Treatment Plant	S22	$3,500,000	$3,500,000	-	-
Common Rate Collector Systems	S6, S7, S8, S10, S13, S17, S18	$1,635,000	$1,635,000	-	$0
Arcadia West	S8	$350,000	$350,000	-	$0
Lynn Township	S25, S26	$480,000	$480,000	-	$0
Little Lehigh Relief Interceptor System	S12, S15, S16	$2,450,000	$2,450,000	-	-
	TOTAL	**$19,385,000**	**$14,673,260**	**$4,711,740**	**$0**

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION
2022-2026 CAPITAL PROGRAM
WASTEWATER

Project #	Name or Title of Proposal	Prj. Category	Approval Stage (1)	Plan Total Cost	This Capital Program							Prior Project Cost (2)	Future Project Cost (2)	Total Project Cost
					2021 Budget Approved	2022 Year 1	2023 Year 2	2024 Year 3	2025 Year 4	2026 Year 5	2022-2026 Total			
	Operating/Capital Reserve Funds													
	Annual													
SD-S-A	Annual Projects	AM - Varies	A	$ 3,262,500	$ 622,500	$ 441,000	$ 531,000	$ 606,000	$ 531,000	$ 531,000	$ 2,640,000	$ -	$ -	$3,262,500
	Subtotal			**$ 3,262,500**	**$ 622,500**	**$ 441,000**	**$ 531,000**	**$ 606,000**	**$ 531,000**	**$ 531,000**	**$ 2,640,000**	**$ -**	**$ -**	**$3,262,500**
	Pretreatment Plant													
SD-S-22	Pretreatment Plant Improvements	AM - Varies	A	$ 4,200,000	$ 700,000	$ 700,000	$ 700,000	$ 700,000	$ 700,000	$ 700,000	$ 3,500,000	$ -	$ -	$4,200,000
	Subtotal			**$ 4,200,000**	**$ 700,000**	**$ 700,000**	**$ 700,000**	**$ 700,000**	**$ 700,000**	**$ 700,000**	**$ 3,500,000**			**$4,200,000**
	Western Lehigh Interceptor													
SD-S-3	Central Lehigh County WW Capacity Planning & Expansion	New Cust	V	$ 1,399,300	$ 799,300	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 200,000	$ 600,000	$ 600,000	$ -	$1,999,300
SD-S-4	Spring Creek Force Main Air/Vacuum Valve Replacements	Sys Imp	C	$ 120,000	$ 40,000	$ 40,000	$ 40,000	$ -	$ -	$ -	$ 80,000	$ 48,000	$ -	$168,000
SD-S-9	Spring Creek Force Main Condition Assessment	AM-High	P	$ 350,000	$ -	$ 50,000	$ 250,000	$ 50,000	$ -	$ -	$ 350,000	$ -	$ -	$350,000
SD-S-24	Signatory I & I Investigation & Remediation Program	Regulatory	V	$ 1,770,000	$ 270,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 1,500,000	$ -		1,770,000
SD-S-28	WLI - Trexlertown Area Capacity Solution Alternative	Regulatory	S	$ 6,000,000	$ 200,000	$ 300,000	$ 3,000,000	$ 2,000,000	$ 500,000	$ -	$ 5,800,000	$ 60,000	$ -	6,060,000
	Subtotal			**$ 9,639,300**	**$ 1,309,300**	**$ 790,000**	**$ 3,690,000**	**$ 2,450,000**	**$ 900,000**	**$ 500,000**	**$ 8,330,000**	**$ 708,000**	**$ -**	**$10,347,300**
	Satellite Systems													
SD-S-6	Wynnewood I & I Investigation & Remediation Program	AM - Varies	V	$ 120,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 10,000	$ 10,000	$ 95,000	$ 25,000	$ -	$145,000
SD-S-8	Arcadia West WWTP Mechanical Screen	Efficiency	P	$ 350,000	$ -	$ 50,000	$ 250,000	$ 50,000	$ -	$ -	$ 350,000	$ -	$ -	$350,000
SD-S-10	Weisenberg Township, Lowhill Township, UMiT SSES	Regulatory	P	$ 300,000	$ 75,000	$ -	$ -	$ -	$ 75,000	$ 150,000	$ 225,000	$ -	$ -	$300,000
SD-S-17	Heidelberg Heights I & I Investigation & Remediation Program	AM - Varies	V	$ 1,150,000	$ 300,000	$ 300,000	$ 300,000	$ 100,000	$ 100,000	$ 50,000	$ 850,000	$ 740,000	$ -	$1,890,000
SD-S-18	Heidelberg Heights WWTP Rehabilitation	AM - High	P	$ 505,000	$ 40,000	$ 250,000	$ 75,000	$ 40,000	$ 50,000	$ 50,000	$ 465,000	$ 210,000	$ -	$715,000
SD-S-25	Lynn Township WWTP Upgrades & Expansion Design	AM - High	P	$ 305,000	$ 50,000	$ 153,000	$ 102,000	$ -	$ -	$ -	$ 255,000	$ -	$ -	$305,000
SD-S-26	Lynn Township I & I Investigation & Remediation Program	AM - High	V	$ 275,000	$ 50,000	$ 50,000	$ 75,000	$ 50,000	$ 25,000	$ 25,000	$ 225,000	$ 170,000	$ -	$445,000
	Subtotal			**$ 3,005,000**	**$ 540,000**	**$ 828,000**	**$ 827,000**	**$ 265,000**	**$ 260,000**	**$ 285,000**	**$ 2,465,000**	**$ 1,145,000**	**$ -**	**$ 4,150,000**
	Little Lehigh Relief Interceptor													
SD-S-12	Park Pump Station Force Main Rehabilitation	AM - High	S	$ 1,300,000	$ 100,000	$ 100,000	$ 500,000	$ 600,000	$ -	$ -	$ 1,200,000	$ 20,000	$ -	$1,320,000
SD-S-15	Park Pump Station Rehabilitation/Improvements	AM - High	C	$ 1,350,000	$ 100,000	$ 100,000	$ 400,000	$ 750,000	$ -	$ -	$ 1,250,000	$ 4,000,000	$ -	$5,350,000
	Subtotal			**$ 2,650,000**	**$ 200,000**	**$ 200,000**	**$ 900,000**	**$ 1,350,000**	**$ -**	**$ -**	**$ 2,450,000**	**$4,020,000**	**$ -**	**$6,670,000**
	GRAND TOTAL WASTEWATER PROJECTS			**$22,756,800**	**$ 3,371,800**	**$ 2,959,000**	**$ 6,648,000**	**$ 5,371,000**	**$ 2,391,000**	**$ 2,016,000**	**$19,385,000**	**$5,873,000**	**$ -**	**28,629,800**

(1) Reference Glossary of Acronyms & Terms found immediately after the Table of Contents. All projects are LCA funded.
(2) If blank , cost is not applicable (annual project) or to be determined

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	ANNUAL PROJECTS						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2021	**Project No.**	SD-S-A
Location	LCA WLI facilities located in various municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Efficiency	**Preparer**		JP/CEV

Purpose of Expenditure *(check all that apply)*			
X	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information				
Expected Useful Life (Years)	N/A		**Project inception date**	N/A
Approx. No. of Customers Benefitted	N/A			
Is this System part of a Common User Rate?	N/A		**Anticipated Project completion date**	N/A
Will the Project Require Obtaining Land Rights	No			

Detailed Project Description

This is an annual project that has been previously listed as separate smaller projects. This annual project includes the following: Mobile Equipment, Sewer Company Acquisitions, Other Equipment, Wastewater Facility Asset Management Upgrades, general sewer system improvements, and development related service connections.

Project Drivers and Needs to be Met by the Project

Asset management and efficiency are the primary project drivers. Annual improvements help maintain the operation of various wastewater facilities in the Suburban Division.

Project Status - Describe what work, if any has been completed or underway for this project

This is an annual project.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	SD-S-A
Project Name	ANNUAL PROJECTS

Prior Project Cost		N/A
Estimated Project Costs:		**2021-2026**
LCA Staff	$	500,000
Land Acquisition	$	-
Construction/Equipment	$	2,212,500
Professional Services	$	400,000
Other	$	50,000
Contingencies	$	100,000
Total Project Cost	**$**	**3,262,500**

Requested in this Capital Program	**$**	**2,640,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 622,500	procurement, planning, design & construction
1st Year	2022	$ 441,000	procurement, planning, design & construction
2nd Year	2023	$ 531,000	procurement, planning, design & construction
3rd Year	2024	$ 606,000	procurement, planning, design & construction
4th Year	2025	$ 531,000	procurement, planning, design & construction
5th Year	2026	$ 531,000	procurement, planning, design & construction

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	PRETREATMENT PLANT IMPROVEMENTS						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2021	**Project No.**	SD-S-22
Location	LCA Pretreatment Plant *(Industrial Blvd & Rt 100)*			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Sys Imp	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	N/A
Approx. No. of Customers Benefitted	**		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	N/A
Will the Project Require Obtaining Land Rights	No		

Provides pretreatment for industrial customers such as Boston Beer, Coca-Cola, Nestle Waters, Niagara, Ocean Spray, Bimbo and others.

Detailed Project Description

This capital project is a comprehensive on-going program to address the continued reliability and functionality of the LCA Wastewater Pre-treatment Plant. Planned projects include Phase 2 SCADA system implementation, security upgrades, belt filter press #1 and #4 rebuilds, air deck mixer replacements (multi-year), solids building HVAC system upgrade, primary clarifiers mechanical refurbish (multi-year), final clarifiers drive replacements (multi-year), annual pavement rehabilitation, cryogenic plant control center modernization, and miscellaneous mechanical and electrical upgrades/replacements.

Project Drivers and Needs to be Met by the Project

The primary project drivers are asset management and system improvements. This facility is critical to the local economy and growth in the Western Lehigh sewer service area. Capital improvements are needed annually to maintain the level of service for the pretreatment facility, which has been in continuous operation since 1990, with significant equipment exposed to corrosive &/or severe duty conditions. The increased industrial loading rates experienced since the plant was placed into service drives the need for repairs, replacements and process modifications/optimization. The Capital Plan intends to maintain the reliability, performance, and structural integrity of the physical plant while maintaining economic viability.

Project Status - Describe what work, if any has been completed or underway for this project

A semi-annual program to rebuild the belt filter presses was started in 2015. Annual pavement reconstruction projects are performed on the main access routes used by the waste hauler trucks within the plant site to replace failed and deteriorated asphalt pavement with concrete pavement. The SCADA system and grease station projects were completed in 2019. Replacement of the cryogenic plant "B-Mac" compressor was completed in 2019, along with other capital improvements to the cryogenic plant. In 2020 a project to modify the waste hauler station piping in order to pre-thicken the waste (prior to conveyance to the digesters) will be completed, along with mechanical upgrades of the 3 digesters, pavement rehabilitation, and influent pump station upgrade.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Exact costs to be determined.

Project No.	SD-S-22
Project Name	PRETREATMENT PLANT IMPROVEMENTS

Prior Project Cost	N/A
Estimated Project Costs:	**2021-2026**
LCA Staff	$ 50,000
Land Acquisition	$ -
Construction/Equipment	$ 4,000,000
Professional Services	$ 150,000
Other	$ -
Contingencies	$ -
Total Project Cost	**$ 4,200,000**

Requested in this Capital Program	**$ 3,500,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 700,000	planning, design & construction
1st Year	2022	$ 700,000	planning, design & construction
2nd Year	2023	$ 700,000	planning, design & construction
3rd Year	2024	$ 700,000	planning, design & construction
4th Year	2025	$ 700,000	planning, design & construction
5th Year	2026	$ 700,000	planning, design & construction

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	CENTRAL LEHIGH COUNTY WASTEWATER CAPACITY PLANNING & EXPANSION						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2021	**Project No.**	SD-S-3
Location	Western Lehigh LCA Service Area tributary to the AD WWTP			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	Rev Opprt	**Preparer**		PMD

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study	**X**	Other (explain): SD-Future Wastewater Treatment Capacity

Additional Information			
Expected Useful Life (Years)	30	**Project inception date**	2009
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2032
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

Scope involves planning for additional treatment capacity for WLI service area and construction of selected alternative. This project is needed for future wastewater treatment capacity and covers either expanding the Kline's Island Wastewater Treatment Plant (KIWWTP) or converting the pretreatment plant to a full treatment facility, which includes discharge pumping and piping. This project is also needed for planning additional conveyance capacity for the WLI area (including the potential Regional Park PS in the future, if needed). Completion of the Regional Act 537 Plan is set for March 2025 and design/construction of the yet to be selected options are assumed to begin in 2026.

Project Drivers and Needs to be Met by the Project

The City's Kline's Island WWTP does not currently have enough available wastewater treatment allocation to meet LCA's future needs. To meet wastewater treatment needs, the best available options must be investigated. Although some recovery of capacity will occur through inflow and infiltration removal, there is no wastewater allocation remaining for sale. Updating the 537 Plan is the primary cost factor for planning. Capital costs will be recovered through a combination of increased user fees and capital recovery fees to new customers. The risk consequence of not doing this project includes regulatory action against the signatory group.

Project Status - Describe what work, if any has been completed or underway for this project

In 2013, ARRO, Inc. and AECOM were retained to prepare an Act 537 Plan (LCA focused, with City partner) to evaluate the alternatives for an additional 4 MGD of wastewater treatment capacity. The project was put on hold by DEP in 2015, with an emphasis on managing wet weather and removing I&I. In 2019, at the request of DEP, preliminary work on the Act 537 Plan (Regional) was restarted. The full Act 537 Plan (Regional) due is now due by March 2025. An Interim Act 537 Plan (Regional) was submitted to DEP in September 2020 and included flow projections through 2025. Proposed work from 2022-2025 will be focused on alternative analyses as it specifically relates to the WLI service area.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	SD-S-3
Project Name	CENTRAL LEHIGH COUNTY WASTEWATER CAPACITY PLANNING & EXPANSION

Prior Project Cost	$ 600,000
Estimated Project Costs: 2021-2026	
LCA Staff	$ 150,000
Land Acquisition	$ -
Construction/Equipment	$ -
Professional Services	$ 1,199,300
Other	$ -
Contingencies	$ 50,000
Total Project Cost	**$ 1,999,300**

Requested in this Capital Program	**$ 600,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 799,300	537 Planning
1st Year	2022	$ 100,000	537 Planning
2nd Year	2023	$ 100,000	537 Planning
3rd Year	2024	$ 100,000	537 Planning
4th Year	2025	$ 100,000	537 Planning
5th Year	2026	$ 200,000	537 Design

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	SPRING CREEK FORCEMAIN AIR/VACUUM VALVE REPLACEMENTS						
Budget Area	Wastewater	**Department**	Operations	**Date**	1/12/2021	**Project No.**	SD-S-4
Location	WLI, various municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Efficiency	**Preparer**		AK

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
X	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2018
Approx. No. of Customers Benefitted	**		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2023
Will the Project Require Obtaining Land Rights	No		

**= The Spring Creek Pump Station & Force Main provides service to 7 WL signatories.

Detailed Project Description

Replacement of inoperable and/or badly corroded original air release or combination air/vacuum release valves (ARV's) on the existing Spring Creek Pump Station force main.

Project Drivers and Needs to be Met by the Project

Inoperable air release valves contribute to both poor hydraulics and wasted pump energy created by allowing air to either accumulate at high points along the force main, or to not provide proper vacuum release. Replacing the air valves should improve the pump station and force main performance. The odor control canisters at various ARVs will be replaced as part of construction.

Project Status - Describe what work, if any has been completed or underway for this project

Design work was completed in 2018. Project to be implemented as an annual upgrade with 2 or 3 ARVs replaced per year, starting in 2020.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Replacement of the air valves should improve station efficiency, which may yield a nominal reduction in pump horsepower required to convey wastewater and therefore reduce electricity. Exact costs to be determined.

Project No.	SD-S-4
Project Name	SPRING CREEK FORCEMAIN AIR/VACUUM VALVE REPLACEMENTS

Prior Project Cost		$ 48,000
Estimated Project Costs:	**2021-2026**	
LCA Staff		$ 20,000
Land Acquisition		$ -
Construction/Equipment		$ 60,000
Professional Services		$ 30,000
Other		$ -
Contingencies		$ 10,000
Total Project Cost		**$ 168,000**

Requested in this Capital Program	**$ 80,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 40,000	Construction
1st Year	2022	$ 40,000	Construction
2nd Year	2023	$ 40,000	Construction
3rd Year	2024	$ -	
4th Year	2025	$ -	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	SPRING CREEK FORCE MAIN CONDITION ASSESSMENT						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2021	**Project No.**	SD-S-9
Location	WLI, various municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM High	**Secondary**	Sys Imp	**Preparer**		ALK

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
X	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	TBD	**Project inception date**	2019
Approx. No. of Customers Benefitted	**		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2024
Will the Project Require Obtaining Land Rights	No		

**= The Spring Creek Force Main provides service to 7 WL signatories.

Detailed Project Description

The Spring Creek force Main was installed in two phases. The first section was installed in 1995 and the second section was installed in 2004. A PURE SmartBall investigation will be performed to identify the location of gas pockets and leaks. A broadband electromagnetic (BEM) test will then be conducted at locations where gas pockets are found to determine remaining wall thickness and assess the remaining useful life of the force main before scoping a repair, rehabilitation, or replacement project. Pipeline rehabilitation is not included in this project as the scope of that work is not known at this time.

Project Drivers and Needs to be Met by the Project

Asset management is the primary driver for this project. The Spring Creek Pump Station and Force Main is an integral part of the Western Lehigh service area. It is essential to perform necessary rehabilitation of the force main to extend the service life of the infrastructure, restore level of service, and mitigate the risk of a catastrophic failure.

Project Status - Describe what work, if any has been completed or underway for this project

Project will commence in 2023.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Exact costs to be determined.

Project No.	SD-S-9
Project Name	SPRING CREEK FORCE MAIN CONDITION ASSESSMENT

Prior Project Cost		0
Estimated Project Costs:	**2021-2026**	
LCA Staff	$	40,000
Land Acquisition	$	-
Construction/Equipment	$	-
Professional Services	$	270,000
Other	$	-
Contingencies	$	40,000
Total Project Cost	**$**	**350,000**

Requested in this Capital Program	**$**	**350,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ -	
1st Year	2022	$ 50,000	Study/investigation
2nd Year	2023	$ 250,000	Study/investigation
3rd Year	2024	$ 50,000	Study/investigation
4th Year	2025	$ -	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WYNNEWOOD INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2021	**Project No.**	SD-S-6
Location	WWD, North Whitehall Township			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Regulatory	**Preparer**		CEV

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2019
Approx. No. of Customers Benefitted	219		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

In 2020, LCA completed updated CCTV inspection condition assessment, identifying problem areas, and in 2021 will begin implementing annual repair/remediation measures to eliminate excess wet weather flow into the sanitary sewer system. An initial remediation project to address problem areas and mitigate inflow and infiltration (I/I) will be designed and bid in-house, and is anticipated to begin in 2021.

Project Drivers and Needs to be Met by the Project

The primary drivers for the project are: maintain the level of service, avoid regulatory violations due to peak wet weather flows, and reduce system operation cost. During wet-weather events, excess flows create capacity problems at the wastewater treatment plant and drive operating costs higher. Removal of wet weather I/I will reduce treatment costs, avoid hydraulic overloads, and reclaim capacity for utilization by potential new customers.

Project Status - Describe what work, if any has been completed or underway for this project

The Test & Seal project was completed in Wynnewood at the end of 2016, however, wet weather flows remain a problem. An updated system-wide CCTV inspection condition assessment was substantially completed in 2019 that helped to identify problem areas and scope out necessary repairs. Capital plan cost is primarily to perform system spot repairs. Periodic CCTV inspection updates are required as a follow up in later years to track system condition and identify problems.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Reducing inflow and infiltration should result in electrical savings by reducing volume of wastewater to pump. However, it is difficult to quantify the amount of flow reduction and therefore electrical savings. Exact costs to be determined.

Project No.	SD-S-6
Project Name	WYNNEWOOD INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM

Prior Project Cost		$25,000
Estimated Project Costs:	**2021-2026**	
LCA Staff	$	40,000
Land Acquisition	$	-
Construction/Equipment	$	70,000
Professional Services	$	-
Other		
Contingencies	$	10,000
Total Project Cost	**$**	**145,000**

Requested in this Capital Program	**$**	**95,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
X	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 25,000	planning & construction
1st Year	2022	$ 25,000	planning & construction
2nd Year	2023	$ 25,000	planning & construction
3rd Year	2024	$ 25,000	planning & construction
4th Year	2025	$ 10,000	study/investigation
5th Year	2026	$ 10,000	study/investigation

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	ARCADIA WEST WWTP MECHANICAL SCREEN						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2021	**Project No.**	SD-S-8
Location	AWD, Weisenberg Township			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Efficiency	**Secondary**	Sys Imp	**Preparer**		CEV

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study	**X**	Other (explain): Operational Efficiency

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2018
Approx. No. of Customers Benefitted	20		
Is this System part of a Common User Rate?	No	**Anticipated Project completion date**	2024
Will the Project Require Obtaining Land Rights	No		

Serves Arcadia West Industrial Park, West Hills Business Center, NW Lehigh SD Elementary School.

Detailed Project Description

The project involves the design and installation of an automatic mechanical screen and associated components at the influent end (headworks) of the plant.

Project Drivers and Needs to be Met by the Project

The primary drivers for the project are: increased operational efficiency, system improvement and reduce operation costs. There is currently no means to automatically remove the inorganic debris (rags, plastics, etc.) from the facility's influent waste stream. This bulky material clogs pumps and periodically accumulates on and fouls downstream process equipment (such as pump floats, piping, and air diffusers). Removal of this material requires manual effort (often in difficult access locations) or complete tank draining (which increases operational costs). A mechanical screen will improve facility operation by removing the rags and other inorganic debris from the influent plant flow and may reduce operations cost.

Project Status - Describe what work, if any has been completed or underway for this project

An internal investigation was performed to determine if the comminutor performance can be optimized to decrease the debris accumulation. Rags and wipes have been plaguing the plant for years, likely from one or more of the connected industries, and should be removed from the waste stream. The preferred alternative to removing the rags and resolving the problem is a mechanical screen. The screen project will be designed in 2022 and constructed in 2023 and 2024.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

The mechanical screen will increase operational costs marginally mainly due to electrical power and debris disposal. However, the increase in operational costs will be offset by a decrease in staff costs associated with not having to remove rags and inorganic debris that currently are not screened from the waste stream and clog downstream pumps and accumulate on mechanical and instrumentation equipment. Exact costs to be determined.

Project No.	SD-S-8
Project Name	ARCADIA WEST WWTP MECHANICAL SCREEN

Prior Project Cost		0
Estimated Project Costs:	**2021-2026**	
LCA Staff	$	15,000
Land Acquisition	$	-
Construction/Equipment	$	250,000
Professional Services	$	65,000
Other	$	-
Contingencies	$	20,000
Total Project Cost	**$**	**350,000**

Requested in this Capital Program	**$**	**350,000**

Project Estimate Level	
X	Conceptual Estimate
	Preliminary Estimate
	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ -	
1st Year	2022	$ 50,000	design
2nd Year	2023	$ 250,000	permitting & construction
3rd Year	2024	$ 50,000	construction
4th Year	2025	$ -	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WEISENBERG, LOWHILL, UMiT TOWNSHIP SSES/REHAB						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2021	**Project No.**	SD-S-10
Location	Weisenberg, Lowhill, and Upper Milford Townships			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	Sys Imp	**Preparer**		JMP

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
X	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2020
Approx. No. of Customers Benefitted	**		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	No		

** Includes customers in the Weisenberg, Lowhill and Upper Milford systems.

Detailed Project Description

This project involves the preparation of a Sanitary Sewer Evaluation Study (SSES) to identify primary areas of concern and prioritize future sewer system improvements in the Weisenberg, Lowhill, and Upper Milford sanitary sewer systems. Components of the SSES may include manhole inspections, CCTV inspections, and flow monitoring. A remediation project to address problem areas and mitigate inflow and infiltration (I/I) will be part of a future project.

Project Drivers and Needs to be Met by the Project

The primary driver for this project is regulatory. These three systems ultimately tie in to the Western Lehigh Interceptor (WLI). Managing inflow and infiltration in these systems will in turn help manage flows in the WLI.

Project Status - Describe what work, if any has been completed or underway for this project

A Sanitary Sewer Evaluation Study was done for these systems in the early 2010s as part of the overall SCARP program. Information from this previous study will be used to help determine any increase in I&I.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Exact costs to be determined.

Project No.	SD-S-10
Project Name	WEISENBERG, LOWHILL, UMiT TOWNSHIP SSES/REHAB

Prior Project Cost		0
Estimated Project Costs:		**2021-2026**
LCA Staff	$	30,000
Land Acquisition	$	-
Construction/Equipment	$	175,000
Professional Services	$	60,000
Other	$	-
Contingencies	$	35,000
Total Project Cost	**$**	**300,000**

Requested in this Capital Program	**$**	**225,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

			Need	**Phase of Work**
2021 Budget		$	75,000	Study/investigation
1st Year	2022	$	-	
2nd Year	2023	$	-	
3rd Year	2024	$	-	
4th Year	2025	$	75,000	Study/investigation
5th Year	2026	$	150,000	construction of rehabilitation work

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	HEIDELBERG HEIGHTS INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	3/14/2019	**Project No.**	SD-S-17
Location	HHD, Heidelberg Township			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	AM-high	**Preparer**		JMP

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2016
Approx. No. of Customers Benefitted	145		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

This project includes investigative and rehabilitative work to address wet weather inflow and infiltration, and is part of a DEP mandated Corrective Action Plan. Rehabilitative work includes replacement of original vitrified clay pipe (VCP) sewer main, VCP sewer lateral replacement, manhole replacement, manhole sealing, cleanout installation on laterals, and private side investigation. It is assumed that the annual construction projects will be designed, managed and bid in-house.

Project Drivers and Needs to be Met by the Project

The primary driver for this project is regulatory. The goal of this multi-year project is to eliminate DEP violations from wet weather overflows, bypasses, and treatment plant effluent limit exceedance events. Historical flows into the wastewater treatment plant have been 3 to 4 times the plant capacity during peak weather events. Mitigation of the compliance issues requires elimination of excess inflow and infiltration into the sewage collection system.

Project Status - Describe what work, if any has been completed or underway for this project

Rehabilitation of four laterals and 320 linear-feet of main were completed in 2016 utilizing internal lining technology. Updated CCTV system inspection was performed in 2017 and repair locations were determined from the data. In 2018 the replacement of 54 laterals and 1,070 linear-feet of sewer main was completed on Glen Court. In 2019 the replacement of 25 laterals and 1,100 linear feet of sewer main was completed along Heidelberg Heights Road. In 2020 the replacement of 18 laterals and 850 linear feet of sewer main was completed along Lake View Street. Rehabilitation work in 2021, 2022 and 2023 will consist of replacing the remaining sections of original vitrified clay sewer pipe and laterals (approximated 2,500 linear feet of main pipe per year). Rehabilitation work beyond 2023 will focus private lateral inspection and rehabilitation and follow-up flow monitoring work.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Reducing excess inflow/infiltration will reduce occurrence of overflows/bypasses at the wastewater treatment plant, facilitate continued compliance with PaDEP, and save staff time and money. It is difficult to quantify potential savings with varying intensity storms and fluctuating groundwater levels.

Project No.	SD-S-17
Project Name	HEIDELBERG HEIGHTS INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM

Prior Project Cost		740,000
Estimated Project Costs:		**2021-2026**
LCA Staff	$	60,000
Land Acquisition	$	-
Construction/Equipment	$	860,000
Professional Services	$	130,000
Other	$	-
Contingencies	$	100,000
Total Project Cost	**$**	**1,890,000**

Requested in this Capital Program	**$**	**850,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 300,000	design & construction
1st Year	2022	$ 300,000	design & construction
2nd Year	2023	$ 300,000	design & construction
3rd Year	2024	$ 100,000	investigation, design & construction
4th Year	2025	$ 100,000	investigation, design & construction
5th Year	2026	$ 50,000	study/investigation

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	HEIDELBERG HEIGHTS WWTP REHABILITATION						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2021	**Project No.**	SD-S-18
Location	HHD, Heidelberg Township			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - High	**Secondary**	Efficiency	**Preparer**		CEV

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2018
Approx. No. of Customers Benefitted	145		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

This is a multi-year project to provide needed upgrades at the Heidelberg Heights wastewater treatment plant. The partitioned steel equalization/sludge holding tank is part of the original plant from the 1970s and was rehabilitated in 2019 into 2020. Future projects include installation of a mechanical screen at the headworks of the plant (2022 installation) to remove rags and other inorganic material, installation of an expanded catwalk grating system above the elevated SBR tanks in order to improve maintenance access, and miscellaneous equipment upgrade/replacement.

Project Drivers and Needs to be Met by the Project

The primary project drivers are asset management and efficiency. An expanded catwalk grating system above the SBR tanks will improve maintenance access and operator safety. A mechanical screen will remove bulky inorganics and rags from the influent waste stream and thereby extend downstream pump life and reduce maintenance problems caused by accumulation of rags and debris.

Project Status - Describe what work, if any has been completed or underway for this project

Design of the 40+ year old EQ tank rehabilitation was completed early 2019 and the steel tank rehabilitation construction was completed in 2019.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Exact costs to be determined.

Project No.	SD-S-18
Project Name	HEIDELBERG HEIGHTS WWTP REHABILITATION

Prior Project Cost		210,000
Estimated Project Costs:		**2021-2026**
LCA Staff	$	30,000
Land Acquisition	$	-
Construction/Equipment	$	350,000
Professional Services	$	85,000
Other		
Contingencies	$	40,000
Total Project Cost	**$**	**715,000**

Requested in this Capital Program	**$**	**465,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	
2021 Budget		$ 40,000	design & permitting
1st Year	2022	$ 250,000	construction
2nd Year	2023	$ 75,000	construction
3rd Year	2024	$ 40,000	design
4th Year	2025	$ 50,000	construction
5th Year	2026	$ 50,000	construction

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	LYNN TOWNSHIP WWTP EXPANSION DESIGN						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/15/2021	**Project No.**	SD-S-25
Location	Lynn Township			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - High	**Secondary**	Efficiency	**Preparer**		ELH

Purpose of Expenditure *(check all that apply)*			
	New Facility	**X**	Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	35	**Project inception date**	2015
Approx. No. of Customers Benefitted	381		
Is this System part of a Common User Rate?	No	**Anticipated Project completion date**	TBD
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

The inception of this facility expansion project pre-dates LCA's acquisition of the Lynn Township sewer system and was originally planned by the Lynn Township Sewer Authority (LTSA) in accordance with the Lynn Township Act 537 Sewage Facilities Plan. The project involved the expansion of the WWTP capacity from 80,000 GPD to 160,000 GPD, in order to accommodate significant growth that was anticipated. Since that time the significant growth pressure has subsided, and Lynn Township was directed by DEP to update their Act 537 Plan to include current growth projections. The updated growth projection numbers in the upcoming Act 537 Plan update by Lynn Township will be used to assess the urgency and quantify the magnitude of a future expansion project. The capital plan reflects design phase only at this time.

Project Drivers and Needs to be Met by the Project

Asset management and efficiency are the primary project drivers. The WWTP expansion, as originally designed and addressed in the Township's Act 537 Plan (2007) at the time, was driven by projected growth and system inflow and infiltration (I/I) issues. Timing of the WWTP expansion construction will be dependent upon short and long term capacity needs. The purpose of this project is to update the design in accordance with updated Act 537 population growth projections, and obtain DEP permitting in the event that development needs necessitate plant expansion.

Project Status - Describe what work, if any has been completed or underway for this project

Growth projections will be re-examined when completed in 2021 as part of the Township's work to update the Act 537 Sewage Facilities Plan, to ensure the plant is properly sized. Design will begin in 2022. Construction phase timing will be a function of development pressure and contingent upon developer capacity charges.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Exact costs to be determined.

Project No.	SD-S-25
Project Name	LYNN TOWNSHIP WWTP EXPANSION DESIGN

Prior Project Cost		-
Estimated Project Costs:		**2021-2026**
LCA Staff	$	35,000
Land Acquisition	$	-
Construction/Equipment	$	-
Professional Services	$	240,000
Other		
Contingencies	$	30,000
Total Project Cost	**$**	**305,000**

Requested in this Capital Program	**$**	**255,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
X	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 50,000	planning/design
1st Year	2022	$ 153,000	design
2nd Year	2023	$ 102,000	design & permitting
3rd Year	2024		
4th Year	2025		
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	LYNN TOWNSHIP INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM						
Budget Area	Wastewater	**Department**		**Date**	1/12/2021	**Project No.**	SD-S-26
Location	LTD, Lynn Township Division			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	AM-high	**Preparer**		JMP

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
X	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2018
Approx. No. of Customers Benefitted	381		
Is this System part of a Common User Rate?	No	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

This project is part of a DEP mandated Corrective Action Plan, and is intended to mitigate inflow and infiltration into the collection system during and after peak weather events and eliminate system overflows and treatment plant bypasses. Updated internal CCTV inspection of the sewage collection system and inspection of manholes were performed in 2019 and the data was used to identify and target and repair locations in the Lynn Township sewage collection system. Capital rehabilitation projects are planned starting in 2020 and include a comprehensive manhole rehabilitation, collection system repairs, and investigation and enforcement of illegal connections on the private side.

Project Drivers and Needs to be Met by the Project

The primary project driver is regulatory, as the work is part of the DEP-mandated Corrective Action Plan to reduce occurrence and magnitude of wet weather peak flows at the WWTP that cause hydraulic overloads. The purpose of the project is to mitigate extraneous flow into the system, maintain DEP compliance, and obtain additional sewer allocations for growth within Township sewer service area.

Project Status - Describe what work, if any has been completed or underway for this project

In 2017 a flow meter study was conducted throughout the system providing data on the areas contributing to excess wet weather flows. In 2018 a manhole inspection program was developed and implemented, along with smoke testing at the campus of the Northwestern Lehigh School District. In 2019 repairs to the on-site sanitary sewer system were performed by the school district, and LCA performed numerous collection system spot repairs to abate significant system leaks. In 2019 an updated internal CCTV inspection of the entire sewage collection system was performed, along with easement stabilization. In 2020 a manhole rehabilitation project repaired approx 180 structures in the system. A capital project is planned for 2021 public and private lateral inspections and investigations. stating in 2022 subsequent projects will further address inflow and infiltration by concentrating on repairs outlined in 2021's reporting.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Reducing I/I flow should result in a reduction of treatment plant operating costs by reducing volume of wastewater that must be conveyed through the plant processes. It is difficult to quantify amount of extraneous flow to be removed, and therefore quantifying cost savings is difficult. Exact costs to be determined.

Project No.	SD-S-26
Project Name	LYNN TOWNSHIP INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM

Prior Project Cost		170,000
Estimated Project Costs:	**2021-2026**	
LCA Staff	$	30,000
Land Acquisition	$	-
Construction/Equipment	$	185,000
Professional Services	$	50,000
Other	$	-
Contingencies	$	10,000
Total Project Cost	**$**	**445,000**

Requested in this Capital Program	**$**	**225,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 50,000	design
1st Year	2022	$ 50,000	investigation & construction
2nd Year	2023	$ 75,000	investigation & construction
3rd Year	2024	$ 50,000	investigation & construction
4th Year	2025	$ 25,000	study/investigation
5th Year	2026	$ 25,000	study/investigation

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	PARK PUMP STATION FORCE MAIN REHABILITATION						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2021	**Project No.**	SD-S-12
Location	LCA LLRI-1 Facilities in the City of Allentown			**Prj. Type**	AO	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - High	**Secondary**	Efficiency	**Preparer**		JP

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	TBD	**Project inception date**	2019
Approx. No. of Customers Benefitted	**		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2023
Will the Project Require Obtaining Land Rights	No		

**= The Park Pump Station provides service to 7 WLI signatories and 3 of the City signatories.

Detailed Project Description

The primary driver for this project is asset management. This project will address the internal rehabilitation of a yet to be identified quantity of existing Park Pump Station Force Main. An internal inspection of the pipe will be performed in 2020 to identify the level of risk and extent of rehabilitation required, and will be used to develop the scope of rehabilitation construction (to be performed in 2021 and 2022). The internal inspection will involve a person entering the drained and ventilated force main from five air release valve access locations, and performing a limited representative visual inspection. For this Capital Plan, rehabilitation work is assumed to consist of internal pipe lining of critical sections.

Project Drivers and Needs to be Met by the Project

The Prestressed Concrete Cylinder Pipe (PCCP) force main pipe was installed in ~1980. This type of pipe is particularly subject to deterioration because corrosive Hydrogen Sulfide gas generated by the wastewater is converted to sulfuric acid (which degrades concrete and any exposed reinforcing steel cylinder pipe) thereby impacting the structural integrity of the pipe. Rehabilitation of the force main will restore level of service, assure longevity and mitigate the risk of a catastrophic failure.

Note: *PCCP consists of a concrete core, a thin steel cylinder, high tensile prestressing wires and a mortar coating. Structural deterioration occurs from sulfuric acid acting on exposed steel reinforcing.*

Project Status - Describe what work, if any has been completed or underway for this project

An internal inspection of the force main will be conducted in 2020 and the scope of rehabilitation work will be determined.

Note: *Utilization of the funding shown in this Capital Plan is contingent upon risk rating of the existing pipe (based on condition, probability of failure and consequence of failure factors).*

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Exact costs to be determined.

Project No.	SD-S-12
Project Name	PARK PUMP STATION FORCE MAIN REHABILITATION

Prior Project Cost		20,000
Estimated Project Costs:	**2021-2026**	
LCA Staff	$	50,000
Land Acquisition	$	-
Construction/Equipment	$	1,000,000
Professional Services	$	150,000
Other		
Contingencies	$	100,000
Total Project Cost	**$**	**1,320,000**

Requested in this Capital Program	**$**	**1,200,000**

Project Estimate Level	
	Conceptual Estimate
X	Preliminary Estimate
	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 100,000	investigation
1st Year	2022	$ 100,000	planning & design
2nd Year	2023	$ 500,000	rehabilitation construction
3rd Year	2024	$ 600,000	rehabilitation construction
4th Year	2025	$ -	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	PARK PUMP STATION REHABILITATION/IMPROVEMENTS						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2021	**Project No.**	SD-S-15
Location	LLRI-1, City of Allentown			**Prj. Type**	AO	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - High	**Secondary**	Regulatory	**Preparer**		CEV

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2016
Approx. No. of Customers Benefitted	**		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2024
Will the Project Require Obtaining Land Rights	No		

**= The Park Pump Station provides service to 7 WLI signatories and 3 of City signatories.

Detailed Project Description

Phase 1 improvements to the pump station included replacement of the existing pumps, suction and discharge side valves, pump speed controllers, motor control center (MCC) panel, SCADA system, wet well level instrumentation, building roof and force main drain valve. Also included are miscellaneous structural, HVAC and other improvements as outlined in Option 3 of the March 21, 2016 Park Pump Station Evaluation Technical Memorandum prepared by Arcadis. Construction of Phase 1 was completed in early 2020. Phase 2 of the station upgrade is to consist of replacement of the original backup diesel generator, which is nearing the end of its service life and slightly undersized for the upgraded station.

Project Drivers and Needs to be Met by the Project

Asset management is the primary driver for this project. Park Pump Station is a critical component of the sewerage infrastructure network in the region, serving ten municipalities. Its operation is critical to conveying wet weather flows and normal day flows, and significantly impacts the operation of Allentown's wastewater treatment plant at Kline's Island. The improvements are needed to restore the station to its design capacity, maintain level of service and extend service life into the foreseeable future.

Project Status - Describe what work, if any has been completed or underway for this project

An Evaluation Technical Memorandum was prepared by Arcadis which assessed various options for continued operation of the pump station. The recommendations outlined in Option 3 of the Memorandum were selected to improve the reliability and capacity of the pump station through 2025. The Phase 1 upgrade design was completed in late 2017, the project was bid in early 2018, construction phase commenced in mid-2018 and the project will be completed the first quarter of 2019. Design of the replacement diesel generator is to be completed in 2021, with construction anticipated to be completed by the end of 2023.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$** -

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

The installation of higher efficiency pumps and motors with variable frequency drive control (VFDs) as part of this project should result in an electrical power savings, however at this time the amount is unknown. Exact costs to be determined. A new generator will insure station operation reliability and enhance resiliency in event of a catastrophic event that results in an extended period of electrical power outage.

Project No.	SD-S-15
Project Name	PARK PUMP STATION REHABILITATION/IMPROVEMENTS

Prior Project Cost		4,000,000
Estimated Project Costs:		**2021-2026**
LCA Staff	$	20,000
Land Acquisition	$	-
Construction/Equipment	$	1,100,000
Professional Services	$	150,000
Other	$	10,000
Contingencies	$	70,000
Total Project Cost	**$**	**5,350,000**

Requested in this Capital Program	**$**	**1,250,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 100,000	design phase 2 upgrade
1st Year	2022	$ 100,000	design completion, permitting and bidding phase 2
2nd Year	2023	$ 400,000	construction phase 2
3rd Year	2024	$ 750,000	construction phase 2
4th Year	2025	$ -	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	SIGNATORY INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2021	**Project No.**	SD-S-24
Location	LCA WLI Sewer Service Area			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	Sys Imp	**Preparer**		PMD

Purpose of Expenditure *(check all that apply)*			
X	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	NA	**Project inception date**	2009
Approx. No. of Customers Benefitted	WLI		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2026
Will the Project Require Obtaining Land Rights	No		

Provides service to 7 WLI signatories, the Borough of Emmaus & others.

Detailed Project Description

LCA provides the leadership, technical expertise and administration for coordinating the projects located within the Signatory sewer systems. The project included two major components: (1) Investigatory/planning work such as flow monitoring, the SCARP development, SSES, Level of Service Determination, Alternatives Analysis, etc., that are necessary to develop the best course of action to reduce I&I within the system(s). Much of this work has been completed. Part (2) - Design, permitting and the construction for rehabilitation of infrastructure that will be necessary to comply with recent PA DEP 537 directives - has not been completed yet. Between 2021-2024, small WLI MH rehab projects are slated for completion in accordance with Interim Act 537 commitments.

Project Drivers and Needs to be Met by the Project

All SSES work, flow monitoring and preliminary modeling work has been completed to define the characteristics of the sewer basins and identify the leakiest basins. With the recent shift from the AO being lifted to full Act 537 Planning, efforts have been realigned. Recalibration of the WLI model was completed in mid-2020. The model assists in determining the effectiveness of the source removal work completed to date and design of the Trexlertown capacity problems. In 2022, the WLI model will be joined with the remaining KISS model under development in 2021. Risk of not doing this project include regulatory action against the region.

Project Status - Describe what work, if any has been completed or underway for this project

Investigation and preliminary alternatives analysis work was completed by 2016. Flow monitoring and analysis occurred in 2017, 2019 and 2020. The WLI model recalibration was completed in 2020 and a small number of WLI MH's were repaired. Additional items for 2022-2066 include additional MH rehab work along the WLI (per the LCA commitment identified in the Interim Act 537 Plan).

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Exact costs to be determined.

Project No.	SD-S-24
Project Name	SIGNATORY INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM

Prior Project Cost	**$**	**-**
Estimated Project Costs:	**2021-2026**	
LCA Staff	$	100,000
Land Acquisition	$	-
Construction/Equipment	$	800,000
Professional Services	$	800,000
Other	$	50,000
Contingencies	$	20,000
Total Project Cost	**$**	**1,770,000**

Requested in this Capital Program	**$**	**1,500,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

			Need	**Phase of Work**
2021 Budget		$	270,000	Planning/Construction
1st Year	2022	$	300,000	Planning/Construction
2nd Year	2023	$	300,000	Planning/Construction
3rd Year	2024	$	300,000	Planning/Construction
4th Year	2025	$	300,000	537 Design
5th Year	2026	$	300,000	537 Design

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WLI - TREXLERTOWN WASTEWATER CAPACITY SOLUTION ALTERNATIVE						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2021	**Project No.**	SD-S-28
Location	WLI, Upper and Lower Macungie Townships			**Prj. Type**	AO	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	Sys Imp	**Preparer**		PMD

Purpose of Expenditure *(check all that apply)*			
X	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study	**X**	Other (explain): Provide capacity for future growth.

Additional Information			
Expected Useful Life (Years)	100	**Project inception date**	2019
Approx. No. of Customers Benefitted	**		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2026
Will the Project Require Obtaining Land Rights	Yes		

**=The WLI system provides service to 7 WLI signatories.

Detailed Project Description

As identified in the Interim Act 537 plan submitted to DEP on 9/4/20, the Trexlertown area experiences both dry day and wet day surcharging issues. the original intent (from the 2013-2016 planning era) was to install a parallel interceptor alongside the existing interceptor in Trexlertown. this was to be installed in the next 20 years or so. However, the heavy precipitation that fell on the area between August 2018-Summer 2019 forced LCA to look at a solution on an accelerated timeline. in late 2019, a study commenced to look at the possible solutions in this area: parallel interceptors, underground storage pipe, and an above ground storage tank. As the WLI modeling effort was completed in mid-2020, it became apparent that all three of these solutions were not ideal.

Project Drivers and Needs to be Met by the Project

The primary drivers for the project are regulatory and system improvement. Additional wet weather wastewater storage and conveyance capacity is required in the segment of the WLI Interceptor. This project is intended to address short term wet weather flows, eliminate long range dry-day overflows, and allow for future growth.

Project Status - Describe what work, if any has been completed or underway for this project

Hydraulic modeling and conceptual cost estimates for the interceptor option were executed as part of the Signatory I&I project. Preliminary cost estimates for this project (interceptor option) and for the Iron Run pump station and force main (as an alternative option) were completed in 2018. A pre-design feasibility study commenced in late 2019 and is to be completed in the first quarter of 2021. Design phase will begin following approval of the interim 537 plan.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Exact costs to be determined.

Project No.	SD-S-28
Project Name	WLI - TREXLERTOWN WASTEWATER CAPACITY SOLUTION ALTERNATIVE

Prior Project Cost		$60,000
Estimated Project Costs:	**2021-2026**	
LCA Staff	$	150,000
Land Acquisition	$	250,000
Construction/Equipment	$	4,800,000
Professional Services	$	500,000
Other	$	40,000
Contingencies	$	260,000
Total Project Cost	**$**	**6,060,000**

Requested in this Capital Program	**$**	**5,800,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 200,000	planning & design
1st Year	2022	$ 300,000	design & permitting
2nd Year	2023	$ 3,000,000	construction
3rd Year	2024	$ 2,000,000	construction
4th Year	2025	$ 500,000	construction
5th Year	2026	$ -	planning

LEHIGH COUNTY AUTHORITY

ALLENTOWN, PA

DRAFT 5-YEAR CAPITAL PLAN

ADMINISTRATION

2022-2026

FEBRUARY 2021

LEHIGH COUNTY AUTHORITY
5-YEAR CAPITAL PLAN
2022-2026

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2022-2026 Capital Plan

Glossary of Acronyms & Terms

The following is a listing of acronyms and terms used in the Capital Plan Summary and Project Detail Sheets.

LCA Water and/or Wastewater Divisions/Systems

LCA Water and/or Wastewater Divisions/Systems			
		Water	**Wastewater**
AD	Allentown Division	X	X
AWD	Arcadia West Division	X	X
BHD	Beverly Hills Division	X	
CLD	Central Lehigh Division	X	
CFD	Clear View Farms Division	X	
ECD	Emmaus Consecutive Division	X	
HHD	Heidelberg Heights Division	X	X
LLRI-1	Little Lehigh Relief Interceptor, Phase 1		X
LLRI-2	Little Lehigh Relief Interceptor, Phase 2		X
LTD	Lynn Township Division		X
MCD	Mill Creek Division	X	
MND	Madison Park Division	X	
NWD	North Whitehall Division	X	
PLD	Pine Lakes Division	X	
SSD	Sands Spring Division		X
UMD	Upper Milford Division	X	X
UMCD	Upper Central Milford Division (Buss Acres)	X	
WLI	Western Lehigh Interceptor		X
WTD	Washington Township Division	X	X
WWD	Wynnewood Division		X

Project Type

Project Type	Description
AO	Administrative Order
UW	Uncompleted Work [(1)]
S-7-MCI	Schedule-7 *(Lease Required)* Major Capital Improvement[(2)]
LCA-MCI	LCA Developed Major Capital Improvement[(2)]
COL	Change of Law[(3)]
Regular	A project that does not fit in any of the aforementioned special categories

(1) Uncompleted Work: City Projects that were supposed to be complete by the time of settlement. The City and LCA have reached an agreement for LCA to execute them.

(2) Major Capital Improvement: In accordance with the Lease, all Major Capital Improvements must be approved by the City.

(3) Change of Law: In accordance with the Change of Law Memorandum of Understanding

Project Funding

Project Funding	Description
LCA	Funded by LCA
100% Reimb	All costs are 100% reimbursable by fees charged
Fees & LCA	Costs partly recovered through fees charged and partly funded by LCA
Allentown	Funded by the City of Allentown
CCRC	Capital Cost Recovery Charge[(1)]; Applies only to City approved MCI

(1) *Capital Cost Recovery Charge: An on-going user fee that is above the rate caps set forth in the Lease to allow the recovery of the cost of an MCI. Rate payers are charged based upon usage.*

Project Category

Projects have been categorized to identify the primary and secondary reasons for the need. In some cases there is no secondary reason that would be applicable.

Project Category	Description
Regulatory	Required to meet Regulatory requirements
New Cust	New Customers
CA/OS	Concession Lease/Operating Standards
Master Plan	Master Plan
AM - Low	Asset Management - Low Risk
AM - Med	Asset Management - Medium Risk
AM - High	Asset Management - High Risk
AM - Varies	Asset Management - Varies[(1)]
Efficiency	Efficiency
Sys Imp	System Improvement
Rev Opprt	Revenue Opportunity
Planning	Planning
N/A	Not Applicable

(1) *Applies to Asset Management Projects, where there are multiple standalone sub-projects of varied levels of "risk".*

Approval Stage

Approval Stage	Description
A	Annual Project, no approvals required
S	Study/Planning Phase
D	Design Phase
C	Construction/Implementation Phase
E	Entire Project
V	Various Phases
P	Pending Board approval

ADMINISTRATION
5-YEAR CAPITAL PLAN
2022-2026

CAPITAL FINANCING JUSTIFICATION

The Administrative projects of the Authority are funded through charge-backs to the various operating and capital budgets.

The Administrative projects are either a strictly Suburban Division (SD) project or a project which benefits both the City and Suburban Division (CON). In the case of the multi-division projects in 2021, the total costs have been apportioned 50% to the Suburban Division and 50% to the Allentown Division.

Project SD-A-1 is an Information Technology (IT) project to upgrade the Suburban SCADA capabilities. Water fund operating reserves will be used to finance the projects with partial recovery through charge-backs to Authority wastewater funds.

Project CON-A-1 is an organization-wide project related to the annual upgrades of computer hardware and software.

Project CON-A-2 is an organizational-wide upgrade to the Geographic Information System (GIS).

Project CON-A-3 is an organization-wide update and implementation of the LCA IT Master Plan.

Project CON-A-4 is an organization-wide project to develop an electronic document management system.

Project CON-A-5 is an organization-wide project to add additional security and disaster recovery tools to the existing IT system.

Project CON-A-6 is an organization-wide project to upgrade the existing CMMS system.

Funding Sources for each project are shown below.

ADMINISTRATION	2022	2023	2024	2025	2026	TOTAL
Project Costs	$1,100,000	$1,050,000	$1,025,000	$725,000	$175,000	$4,075,000
Funding Sources:						
Operating/Capital Reserves	$1,100,000	$1,050,000	$1,025,000	$725,000	$175,000	$4,075,000
New Borrowing	-	-	-	-	-	-
Total Funding	$1,100,000	$1,050,000	$1,025,000	$725,000	$175,000	$4,075,000

ADMINISTRATION

LEHIGH COUNTY AUTHORITY
ADMINISTRATION
2022-2026 CAPITAL PROGRAM

Project #	Name or Title of Proposal	Prj. Category	Approvals Stage (1)	Plan Total Cost	This Capital Program							Prior Project Cost (2)	Future Project Cost (2)	Total Project Cost
					2021 *Budget Approved*	2022 *Year 1*	2023 *Year 2*	2024 *Year 3*	2025 *Year 4*	2026 *Year 5*	2022-2026 Total			
	Operating/Capital Reserve Funds													
SD-A-1	SCADA Programming, Hardware Upgrades, Software & Training	AM - Varies	A	$ 3,100,000	$ 300,000	$ 750,000	$ 750,000	$ 750,000	$ 500,000	$ 50,000	$ 2,800,000			$3,100,000
CON-A-1*	Computer System Hardware & Software Upgrades	AM - High	A	$ 390,000	$ 140,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 250,000	$40,000		$430,000
CON-A-2*	GIS Upgrades & Application Development	Efficiency	V	$ 350,000	$ 50,000	$ 75,000	$ 50,000	$ 50,000	$ 75,000	$ 50,000	$ 300,000	$46,000		$396,000
CON-A-3*	Information Technology Master Plan Update	Planning	P	$ 475,000	$ 125,000	$ 100,000	$ 100,000	$ 100,000	$ 50,000	$ -	$ 350,000	$85,000		$560,000
CON-A-4*	Document Management	Efficiency	V	$ 275,000	$ 200,000	$ 75,000	$ -	$ -	$ -	$ -	$ 75,000	$2,000		$277,000
CON-A-5*	Disaster Recovery/Security Upgrades	Sys Imp	A	$ 150,000	$ 25,000	$ 25,000	$ 25,000	$ 50,000	$ 25,000	$ -	$ 125,000	$18,000		$168,000
CON-A-6*	CMMS Upgrades	Sys Imp	A	$ 275,000	$ 100,000	$ 25,000	$ 75,000	$ 25,000	$ 25,000	$ 25,000	$ 175,000	$21,000		$296,000
GRAND TOTAL				**$ 5,015,000**	**$ 940,000**	**$ 1,100,000**	**$ 1,050,000**	**$ 1,025,000**	**$ 725,000**	**$ 175,000**	**$ 4,075,000**	**$ 212,000**	**$ -**	**$ 5,227,000**

(*) CON = a Project that benefits both the Allentown and Suburban Divisions. All projects are LCA funded.
(1) Reference Glossary of Acronyms & Terms found immediately after the Table of Contents
(2) If blank project cost is not applicable (annual project) or to be determined

LEHIGH COUNTY AUTHORITY
ADMINISTRATION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	SUPERVISORY CONTROL & DATA ACQUISTION (SCADA) PROGRAMMING, HARDWARE UPGRADES, SOFTWARE & TRAINING						
Budget Area	Administration	**Department**	IT	**Date**	1/15/2021	**Project No.**	SD-A-1
Location	Various LCA Divisions located in multiple municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Efficiency	**Preparer**		CM

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study	**X**	Other (explain): Improve Operational Efficiencies

Additional Information			
Expected Useful Life (Years)	5	**Project inception date**	**2010**
Approx. No. of Customers Benefitted	*Varies		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2035
Will the Project Require Obtaining Land Rights	No		

*Dependent upon the system

Detailed Project Description

This annual on-going project includes both programming and hardware enhancements to the SCADA system to provide reliable telemetry and effective/proactive/flexible control of our facilities. It also includes an upgrade to SCADA & Telog communications and radio replacement of Telco lines to reduce monthly Telco charges to resolve ongoing communication problems with critical facilities. Training on the Historian software package is also included. The larger scope of this project will include a study and design project that will result in a project plan to upgrade all of our Suburban SCADA stations.

Project Drivers and Needs to be Met by the Project

The SCADA system currently provides real-time data and control for CLD water facilities and WLI related wastewater facilities and must be updated. The Telog system provides real-time data (no control) for satellite water and wastewater systems. Both are necessary to allow efficient operation of the water and wastewater system facilities.

Project Status - Describe what work, if any has been completed or underway for this project

SCADA upgrades have been completed at Pine Lakes and Crestwood water systems in 2017 and 2018.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	SD-A-1
Project Name	SUPERVISORY CONTROL & DATA ACQUISTION (SCADA) PROGRAMMING, HARDWARE UPGRADES, SOFTWARE & TRAINING

Prior Project Cost		$42,000
Estimated Project Costs:	**2022-2026**	
LCA Staff	$	225,000
Land Acquisition	$	-
Construction/Equipment	$	2,000,000
Professional Services	$	800,000
Other	$	-
Contingencies	$	33,000
Total Project Cost	**$**	**3,100,000**

Requested in this Capital Program	**$**	**2,800,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 300,000	$250k for Keystone Eng Study for subsequent years, $50k for general support
1st Year	2022	$ 750,000	Multi year project upgrading Suburban SCADA stations
2nd Year	2023	$ 750,000	Multi year project upgrading Suburban SCADA stations
3rd Year	2024	$ 750,000	Multi year project upgrading Suburban SCADA stations
4th Year	2025	$ 500,000	Multi year project upgrading Suburban SCADA stations
5th Year	2026	$ 50,000	Multi year project upgrading Suburban SCADA stations

LEHIGH COUNTY AUTHORITY
ADMINISTRATION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	COMPUTER SYSTEM HARDWARE & SOFTWARE UPGRADES						
Budget Area	Administration	**Department**	IT	**Date**	1/15/2021	**Project No.**	CON-A-1
Location	Allentown & Suburban Divisions			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - High	**Secondary**	Efficiency	**Preparer**		PB

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	6	**Project inception date**	**2010**
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	Ongoing
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

This project includes both hardware and software costs for server replacements for units older than 6 years.

Project Drivers and Needs to be Met by the Project

Improved efficiencies will assist employees in becoming more productive.

Project Status - Describe what work, if any has been completed or underway for this project

Hardware replaced annually as needed. Software upgraded annually as needed.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	CON-A-1
Project Name	COMPUTER SYSTEM HARDWARE & SOFTWARE UPGRADES

Prior Project Cost		$40,000
Estimated Project Costs:	**2022-2026**	
LCA Staff	$	40,000
Land Acquisition	$	-
Construction/Equipment	$	300,000
Professional Services	$	20,000
Other	$	-
Contingencies	$	30,000
Total Project Cost	**$**	**430,000**

Requested in this Capital Program	**$**	**250,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 140,000	
1st Year	2022	$ 50,000	
2nd Year	2023	$ 50,000	
3rd Year	2024	$ 50,000	
4th Year	2025	$ 50,000	
5th Year	2026	$ 50,000	

LEHIGH COUNTY AUTHORITY
ADMINISTRATION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	GEOGRAPHIC INFORMATION SYSTEM (GIS) UPGRADES & APPLICATION DEVELOPMENT						
Budget Area	Administration	**Department**	IT	**Date**	1/15/2021	**Project No.**	CON-A-2
Location	Allentown & Suburban Divisions			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Efficiency	**Secondary**	Sys Imp	**Preparer**		PB

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	N/A	**Project inception date**	**1991**
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	Ongoing
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

This project will continue to support the development of the Authority's GIS system. The project scope includes implementation of ESRI's event server which will allow SCADA integration with the GIS system, replacement of the existing GIS network/framework which will allow advanced hydraulic modeling and outage solutions, upgrades to the web and mobile GIS platforms to enhance usability and functionality for internal staff, completion and adoption of a GIS Strategic Plan to assist with the utilization of all software and integrations, and enhanced security updates to all GIS systems.

Project Drivers and Needs to be Met by the Project

Adoption of an integrated and complete GIS system is critical for asset management and facility management. Advancements in geospatial technologies require updates on an annual basis. As part of LCA's 2020 Goals, a complete GIS system will help support the implementation of a CMMS system. Applications covered under this project include easement mapping and access, as-built mapping and access, and various internal project based applications to support all Departments.

Project Status - Describe what work, if any has been completed or underway for this project

Transition to the new utility network is currently underway. The adoption of ESRI's event server is underway and being configured with LCA's CMMS system. Multiple applications to support the operations of LCA are also under development.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	CON-A-2
Project Name	GEOGRAPHIC INFORMATION SYSTEM (GIS) UPGRADES & APPLICATION DEVELOPMENT

Prior Project Cost		$46,000
Estimated Project Costs:	**2022-2025**	
LCA Staff	$	50,000
Land Acquisition		
Construction/Equipment	$	250,000
Professional Services	$	25,000
Other		
Contingencies	$	25,000
Total Project Cost	**$**	**396,000**

Requested in this Capital Program	**$**	**300,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 50,000	
1st Year	2022	$ 75,000	
2nd Year	2023	$ 50,000	
3rd Year	2024	$ 50,000	
4th Year	2025	$ 75,000	
5th Year	2026	$ 50,000	

LEHIGH COUNTY AUTHORITY
ADMINISTRATION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	INFORMATION TECHNOLOGY MASTER PLAN UPDATE						
Budget Area	Administration	**Department**	IT	**Date**	1/15/2021	**Project No.**	CON-A-3
Location	Allentown & Suburban Divisions			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Planning	**Secondary**	Sys Imp	**Preparer**		PB

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
X	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	10	**Project inception date**	**2016**
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	Ongoing
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

This project will provide the guidance for update and implementation of the technology systems currently residing (or new systems) for LCA. It contains funding for investigation, purchase, implementation and support.

Project Drivers and Needs to be Met by the Project

The 2019 update identified needs in both technology and software support for LCA's employee base. Moving forward IT and supporting technology in a secure fashion is paramount. This project will support those needs.

Project Status - Describe what work, if any has been completed or underway for this project

IT Master Plan began in 2019 and will be finished in 2020.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	CON-A-3
Project Name	INFORMATION TECHNOLOGY MASTER PLAN UPDATE

Prior Project Cost		$85,000
Estimated Project Costs:	**2022-2026**	
LCA Staff	$	225,000
Land Acquisition	$	-
Construction/Equipment	$	50,000
Professional Services	$	150,000
Other	$	-
Contingencies	$	50,000
Total Project Cost	**$**	**560,000**

Requested in this Capital Program	**$**	**350,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 125,000	
1st Year	2022	$ 100,000	
2nd Year	2023	$ 100,000	
3rd Year	2024	$ 100,000	
4th Year	2025	$ 50,000	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
ADMINISTRATION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	DOCUMENT MANAGEMENT						
Budget Area	Administration	**Department**	IT	**Date**	1/15/2021	**Project No.**	CON-A-4
Location	Allentown & Suburban Divisions			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Efficiency	**Secondary**	Sys Imp	**Preparer**		PB

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study	**X**	Other (explain): Increase Efficiencies

Additional Information			
Expected Useful Life (Years)	10	**Project inception date**	**2008**
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2022
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

This project provides for an Electronic Document Management System (EDMS) to store, search and share documents. This project does not plan for the imaging of existing paper documents.

Project Drivers and Needs to be Met by the Project

Readily available access to plans, reports and past correspondence will reduce research time. Storage space, files and cabinets for maintaining hard-copy documents will be minimized or eliminated. Digital, cross-referenced documents will improve accessibility and ease workflow.

Project Status - Describe what work, if any has been completed or underway for this project

Preliminary stages of this project began in 2018 and 2019.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	CON-A-4
Project Name	DOCUMENT MANAGEMENT

Prior Project Cost		$2,000
Estimated Project Costs:	**2022-2026**	
LCA Staff	$	125,000
Land Acquisition	$	-
Construction/Equipment	$	30,000
Professional Services	$	100,000
Other	$	-
Contingencies	$	20,000
Total Project Cost	**$**	**277,000**

Requested in this Capital Program	**$**	**75,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 200,000	
1st Year	2022	$ 75,000	
2nd Year	2023	$ -	
3rd Year	2024	$ -	
4th Year	2025	$ -	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
ADMINISTRATION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	DISASTER RECOVERY/SECURITY UPGRADES						
Budget Area	Administration	**Department**	IT	**Date**	1/15/2021	**Project No.**	CON-A-5
Location	Allentown & Suburban Divisions			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Efficiency	**Preparer**		CWM

Purpose of Expenditure *(check all that apply)*			
	New Facility	**X**	Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	5	**Project inception date**	**2018**
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	Ongoing
Will the Project Require Obtaining Land Rights	NO		

Detailed Project Description

This project will cover several areas to increase or add security, as well as improve our disaster recovery options for catastrophic failure.

Project Drivers and Needs to be Met by the Project

This project will provide on-site back up as well as unlimited cloud storage of all back-ups. It will also encompass spam filters, real time anti virus scanning, as well as Exchange backup. As part of the disaster recovery, a large room scaled UPS system to ensure server uptime will be incorporated.

Project Status - Describe what work, if any has been completed or underway for this project

Project commenced in 2019.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	CON-A-5
Project Name	DISASTER RECOVERY/SECURITY UPGRADES

Prior Project Cost		$18,000
Estimated Project Costs:	**2022-2026**	
LCA Staff	$	25,000
Land Acquisition	$	-
Construction/Equipment	$	50,000
Professional Services	$	25,000
Other	$	-
Contingencies	$	50,000
Total Project Cost	**$**	**168,000**

Requested in this Capital Program	**$**	**125,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 25,000	
1st Year	2022	$ 25,000	
2nd Year	2023	$ 25,000	
3rd Year	2024	$ 50,000	
4th Year	2025	$ 25,000	
5th Year	2026	$ -	

LEHIGH COUNTY AUTHORITY
ADMINISTRATION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	CMMS UPGRADES						
Budget Area	Administration	**Department**	IT	**Date**	1/15/2021	**Project No.**	CON-A-6
Location	Allentown & Suburban Divisions			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Efficiency	**Preparer**		CWM

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
X	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	5	**Project inception date**	**2017**
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	NO		

Detailed Project Description

This project will upgrade multiple modules of the existing CMMS application, Cityworks. The modules include implementation of a complete inventory system, API integrations with the GIS system, development of an asset strategy plan, site upgrades, and additional security enhancements. This project will also provide more opportunities for automation of vertical asset management through the use of ESRI's Geoevent server and SCADA information.

Project Drivers and Needs to be Met by the Project

As part of LCA's 2020 Goals, this project will support the need for additional integrations, automation, and security to increase availability and reliability of the software. The project will also help initiate the development and adoption of an asset strategy through the identification and interpretation of multiple data integrations.

Project Status - Describe what work, if any has been completed or underway for this project

This project commenced in 2019 with development of the existing Cityworks system and adoption of preventive maintenance practices in the City and Suburban Division. Multiple integrations have been completed; MUNIS integration, WINCAN integration, Customer Records Integration.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	CON-A-6
Project Name	CMMS UPGRADES

Prior Project Cost		$21,000
Estimated Project Costs:	**2022-2025**	
LCA Staff	$	25,000
Land Acquisition	$	-
Construction/Equipment	$	175,000
Professional Services	$	50,000
Other	$	-
Contingencies	$	25,000
Total Project Cost	**$**	**296,000**

Requested in this Capital Program	**$**	**175,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2021 Budget		$ 100,000	
1st Year	2022	$ 25,000	
2nd Year	2023	$ 75,000	
3rd Year	2024	$ 25,000	
4th Year	2025	$ 25,000	
5th Year	2026	$ 25,000	

MEMORANDUM

Date: February 15, 2021

To: LCA Board of Directors
Liesel Gross, CEO

From: Phil DePoe, Senior Planning Engineer

Subject: Kline's Island Sewer System (KISS) – Regional Sewer Capacity & Wet-Weather Planning: 2021 KISS Model Expansion & Calibration and 2022 City of Allentown RDII (Rain Derived Inflow and Infiltration) Analysis

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Capital Project Authorization: KISS – Act 537 Planning (City-Funded Portion)	$993,000
1A	Professional Services Authorization: Arcadis – 2021 KISS Model Expansion & Calibration	$898,000*
1B	Professional Services Authorization: Arcadis – 2022 Allentown Division RDII Analysis	$60,000*

**Included in the Capital Project Authorization*

Introduction & Background

NOTE: This will be the last Board Memo to provide the introduction and background related to current Act 537 Planning efforts.

In 2008, the Pa. Department of Environmental Protection (DEP) required Lehigh County Authority (LCA) and the Western Lehigh sewer signatories to generate a corrective action plan for the areas identified as having significant infiltration and inflow (I&I) conditions. The municipalities formed the Western Lehigh Sewerage Partnership (WLSP) and developed the Sewer Capacity Assurance & Rehabilitation Program (SCARP) to provide a formalized and planned method of evaluating the LCA and signatory sewer systems, prioritizing and conducting sewer rehabilitation by all WLSP communities – LCA, Upper Macungie, Lower Macungie, Weisenberg, Lowhill and Upper Milford townships, and Macungie and Alburtis boroughs.

To support this work, flow metering was conducted in 2008 and a hydraulic model was developed in 2009. At the same time, in 2009, the U.S. Environmental Protection Agency issued an Administrative Order for all municipalities served by the Kline's Island Wastewater Treatment Plant to eliminate sanitary sewer overflows and bypasses at the plant during wet-weather events.

From 2009 through 2018, the WLSP group completed significant projects to address sources of I&I in the Western Lehigh service area. In 2014, the WLSP hydraulic model was recalibrated using data gathered for adjoining sewer systems in the City of Allentown and surrounding communities. At that time, all communities began considering developing a regional Act 537 Plan (Sewage Facilities Plan) to address long-term sewer capacity requirements for the region. This work was halted in 2016 after receiving direction from DEP that the region should focus first on addressing the system's wet-weather challenges prior to submitting an Act 537 Plan to address future capacity requirements. From 2016 through 2017, a comprehensive plan was developed focusing on I&I source removal, conveyance system upgrades, and expansion of the KIWWTP's capacity to handle peak flows during wet-weather events. Early estimates of the cost to complete these upgrades was in the range of $300 million.

In late 2017, the USEPA provided direction to the region that this capital-intensive program was not warranted to meet the requirements of the Administrative Order, and the region should refocus its efforts on flow characterization and I&I source removal. Therefore, in 2018, LCA and all the municipalities in the Kline's Island Sewer System submitted a Regional Flow Management Strategy to the USEPA and to DEP which included commitment to conduct flow monitoring and additional flow characterization work in the years ahead, along with each municipality's individual I&I source removal plans for the next five to seven years. In March 2019, the USEPA withdrew the Administrative Order and transferred oversight of the plan back to DEP.

In the intervening time period while the region sought to meet USEPA's shift in scope for addressing wet-weather challenges, the Lehigh Valley experienced an unprecedented prolonged period of excessive rainfall totaling 67 inches in 2018 and 61 inches in 2019. In particular, during the 12-month period of August 2018 through July 2019, the region received 80 inches of precipitation. Normal precipitation for our area is about 45 inches per year. As a result of this weather pattern and the ongoing leakage in the region's sewer system, sewer flows increased significantly during this time period and exceeded the KIWWTP's permitted capacity limit of 40 million gallons per day on several occasions.

Important Note: While the KIWWTP exceeded its hydraulic capacity limit of 40 MGD on a monthly basis several times in 2018 and 2019, the discharge of treated effluent from the plant met every effluent quality permit requirement during this time period so that environmental quality was not impacted by the higher flows.

Beginning in August 2019, LCA, the City of Allentown and the 13 other municipalities served by the Kline's Island Sewer System (KISS) began discussing the situation with DEP representatives. These discussions have been focused on evaluating and documenting the KIWWTP's capacity to address continued higher flows if wet-weather patterns continue, illustrating the region's commitment to cooperative management of the KISS, and to develop a plan to address the long-term capacity requirements of the system to meet the economic and environmental needs of the region. Through these discussions, a three-phase approach has been developed as follows:

Phase 1 – 2020 Corrective Action & Connection Management Plan (Completed)

In 2020, new connections to the KISS were managed under the terms of regional corrective action plan managed by LCA and under the requirement that an "Interim" Act 537 Plan be developed and submitted to DEP by September 2020. The primary thrust of the corrective action plan was the development of the Interim Act 537 Plan, quarterly progress reporting to DEP, and new developments requiring sewer service approved in accordance with a formal allocation request to DEP.

Phase 2 – Interim Act 537 Plan, Corrective Action & Connection Management Plan (Current Phase – In Progress)

From 2021 to 2025, the KISS municipalities will work cooperatively to develop a Regional Long-Term Act 537 Plan. This plan will evaluate all municipalities' dry-weather and wet-weather flows projected for the next 20 to 30 years, including peak flows and anticipated changes in regional weather patterns, and develop the facilities plan and other actions required to address those needs. DEP's requirements for the Act 537 Sewage Facilities Plan include an evaluation of flows that can be removed by I&I programs in addition to construction of new facilities such as upsized parallel interceptors, pump stations, storage tanks and treatment plant expansion/upgrades. This work will include extensive flow monitoring and an update to the KISS hydraulic model to support the revised analysis of options previously evaluated, such as expansion of the KIWWTP, upgrade of LCA's pretreatment plant to provide full treatment, and construction of parallel

interceptors and a new regional pump station to address peak flows, in addition to I&I removal estimates. The plan that is ultimately developed by 2025 will include a financial and organizational / legal analysis to determine appropriate cost-sharing and intermunicipal agreement structures.

While this critical planning work is being completed, all KISS municipalities will complete I&I source removal programs within their municipal sewer collection systems. LCA also expects to move forward on design and construction of facilities to address the hydraulic bottleneck in the system located in the Trexlertown area to improve service to customers in this area. This project was kicked off in 2019 with a feasibility study being conducted by HDR Engineering and hydraulic modeling by Arcadis.

New sewer connections during the time period of 2021 to 2025 will be contingent on DEP's approval of the Region's Interim 537 Plan (submitted to DEP on September 4, 2020) and the Region's satisfactory progress on this work as reported in quarterly reports to DEP. On January 27, 2021 DEP formally requested 60 more days to review the Interim 537 Plan.

Phase 3 – Regional Act 537 Plan Implementation (2025 and beyond)

Following the comprehensive planning to be completed by 2025 as described in Phase 2 above, the Region will begin implementing the plan upon approval by DEP. Approval of new connections to the sewer system after 2025 will be based on details of the plan and plan approval by DEP.

Moving Forward on Phase 2

LCA staff have outlined two additional critical authorizations in 2021 that will allow the KISS System to move forward on the work described above. The professional services authorization described in subsections 1A and 1B below will be reviewed with the LCA Board of Directors at the February 22, 2021 Board meeting, and represent the next steps in the process toward addressing these important regional sewer capacity and wet-weather challenges.

1A. Kline's Island Sewer System – Regional Sewer Capacity & Wet-Weather Planning: 2021 KISS Model Expansion & Calibration

AUTHORIZATION OVERVIEW:
As part of the Interim Act 537 Plan, the municipalities served by the Kline's Island Sewer System have committed to completing a flow metering and modeling project beginning in 2021. The Lehigh County Authority planning level model was previously combined with the City of Allentown model to create one integrated Kline's Island Sewer System (KISS) model. This scope and budget is for the expansion of this model into the remaining Signatory systems and the calibration of the KISS model using the rainfall and flow data collected during the 2021 monitoring period. This project is expected to start in March 2021 and be completed by June 2022. Upon completion by June of 2022, various modeling scenarios (under separate proposal) will then be used to size infrastructure improvements.

FINANCIAL:
Costs associated with the implementation of the 2021 Flow Characterization Study will be paid by the City of Allentown and reimbursed through existing intermunicipal agreements and by City customers through the use of the Administrative Order Fee.

CURRENT STATUS:

Pending Board approval of these services.

THIS APPROVAL – 2021 KISS MODEL EXPANSION & CALIBRATION

Lehigh County Authority (LCA) intends to retain the services of an engineering consulting firm to provide the hydraulic sewer modeling efforts for the KISS system. These services will include, but are not limited to, the following six tasks:

Professional Services
• Data Collection and Pre-Modeling Framework
• Rainfall and Flow Monitoring Data
• Hydraulic Model Update and Expansion
• Hydrologic Model Update & Expansion (Model at Source)
• Model Calibration & Validation
• Reports & Client Workshop

CONSULTANT SELECTION PROCESS:

In addition to serving as LCA's engineering consultant for annual ongoing sewer program support services, Arcadis has worked with the City and their signatories since the 2009 Administrative Order. In addition, Arcadis has extensive knowledge of the KISS partners' sewer systems, sewer billing meters, and was instrumental in creating the original KISS sewer model in 2014.

Prior data validation, hydraulic modeling and related work has been completed by Arcadis since 2008, most notably in 2019 (meter QA/QC, RDII analysis, and WLI model development) and 2020 (meter QA/QC, WLI model scenario planning).

SCHEDULE:

Arcadis will start the model expansion and calibration efforts in March 2021 and will complete these efforts by June of 2022.

FUTURE AUTHORIZATIONS:

Upon completion by June of 2022, various modeling scenarios will then be used to size infrastructure improvements. Board approval will be requested in 2022 for these services.

1B. Allentown Division – Regional Sewer Capacity & Wet-Weather Planning: 2022 RDII (Rain Derived Inflow and Infiltration) Analysis of 2021 Flow Meter and Rain Gauge Data

AUTHORIZATION OVERVIEW:

The main goal of this work is to conduct an RDII analysis of storm events during the flow monitoring period to determine the nature and extent of infiltration and inflow (I&I) leakage, and to use hydrograph interpretation to help the City focus their rehabilitation work (both secondary Sanitary Sewer Evaluation Survey (SSES) investigations and rehabilitation efforts) toward the sources contributing the leakage. It will also be determined where the flow meters should be installed for the next monitoring period and where future SSES work should be completed. For the purposes of this scope and budget, we assume that the data from 43 flow meters and five rain gauges will be used. Specific tasks that Arcadis will perform include, but are not limited to, the following:

FINANCIAL:
The project is an Administrative Order (AO) Project and it will be funded by the City. The terms of the concession lease agreement between LCA and the City specify that the City will directly fund projects associated with the AO, and LCA will collect fees from City customers to pay any associated debt service for these projects. The City determines the projects to be completed and directs LCA to complete the projects in the manner desired by the City.

CURRENT STATUS:
Pending Board approval of these services.

THIS APPROVAL – 2022 RDII SERVICES
Lehigh County Authority (LCA) intends to retain the services of an engineering consulting firm to provide the RDII analysis of the City's 2021 flow meter data. These services will include the following:

Professional Services
• Rainfall Derived I&I Analysis
• Meet with LCA staff and stakeholders as needed
• Deliver final results to LCA staff and stakeholders

CONSULTANT SELECTION PROCESS:
In addition to serving as LCA's engineering consultant for annual ongoing sewer program support services, Arcadis has worked with the City and their signatories since the 2009 Administrative Order. In addition, Arcadis has extensive knowledge of the KISS partners' sewer systems, sewer billing meters, and was instrumental in creating the original KISS sewer model in 2014.

Prior data validation, hydraulic modeling and related work has been completed by Arcadis since 2008, most notably in 2019 (meter QA/QC, RDII analysis, and WLI model development) and 2020 (meter QA/QC, WLI model scenario planning).

Lastly, the City has directed LCA to utilize Arcadis for these services.

SCHEDULE:
Arcadis will start these RDII efforts in late 2021 and will complete these efforts by March of 2022.

FUTURE AUTHORIZATIONS:
None anticipated.

Arcadis U.S., Inc.
1600 Market St., Suite 1810
Philadelphia
Pennsylvania 19103
Tel 215.931.4372
www.arcadis-us.com

Mr. Philip DePoe
Capital Works Program Manager
Lehigh County Authority
1053 Spruce Road
Allentown, PA 18106-0348

Subject:
Kline's Island Sewer System (KISS) 2021 Model Expansion and Calibration Scope and Budget

Date:
2/12/21

Contact:
Jim Shelton

Phone:
302.723.1450

Email:
James.Shelton@arcadis.com

Our ref:

Dear Mr. DePoe:

The Lehigh County Authority (LCA) planning level model was previously combined with the City of Allentown (City) model to create one integrated Kline's Island Sewer System (KISS) model. This scope and budget is for the expansion of this model into the remaining Signatory systems and the calibration of the KISS model using the rainfall and flow data collected during the 2021 monitoring period. This project is expected to start in March 2021 and be complete in June 2022.

OBJECTIVES

The primary goal of this work is to expand the model into the surrounding Signatories (namely the municipalities of Coplay, Whitehall, North Whitehall, Hanover, South Whitehall, Salisbury, and Emmaus) and calibrate the expanded model to current flow characteristics to aid in the identification and evaluation of regional alternatives for solutions to both treatment and conveyance through the 2050 planning horizon via the Act 537 master planning work. Use of the completed model for those purposes will be addressed in future scopes of work.

SCOPE OF WORK

Task 1 – Data Collection and Modeling Framework

Arcadis will develop a Signatories model network of manhole and sewer segments using the following model extent criteria.

- All gravity sewers of 10 inches in diameter and greater.

- Any smaller gravity sewers that serve as direct cross-connections between major branches or are otherwise comparatively significant to the collection system's hydraulic functioning.
- Any hydraulic control structures, such as weirs, gates, crossover connection, inverted siphons, and chambers in the system.
- All major pump stations and force mains conveying flows within or into the system.
- Significant industrial wastewater users with flow meters (assumed to be 20 industries).

Arcadis will delineate meter basins within the resulting sewer network associated with the planned metering network. One hundred meters are planned; of these, 44 are net meter basins, meaning they have upstream meters that require significant additional data calculations to use for modeling. Twenty seven rain gauges are planned.

Within each meter basin, we will further delineate catchments rationally sized based on sewer use. Interceptors and major industries will be delineated as separate catchments with a given basin.

Arcadis will:

- Conduct a review of the Signatories wastewater collection GIS databases and operations data to identify missing data and connectivity gaps.
- Review previously collected record plans and perform field investigations to populate the missing pipe, manhole, and pump station attributes required for the hydraulic model network.
- Review previously collected water consumption data from water utilities serving the Signatories to allocate dry weather flows to the catchments.
- Identify industrial users, especially those with wastewater flowmeters.
- Delineate catchments using parcels to represent the base wastewater (BWWF), groundwater influence (GWI) and rainfall dependent inflow and infiltration (RDII) contributing to the collection system.
- Assign rain gauges to each catchment.

Task 2 – Rainfall and Flow Monitoring Data

The rainfall and flow data will undergo quality assurance/quality control reviews under a separate scope of work. Additionally, Arcadis will add in significant industrial wastewater users with flow meters. At the end of the complete monitoring period, the Arcadis will review the rain and flow monitoring data determined to be valid to:

- Define and classify wet weather events according to the local Intensity/Duration/Frequency (IDF) Curves.
- Select 3-5 wet weather events for model calibration and 1-3 for verification.
- Verify inflow and infiltration response at all flow meters and the flow balance between the net flow meters for the selected wet weather events for calibration and verification.
- Combine rain gauge data with radar data to provide accurate rainfall for wet weather calibration and verification.
- Develop subcatchment hyetograph for model calibration and verification.

Task 3 – Hydraulic Model Update and Expansion

Arcadis will expand the hydraulic model network by adding Signatories' manhole and sewer segments and update the existing KISS model network with infrastructure constructed or modified since the model was last calibrated. In this task, Arcadis will:

- Expand the model by adding Signatory sewers. This includes 1300 new Signatory pipes and manholes, 4 new pump stations and force mains, and 10 siphons and crossover chambers from Signatory-provided record plans into the model.
- Add specific catchments for industrial users with wastewater flow meters.
- Update existing facilities within City of Allentown sewer system that were constructed and modified since 2009. (The LCA/WLSP portion of this work was already completed as part of the 2019 WLSP model recalibration).
- Review the model network and develop hydraulic profiles to identify and correct hydraulically unconnected facilities such as adverse pipe slopes, datum corrections, and connectivity busts.
- Review and update critical hydraulic structures - siphons and cross-connections between parallel pipes, pump stations, treatment plant headworks, storage tanks, etc.
- Add necessary non-spatial information such as pump station wetwell geometry, pump curves, and storage tank and pump station operating set-points to the hydraulic network.

Task 4 – Hydrologic Model Update and Expansion for using Model at Source Approach

Arcadis will expand the Hydrologic Model by adding signatories' subcatchments and re-delineating the existing KISS model subcatchments. In this task, Arcadis will:

- Delineate existing model subcatchments and new signatories subcatchments to several small RDII sources to represent unique runoff characteristics within the catchment at a micro-scale.
- Review existing subcatchment load points in the model network and assign load points to the newly delineated subcatchments.
- Conduct a windshield survey to evaluate representative areas of each neighborhood to determine typical discharge points for house downspouts.
- Define land use parameters such as pervious and impervious area for each RDII source with in the subcatchment.
- Apply RDII GIS processing tool to add newly delineated subcatchments with initial hydrological parameters into the ICM

Task 5 – Model Calibration and Validation

Arcadis will calibrate and validate the model using the 2021 flow monitoring data. Dry weather flows are calibrated first to establish the model's ability to predict base flows and confirm that the hydraulic system responds as expected. Wet weather calibration is a critical task that prepares the model for predicting system response during various wet weather events.

The degree of model calibration will be evaluated by both qualitative and quantitative comparison of model predictions with the observed data. Qualitative evaluations will rely primarily on a graphical comparison of model results and observed data for both flow and depth (visual goodness of fit). Quantitative comparisons will be expressed in terms of percent deviation of the model predictions from the observed data for volume, peak flow, and peak depth consistent with Charted Institution of Water and Environmental Management (CIWEM) standards.

Task 5.1 – Dry Weather Calibration

Following past several years of rainfall patterns, it is assumed that the dry weather calibration period will be September 2021. In this task, Arcadis will:

- Calibrate the model to monitored dry weather conditions
- Refine Base Wastewater Flow (BWWF) for each sewershed, along with diurnal patterns and Groundwater Infiltration (GWI) until the calibration goals are satisfied for the selected dry weather periods at each monitoring location.
- Compare measured and modeled flow depths, adjusting friction and energy losses as necessary, or identifying probable causes of discrepancies (e.g., downstream blockage, local flow effects)

Task 5.2 – Wet Weather Calibration

Wet weather calibration will be performed for 3-5 monitored wet weather events representing different rainfall intensities and durations. In this task, Arcadis will:

- Adjust hydrologic wet weather parameters until calibration guidelines are satisfied between model results and corresponding monitoring records for the selected events at each monitoring site
- Compare measured and modeled peak flow rate, total event volume and peak depth for each selected event at each monitoring site
- Compare the identified and modeled wet weather capacity problems during the calibration process

Task 5.3 – Wet Weather Validation

Once the model is calibrated, a period not used for the calibration will be simulated to assess the model calibrations' validity and robustness. In this task, Arcadis will:

- Compare measured and modeled peak flow rate, total event volume, and peak depth for each selected validation event at each monitoring site

Task 6 – Model Calibration Manual & Meetings

During model calibration and verification, regular ongoing discussions with City and LCA will occur to foster progress, update data requests, and identify obstacles or difficulties.

We will also host review meetings with Signatories to review and discuss Dry Weather Calibration and Wet Weather Calibration results. Consistent with past practices, we have assumed separate meetings will be held with LCA engineering staff, then with LCA and City, and then with Signatories for the calibration review meetings.

A model calibration manual will be prepared to summarize the model calibration and verification methodologies and findings. This report will include a range of graphical plots comparing modeled and monitored flow and depth at each location. The manual will provide useful information to future users of the model. It is anticipated that from time to time the model may require updates and calibration improvements to account for physical changes to pipe network, significant I&I reduction efforts, and changes in discharge flows.

BUDGET

We estimate this project will take nearly 6,500 manhours. One third of this work will be done in 2021 and the balance in 2022. We have escalated estimated costs by 1.5% for the 2022 aspects of the work. We estimate the costs by task as shown in the below table.

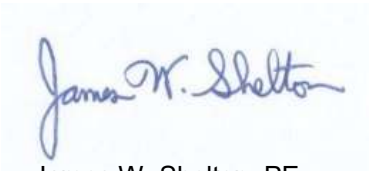
Task	Hours	Cost
Task 1 - Data Collection and Pre-Modeling Framework	363	$ 50,000
Task 2 - Rainfall and flow monitoring data	288	$ 43,000
Task 3 - Hydraulic Model Update and Expansion	269	$ 38,000
Task 4 - Hydrologic Model Update & Expansion - Model At Source	2889	$ 384,000
Task 5 - Model Calibration & Validation	1983	$ 277,000
Task 6 - Reports & Client Workshop	694	$ 106,000
Total	**6487**	**$898,000**

We propose to complete these services on a time and materials basis in accordance with the Agreement between LCA and Malcolm Pirnie and the current Summary of Standard Charges for Lehigh County Authority. Arcadis will track the costs associated with this work and report them to LCA monthly throughout the project; we will not exceed the authorized budget without written professional services authorization from LCA. Payment for services will be based upon the actual labor and expenses incurred.

Please contact me with your authorization to proceed if this scope and budget are acceptable to you. If you have any questions please do not hesitate to call me at 302.723.1450.

Sincerely,

Arcadis U.S., Inc.



James W. Shelton, PE
Vice President – Buried Infrastructure

Cc: Tony Dill, Arcadis
Brian Chamberlain, City of Allentown

CAPITAL PROJECT AUTHORIZATION

City AO Funded Act 537 Planning (since Q4 2019)

PROJECT NO.:	AD-S-12	**BUDGET FUND:**	Allentown Div\Wastewater\Capital
PROJECT TITLE:	Kline's Island Sewer System (KISS) – Act 537 Planning (City-Funded Portion)	**PROJECT TYPE:**	
		☐	Construction
		☒	Engineering Study
THIS AUTHORIZATION:	**$993,000**	☐	Equipment Purchase
TO DATE (W/ ABOVE)	**$2,029,550**	☐	**Amendment**

DESCRIPTION AND BENEFITS:

Since the fourth quarter of 2019, the City of Allentown has been using Administrative Order (AO) funds to cover expenses related to DEP-mandated Act 537 Planning. Projects in 2019 and 2020 included the following: Interim 537 preparation and submission, Part 2 permit submission for hydraulic capacity of the Kline's Island Wastewater Treatment Plant (KIWWTP), sewage billing meter inspection and upgrade evaluations, KIWWTP peak capacity study, 2020 municipal signatory flow metering plan development, flow capacity study planning efforts. To date in 2021, authorized projects include the 2021 flow metering and quality assurance/quality control work necessary to collect accurate data to be used in future flow modeling and alternatives analysis steps of the Act 537 planning process.

This Authorization: 2021 KISS Model Calibration & Expansion; and City of Allentown Rain-Derived Inflow & Infiltration (RDII) Analysis. This work will be completed in 2021 and 2022. Additional City AO funded projects related to Act 537 Planning are to be determined in Years 2022-2025.

See attached Board Memo for further project details.

Authorization Status:

Requested This Authorization (2021 KISS Model and 2022 City RDII Analysis)	
Planning Phase	
Staff	**$30,000**
Contractor	**$0**
Engineering Consultant	**$958,000**
Contingency	**$5,000**
Total This Authorization	**$993,000**

Prior Authorizations (2019-2020)	$290,000
Prior Authorizations (2021)	$746,550
Subtotal	**$2,029,550**
Future Authorizations (2022-2025)	*TBD*

REVIEW AND APPROVALS:

Project Manager	Date	Chief Executive Officer	Date
Chief Capital Works Officer	Date	Chairman	Date

Lehigh County Authority

1053 Spruce Street * P.O. Box 3348 * Allentown, PA 18106-0348
(610)398-2503 * FAX (610)398-8413 * Email: service@lehighcountyauthority.org

PROFESSIONAL SERVICES AUTHORIZATION

Professional: ARCADIS U.S., INC.
1600 Market Street, Suite 1810
Philadelphia, PA 19103

Date: February 22, 2021
Requested By: Phil DePoe

Approvals
Department Head: _____
Chief Executive Officer: _____

Kline's Island Sewer System – Regional Sewer Capacity & Wet-Weather Planning: 2021 KISS Model Expansion & Calibration

As part of the Interim Act 537 Plan, the municipalities served by the Kline's Island Sewer System have committed to completing a flow metering and modeling project beginning in 2021. The Lehigh County Authority planning level model was previously combined with the City of Allentown model to create one integrated Kline's Island Sewer System (KISS) model. This scope and budget is for the expansion of this model into the remaining Signatory systems and the calibration of the KISS model using the rainfall and flow data collected during the 2021 monitoring period. This project is expected to start in March 2021 and be completed by June 2022. Upon completion by June of 2022, various modeling scenarios (under a separate proposal) will then be used to size infrastructure improvements.

Specific tasks that Arcadis will perform include, but are not limited to, the following:

Professional Services [(1)]
1. Data Collection and Pre-Modeling Framework
2. Rainfall and Flow Monitoring Data
3. Hydraulic Model Update and Expansion
4. Hydrologic Model Update & Expansion (Model at Source)
5. Model Calibration & Validation
6. Reports & Client Workshop

(1) For 2021 KISS Model Expansion & Calibration Only

Please reference the cover Memo for additional information.

KISS Model Proposal: *$898,000*

Cost Estimate (not to be exceeded without further authorization): *$898,000*

Time Table and Completion Deadline: As required to meet various critical deadlines as set forth in the proposal.

(For Authority Use Only)

Authorization Completion:

Approval: _____ **Actual Cost:** _____ **Date:** _____

Arcadis U.S., Inc.
1600 Market Street
Suite 1810
Philadelphia
Pennsylvania 19103
Tel 215 625 0850
www.arcadis.com

Mr. Philip DePoe
Capital Works Program Manager
Lehigh County Authority
1053 Spruce Road
Allentown, PA 18106-0348

Subject:
Scope and Budget for 2022 City of Allentown RDII Analysis of 2021 Flow Meter and Rain Gauge Data

Date:
February 12, 2021

Contact:

Jim Shelton

Phone:

302.723.1450

Email:

James.Shelton@arcadis.com

Dear Mr. DePoe:

Arcadis is pleased to the City of Allentown (COA) with this scope and budget for the flow data analysis for Rainfall Derived Inflow and Infiltration (RDII) effects using the 2021 flow and rainfall data gathered from the 43 flow meters installed in COA sewers.

OBJECTIVES

The main goal of this work is to conduct an RDII analysis of storm events during the flow monitoring period to determine the nature and extent of infiltration and inflow (I&I) leakage, and to use hydrograph interpretation to help the City focus their rehabilitation work (both secondary Sanitary Sewer Evaluation Survey (SSES) investigations and rehabilitation efforts) toward the sources contributing the leakage. It will also be determined where the flow meters should be installed for the next monitoring period and where SSES future work should be completed.

For the purposes of this scope and budget, we assume that the data from 43 flow meters and 5 rain gauges will be used. We also assume that flow data will be gathered and QC'd for data defects during the 2021 Kline's Island Sewer System (KISS) Model Calibration project. There will be approximately eight months of data and the analysis will be completed in 2022. Of these 43 meters/catchments, 26 of them will have upstream flow meters (including meters from other Signatories additionally monitored in 2021) that will require net flow analyses.

SCOPE OF WORK

Task 1 – Rainfall Derived I&I Analysis

Arcadis will conduct rainfall derived removal potential evaluations (RDII analysis) of flow monitoring and rainfall data. The results of the RDII analysis will be used to

identify the types and amounts of I&I for each catchment and determine the peaking factor for each storm event. The analysis can also be used to identify the most effective and efficient SSES activities for locating actual sources in each catchment.
Upon receipt of the final flow and rainfall data set, wet weather events will be defined and classified according to local Intensity/Duration/Frequency (IDF) curves. The most significant wet weather events will then be selected and evaluated for RDII analysis.

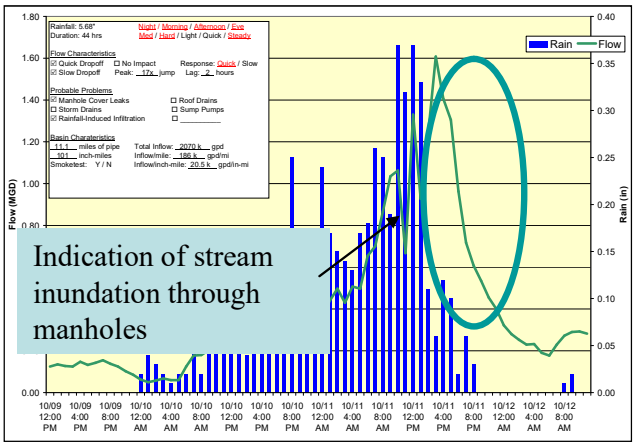
For each metered location, the data will be analyzed, and hydrographs will be developed and interpreted to identify suspected sources of I&I. Our data analysis software automates much of the analysis of flow and rainfall data, providing efficient and effective review of data quality and statistical summaries, base flow patterns, and magnitude of RDII impacts. Where necessary, upstream flows will be subtracted from downstream flows to represent catchment RDII conditions. The hydrographs will be analyzed qualitatively to determine the nature of RDII in each catchment.

The following data assessments will be prepared for each valid and true meter catchment:

- Average dry day flow by individual weekday
- Rainfall duration and intensity (recurrence frequency) for each event
- Peak flow rate and peaking factor for each event
- Peak RDII flow (Q) rate per event
- RDII volume (V) per event
- RDII capture (Q vs. I)
- Normalized peak RDII Q and V (gpd/LF)

We will analyze all flow data collected to calculate average daily flows, peak flows, and I&I from each of the catchments. Wet weather and dry weather flow patterns will be established and peak, minimum, and average flow rates will be calculated for each catchment flow element: base infiltration, base sewage flow, and RDII.

Mr. Philip DePoe
February 12, 2021



Analysis of the flow hydrographs described above will provide insight into the sources of RDII in each catchment. The hydrograph for each catchment can be used to select the SSES activities. Different sources of RDII have different flow signatures. For example, high peaks in the hydrograph over a short duration are evidence of sources of inundation or inflow; we would identify SSES activities for these catchments to specifically identify inflow and inundation sources as well as cross connections with storm sewer systems as well as illicit storm and/or groundwater connections to the sewer system by private property connections. Conversely, hydrographs illustrating peaks that are sustained over a long duration are evidence of sources of rainfall-induced infiltration; for these, we would recommend night-time weiring. Hydrographs may also indicate a combination of infiltration and inflow within the same catchment.

The hydrographs and the data tables will be presented as Excel spreadsheets and GIS figures, which will be used to report the findings and, based on the amount and source(s) of RDII entering the catchment.

DELIVERABLES

Arcadis will deliver the RDII analysis and SSES recommendations in the form of tables, hydrographs, scatter-graphs, and GIS figures and will meet with City and LCA staff and stakeholders as necessary to present the results and recommendations. No written report will be provided. Work including meetings will be completed by March 2022.

BUDGET ESTIMATE

We estimate the cost and level of effort of this work as shown in the below table.

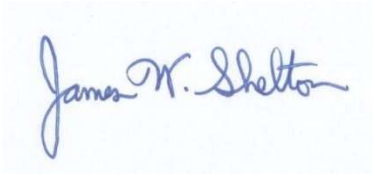
Task	Hours	Cost
Task 1 – Rainfall Derived I&I Analysis	386	$60,000
Total	**386**	**$60,000**

We propose to complete these services on a time and materials basis in accordance with the Agreement between LCA and Malcolm Pirnie, Inc., and the current Summary of Standard Charges for Lehigh County Authority. Arcadis will track the costs associated with this work and report them to LCA monthly throughout the project; we will not exceed the authorized budget without written professional services authorization from LCA. Payment for services will be based upon the actual labor and expenses incurred. Invoicing will be completed monthly. The invoice will include the defined contract tasks listing the day by day personnel performing the task with hourly rate and hours worked. The invoice will provide total billed for month. Support documents will be provided if there are any expenses incurred.

Please contact me with your authorization to proceed if this scope and budget are acceptable to you. If you have any questions, please do not hesitate to call me.

Sincerely,

ARCADIS U.S., Inc.



James W. Shelton, PE

Vice President

Cc: Tony Dill

Lehigh County Authority

1053 Spruce Street * P.O. Box 3348 * Allentown, PA 18106-0348
(610)398-2503 * FAX (610)398-8413 * Email: service@lehighcountyauthority.org

PROFESSIONAL SERVICES AUTHORIZATION

Professional: ARCADIS U.S., INC.
1600 Market Street, Suite 1810
Philadelphia, PA 19103

Date: February 22, 2021
Requested By: Phil DePoe

Approvals
Department Head: _____
Chief Executive Officer: _____

Allentown Division – Regional Sewer Capacity & Wet-Weather Planning: 2022 RDII (Rain Derived Inflow and Infiltration) Analysis of 2021 Flow Meter and Rain Gauge Data

The main goal of this work is to conduct an RDII analysis of storm events during the flow monitoring period to determine the nature and extent of infiltration and inflow (I&I) leakage, and to use hydrograph interpretation to help the City focus their rehabilitation work (both secondary Sanitary Sewer Evaluation Survey (SSES) investigations and rehabilitation efforts) toward the sources contributing the leakage. It will also be determined where the flow meters should be installed for the next monitoring period and where future SSES work should be completed. For the purposes of this scope and budget, we assume that the data from 43 flow meters and five rain gauges will be used. Specific tasks that Arcadis will perform include, but are not limited to, the following:

Professional Services *(1)*
1. Rainfall Derived I&I Analysis
2. Meet with LCA staff and stakeholders as needed
3. Deliver final results to LCA staff and stakeholders

(1) For 2022 RDII Analysis Only

Please reference the cover Memo for additional information.

RDII Proposal: *$60,000*

Cost Estimate (not to be exceeded without further authorization): *$60,000*

Time Table and Completion Deadline: As required to meet various critical deadlines as set forth in the proposal.

(For Authority Use Only)

Authorization Completion:

Approval: _____ **Actual Cost:** _____ **Date:** _____

LEHIGH COUNTY AUTHORITY
FINANCIAL STATEMENTS
DECEMBER 2020

LEHIGH COUNTY AUTHORITY
FINANCIAL STATEMENTS - SUMMARY
DECEMBER 2020

MONTH						YEAR-TO-DATE					FULL YEAR				
Actual	Q4 FC	Prior Year	FC Var	PY Var	DECEMBER 2020	Actual	Q4 FC	Prior Year	FC Var	PY Var	Actual	Budget	Prior Year	Bud Var	PY Var
					Income Statement										
(703,717)	(775,639)	(16,258)	71,922	(687,459)	Suburban Water	845,914	681,796	953,675	164,118	(107,761)	845,914	(78,407)	2,670,094	924,321	(1,824,180)
(352,980)	(404,134)	938,188	51,154	(1,291,168)	Suburban Wastewater	3,905,892	3,763,307	(488,333)	142,585	4,394,225	3,905,892	(1,269,292)	(473,333)	5,175,184	4,379,225
1,895,083	1,848,064	(3,309,946)	47,019	5,205,029	City Division	(3,868,571)	(4,008,810)	(3,459,921)	140,239	(408,650)	(3,868,571)	(4,106,561)	(4,130,921)	237,990	262,350
838,386	668,291	(2,388,016)	170,095	3,226,402	Total LCA	883,235	436,293	(2,994,579)	446,942	3,877,814	883,235	(5,454,260)	(1,934,160)	6,337,495	2,817,395
					Cash Flow Statement										
(963,654)	(1,098,592)	(1,556,607)	134,938	592,953	Suburban Water	(3,807,539)	(3,998,351)	2,681,907	190,812	(6,489,446)	(3,807,539)	(2,048,282)	2,681,907	(1,759,257)	(6,489,446)
1,519,021	1,486,001	365,017	33,020	1,154,004	Suburban Wastewater	480,210	313,039	(1,685,495)	167,171	2,165,705	480,210	17,484,855	(1,685,495)	(17,004,645)	2,165,705
(2,537,733)	(2,494,932)	(2,493,552)	(42,801)	(44,181)	City Division	1,415,876	1,287,120	128,756	128,756	1,287,120	1,415,876	3,142,950	7,328,430	(1,727,074)	(5,912,554)
(1,982,366)	(2,107,523)	(3,685,142)	125,157	1,702,776	Total LCA	(1,911,453)	(2,398,192)	1,125,168	486,739	(3,036,621)	(1,911,453)	18,579,523	8,324,842	(20,490,976)	(10,236,295)
					Debt Service Coverage Ratio										
(1.15)	(1.39)	0.76	0.24	(1.92)	Suburban Water	1.28	1.24	1.59	0.04	(0.31)	1.28	1.25	1.59	0.03	(0.31)
0.82	(0.06)	23.17	0.87	(22.36)	Suburban Wastewater	12.32	12.16	6.34	0.16	5.98	12.32	2.56	6.34	9.76	5.98
3.99	3.94	(0.07)	0.05	4.06	City Division	1.63	1.62	1.40	0.01	0.23	1.63	1.34	1.40	0.30	0.23

LEHIGH COUNTY AUTHORITY
CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 2020

MONTH				DECEMBER 2020	YEAR-TO-DATE				Q4 FULL YEAR FORECAST				FULL YEAR BUDGET			
Sub W	Sub WW	City	LCA	INCOME STATEMENT	Sub W	Sub WW	City	LCA	Sub W	Sub WW	City	LCA	Sub W	Sub WW	City	LCA
				Operating Revenues												
852,528	1,227,611	5,094,570	7,174,709	User Charges	10,769,774	15,962,933	39,741,396	66,474,103	10,738,667	15,901,248	39,686,771	66,326,686	10,582,010	16,446,154	38,712,488	65,740,652
109,279	86,143	223,811	419,233	Connection & System Charges	835,990	3,657,080	529,940	5,023,010	822,221	3,626,161	546,774	4,995,156	776,500	846,282	2,959,800	4,582,582
961,807	1,313,754	5,318,381	7,593,942	Total Operating Revenues	11,605,764	19,620,013	40,271,336	71,497,113	11,560,888	19,527,409	40,233,545	71,321,842	11,358,510	17,292,436	41,672,288	70,323,234
				Operating Expenses												
754,285	355,855	722,419	1,832,559	Personnel Costs	2,776,020	1,309,472	10,745,145	14,830,637	2,806,064	1,315,632	10,770,646	14,892,342	2,706,222	1,092,555	7,883,195	11,681,972
27,085	12,740	(583,389)	(543,564)	General and Administrative	301,192	142,031	1,575,917	2,019,140	304,719	136,671	1,576,683	2,018,073	593,837	352,684	4,604,681	5,551,202
46,736	32,465	171,014	250,215	Utilities	423,092	299,669	1,897,847	2,620,608	442,446	331,095	1,904,688	2,678,229	596,540	464,325	2,141,069	3,201,934
27,800	72,170	258,447	358,417	Materials and Supplies	278,738	376,801	1,464,250	2,119,789	383,373	342,673	1,550,473	2,276,519	563,005	430,139	1,688,624	2,681,768
473,338	783,742	653,766	1,910,846	Miscellaneous Services	2,954,194	8,910,180	1,808,523	13,672,897	2,940,445	8,877,729	1,807,441	13,625,615	2,875,124	10,015,943	2,342,341	15,233,408
-	-	-	-	Treatment & Transportation	-	-	-	-	-	-	-	-	-	-	-	-
227,359	385,166	490,000	1,102,525	Depreciation and Amortization	2,650,715	4,603,995	5,880,000	13,134,710	2,643,375	4,635,695	5,880,000	13,159,070	2,750,000	4,603,000	5,880,000	13,233,000
4,355	12,636	131,399	148,390	Other Expenses	13,767	64,750	1,130,236	1,208,753	8,743	115,732	1,130,182	1,254,657	3,400	1,000,000	2,782,916	3,786,316
1,560,958	1,654,774	1,843,656	5,059,388	Total Operating Expenses	9,397,718	15,706,898	24,501,918	49,606,534	9,529,165	15,755,227	24,620,113	49,904,505	10,088,128	17,958,646	27,322,826	55,369,600
(599,151)	(341,020)	3,474,725	2,534,554	Net Operating Income	2,208,046	3,913,115	15,769,418	21,890,579	2,031,723	3,772,182	15,613,432	21,417,337	1,270,382	(666,210)	14,349,462	14,953,634
				Non-Operating Income (Expense)												
4,090	10,140	602	14,832	Interest Income	74,594	183,962	162,074	420,630	83,965	207,515	164,886	456,366	160,000	200,000	900,000	1,260,000
(107,284)	(15,898)	(1,580,245)	(1,703,427)	Interest Expense	(1,434,083)	(199,654)	(17,800,701)	(19,434,438)	(1,436,181)	(196,897)	(17,800,676)	(19,433,754)	(1,508,789)	(803,082)	(19,356,023)	(21,667,894)
(1,372)	(6,202)	1	(7,573)	Other Miscellaneous Income (Expenses)	(2,643)	8,469	(1,999,362)	(1,993,536)	2,289	(19,493)	(1,986,452)	(2,003,656)	-	-	-	-
(104,566)	(11,960)	(1,579,642)	(1,696,168)	Net Non-Operating Income (Expense)	(1,362,132)	(7,223)	(19,637,989)	(21,007,344)	(1,349,927)	(8,875)	(19,622,242)	(20,981,044)	(1,348,789)	(603,082)	(18,456,023)	(20,407,894)
(703,717)	(352,980)	1,895,083	838,386	Net Income Before Capital Contributions	845,914	3,905,892	(3,868,571)	883,235	681,796	3,763,307	(4,008,810)	436,293	(78,407)	(1,269,292)	(4,106,561)	(5,454,260)
-	-	-	-	Capital Contributions	-	-	-	-	-	-	-	-	-	-	-	-
(703,717)	(352,980)	1,895,083	838,386	NET INCOME	845,914	3,905,892	(3,868,571)	883,235	681,796	3,763,307	(4,008,810)	436,293	(78,407)	(1,269,292)	(4,106,561)	(5,454,260)

MONTH				DECEMBER 2020	YEAR-TO-DATE				Q4 FULL YEAR FORECAST				FULL YEAR BUDGET			
Sub W	Sub WW	City	LCA	CASH FLOW STATEMENT	Sub W	Sub WW	City	LCA	Sub W	Sub WW	City	LCA	Sub W	Sub WW	City	LCA
				Cash Flows From Operating Activities												
961,807	1,313,754	5,318,381	7,593,942	Operating Revenues	11,605,764	19,620,013	40,271,336	71,497,113	11,560,888	19,527,409	40,233,545	71,321,842	11,358,510	17,292,436	41,672,288	70,323,234
(1,333,599)	(1,269,608)	(1,353,656)	(3,956,863)	Operating Expenses (ex D&A)	(6,747,003)	(11,102,903)	(18,621,918)	(36,471,824)	(6,885,790)	(11,119,532)	(18,740,113)	(36,745,435)	(7,338,128)	(13,355,646)	(21,442,826)	(42,136,600)
2,200,480	1,621,530	(515,352)	3,306,658	Non-Cash Working Capital Changes	(274,965)	(708,872)	(3,033,744)	(4,017,581)	(273,777)	(798,495)	(3,118,062)	(4,190,334)	-	-	-	-
1,828,688	1,665,676	3,449,373	6,943,737	Net Cash Provided by (Used in) Operating Activities	4,583,796	7,808,238	18,615,674	31,007,708	4,401,321	7,609,382	18,375,370	30,386,073	4,020,382	3,936,790	20,229,462	28,186,634
				Cash Flows From Financing Activities												
-	-	-	-	Capital Contributions	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	Proceeds New Borrowing	-	-	-	-	-	-	-	-	5,119,500	22,635,000	-	27,754,500
(103,036)	(16,542)	(4,023,972)	(4,143,550)	Interest Payments	(1,756,050)	(164,692)	(10,651,666)	(12,572,408)	(1,756,050)	(164,692)	(10,592,208)	(12,512,950)	(1,508,789)	(803,082)	(13,978,238)	(16,290,109)
(1,742,125)	(45,305)	(882,406)	(2,669,836)	Principal Payments	(2,081,390)	(542,065)	(1,149,035)	(3,772,490)	(2,081,390)	(542,065)	(1,148,629)	(3,772,084)	(1,832,775)	(813,353)	(1,442,932)	(4,089,060)
(1,845,161)	(61,847)	(4,906,378)	(6,813,386)	Net Cash Provided by (Used in) Financing Activities	(3,837,440)	(706,757)	(11,800,701)	(16,344,898)	(3,837,440)	(706,757)	(11,740,837)	(16,285,034)	1,777,936	21,018,565	(15,421,170)	7,375,331
				Cash Flows from Capital and Related Activities												
(1,372)	(6,202)	1	(7,573)	Non-Operating Income (Expenses)	(2,643)	8,469	(2,532,620)	(2,526,794)	2,289	(19,493)	(2,519,710)	(2,536,914)	-	-	(533,258)	(533,258)
(1,104,899)	(1,333,746)	(1,081,331)	(3,519,976)	Capital Expenditures, net	(5,030,164)	(8,316,702)	(3,028,551)	(16,375,417)	(5,052,804)	(8,280,608)	(2,992,589)	(16,326,001)	(8,006,600)	(7,670,500)	(2,032,084)	(17,709,184)
(1,106,271)	(1,339,948)	(1,081,330)	(3,527,549)	Net Cash Provided By (Used In) Capital and Related Activities	(5,032,807)	(8,308,233)	(5,561,171)	(18,902,211)	(5,050,515)	(8,300,101)	(5,512,299)	(18,862,915)	(8,006,600)	(7,670,500)	(2,565,342)	(18,242,442)
				Cash Flows From Investing Activities												
155,000	1,245,000	-	1,400,000	Investments Converting To Cash	2,382,000	5,156,000	-	7,538,000	2,382,000	5,156,000	-	7,538,000	-	-	-	-
-	-	-	-	Purchased Invesments	(1,977,682)	(3,653,000)	-	(5,630,682)	(1,977,682)	(3,653,000)	-	(5,630,682)	-	-	-	-
4,090	10,140	602	14,832	Interest Income	74,594	183,962	162,074	420,630	83,965	207,515	164,886	456,366	160,000	200,000	900,000	1,260,000
159,090	1,255,140	602	1,414,832	Net Cash Provided By (Used In) Investing Activities	478,912	1,686,962	162,074	2,327,948	488,283	1,710,515	164,886	2,363,684	160,000	200,000	900,000	1,260,000
(963,654)	1,519,021	(2,537,733)	(1,982,366)	FUND NET CASH FLOWS	(3,807,539)	480,210	1,415,876	(1,911,453)	(3,998,351)	313,039	1,287,120	(2,398,192)	(2,048,282)	17,484,855	3,142,950	18,579,523
				DEBT SERVICE RATIO												
(369,074)	48,084	3,920,888	3,599,898	Total Cash Available For Debt Service	4,930,712	8,709,541	19,278,872	32,919,125	4,761,352	8,595,899	19,138,608	32,495,859	4,180,382	4,136,790	20,596,204	28,913,376
319,783	58,890	983,389	1,362,062	Debt Service	3,837,440	706,757	11,800,701	16,344,898	3,837,440	706,757	11,800,701	16,344,898	3,341,564	1,616,435	15,421,170	20,379,169
(1.15)	0.82	3.99	2.64	DSCR	1.28	12.32	1.63	2.01	1.24	12.16	1.62	1.99	1.25	2.56	1.34	1.42

LEHIGH COUNTY AUTHORITY
CASH & INVESTMENT ANALYSIS
YTD DECEMBER 2020

US DOLLARS	Suburban Water	Suburban Wastewater	City Division	LCA Total
CURRENT YEAR ENDING BALANCES				
Cash				
Unrestricted Operating Cash	7,095,554	4,926,175	756,961	12,778,690
Unrestricted Project Cash	414,973	2,610,950	170,982	3,196,905
Total Unrestricted Cash	7,510,527	7,537,125	927,943	15,975,595
Restricted Cash	1,499,820	338,204	59,947,286	61,785,310
Total Cash	9,010,347	7,875,329	60,875,229	77,760,905
Investments				
Unrestricted Investments	2,742,749	6,387,745	-	9,130,494
Restricted Investments	4,499,725	-	-	4,499,725
Total Investments	7,242,474	6,387,745	-	13,630,219
Total Cash + Investments				
Unrestricted	10,253,276	13,924,870	927,943	25,106,089
Restricted	5,999,545	338,204	59,947,286	66,285,035
Total	16,252,821	14,263,074	60,875,229	91,391,124
CURRENT YEAR BEGINNING BALANCES				
Cash				
Unrestricted Operating Cash	7,205,363	4,385,168	3,590,422	15,180,953
Unrestricted Project Cash	2,037,248	2,672,019	169,980	4,879,247
Total Unrestricted Cash	9,242,611	7,057,187	3,760,402	20,060,200
Restricted Cash	3,575,275	337,932	55,698,951	59,612,158
Total Cash	12,817,886	7,395,119	59,459,353	79,672,358
Investments				
Unrestricted Investments	3,136,930	7,757,276	-	10,894,206
Restricted Investments	4,236,279	-	-	4,236,279
Total Investments	7,373,209	7,757,276	-	15,130,485
Total Cash + Investments				
Unrestricted	12,379,541	14,814,463	3,760,402	30,954,406
Restricted	7,811,554	337,932	55,698,951	63,848,437
Total	20,191,095	15,152,395	59,459,353	94,802,843
NET ACTIVITY - INCREASE (DECREASE)				
Cash				
Unrestricted Operating Cash	(109,809)	541,007	(2,833,461)	(2,402,263)
Unrestricted Project Cash	(1,622,275)	(61,069)	1,002	(1,682,342)
Total Unrestricted Cash	(1,732,084)	479,938	(2,832,459)	(4,084,605)
Restricted Cash	(2,075,455)	272	4,248,335	2,173,152
Total Cash	(3,807,539)	480,210	1,415,876	(1,911,453)
Investments				
Unrestricted Investments	(394,181)	(1,369,531)	-	(1,763,712)
Restricted Investments	263,446	-	-	263,446
Total Investments	(130,735)	(1,369,531)	-	(1,500,266)
Total Cash + Investments				
Unrestricted	(2,126,265)	(889,593)	(2,832,459)	(5,848,317)
Restricted	(1,812,009)	272	4,248,335	2,436,598
Total	(3,938,274)	(889,321)	1,415,876	(3,411,719)
Days on Hand - Unrestricted Cash	398.12	247.41	18.07	158.69
Days on Hand - Unrestricted Cash + Investments	543.50	457.09	18.07	249.38

LEHIGH COUNTY AUTHORITY
FINANCIAL STATEMENTS - SUBURBAN WATER
DECEMBER 2020

MONTH					DECEMBER 2020	YEAR-TO-DATE					FULL YEAR				
Actual	Q4 FC	Prior Yr	FC Var	PY Var	INCOME STATEMENT	Actual	Q4 FC	Prior Yr	FC Var	PY Var	Actual	Budget	Prior Yr	Bud Var	PY Var
					Operating Revenues										
852,528	859,136	820,522	(6,608)	32,006	User Charges	10,769,774	10,738,667	9,930,537	31,107	839,237	10,769,774	10,582,010	9,930,537	187,764	839,237
109,279	99,511	144,821	9,768	(35,542)	Connection & System Charges	835,990	822,221	1,000,653	13,769	(164,663)	835,990	776,500	1,000,653	59,490	(164,663)
961,807	958,647	965,343	3,160	(3,536)	Total Operating Revenues	11,605,764	11,560,888	10,931,190	44,876	674,574	11,605,764	11,358,510	10,931,190	247,254	674,574
					Operating Expenses										
754,285	779,728	114,338	25,443	(639,947)	Personnel Costs	2,776,020	2,806,064	1,525,462	30,044	(1,250,558)	2,776,020	2,706,222	1,525,462	(69,798)	(1,250,558)
27,085	28,000	206,185	915	179,100	General and Administrative	301,192	304,719	919,226	3,527	618,034	301,192	593,837	919,226	292,645	618,034
46,736	64,962	68,017	18,226	21,281	Utilities	423,092	442,446	488,568	19,354	65,476	423,092	596,540	488,568	173,448	65,476
27,800	62,368	67,642	34,568	39,842	Materials and Supplies	278,738	383,373	402,069	104,635	123,331	278,738	563,005	402,069	284,267	123,331
473,338	472,581	294,274	(757)	(179,064)	Miscellaneous Services	2,954,194	2,940,445	2,575,929	(13,749)	(378,265)	2,954,194	2,875,124	2,575,929	(79,070)	(378,265)
-	-	-	-	-	Treatment & Transportation	-	-	-	-	-	-	-	-	-	-
227,359	221,125	81,353	(6,234)	(146,006)	Depreciation and Amortization	2,650,715	2,643,375	2,602,179	(7,340)	(48,536)	2,650,715	2,750,000	2,602,179	99,285	(48,536)
4,355	-	53,840	(4,355)	49,485	Other Expenses	13,767	8,743	113,253	(5,024)	99,486	13,767	3,400	113,253	(10,367)	99,486
1,560,958	1,628,764	885,649	67,806	(675,309)	Total Operating Expenses	9,397,718	9,529,165	8,626,686	131,447	(771,032)	9,397,718	10,088,128	8,626,686	690,410	(771,032)
(599,151)	(670,117)	79,694	70,966	(678,845)	Net Operating Income	2,208,046	2,031,723	2,304,504	176,323	(96,458)	2,208,046	1,270,382	2,304,504	937,664	(96,458)
					Non-Operating Income (Expense)										
4,090	4,000	42,848	90	(38,758)	Interest Income	74,594	83,965	194,200	(9,371)	(119,606)	74,594	160,000	194,200	(85,406)	(119,606)
(107,284)	(109,522)	(138,800)	2,238	31,516	Interest Expense	(1,434,083)	(1,436,181)	(1,545,029)	2,098	110,946	(1,434,083)	(1,508,789)	(1,545,029)	74,706	110,946
(1,372)	-	-	(1,372)	(1,372)	Other Miscellaneous Income (Expenses)	(2,643)	2,289	-	(4,932)	(2,643)	(2,643)	-	-	(2,643)	(2,643)
(104,566)	(105,522)	(95,952)	956	(8,614)	Net Non-Operating Income (Expense)	(1,362,132)	(1,349,927)	(1,350,829)	(12,205)	(11,303)	(1,362,132)	(1,348,789)	(1,350,829)	(13,343)	(11,303)
(703,717)	(775,639)	(16,258)	71,922	(687,459)	Net Income Before Capital Contributions	845,914	681,796	953,675	164,118	(107,761)	845,914	(78,407)	953,675	924,321	(107,761)
-	-	-	-	-	Capital Contributions	-	-	-	-	-	-	-	1,716,419	-	(1,716,419)
(703,717)	(775,639)	(16,258)	71,922	(687,459)	NET INCOME	845,914	681,796	953,675	164,118	(107,761)	845,914	(78,407)	2,670,094	924,321	(1,824,180)

MONTH					DECEMBER 2020	YEAR-TO-DATE					FULL YEAR				
Actual	Q4 FC	Prior Yr	FC Var	PY Var	CASH FLOW STATEMENT	Actual	Q4 FC	Prior Yr	FC Var	PY Var	Actual	Budget	Prior Yr	Bud Var	PY Var
					Cash Flows From Operating Activities										
961,807	958,647	965,343	3,160	(3,536)	Operating Revenues	11,605,764	11,560,888	10,931,190	44,876	674,574	11,605,764	11,358,510	10,931,190	247,254	674,574
(1,333,599)	(1,407,639)	(804,296)	74,040	(529,303)	Operating Expenses (ex D&A)	(6,747,003)	(6,885,790)	(6,024,507)	138,787	(722,496)	(6,747,003)	(7,338,128)	(6,024,507)	591,125	(722,496)
2,200,480	2,201,700	825,405	(1,220)	1,375,075	Non-Cash Working Capital Changes	(274,965)	(273,777)	6,008,985	(1,188)	(6,283,950)	(274,965)	-	6,008,985	(274,965)	(6,283,950)
1,828,688	1,752,708	986,452	75,980	842,236	Net Cash Provided by (Used in) Operating Activities	4,583,796	4,401,321	10,915,668	182,475	(6,331,872)	4,583,796	4,020,382	10,915,668	563,414	(6,331,872)
					Cash Flows From Financing Activities										
-	-	-	-	-	Capital Contributions	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	Proceeds New Borrowing	-	-	-	-	-	-	5,119,500	-	(5,119,500)	-
(103,036)	(123,869)	(4,632)	20,833	(98,404)	Interest Payments	(1,756,050)	(1,756,050)	(1,475,406)	-	(280,644)	(1,756,050)	(1,508,789)	(1,475,406)	(247,261)	(280,644)
(1,742,125)	(1,762,912)	(30,513)	20,787	(1,711,612)	Principal Payments	(2,081,390)	(2,081,390)	(1,725,137)	-	(356,253)	(2,081,390)	(1,832,775)	(1,725,137)	(248,615)	(356,253)
(1,845,161)	(1,886,781)	(35,145)	41,620	(1,810,016)	Net Cash Provided by (Used in) Financing Activities	(3,837,440)	(3,837,440)	(3,200,543)	-	(636,897)	(3,837,440)	1,777,936	(3,200,543)	(5,615,376)	(636,897)
					Cash Flows from Capital and Related Activities										
(1,372)	-	-	(1,372)	(1,372)	Non-Operating Income (Expenses)	(2,643)	2,289	-	(4,932)	(2,643)	(2,643)	-	-	(2,643)	(2,643)
(1,104,899)	(1,123,519)	(2,691,208)	18,620	1,586,309	Capital Expenditures, net	(5,030,164)	(5,052,804)	(8,687,268)	22,640	3,657,104	(5,030,164)	(8,006,600)	(8,687,268)	2,976,436	3,657,104
(1,106,271)	(1,123,519)	(2,691,208)	17,248	1,584,937	Net Cash Provided By (Used In) Capital and Related Activities	(5,032,807)	(5,050,515)	(8,687,268)	17,708	3,654,461	(5,032,807)	(8,006,600)	(8,687,268)	2,973,793	3,654,461
					Cash Flows From Investing Activities										
155,000	155,000	140,446	-	14,554	Investments Converting To Cash	2,382,000	2,382,000	5,849,670	-	(3,467,670)	2,382,000	-	5,849,670	2,382,000	(3,467,670)
-	-	-	-	-	Purchased Invesments	(1,977,682)	(1,977,682)	(2,389,820)	-	412,138	(1,977,682)	-	(2,389,820)	(1,977,682)	412,138
4,090	4,000	42,848	90	(38,758)	Interest Income	74,594	83,965	194,200	(9,371)	(119,606)	74,594	160,000	194,200	(85,406)	(119,606)
159,090	159,000	183,294	90	(24,204)	Net Cash Provided By (Used In) Investing Activities	478,912	488,283	3,654,050	(9,371)	(3,175,138)	478,912	160,000	3,654,050	318,912	(3,175,138)
(963,654)	(1,098,592)	(1,556,607)	134,938	592,953	FUND NET CASH FLOWS	(3,807,539)	(3,998,351)	2,681,907	190,812	(6,489,446)	(3,807,539)	(2,048,282)	2,681,907	(1,759,257)	(6,489,446)
					DEBT SERVICE RATIO										
(369,074)	(444,992)	203,895	75,918	(572,969)	Total Cash Available For Debt Service	4,930,712	4,761,352	5,100,883	169,360	(170,171)	4,930,712	4,180,382	5,100,883	750,330	(170,171)
319,783	319,783	266,711	-	53,072	Debt Service	3,837,440	3,837,440	3,200,543	-	636,897	3,837,440	3,341,564	3,200,543	495,876	636,897
(1.15)	(1.39)	0.76	0.24	(1.92)	DSCR	1.28	1.24	1.59	0.04	(0.31)	1.28	1.25	1.59	0.03	(0.31)

LEHIGH COUNTY AUTHORITY
FINANCIAL STATEMENTS - SUBURBAN WATER
DECEMBER 2020

FORECAST VARIANCES - MONTH

INCOME STATEMENT	Actual	Q4 FC	Variance	Comments
Operating Revenues				
User Charges	852,528	859,136	(6,608)	
Connection & System Charges	109,279	99,511	9,768	
Total Operating Revenues	961,807	958,647	3,160	No major variance
Operating Expenses				
Salaries and Wages	754,285	779,728	25,443	
General and Administrative	27,085	28,000	915	
Utilities	46,736	64,962	18,226	
Materials and Supplies	27,800	62,368	34,568	
Miscellaneous Services	473,338	472,581	(757)	
Treatment & Transportation	-	-	-	
Depreciation and Amortization	227,359	221,125	(6,234)	
Other Expenses	4,355	-	(4,355)	
Total Operating Expenses	1,560,958	1,628,764	67,806	Lower employee costs along with lower spending on utilities and materials and supplies
Net Operating Income	(599,151)	(670,117)	70,966	Lower operating expenses
Non-Operating Income (Expenses)				
Interest Income	4,090	4,000	90	
Interest (Expense)	(107,284)	(109,522)	2,238	
Other Miscellaneous Income (Expenses)	(1,372)	-	(1,372)	
Capital Contributions	-	-	-	
Total Non-Operating Income (Expenses)	(104,566)	(105,522)	956	Higher interest earnings
NET INCOME	(703,717)	(775,639)	71,922	Higher net operating income and higher interest earnings

FORECAST VARIANCES - MONTH

CASH FLOW STATEMENT	Actual	Q4 FC	Variance	Comments
Cash Flows From Operating Activities				
Operating Revenues	961,807	958,647	3,160	
Operating Expenses (ex D&A)	(1,333,599)	(1,407,639)	74,040	
Non-Cash Working Capital Changes	2,200,480	2,201,700	(1,220)	
Net Cash Provided by (Used in) Operating Activities	1,828,688	1,752,708	75,980	Lower operating expenses
Cash Flows From Financing Activities				
Capital Contributions	-	-	-	
Proceeds New Borrowing	-	-	-	
Interest Payments	(103,036)	(123,869)	20,833	
Principal Payments	(1,742,125)	(1,762,912)	20,787	
Net Cash Provided by (Used in) Financing Activities	(1,845,161)	(1,886,781)	41,620	
Cash Flows from Capital and Related Activities				
Capital Expenditures, Net	(1,104,899)	(1,123,519)	18,620	Lower capex spending
Non-Operating Income (Expenses)	(1,372)	-	(1,372)	
Net Cash Provided By (Used In) Capital and Related Activities	(1,106,271)	(1,123,519)	17,248	
Cash Flows From Investing Activities				
Investments Converting To Cash	155,000	155,000	-	
Purchased Invesments	-	-	-	
Interest Income	4,090	4,000	90	
Net Cash Provided By (Used In) Investing Activities	159,090	159,000	90	
FUND NET CASH FLOWS	(963,654)	(1,098,592)	134,938	Higher cash provided by operations and lower capex

LEHIGH COUNTY AUTHORITY
FINANCIAL STATEMENTS - SUBURBAN WASTEWATER
DECEMBER 2020

MONTH					DECEMBER 2020	YEAR-TO-DATE					FULL YEAR				
Actual	Q4 FC	Prior Yr	FC Var	PY Var	INCOME STATEMENT	Actual	Q4 FC	Prior Yr	FC Var	PY Var	Actual	Budget	Prior Yr	Bud Var	PY Var
					Operating Revenues										
1,227,611	1,215,166	809,999	12,445	417,612	User Charges	15,962,933	15,901,248	14,082,154	61,685	1,880,779	15,962,933	16,446,154	14,082,154	(483,221)	1,880,779
86,143	60,000	(422,540)	26,143	508,683	Connection & System Fees	3,657,080	3,626,161	1,616,882	30,919	2,040,198	3,657,080	846,282	1,616,882	2,810,798	2,040,198
1,313,754	1,275,166	387,459	38,588	926,295	Total Operating Revenues	19,620,013	19,527,409	15,699,036	92,604	3,920,977	19,620,013	17,292,436	15,699,036	2,327,577	3,920,977
					Operating Expenses										
355,855	353,650	106,202	(2,205)	(249,653)	Personnel Costs	1,309,472	1,315,632	854,472	6,160	(455,000)	1,309,472	1,092,555	854,472	(216,917)	(455,000)
12,740	10,000	88,305	(2,740)	75,565	General and Administrative	142,031	136,671	396,588	(5,360)	254,557	142,031	352,684	396,588	210,653	254,557
32,465	44,001	46,255	11,536	13,790	Utilities	299,669	331,095	438,942	31,426	139,273	299,669	464,325	438,942	164,656	139,273
72,170	32,588	37,490	(39,582)	(34,680)	Materials and Supplies	376,801	342,673	333,610	(34,128)	(43,191)	376,801	430,139	333,610	53,338	(43,191)
783,742	750,019	690,115	(33,723)	(93,627)	Miscellaneous Services	8,910,180	8,877,729	9,666,619	(32,451)	756,439	8,910,180	10,015,943	9,666,619	1,105,763	756,439
-	-	-	-	-	Treatment & Transportation	-	-	-	-	-	-	-	-	-	-
385,166	385,512	352,527	346	(32,639)	Depreciation and Amortization	4,603,995	4,635,695	4,571,324	31,700	(32,671)	4,603,995	4,603,000	4,571,324	(995)	(32,671)
12,636	58,902	(1,819,158)	46,266	(1,831,794)	Other Expenses	64,750	115,732	45,545	50,982	(19,205)	64,750	1,000,000	45,545	935,250	(19,205)
1,654,774	1,634,672	(498,264)	(20,102)	(2,153,038)	Total Operating Expenses	15,706,898	15,755,227	16,307,100	48,329	600,202	15,706,898	17,958,646	16,307,100	2,251,748	600,202
(341,020)	(359,506)	885,723	18,486	(1,226,743)	Net Operating Income	3,913,115	3,772,182	(608,064)	140,933	4,521,179	3,913,115	(666,210)	(608,064)	4,579,325	4,521,179
					Non-Operating Income (Expense)										
10,140	19,444	69,862	(9,304)	(59,722)	Interest Income	183,962	207,515	332,846	(23,553)	(148,884)	183,962	200,000	332,846	(16,038)	(148,884)
(15,898)	(15,238)	(17,397)	(660)	1,499	Interest Expense	(199,654)	(196,897)	(213,115)	(2,757)	13,461	(199,654)	(803,082)	(213,115)	603,428	13,461
(6,202)	(48,834)	-	42,632	(6,202)	Other Miscellaneous Income (Expenses)	8,469	(19,493)	-	27,962	8,469	8,469	-	-	8,469	8,469
(11,960)	(44,628)	52,465	32,668	(64,425)	Net Non-Operating Income (Expense)	(7,223)	(8,875)	119,731	1,652	(126,954)	(7,223)	(603,082)	119,731	595,859	(126,954)
(352,980)	(404,134)	938,188	51,154	(1,291,168)	Net Income Before Capital Contributions	3,905,892	3,763,307	(488,333)	142,585	4,394,225	3,905,892	(1,269,292)	(488,333)	5,175,184	4,394,225
-	-	-	-	-	Capital Contributions	-	-	-	-	-	-	-	15,000	-	(15,000)
(352,980)	(404,134)	938,188	51,154	(1,291,168)	NET INCOME	3,905,892	3,763,307	(488,333)	142,585	4,394,225	3,905,892	(1,269,292)	(473,333)	5,175,184	4,379,225

MONTH					DECEMBER 2020	YEAR-TO-DATE					FULL YEAR				
Actual	Q4 FC	Prior Yr	FC Var	PY Var	CASH FLOW STATEMENT	Actual	Q4 FC	Prior Yr	FC Var	PY Var	Actual	Budget	Prior Yr	Bud Var	PY Var
					Cash Flows From Operating Activities										
1,313,754	1,275,166	387,459	38,588	926,295	Operating Revenues	19,620,013	19,527,409	15,699,036	92,604	3,920,977	19,620,013	17,292,436	15,699,036	2,327,577	3,920,977
(1,269,608)	(1,249,160)	850,791	(20,448)	(2,120,399)	Operating Expenses (ex D&A)	(11,102,903)	(11,119,532)	(11,735,776)	16,629	632,873	(11,102,903)	(13,355,646)	(11,735,776)	2,252,743	632,873
1,621,530	1,619,000	1,613,122	2,530	8,408	Non-Cash Working Capital Changes	(708,872)	(798,495)	5,595,449	89,623	(6,304,321)	(708,872)	-	5,595,449	(708,872)	(6,304,321)
1,665,676	1,645,006	2,851,372	20,670	(1,185,696)	Net Cash Provided by (Used in) Operating Activities	7,808,238	7,609,382	9,558,709	198,856	(1,750,471)	7,808,238	3,936,790	9,558,709	3,871,448	(1,750,471)
					Cash Flows From Financing Activities										
-	-	-	-	-	Capital Contributions	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	Proceeds New Borrowing	-	-	-	-	-	-	22,635,000	-	(22,635,000)	-
(16,542)	(9,169)	(14,414)	(7,373)	(2,128)	Interest Payments	(164,692)	(164,692)	(178,219)	-	13,527	(164,692)	(803,082)	(178,219)	638,390	13,527
(45,305)	(45,647)	(48,529)	342	3,224	Principal Payments	(542,065)	(542,065)	(499,110)	-	(42,955)	(542,065)	(813,353)	(499,110)	271,288	(42,955)
(61,847)	(54,816)	(62,943)	(7,031)	1,096	Net Cash Provided by (Used in) Financing Activities	(706,757)	(706,757)	(677,329)	-	(29,428)	(706,757)	21,018,565	(677,329)	(21,725,322)	(29,428)
					Cash Flows from Capital and Related Activities										
(6,202)	(48,834)	15,000	42,632	(21,202)	Non-Operating Income (Expenses)	8,469	(19,493)	15,000	27,962	(6,531)	8,469	-	15,000	8,469	(6,531)
(1,333,746)	(1,319,799)	(3,250,091)	(13,947)	1,916,345	Capital Expenditures, net	(8,316,702)	(8,280,608)	(9,613,149)	(36,094)	1,296,447	(8,316,702)	(7,670,500)	(9,613,149)	(646,202)	1,296,447
(1,339,948)	(1,368,633)	(3,235,091)	28,685	1,895,143	Net Cash Provided By (Used In) Capital and Related Activities	(8,308,233)	(8,300,101)	(9,598,149)	(8,132)	1,289,916	(8,308,233)	(7,670,500)	(9,598,149)	(637,733)	1,289,916
					Cash Flows From Investing Activities										
1,245,000	1,245,000	741,817	-	503,183	Investments Converting To Cash	5,156,000	5,156,000	5,481,724	-	(325,724)	5,156,000	-	5,481,724	5,156,000	(325,724)
-	-	-	-	-	Purchased Invesments	(3,653,000)	(3,653,000)	(6,783,296)	-	3,130,296	(3,653,000)	-	(6,783,296)	(3,653,000)	3,130,296
10,140	19,444	69,862	(9,304)	(59,722)	Interest Income	183,962	207,515	332,846	(23,553)	(148,884)	183,962	200,000	332,846	(16,038)	(148,884)
1,255,140	1,264,444	811,679	(9,304)	443,461	Net Cash Provided By (Used In) Investing Activities	1,686,962	1,710,515	(968,726)	(23,553)	2,655,688	1,686,962	200,000	(968,726)	1,486,962	2,655,688
1,519,021	1,486,001	365,017	33,020	1,154,004	FUND NET CASH FLOWS	480,210	313,039	(1,685,495)	167,171	2,165,705	480,210	17,484,855	(1,685,495)	(17,004,645)	2,165,705
					DEBT SERVICE RATIO										
48,084	(3,384)	1,308,112	51,468	(1,260,028)	Total Cash Available For Debt Service	8,709,541	8,595,899	4,296,106	113,642	4,413,435	8,709,541	4,136,790	4,296,106	4,572,751	4,413,435
58,890	58,890	56,445	-	2,445	Debt Service	706,757	706,757	677,329	-	29,428	706,757	1,616,435	677,329	(909,678)	29,428
0.82	(0.06)	23.17	0.87	(22.36)	DSCR	12.32	12.16	6.34	0.16	5.98	12.32	2.56	6.34	9.76	5.98

LEHIGH COUNTY AUTHORITY
FINANCIAL STATEMENTS - SUBURBAN WASTEWATER
DECEMBER 2020

FORECAST VARIANCES - MONTH

INCOME STATEMENT	Actual	Q4 FC	Variance	Comments
Operating Revenues				
User Charges	1,227,611	1,215,166	12,445	Higher municipal charges partially offset by lower hauler charges
Connection & System Charges	86,143	60,000	26,143	Higher tapping fees
Total Operating Revenues	1,313,754	1,275,166	38,588	Higher user charges and higher tapping fees
Operating Expenses				
Salaries and Wages	355,855	353,650	(2,205)	
General and Administrative	12,740	10,000	(2,740)	
Utilities	32,465	44,001	11,536	
Materials and Supplies	72,170	32,588	(39,582)	Higher miscellaneous supplies
Miscellaneous Services	783,742	750,019	(33,723)	Higher contract operator charges
Treatment & Transportation	-	-	-	
Depreciation and Amortization	385,166	385,512	346	
Other Expenses	12,636	58,902	46,266	Lower miscellaneous expenses
Total Operating Expenses	1,654,774	1,634,672	(20,102)	Higher materials/supplies and higher services spending offset partly by lower miscellaneous expenses
Net Operating Income	(341,020)	(359,506)	18,486	Higher operating revenues aprtially eroded by higher operating expenses
Non-Operating Income (Expenses)				
Interest Income	10,140	19,444	(9,304)	
Interest (Expense)	(15,898)	(15,238)	(660)	
Other Miscellaneous Income (Expenses)	(6,202)	(48,834)	42,632	Higher investment gains
Capital Contributions	-	-	-	
Total Non-Operating Income (Expenses)	(11,960)	(44,628)	32,668	Higher investment gains reduced a bit by lower interest income
NET INCOME	(352,980)	(404,134)	51,154	

FORECAST VARIANCES - MONTH

CASH FLOW STATEMENT	Actual	Q4 FC	Variance	Comments
Cash Flows From Operating Activities				
Operating Revenues	1,313,754	1,275,166	38,588	
Operating Expenses (ex D&A)	(1,269,608)	(1,249,160)	(20,448)	
Non-Cash Working Capital Changes	1,621,530	1,619,000	2,530	
Net Cash Provided by (Used in) Operating Activities	1,665,676	1,645,006	20,670	Higher operating revenues aprtially eroded by higher operating expenses
Cash Flows From Financing Activities				
Capital Contributions	-	-	-	
Proceeds New Borrowing	-	-	-	
Interest Payments	(16,542)	(9,169)	(7,373)	
Principal Payments	(45,305)	(45,647)	342	
Net Cash Provided by (Used in) Financing Activities	(61,847)	(54,816)	(7,031)	
Cash Flows from Capital and Related Activities				
Capital Expenditures, Net	(1,333,746)	(1,319,799)	(13,947)	
Non-Operating Income (Expenses)	(6,202)	(48,834)	42,632	Lower capex
Net Cash Provided By (Used In) Capital and Related Activities	(1,339,948)	(1,368,633)	28,685	
Cash Flows From Investing Activities				
Investments Converting To Cash	1,245,000	1,245,000	-	
Purchased Invesments	-	-	-	
Interest Income	10,140	19,444	(9,304)	
Net Cash Provided By (Used In) Investing Activities	1,255,140	1,264,444	(9,304)	Lower interest income
FUND NET CASH FLOWS	1,519,021	1,486,001	33,020	Higher cash from operations aided by lower capex with a partial impact from lower interest income

LEHIGH COUNTY AUTHORITY
FINANCIAL STATEMENTS - CITY DIVISION
DECEMBER 2020

MONTH					DECEMBER 2020	YEAR-TO-DATE					FULL YEAR				
Actual	Q4 FC	Prior Yr	FC Var	PY Var	INCOME STATEMENT	Actual	Q4 FC	Prior Yr	FC Var	PY Var	Actual	Budget	Prior Yr	Bud Var	PY Var
					Operating Revenues										
5,094,570	4,993,234	3,289,857	101,336	1,804,713	User Charges	39,741,396	39,686,771	38,630,691	54,625	1,110,705	39,741,396	38,712,488	38,630,691	1,028,908	1,110,705
223,811	255,000	16,040	(31,189)	207,771	Connection & System Fees	529,940	546,774	1,101,025	(16,834)	(571,085)	529,940	2,959,800	1,101,025	(2,429,860)	(571,085)
5,318,381	5,248,234	3,305,897	70,147	2,012,484	Total Operating Revenues	40,271,336	40,233,545	39,731,716	37,791	539,620	40,271,336	41,672,288	39,731,716	(1,400,952)	539,620
					Operating Expenses										
722,419	735,195	650,885	12,776	(71,534)	Personnel Costs	10,745,145	10,770,646	8,050,023	25,501	(2,695,122)	10,745,145	7,883,195	8,050,023	(2,861,950)	(2,695,122)
(583,389)	(582,666)	873,802	723	1,457,191	General and Administrative	1,575,917	1,576,683	4,481,586	766	2,905,669	1,575,917	4,604,681	4,481,586	3,028,764	2,905,669
171,014	168,621	293,032	(2,393)	122,018	Utilities	1,897,847	1,904,688	2,241,593	6,841	343,746	1,897,847	2,141,069	2,241,593	243,222	343,746
258,447	258,633	136,367	186	(122,080)	Materials and Supplies	1,464,250	1,550,473	1,240,260	86,223	(223,990)	1,464,250	1,688,624	1,240,260	224,374	(223,990)
653,766	628,609	409,504	(25,157)	(244,262)	Miscellaneous Services	1,808,523	1,807,441	1,834,666	(1,082)	26,143	1,808,523	2,342,341	1,834,666	533,818	26,143
-	-	-	-	-	Treatment & Transportation	-	-	-	-	-	-	-	-	-	-
490,000	490,000	490,000	-	-	Depreciation and Amortization	5,880,000	5,880,000	5,880,000	-	-	5,880,000	5,880,000	5,880,000	-	-
131,399	130,000	519,229	(1,399)	387,830	Other Expenses	1,130,236	1,130,182	1,269,658	(54)	139,422	1,130,236	2,782,916	1,269,658	1,652,680	139,422
1,843,656	1,828,392	3,372,819	(15,264)	1,529,163	Total Operating Expenses	24,501,918	24,620,113	24,997,786	118,195	495,868	24,501,918	27,322,826	24,997,786	2,820,908	495,868
3,474,725	3,419,842	(66,922)	54,883	3,541,647	Net Operating Income	15,769,418	15,613,432	14,733,930	155,986	1,035,488	15,769,418	14,349,462	14,733,930	1,419,956	1,035,488
					Non-Operating Income (Expense)										
602	1,503	201,576	(901)	(200,974)	Interest Income	162,074	164,886	1,193,573	(2,812)	(1,031,499)	162,074	900,000	1,193,573	(737,926)	(1,031,499)
(1,580,245)	(1,580,596)	(3,444,600)	351	1,864,355	Interest Expense	(17,800,701)	(17,800,676)	(19,387,424)	(25)	1,586,723	(17,800,701)	(19,356,023)	(19,387,424)	1,555,322	1,586,723
1	7,315	-	(7,314)	1	Other Miscellaneous Income (Expenses)	(1,999,362)	(1,986,452)	-	(12,910)	(1,999,362)	(1,999,362)	-	(671,000)	(1,999,362)	(1,328,362)
(1,579,642)	(1,571,778)	(3,243,024)	(7,864)	1,663,382	Net Non-Operating Income (Expense)	(19,637,989)	(19,622,242)	(18,193,851)	(15,747)	(1,444,138)	(19,637,989)	(18,456,023)	(18,864,851)	(1,181,966)	(773,138)
1,895,083	1,848,064	(3,309,946)	47,019	5,205,029	Net Income Before Capital Contributions	(3,868,571)	(4,008,810)	(3,459,921)	140,239	(408,650)	(3,868,571)	(4,106,561)	(4,130,921)	237,990	262,350
-	-	-	-	-	Capital Contributions	-	-	-	-	-	-	-	-	-	-
1,895,083	1,848,064	(3,309,946)	47,019	5,205,029	NET INCOME	(3,868,571)	(4,008,810)	(3,459,921)	140,239	(408,650)	(3,868,571)	(4,106,561)	(4,130,921)	237,990	262,350

MONTH					DECEMBER 2020	YEAR-TO-DATE					FULL YEAR				
Actual	Q4 FC	Prior Yr	FC Var	PY Var	CASH FLOW STATEMENT	Actual	Q4 FC	Prior Yr	FC Var	PY Var	Actual	Budget	Prior Yr	Bud Var	PY Var
					Cash Flows From Operating Activities										
5,318,381	5,248,234	3,305,897	70,147	2,012,484	Operating Revenues	40,271,336	40,233,545	39,731,716	37,791	539,620	40,271,336	41,672,288	39,731,716	(1,400,952)	539,620
(1,353,656)	(1,338,392)	(2,882,819)	(15,264)	1,529,163	Operating Expenses (ex D&A)	(18,621,918)	(18,740,113)	(19,117,786)	118,195	495,868	(18,621,918)	(21,442,826)	(19,117,786)	2,820,908	495,868
(515,352)	(521,000)	1,812,323	5,648	(2,327,675)	Non-Cash Working Capital Changes	(3,033,744)	(3,118,062)	1,039,533	84,318	(4,073,277)	(3,033,744)	-	1,039,533	(3,033,744)	(4,073,277)
3,449,373	3,388,842	2,235,401	60,531	1,213,972	Net Cash Provided by (Used in) Operating Activities	18,615,674	18,375,370	21,653,463	240,304	(3,037,789)	18,615,674	20,229,462	21,653,463	(1,613,788)	(3,037,789)
					Cash Flows From Financing Activities										
-	-	-	-	-	Capital Contributions	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	Proceeds New Borrowing	-	-	-	-	-	-	-	-	-	-
(4,023,972)	(3,964,514)	(6,646,575)	(59,458)	2,622,603	Interest Payments	(10,651,666)	(10,592,208)	(13,426,458)	(59,458)	2,774,792	(10,651,666)	(13,978,238)	(13,426,458)	3,326,572	2,774,792
(882,406)	(882,000)	(1,245,000)	(406)	362,594	Principal Payments	(1,149,035)	(1,148,629)	(1,245,000)	(406)	95,965	(1,149,035)	(1,442,932)	(1,245,000)	293,897	95,965
(4,906,378)	(4,846,514)	(7,891,575)	(59,864)	2,985,197	Net Cash Provided by (Used in) Financing Activities	(11,800,701)	(11,740,837)	(14,671,458)	(59,864)	2,870,757	(11,800,701)	(15,421,170)	(14,671,458)	3,620,469	2,870,757
					Cash Flows from Capital and Related Activities										
1	7,315	(671,000)	(7,314)	671,001	Non-Operating Income (Expenses)	(2,532,620)	(2,519,710)	(1,195,861)	(12,910)	(1,336,759)	(2,532,620)	(533,258)	(1,195,861)	(1,999,362)	(1,336,759)
(1,081,331)	(1,046,078)	(308,594)	(35,253)	(772,737)	Capital Expenditures, net	(3,028,551)	(2,992,589)	(3,591,927)	(35,962)	563,376	(3,028,551)	(2,032,084)	(3,591,927)	(996,467)	563,376
(1,081,330)	(1,038,763)	(979,594)	(42,567)	(101,736)	Net Cash Provided By (Used In) Capital and Related Activities	(5,561,171)	(5,512,299)	(4,787,788)	(48,872)	(773,383)	(5,561,171)	(2,565,342)	(4,787,788)	(2,995,829)	(773,383)
					Cash Flows From Investing Activities										
-	-	3,940,640	-	(3,940,640)	Investments Converting To Cash	-	-	3,940,640	-	(3,940,640)	-	-	3,940,640	-	(3,940,640)
-	-	-	-	-	Purchased Invesments	-	-	-	-	-	-	-	-	-	-
602	1,503	201,576	(901)	(200,974)	Interest Income	162,074	164,886	1,193,573	(2,812)	(1,031,499)	162,074	900,000	1,193,573	(737,926)	(1,031,499)
602	1,503	4,142,216	(901)	(4,141,614)	Net Cash Provided By (Used In) Investing Activities	162,074	164,886	5,134,213	(2,812)	(4,972,139)	162,074	900,000	5,134,213	(737,926)	(4,972,139)
(2,537,733)	(2,494,932)	(2,493,552)	(42,801)	(44,181)	FUND NET CASH FLOWS	1,415,876	1,287,120	7,328,430	128,756	(5,912,554)	1,415,876	3,142,950	7,328,430	(1,727,074)	(5,912,554)
					DEBT SERVICE RATIO										
3,920,888	3,874,220	(90,089)	46,668	4,010,977	Total Cash Available For Debt Service	19,278,872	19,138,608	20,611,642	140,264	(1,332,770)	19,278,872	20,596,204	20,611,642	(1,317,332)	(1,332,770)
983,389	983,389	1,222,627	-	(239,238)	Debt Service	11,800,701	11,800,701	14,671,458	-	(2,870,757)	11,800,701	15,421,170	14,671,458	(3,620,469)	(2,870,757)
3.99	3.94	(0.07)	0.05	4.06	DSCR	1.63	1.62	1.40	0.01	0.23	1.63	1.34	1.40	0.30	0.23

LEHIGH COUNTY AUTHORITY
FINANCIAL STATEMENTS - CITY DIVISION
DECEMBER 2020

FORECAST VARIANCES - MONTH

INCOME STATEMENT	Actual	Q4 FC	Variance	Comments
Operating Revenues				
User Charges	5,094,570	4,993,234	101,336	Higher residential & commercial revenues
Connection & System Charges	223,811	255,000	(31,189)	Lower tapping fees and lower project reimbursement revenues
Total Operating Revenues	5,318,381	5,248,234	70,147	Higher user charges offset partly by lower system fees
Operating Expenses				
Salaries and Wages	722,419	735,195	12,776	
General and Administrative	(583,389)	(582,666)	723	
Utilities	171,014	168,621	(2,393)	
Materials and Supplies	258,447	258,633	186	
Miscellaneous Services	653,766	628,609	(25,157)	Higher extraordinary spending along with higher anaysis costs
Treatment & Transportation	-	-	-	
Depreciation and Amortization	490,000	490,000	-	
Other Expenses	131,399	130,000	(1,399)	
Total Operating Expenses	1,843,656	1,828,392	(15,264)	Higher services costs partially offset by lower employee costs
Net Operating Income	3,474,725	3,419,842	54,883	Higher operating revenues partially eroded by higher operating expenses
Non-Operating Income (Expenses)				
Interest Income	602	1,503	(901)	
Interest (Expense)	(1,580,245)	(1,580,596)	351	
Other Miscellaneous Income (Expenses)	1	7,315	(7,314)	
Capital Contributions	-	-	-	
Total Non-Operating Income (Expenses)	(1,579,642)	(1,571,778)	(7,864)	
NET INCOME	1,895,083	1,848,064	47,019	Higher operating income with some unfavorable offset from lower non-operating income

FORECAST VARIANCES - MONTH

CASH FLOW STATEMENT	Actual	Q4 FC	Variance	Comments
Cash Flows From Operating Activities				
Operating Revenues	5,318,381	5,248,234	70,147	Higher user charges offset partly by lower system fees
Operating Expenses (ex D&A)	(1,353,656)	(1,338,392)	(15,264)	Higher services costs partially offset by lower employee costs
Non-Cash Working Capital Changes	(515,352)	(521,000)	5,648	
Net Cash Provided by (Used in) Operating Activities	3,449,373	3,388,842	60,531	Higher net operating income and a slightly favorable working capital variance
Cash Flows From Financing Activities				
Capital Contributions	-	-	-	
Proceeds New Borrowing	-	-	-	
Interest Payments	(4,023,972)	(3,964,514)	(59,458)	
Principal Payments	(882,406)	(882,000)	(406)	
Net Cash Provided by (Used in) Financing Activities	(4,906,378)	(4,846,514)	(59,864)	Higher interest payments
Cash Flows from Capital and Related Activities				
Capital Expenditures, Net	(1,081,331)	(1,046,078)	(35,253)	
Non-Operating Income (Expenses)	1	7,315	(7,314)	
Net Cash Provided By (Used In) Capital and Related Activities	(1,081,330)	(1,038,763)	(42,567)	Higher capex
Cash Flows From Investing Activities				
Investments Converting To Cash	-	-	-	
Purchased Invesments	-	-	-	
Interest Income	602	1,503	(901)	
Net Cash Provided By (Used In) Investing Activities	602	1,503	(901)	
FUND NET CASH FLOWS	(2,537,733)	(2,494,932)	(42,801)	Higher cash from operations more than offset by higher debt service and higher capex

Lehigh County Authority

System Operations Review - January 2021

Presented: February 22, 2021

Critical Activities	System	Description	Jan-21	2021 Totals	2020 Totals	Permit
			Daily Avg (MGD)	Daily Avg (MGD)	Daily Avg (MGD)	Daily Max (MGD)
Water Production	Allentown	Total	21.36	21.36	21.37	39.0
		Schantz Spring	7.78	7.78	7.31	9.0
		Crystal Spring	3.69	3.69	3.80	4.0
		Little Lehigh Creek	9.77	9.77	10.17	30.0
		Lehigh River	0.12	0.12	0.09	28.0
	Central Lehigh	Total	9.69	9.69	10.24	19.04 MGD Avg
		Feed from Allentown	6.52	6.52	6.71	7.0 MGD Avg 10.5 MGD Max
		Well Production (CLD)	3.17	3.17	3.53	8.54 MGD Avg
		Sum of all (12) other Suburban Water Systems	0.14	0.14	0.15	1.71 Sum of all wells
Wastewater Treatment		Kline's Island	32.47	32.47	32.27	40.0
		Pretreatment Plant	4.68	4.68	4.94	5.75 (design capacity)
		Sum of all (5) other Suburban WW Systems	0.22	0.22	0.21	0.36

		Jan-21	2021 Totals	2020 Totals	2019 Totals
Precipitation Totals (inches)		1.99	1.99	49.57	60.66
Compliance Reports Submitted to Allentown		29	29	275	278
Notices of Violation (NOVs)	(Allentown + Suburban)	0	0	2	1
Sanitary Sewer Overflows (SSOs)/Bypasses	(Allentown + Suburban)	0	0	44	37
Main Breaks Repaired	Allentown	6	6	19	20
	Suburban	1	1	17	12
Customer Service Phone Inquiries	(Allentown + Suburban)	1,603	1,603	16,772	22,992
Water Shutoffs for Non-Payment	(Allentown + Suburban)	0	0	280	1,956
Injury Accidents	(Allentown + Suburban)	2	2	10	10
Emergency Declarations	Allentown	0	0	(4)@$750,058	(2)@ $152,053
	Suburban	0	0	(1)@$110,000	(1) @ $19,335

Significant Repairs/Upgrades: Nothing to report.

Description of NOVs and/or SSOs: There were zero (0) bypasses and SSOs during January. No NOVs were issued.

Other Highlights: On February 9, 2021, the public water system for Oldsmar Florida was successfully hacked in to. One of their treatment chemicals, namely sodium hydroxide, had its feed rate increased by a factor of 100 until the change was caught and corrected by a system operator. LCA has always taken a very proactive stance with system security, both in the form of cyber security that was lacking in Oldsmar, and also the physical security of our plants, pump stations, and reservoirs. Firewalls and other precautions prevent external hacking. After 9/11, water sytems were required to enhance their system security as a result of EPA-mandated Vulnerability Assessments. Security systems were installed or enhanced. Access to our facilities became much more restricted. However, we never want to become complacent with anything pertaining to security and we use incidents such as the recent one in Florida as an example to review and update anything we feel should be addressed. LCA staff remains constantly diligent with every aspect of system security and we remain confident that we are protected from sabotage as well as we possibly can be.