



LEHIGH COUNTY AUTHORITY

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Agendas & Minutes Posted:
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BOARD MEETING AGENDA – April 12, 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

- *March 22, 2021 Board meeting minutes*

4. Public Comments

5. Action / Discussion Items:

FINANCE AND ADMINISTRATION

- *PENNVEST Resolutions (Approval) (green) (digital Board packet, page 10-23)*
 - *Resolution 04-2021-01 – Borrower's Resolution*
 - *Resolution 04-2021-02 – Reimbursement Resolution*
 - *Resolution 04-2021-03 – Rate Resolution*

WATER

- *Allentown Division – Water Main Replacement Program Cycle 5 (Approval) (salmon) (digital Board packet, page 24-30)*

WASTEWATER

6. Monthly Project Updates / Information Items (1st Board meeting per month) – **April report attached**
7. Monthly Financial Review (2nd Board meeting per month)
8. Monthly System Operations Overview (2nd Board meeting per month)
9. Staff Comments
10. Solicitor's Comments
11. Public Comments / Other Comments
12. Executive Sessions

13. Adjournment

UPCOMING BOARD MEETINGS		
April 26, 2021	May 10, 2021	May 24, 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

March 22, 2021

The Regular Meeting of the Lehigh County Authority Board of Directors was called to order at 12:03 p.m. on Monday, March 22, 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.

Melissa Elliott and Catherine Carter were also present from Raftelis.

Chairman Nagle stated that the Board received their electronic copy of the Board packet in advance and asked if anyone did not receive their hard copy of the packet. No Board members indicated they had not received their packet by mail.

REVIEW OF AGENDA

Liesel Gross stated that Chairman Nagle has requested an Executive Session at the end of the regular meeting to discuss matters of personnel. There are no changes to the agenda.

APPROVAL OF MINUTES

March 8, 2021 Meeting Minutes

On a motion by Richard Bohner, seconded by Norma Cusick, the Board approved the minutes of the March 8, 2021 Board meeting as published (9-0).

PUBLIC COMMENTS

None.

ACTION AND DISCUSSION ITEMS

LCA Strategic Plan

Liesel Gross gave an overview of the project and reviewed the history of the Authority's strategic planning approach. She noted significant organizational changes including the 2013 lease of the Allentown water and sewer systems, along with significant staff turnover due to retirements, and major changes to the Authority's customer base and financial position. Over the past five years, the Authority has been using the Effective Utility Management framework to develop annual goals and multi-year action plans, which has been a successful effort. Due to the organizational changes the Authority has experienced, however, the staff recommend conducting a broader, more comprehensive strategic planning effort to create a business plan for the future. Ms. Gross stated that using an external facilitator would be helpful to assist in gathering input from stakeholders, the

Board, customers, and employees. A consultant would also be beneficial to support the staff's development of an implementation plan and metrics to ensure the strategic goals can be achieved. The Board's Strategic Planning Subcommittee (Brian Nagle, Amir Famili and Norma Cusick) has reviewed the proposal from the staff's recommended consultant, Raftelis, and met with the team last week to discuss the project. Ms. Gross noted that four proposals were received for this work. While Raftelis was not the lowest cost proposal, the depth and breadth of their team's resources, customizable project approach, and strong references were key elements that led to the staff's selection of Raftelis for this work.

Liesel Gross introduced Melissa Elliott and Catherine Carter from Raftelis to give a presentation of their proposal and provided a background of their experience. They reviewed their project approach, which will be to focus on assuring alignment of the Authority's vision, mission and strategies, assisting the Authority in allocating resources for the priorities identified, and developing an action-oriented plan that will achieve positive results.

Chairman Nagle commented on the Subcommittee's discussion last week, stating that he found Raftelis personnel, experience, flexibility, and project approach were appreciated. Both Norma Cusick and Amir Famili concurred. Jeff Morgan noted the proposal indicated Raftelis had previously completed work for the Authority and asked what that work entailed. Liesel Gross explained that Raftelis's financial staff had previously worked with the Authority on the Allentown water and sewer system lease financial evaluation, and had, more recently, developed data on water and sewer rate affordability for the Authority's financial planning efforts.

Liesel Gross commented that approval at today's meeting is for the base proposal. The proposal includes two additional value-added services, which will be reviewed at a later stage of the work. Chairman Nagle asked if the project schedule is reasonable. Melissa Elliott stated Raftelis is confident the schedule will work as proposed.

On a motion by Ted Lyons, seconded by Norma Cusick, the Board approved the Professional Services Authorization to Raftelis in the amount of \$74,930.00 (9-0).

A roll call vote was taken with the following votes cast:

Brian Nagle – yes
Scott Bieber – yes
Richard Bohner – yes
Norma Cusick – yes
Ted Lyons – yes
Kevin Baker – yes
Linda Rosenfeld – yes
Jeff Morgan – yes
Amir Famili – yes

There were no public comments.

Administration Division (Suburban): Supervisory Control and Data Acquisition System (SCADA) – Communication Upgrade Services to Existing Water Systems

Chris Moughan explained that several years ago, the Authority set up a plan to upgrade three remote stations per year to replace the radio system that is currently being leased. Staff have found the system is causing some issues and becoming less reliable. A pilot study was completed for the

Authority last year by Keystone Engineering Group, in which two remote stations were upgraded to a cellular modem with a direct connection back to the Authority's primary system, allowing for improved control, access, and reporting. The Authority would like to retain Keystone Engineering Group to provide the hardware and programming services to begin the process of upgrading the remaining 26 remote sites and provide programming, training and testing services to ensure proper data transfer. Mr. Moughan noted this is the first step in a much larger project associated with upgrading the SCADA system.

Amir Famili stated that technology moves so quickly and asked what research has been done to ensure that the Authority will not have to make another change in a short period of time. Chris Moughan explained all the sites will be upgraded to 4G communication, which is the fastest speed provided by Verizon, and will be upgradeable to 5G in the future, which should be good for 7 to 10 years. Jeff Morgan commented that he has worked with Keystone Engineering Group on these types of projects and they are excellent at this.

There was some additional discussion about system security.

On a motion by Linda Rosenfeld, seconded by Norma Cusick, the Board approved the Capital Project Authorization: Administration – SCADA System Upgrades in the amount of \$92,810.00 which includes the Professional Services Authorization: Keystone – SCADA System Upgrades in the amount of \$77,810.00 (9-0).

A roll call vote was taken with the following votes cast:

Brian Nagle – yes
Scott Bieber – yes
Richard Bohner – yes
Norma Cusick – yes
Ted Lyons – yes
Kevin Baker – yes
Linda Rosenfeld – yes
Jeff Morgan – yes
Amir Famili – yes

Allentown Division – Water Filtration Plant: High Lift Pump VFD Replacements – Construction Phase Authorization

Chuck Volk described the project to upgrade the High Service Pumping System (HSPS) at the Water Filtration Plant. The electrical equipment has reached the end of its useful life and replacement parts are no longer available. The project will replace the two existing Variable Frequency Drives (VFDs) for Pump No. 1 and 2. For Pump No. 3, the constant speed motor will be replaced with a new inverter duty motor, and a new VFD will be added. Mr. Volk reviewed the bid summary stating that he has not worked with Mohawk Construction & Development previously and their bid documents are satisfactory and complete. Albarell Electric, Inc. was the lowest bidder for the electrical construction and has performed other services satisfactorily for the Authority. Mr. Volk also noted that project will be funded by a PennVEST loan.

On a motion by Linda Rosenfeld, seconded by Norma Cusick, the Board approved the Capital Project Authorization for the Construction Phase in the amount of \$1,374,227.00 which includes the Construction Contract – General to Mohawk Contracting & Development in the amount of \$70,775.00, the Construction Contract – Electrical to Albarell Electric, Inc. in the amount of

\$1,078,452.00 and the Professional Services Authorization for Construction Phase Engineering to Borton-Lawson in the amount of \$80,000.00 (9-0). Jennifer McKenna asked Mr. Volk if there will be any additional professional expenses or contracts that will need to be presented for this project, noting that the construction costs are currently lower than the estimate. Mr. Volk replied no. Jeff Morgan asked if inspection is covered by the Board's approval. Mr. Volk stated that Borton-Lawson will be taking care of the inspections as part of this approval.

A roll call vote was taken with the following votes cast:

Brian Nagle – yes
Scott Bieber – yes
Richard Bohner – yes
Norma Cusick – yes
Ted Lyons – yes
Kevin Baker – yes
Linda Rosenfeld – yes
Jeff Morgan – yes
Amir Famili – yes

Suburban Division – Park Pump Station Phase 2 Upgrade: Design Authorization

Chuck Volk stated this project is needed to replace the original generator at the Park Pump Station that is more than 40 years old. After a load test performed in 2020, the output was found to be slightly below the original design rating of the equipment and undersized for conveying the station's design flow capacity. As part of the upgrade, Whitman, Requardt & Associates, LLP (WRA) will evaluate the use of a natural gas generator rather than a diesel generator. There are some design challenges because the building was originally built around the generator. Mr. Volk presented photos of the station to the Board for reference. After this upgrade, all necessary upgrades at Park Pump Station will have been completed.

Chairman Nagle noted that the removal of the diesel tank from the site, which is near the Little Lehigh Creek, could be a positive outcome for the project and reduce environmental risk associated with the station. He asked if the generator would be switched to natural gas, would there be any other new environmental risks. Mr. Volk stated that the use of natural gas would present a negligible risk since it would be achieved through a connection to the natural gas service already available in the area. Scott Bieber asked if Mr. Volk thinks the Authority should convert to natural gas. Mr. Volk stated yes because it is a cleaner form of energy, although he noted the generator will need to be larger. Chairman Nagle commented that he would like to see a complete containment system constructed around the fuel tank if the Authority decides to stay with diesel.

On a motion by Norma Cusick, seconded by Jeff Morgan, the Board approved the Capital Project Authorization for the Design Phase in the amount of \$248,454.00 which includes the Professional Services Authorization for the Design Phase to Whitman, Requardt, & Associates, LLP (WRA) in the amount of \$198,454.00 (9-0).

A roll call vote was taken with the following votes cast:

Brian Nagle – yes
Scott Bieber – yes
Richard Bohner – yes
Norma Cusick – yes

Ted Lyons – yes
Kevin Baker – yes
Linda Rosenfeld – yes
Jeff Morgan – yes
Amir Famili – yes

Allentown Division – Sanitary Sewer Collection System: I&I Source Reduction Program Plan (Year 2)

Phil DePoe gave an overview of the project, noting that the City of Allentown will fund the work as part of the prior Administrative Order program. The project involves heavy cleaning of 8", 10", and 12" sewer mains, grout sealing of 8", 10", 12", and 24" sewer main joints and lining of 8", 10", 12", 18", and 24" sewer mains, all in the City of Allentown sewer collection system. Two alternatives are also included in the project involving an 18" sewer main near the Kline's Island Wastewater Treatment Plant. Alternative A consists of CCTV investigation only and Alternative B includes the CCTV work plus a full lining of the line. The City has elected to award the base bid plus Alternative B. Mr. DePoe explained that even though Standard Pipe Services, LCC bid was much lower than other bidders and the estimate given by Kleinfelder, their previous work with the Authority has been satisfactory.

Chairman Nagle asked if Standard Pipe Services, LCC had any add-ons for their previous work or did they stay within what had been bid. Mr. DePoe said that in prior projects, Standard Pipe Services did not have any add-ons other than what the Authority requested from them. Chairman Nagle asked if it is necessary to conduct CCTV work on a line that will be slip lined. Mr. DePoe explained that the sewer lines included in this project have not been inspected in many years, and it is recommended to do so before the lining work is completed so any major defects can be identified. Amir Famili asked how many miles of sewer line Standard Pipe Services, LCC has completed lining projects for in the past and what their failure rate is, noting the risk of the lining not adhering to the pipe wall after a period of time. Mr. DePoe stated he would will investigate this concern, but noted that Standard Pipe Services is an industry leading service provider for this type of work, and the work will be guaranteed for 18 months after construction. Chairman Nagle recommended moving forward with project authorization, and recommended the project be halted and the Board informed if Mr. DePoe discovers any data from his research that indicates poor performance of lining work completed by Standard Pipe Services.

On a motion by Norma Cusick, seconded by Linda Rosenfeld, the Board approved the Capital Project Authorization for Construction in the amount of \$986,837.00 which includes the Construction Contract to Standard Pipe Services, LCC, in the amount of \$785,037.00 and a Professional Services Authorization to Kleinfelder with a subcontract to Barry Isett and Associates for onsite inspection in the amount of \$161,800.00 (9-0)

A roll call vote was taken with the following votes cast:

Brian Nagle – yes
Scott Bieber – yes
Richard Bohner – yes
Norma Cusick – yes
Ted Lyons – yes
Kevin Baker – yes
Linda Rosenfeld – yes
Jeff Morgan – yes

Amir Famili – yes

MONTHLY FINANCIAL REVIEW

Ed Klein gave an overview of the February 2021 financial statements, highlighting variances between actual expenses and budgeted or forecasted expenses. Mr. Klein then reviewed the possibility of refinancing a portion of the Suburban Water Division's existing debt for the purpose of debt service savings. Current interest rates are low. Chairman Nagle asked if the refinance options will extend the term of the debt. Mr. Klein said that refinancing may extend the term, but with current interest rates the lower debt service payments will offer a net present value savings of about \$2 million over the life of the bonds. Board members expressed concern about the impact on the Authority's ability to borrow for capital improvements in the future. Liesel Gross commented that the refinancing approach is in line with the Authority's current capital financing strategy, which includes increasing rates gradually over time to support funding recurring capital improvements through operating revenues and reducing reliance on debt over time. Lowering the annual debt service for existing debt supports this strategy by allowing the increased revenue generated by rate increases to fund more capital improvements. Ted Lyons commented that it may be beneficial to seek guidance from a financial adviser on how to structure long-term debt. Ms. Gross said the next step will be to engage with a financial consultant to work through the refinancing options, but the staff wanted to review the concept with the Board in advance, before incurring consulting expenses. Chairman Nagle stated that the Board would like to see the debt service schedule and savings impact as a next step in the process.

MONTHLY SYSTEM OPERATIONS OVERVIEW

John Parsons reviewed the February 2021 Monthly Systems Overview report, highlighting the 13 Distribution and Collection water main breaks so far in 2021.

Chairman Nagle stated his concern about the wastewater plant bypass that occurred in the Heidelberg Heights system, and asked what the status is and plans to correct this problem before the Authority faces more stringent regulatory action or penalties. Liesel Gross reminded the Board that the Authority is already operating under an approved Consent Order and Agreement with DEP, in which a corrective action plan has been developed and including a penalty schedule for continuing violations while the Agreement is in place. Chuck Volk commented that the first annual report for the Consent Order and Agreement will be submitted to DEP later in March. The report will document the Authority's progress on the projects outlined in the corrective action plan. Mr. Volk commented that as a majority of the public sewer system has already been replaced, and the bypasses are continuing after heavy rain events, this indicates that most of the problem lies in the private side of the system including damaged private sewer laterals and the unauthorized connection of sump pumps. He will be working with Susan Sampson to start an outreach program to educate the residents about these unauthorized connections to this system, and private system inspections will begin next year. Scott Bieber asked if the Authority can conduct the inspection of the laterals this year rather than wait until next year. Mr. Volk explained that the outreach program needs to occur first and allow for customer feedback before starting the program. He anticipates some customer resistance and additional discussion with township officials may be required before the inspection program can begin.

Amir Famili asked about the outcome of pipeline condition assessment that is under way, following the transmission line break that occurred in Allentown at 17th and Walnut streets last year. John Parsons said the report will be available in April.

STAFF COMMENTS

Chris Moughan reported that Board email accounts will be moved to an O365 cloud platform, which will require some reconfiguration of how all Board members connect to their Authority email accounts. Information on this will be shared with each Board member, and Mr. Moughan invited any Board member to contact him if assistance is needed to implement the change.

SOLICITOR'S COMMENTS

None.

PUBLIC COMMENTS / OTHER COMMENTS

None.

EXECUTIVE SESSION

ADJOURNMENT

There being no further business, the Chairman adjourned the meeting at 2:01 p.m.

Richard Bohner
Secretary



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MEMORANDUM

TO: LCA Board of Directors
FROM: Liesel Gross, Chief Executive Officer
DATE: April 5, 2021
RE: PENNVEST Financing
Allentown Division – Water Filtration Plant; High Lift Pump VFD Upgrade Project

Approvals Requested:

1. Resolution 04-2021-01 – Authorizing financing of the project via a loan from PENNVEST
2. Resolution 04-2021-02 – Authorizing the reimbursement of project costs to Lehigh County Authority via the PENNVEST loan
3. Resolution 04-2021-03 – Authorizing adoption and implementation of rates adequate to pay the full debt service on the PENNVEST loan

Attached to this memo are three Resolutions to be considered for approval at the April 12, 2021 Board of Directors meeting. These Resolutions are required by the Authority and by the Pennsylvania Infrastructure Investment Authority (PENNVEST) in order to complete the financing for the Allentown Division project to upgrade the High Lift Pumps and Variable Frequency Drives at the Water Filtration Plant (VFD Project).

For the Board's consideration and background:

The limited use of PENNVEST loans was a key component of the capital financing strategy LCA staff developed during its negotiations with the City of Allentown in 2019 and 2020 in order to settle prior legal disputes associated with the Concession Lease Agreement (Lease). While the use of debt financing for the Allentown Division capital program is not financially sustainable in the long-term view, some limited borrowing is expected and planned within the first few years following settlement of the disputes. This will allow critical projects to move forward on a timely basis while operating revenues increase through the phased implementation of new rates.

On February 17, 2021, LCA received a funding offer from PENNVEST for the VFD Project, including a 20-year debt service schedule and 1 percent interest rate. The loan will be used to reimburse LCA for up to \$2 million in project costs. As discussed at the March 22, 2021 Board meeting, construction bids for this project came in lower than estimated, and the full project cost is expected to fall well below \$2 million, which will lower the debt service cost.

Another key component of the negotiated settlement with the City of Allentown, completed in August 2020, was the refinement of terms associated with LCA's ability to recover the cost for capital projects that are funded via new debt such as a PENNVEST loan. The updated method for calculating the capital cost recovery charge will allow LCA to establish the rates necessary to guarantee repayment of the

PENNVEST loan, as required by PENNVEST and outlined in Resolution 04-2021-03. The actual capital cost recovery charge associated with this project will be calculated after the final project costs are determined and final debt service schedule developed.

Due to the complex nature of the Lease and the existing bond documents, McNees Wallace & Nurick LLC, (MWN) has been retained as bond counsel to review this transaction to ensure that the issuance of new debt via PENNVEST conforms with all requirements of the Lease and Bond Indenture. MWN representatives, along with LCA's Solicitor from KingSpry, have been in close communication with PENNVEST to ensure the debt is structured properly for both parties. An MWN representative will be available at the April 12, 2021 Board meeting to review the resolutions and answer Board questions.

The three resolutions attached to this memo are required for the PENNVEST financing to be implemented. The borrower's resolution, reimbursement resolution, and rate resolution were all developed in accordance with PENNVEST's requirements and reviewed by both MWN and KingSpry. Board considerations for approval will be requested at the April 12, 2021 meeting, which will allow settlement on the PENNVEST financing to be completed on May 25, 2021 as scheduled.

RESOLUTION No. 04-2021-01

Borrower Resolution

(Duly adopted 12 April, 2021)

AUTHORIZING THE SECURING OF FUNDING FROM THE PENNSYLVANIA INFRASTRUCTURE INVESTMENT AUTHORITY IN THE MAXIMUM PRINCIPAL AMOUNT OF \$2,000,000 FOR THE PURPOSE OF PROVIDING FUNDS TO FINANCE THE REPLACEMENT OF EQUIPMENT USED IN THE HIGH SERVICE WATER PUMP SYSTEM OF THE ALLENTOWN WATER PLANT AND DISTRIBUTION SYSTEM AND TO PAY COSTS AND EXPENSES OF SECURING SUCH FUNDING; AUTHORIZING THE EXECUTION AND DELIVERY OF A DEBT OBLIGATION OF THE AUTHORITY IN CONNECTION WITH SUCH FUNDING SECURED BY THE INDENTURE DEFINED HEREIN; APPROVING THE FORM OF AND AUTHORIZING AND DIRECTING THE EXECUTION AND DELIVERY OF A 2021-1 SUPPLEMENTAL TRUST INDENTURE; AUTHORIZING THE EXECUTION OF THE FUNDING DOCUMENTS, AND PROVIDING FOR THE AUTHENTICATION AND DELIVERY THEREOF; AUTHORIZING THE DISPOSITION OF THE FUNDING PROCEEDS RECEIVED OR TO BE RECEIVED FROM PENNVEST; AUTHORIZING AND DIRECTING THE PROPER OFFICERS OF THE AUTHORITY TO DO ALL THINGS NECESSARY TO CARRY OUT THIS RESOLUTION; AND RESCINDING ALL INCONSISTENT RESOLUTIONS.

WHEREAS, the Lehigh County Authority (the “Authority”) is a body corporate and politic organized by the Board of County Commissioners of the County of Lehigh, Pennsylvania (the “County”) under the provisions of the Pennsylvania Municipality Authorities Act, 53 Pa. C.S. §5601 et seq., as amended (the “Act”); and

WHEREAS, the City of Allentown, Pennsylvania (the “City”) owns the Allentown Sewer Utility System and the Allentown Water Plant and Distribution System; and

WHEREAS, pursuant to the terms and conditions of the Allentown Water and Sewer Utility System Concession and Lease Agreement dated as of May 1, 2013, as amended, including by that Allentown Water and Sewer Utility System Amended and Restated Concession and Lease Agreement dated as of September 1, 2020, and effective as of September 17, 2020 (the “Concession Agreement”), by and between the City and the Authority, the City leased the Concessioned System (as defined in the Concession Agreement) to the Authority, as concessionaire, and granted to the Authority the right to

operate the Concessioned System in order to provide utility services and collect revenues therefrom and in connection therewith, all in accordance with the provisions of the Existing Concession Agreement (as defined in the Concession Agreement); and

WHEREAS, the Authority, in connection with the lease and operation of the Concessioned System pursuant to the Concession Agreement, has from time to time issued bonds under and pursuant to a Trust Indenture dated as of August 1, 2013, as supplemented by a First Supplemental Trust Indenture dated as of August 1, 2015, a Second Supplemental Trust Indenture dated as of October 1, 2018, a 2020-1 Supplemental Trust Indenture dated as of September 1, 2020, and a 2020-2 Supplemental Trust Indenture dated as of September 1, 2020, and as amended and restated by that Amended and Restated Trust Indenture between the Authority and Manufacturers and Traders Trust Company (the “Trustee”), dated as of September 1, 2020, and effective as of September 17, 2020 (collectively, the “Existing Indenture”); and

WHEREAS, the Existing Indenture provides that the Authority, under certain conditions, may incur Subordinated Indebtedness from time to time for any lawful purpose of the Authority; and

WHEREAS, in accordance with the Act and pursuant to the Existing Indenture, the Authority desires to incur Subordinate Indebtedness to undertake a project (the “Project”) consisting of (i) the replacement of equipment used in the high service water pump system of the Allentown Water Plant and Distribution System and (ii) the payment of the cost of issuing the Debt Obligation (hereinafter defined); and

WHEREAS, in order to finance the Project, the Authority intends to secure from the Pennsylvania Infrastructure Investment Authority (“PENNVEST”) a loan in the maximum principal amount of \$2,000,000 (the “PENNVEST Funding”) to be evidenced by a Subordinate Lien Water and Sewer Revenue Bond (City of Allentown Concession), Series of 2021 (Pennsylvania Infrastructure Investment Authority) (the “Debt Obligation”); and

WHEREAS, as required by the Existing Indenture, prior to the issuance of the Debt Obligation, the Authority shall execute and deliver a 2021-1 Supplemental Trust Indenture, dated as of May 1, 2021, between the Authority and the Trustee (the “2021-1 Supplemental Indenture,” and together with the Existing Indenture, the “Indenture”); and

WHEREAS, the Debt Obligation will be issued under and secured by the Indenture; and

WHEREAS, as provided for in the Indenture, the Debt Obligation shall be secured by a lien on the Concession Revenues, as defined therein (known herein as the “Project Collateral”) that is by its terms expressly subordinated to the lien of the Existing Indenture and the Concession Revenues, and therefore constitutes “Subordinate Indebtedness” of the Authority, in accordance with Section 3.05 of the Existing Indenture; and

WHEREAS, in addition to the security provided for in the Indenture, the Debt Obligation shall be secured by any other agreements granting and creating security interests, all as more particularly set forth in the funding agreement between the Authority and PENNVEST (the "Funding Agreement") and the funding offer from PENNVEST (the Debt Obligation, Project Collateral, other security agreements, the funding offer, the Funding Agreement, and all other agreements, documents, certificates and instruments described in or contemplated by the Funding Agreement are collectively referred to as the "Funding Documents"); and

WHEREAS, in connection with the Debt Obligation, the Authority desires and intends to take all necessary and proper actions to execute the 2021-1 Supplemental Indenture and all documents required by PENNVEST to be executed to obtain the PENNVEST Funding and assure its proper repayment; and

NOW, THEREFORE, the Board of the Lehigh County Authority hereby resolves as follows:

SECTION 1. For the purpose of providing funds to finance the cost of the Project and to pay costs and expenses in connection with the PENNVEST Funding, the Authority hereby authorizes the execution of all Funding Documents and the taking of all actions necessary and required by PENNVEST to obtain the PENNVEST Funding in the maximum principal amount of \$2,000,000, pursuant to the provisions of the Act and the Funding Documents.

SECTION 2. The PENNVEST Funding shall be secured by the Indenture and the Funding Documents from the Authority to PENNVEST, and to the extent and in the manner therein set forth, the Project Collateral and other agreements granting and creating certain security interests in favor of PENNVEST.

Neither the Debt Obligation nor the Funding Documents shall in any manner pledge the full faith and credit or taxing power of the Commonwealth of Pennsylvania, the County or any political subdivision thereof, nor shall it be deemed to be an obligation of the Commonwealth of Pennsylvania, the County or any political subdivision thereof, nor shall the Commonwealth of Pennsylvania, the County or any political subdivision thereof be liable for the payment of the principal of, or interest on, such obligation, but it shall be secured upon and payable as provided for in the Indenture and from such other moneys as may be made available for the purpose of repaying the Debt Obligation.

SECTION 3. The form, terms and conditions of the 2021-1 Supplemental Indenture prepared by McNees Wallace & Nurick LLC ("Bond Counsel"), to be substantially in the form as submitted to this meeting, are hereby approved. The Chief Executive Officer or the Chief Financial Officer of the Authority are hereby authorized and directed to execute the 2021-1 Supplemental Indenture in such form on behalf of the Authority, with the advice of the Authority Solicitor and Bond Counsel, subject to such changes and modifications, if any, as may be approved by the Chief Executive Officer or the Chief Financial Officer of the Authority, the execution of the 2021-1 Supplemental

Indenture to be conclusive evidence of such approval, and, if required, the Authority Solicitor is hereby authorized to cause the corporate seal of the Authority to be affixed thereto and to attest the same. The Chief Executive Officer and the Chief Financial Officer of the Authority are further authorized and directed to acknowledge the same on behalf of the Authority and to deliver the 2020-1 Supplemental Indenture to the Trustee.

SECTION 4. The form, terms and conditions of the Funding Documents to be prepared by Bond Counsel and PENNVEST, in such forms as shall be acceptable to the Chief Executive Officer or the Chief Financial Officer of the Authority with the advice of the Authority Solicitor and Bond Counsel, are hereby approved. The Chief Executive Officer or the Chief Financial Officer of the Authority are hereby authorized and directed to execute the Funding Documents in such forms on behalf of the Authority, with the advice of the Authority Solicitor and Bond Counsel, subject to such changes and modifications, if any, as may be approved by the Chief Executive Officer or the Chief Financial Officer of the Authority, the execution of the Funding Documents to be conclusive evidence of such approval, and, if required, the Authority Solicitor is hereby authorized to cause the corporate seal of the Authority to be affixed thereto and to attest the same. The Chief Executive Officer and the Chief Financial Officer of the Authority are further authorized to acknowledge the same on behalf of the Authority and to deliver said Funding Documents to PENNVEST.

SECTION 5. The PENNVEST Funding shall be repaid in the amounts and on certain dates, all as set forth in the Funding Documents as submitted to this meeting. The PENNVEST Funding is also subject to early repayment as provided in the Funding Documents.

SECTION 6. Upon receipt, the proceeds from the PENNVEST Funding authorized to be secured in this Resolution, shall be applied by the Authority under the terms and conditions set forth in the Funding Documents.

SECTION 7. The Authority hereby ratifies and confirms the appointment of McNees Wallace & Nurick LLC, Harrisburg, Pennsylvania, as bond counsel for the Authority in connection with the PENNVEST funding. Such firm shall work in cooperation with the Authority's solicitor.

SECTION 8. The proper officers of the Authority are hereby authorized, empowered and directed on behalf of the Authority to execute any and all papers and documents, to pay all expenses incurred by the Authority in connection herewith, and to do and cause to be done any and all acts and things necessary or proper for the execution or carrying out of this Resolution and the Funding Documents.

SECTION 9. All resolutions or parts of resolutions inconsistent herewith shall be, and the same are, hereby rescinded, cancelled and annulled.

NOW THEREFORE, BE IT RESOLVED that the Lehigh County Authority Board hereby approves Resolution No. 04-2021-01.

On motion of _____, seconded by _____
_____, this resolution was adopted the 12th day of April 2021.

Tally of Votes: Yeas _____ Nays _____

§ 3

I, Michael A. Gaul, of the law firm of King, Spry, Herman, Freund & Faul, LLC, Solicitor to the 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 Board at a public meeting of the Authority Board held on 12 April 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. 04-2021-01 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

RESOLUTION No. 04-2021-02

Reimbursement Resolution

(Duly adopted 12 April, 2021)

DECLARATION OF OFFICIAL INTENT TO REIMBURSE ITS GENERAL FUNDS USED TO CONSTRUCT THE REPLACEMENT OF EQUIPMENT USED IN THE HIGH SERVICE WATER PUMP SYSTEM OF THE ALLENTOWN WATER PLANT AND DISTRIBUTION SYSTEM WITH FUNDS RECEIVED FROM THE PENNSYLVANIA INFRASTRUCTURE INVESTMENT AUTHORITY.

WHEREAS, Lehigh County Authority, Lehigh County, Pennsylvania (the "Authority"), has determined that it is necessary to undertake a capital project (the "Project") consisting of the construction of the replacement of equipment used in the high service water pump system of the Allentown Water plant and distribution system;

WHEREAS, in order to finance the costs of the Project, the Authority has issued or intends to issue its Subordinate Lien Water and Sewer Revenue Bond (City of Allentown Concession), Series of 2021 (Pennsylvania Infrastructure Investment Authority), to be purchased by the Pennsylvania Infrastructure Investment Authority ("PENNVEST") in the maximum principal amount of \$2,000,000 (the "PENNVEST Debt Obligation");

WHEREAS, the Authority will be the "Issuer" of the PENNVEST Debt Obligation as that term is defined in 26 C.F.R. §1.150-2(c); and

WHEREAS, the Authority intends to pay certain costs and expenses of the Project, on an interim basis, using funds from its General Fund until the proceeds of the PENNVEST Debt Obligation are received.

NOW, THEREFORE, the Authority hereby declares as follows:

Pursuant to federal requirements set forth at 26 C.F.R. § 1.150-2, the Authority officially intends to reimburse its General Fund for Project costs incurred by the Authority with the proceeds of the PENNVEST Debt Obligation up to the maximum principal amount of \$2,000,000.

NOW THEREFORE, BE IT RESOLVED that the Lehigh County Authority Board hereby approves Resolution No. 04-2021-02.

On motion of _____, seconded by _____
_____, this resolution was adopted the 12th day of April 2021.

Tally of Votes: Yeas _____ Nays _____

☞ ☞

I, Michael A. Gaul, of the law firm of King, Spry, Herman, Freund & Faul, LLC, Solicitor to the 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 Board at a public meeting of the Authority Board held on 12 April 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. 04-2021-02 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

RESOLUTION NO. 04-2021-03

Rate Resolution

(Duly adopted 12 April, 2021)

AUTHORIZING THE ADOPTION OF SUFFICIENT RATES CONSISTENT WITH THE CONCESSION AGREEMENT AND PROVIDING FOR THE IMPLEMENTATION THEREOF NO LATER THAN THREE MONTHS BEFORE THE SCHEDULED AMORTIZATION DATE ON THE AUTHORITY'S \$2,000,000 MAXIMUM PRINCIPAL AMOUNT FUNDING ARRANGEMENT WITH THE PENNSYLVANIA INFRASTRUCTURE INVESTMENT AUTHORITY.

WHEREAS, the Lehigh County Authority (the "Authority") is a body corporate and politic organized by the Board of County Commissioners of the County of Lehigh, Pennsylvania (the "County") under the provisions of the Pennsylvania Municipality Authorities Act, 53 Pa. C.S. §5601 et seq., as amended (the "Act"); and

WHEREAS, the City of Allentown, Pennsylvania (the "City") owns the Allentown Sewer Utility System and the Allentown Water Plant and Distribution System; and

WHEREAS, pursuant to the terms and conditions of the Allentown Water and Sewer Utility System Concession and Lease Agreement dated as of May 1, 2013, as amended, including by that Allentown Water and Sewer Utility System Amended and Restated Concession and Lease Agreement dated as of September 1, 2020, and effective as of September 17, 2020 (the "Concession Agreement"), by and between the City and the Authority, the City leased the Concessioned System (as defined in the Concession Agreement) to the Authority, as concessionaire, and granted to the Authority the right to operate the Concessioned System in order to provide utility services and collect revenues therefrom and in connection therewith, all in accordance with the provisions of the Existing Concession Agreement (as defined in the Concession Agreement); and

WHEREAS, the Authority, in connection with the lease and operation of the Concessioned System pursuant to the Concession Agreement, has from time to time issued bonds under and pursuant to a Trust Indenture dated as of August 1, 2013, as supplemented by a First Supplemental Trust Indenture dated as of August 1, 2015, a Second Supplemental Trust Indenture dated as of October 1, 2018, a 2020-1 Supplemental Trust Indenture dated as of September 1, 2020, and a 2020-2 Supplemental Trust Indenture dated as of September 1, 2020, and as amended and restated by that Amended and Restated Trust Indenture between the Authority and Manufacturers and Traders Trust Company (the "Trustee"), dated as of September 1, 2020, and effective as of September 17, 2020 (collectively, the "Existing Indenture"); and

WHEREAS, the Authority has determined that it is necessary and in the best interests of the Authority to undertake a capital project to replace equipment used in the high service water pump system of the Allentown Water Plant and Distribution System (the “Project”); and

WHEREAS, in order to finance the cost of the Project, the Authority intends to secure from the Pennsylvania Infrastructure Investment Authority a loan in the maximum principal amount of \$2,000,000 to be evidenced by a debt obligation (the “Debt Obligation”); and

WHEREAS, the Authority desires to adopt this Resolution to evidence its intent to adopt rates consistent with the Concession Agreement and the Existing Indenture that will produce revenues sufficient to cover all of its operational and maintenance costs with respect to its operation of the Allentown Sewer Utility System and the Allentown Water Plant and Distribution System pursuant to the Concession Agreement, the debt service on the Debt Obligation and the debt service on all other outstanding debt of the Authority under the Existing Indenture;

WHEREAS, the existing rates are set forth in Exhibit A hereto; and

NOW, THEREFORE, BE IT RESOLVED, the Authority shall institute rates as permitted by the Indenture and the Concession Agreement and provide for the implementation thereof no later than three months before the Scheduled Amortization Date on the Debt Obligation, at levels sufficient to produce revenues to cover all operational and maintenance costs of the Authority with respect to its operation of the Allentown Sewer Utility System and the Allentown Water Plant and Distribution System pursuant to the Concession Agreement, the debt service on the Debt Obligation and the debt service on all other outstanding debt of the Authority under the Existing Indenture; provided, however, that such rates shall not in any event exceed the maximum rates permitted by the Concession Agreement. For purposes hereof, “Scheduled Amortization Date” means the date on which the Authority shall initiate principal and interest payments on the Debt Obligation.

NOW THEREFORE, BE IT RESOLVED that the Lehigh County Authority Board hereby approves Resolution No. 04-2021-03.

On motion of _____, seconded by _____, this resolution was adopted the 12th day of April 2021.

Tally of Votes: Yeas _____ Nays _____

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I, Michael A. Gaul, of the law firm of King, Spry, Herman, Freund & Faul, LLC, Solicitor to the 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 Board at a public meeting of the Authority Board held on 12 April 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. 04-2021-03 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

EXHIBIT A

LEIGH COUNTY AUTHORITY

EXISTING RATES

Updated: January 1, 2021

LEHIGH COUNTY AUTHORITY SCHEDULE OF WATER RATES AND CHARGES (cont'd)

CITY OF ALLENTOWN

Adopted 11/9/2020; Effective 1/1/2021

NOTE: Unless expressed specifically in this Schedule of Rates and Charges, customers of the City of Allentown water system are subject to any and all additional charges, fees, penalties and policies stated in Lehigh County Authority's Rules & Regulations for Water Service and its Schedule of Water Rates and Charges duly adopted for its non-City systems.

A. Metered Water Use

Meter Size	2021 Monthly Charge	2021 Quarterly Charge
5/8"	n/a	\$48.34
3/4"	n/a	\$55.46
1"	n/a	\$69.88
1 1/2"	\$40.97	n/a
2"	\$55.34	n/a
3"	\$93.56	n/a
4"	\$136.78	n/a
6"	\$256.47	n/a
8"	\$400.25	n/a

Volume	2021 Rate per 1000 Gallons*
All Volume	\$3.87478

* Volume charge includes cost recovery for any Change of Law and cost passed through from the Delaware River Basin Commission as allowed under the Lease Agreement with the City of Allentown.

B. Capital Cost Recovery Charge \$0.35365 per 1000 gallons

**LEHIGH COUNTY AUTHORITY
SCHEDULE OF WASTEWATER RATES AND CHARGES**

CITY OF ALLENTOWN

Adopted 11/9/2020; Effective 1/1/2021

NOTE: Unless expressed specifically in this Schedule of Rates and Charges, customers of the City of Allentown wastewater system are subject to any and all additional charges, fees, penalties and policies stated in Lehigh County Authority's Rules & Regulations for Sewerage Service and its Schedule of Wastewater Rates and Charges duly adopted for its non-City systems.

A. Sewer Usage Charges

Meter Size	2021 Monthly Charge	2021 Quarterly Charge
5/8"	n/a	\$16.79
3/4"	n/a	\$19.25
1"	n/a	\$24.17
1 1/2"	\$14.11	n/a
2"	\$19.02	n/a
3"	\$32.22	n/a
4"	\$46.97	n/a
6"	\$88.02	n/a
8"	\$161.48	n/a

Flow Charge	2021 Rate per 1000 Gallons*
All flow based on metered water usage**	\$2.78520

* Flow charge includes cost recovery for any Change of Law and cost passed through from the Delaware River Basin Commission as allowed under the Lease Agreement with the City of Allentown.

** Unmetered residential accounts will be charged for flow based on an average usage of 180 gallons per day.

**Lehigh County Authority**

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

MEMORANDUM

Date: April 12, 2021

To: Lehigh County Authority Board of Directors

From: Jason Peters, Capital Works Project Coordinator

Subject: Allentown Division Cycle 5 Water Main Replacement Program - Construction Phase

MOTIONS /APPROVALS REQUESTED:

No.	Item	Amount
1	<u>Capital Project Authorization - Construction Phase:</u> Allentown Division Cycle 5 Water Main Replacement	\$2,011,718
2	<u>Professional Services Authorization:</u>	
**	<ul style="list-style-type: none">Construction Engineering and Administration Services - <i>Gannett Fleming Inc.</i>Construction Inspection Services - <i>Keystone Consulting Engineers</i>	\$43,540 \$75,000
3	<u>General Construction Contract:</u>	
**	<ul style="list-style-type: none">General Construction – <i>JOAO Bradley Construction Co., Inc.</i>	\$1,547,636
4	<u>Final Paving Restoration Contract:</u>	
**	<ul style="list-style-type: none">Cost Sharing Agreement – <i>City of Allentown</i>	\$195,542

(**) Included in the Capital Project Authorization

PROJECT OVERVIEW:

The amended Operating Standards of the Lease Agreement (Agreement) in the 2020 settlement with the City of Allentown (City) requires Lehigh County Authority (LCA) to replace one (1) mile of aged spun and/or pit cast-iron water main in 2021. Moving forward for 2022 thru 2024, LCA is required to replace at least 3 miles of water main within that time period, such that a minimum of four (4) miles of water main is replaced from 2021 through the end of 2024.

The water main replacement projects are closely coordinated with the City's Compliance Office, Streets Department, PennDOT, and private utilities (such as UGI). Given the complex nature of the project, which entails construction in a densely populated urban area, other buried infrastructure and required maintenance of traffic flow, numerous challenges are incurred which requires a significant amount of coordination and public relations efforts.

FUNDING:

The Project will be funded by the LCA Allentown Division. It is identified as required work in the Lease and is classified as a Major Capital Improvement, where the cost of the project will be recovered from the ratepayers over a 30-year period above the Lease rate caps.

PROJECT STATUS:

In March 2016 the Board approved the Design Phase and Pipe Prioritization Engineering Assessment for Cycles 4-6 for the Allentown Division Water Main Replacement Project. The Cycle 5 project prioritization and preliminary design were completed in 2019 and halted due to funding concerns. During negotiations between LCA and the City no water line replacement projects were completed in 2019 and 2020. The project was re-activated in late 2020 and design phase was completed in early 2021. Working closely with the City to obtain Major Capital Improvement approvals (as required by the lease) and outside agencies, Capital Works has obtained all approvals and permits required for the Cycle 5 Construction Phase of this project.

THIS APPROVAL: CONSTRUCTION PHASE CYCLE 5:

The Allentown Division Cycle 5 Water Main Replacement project will include a pipe replacement length of 1.13 mile in order to satisfy the annual Lease requirement in 2021. All pipe sections are located within City-owned streets.

BIDDING SUMMARY - CONSTRUCTION CONTRACTS:

The project was advertised for bid on March 1, 2021, a mandatory pre-bid meeting was held virtually on March 17, 2021, with nine contractors in attendance. Bids were opened on March 31, 2021. The bidding results are as shown in Table 1 below.

Table 1	
General Construction	
Bidder	Amount
<i>JOAO Bradley Construction Co., Inc.</i>	<i>\$1,547,636.00</i>
Pioneer Construction, Co., Inc.	\$1,766,765.10
Anrich, Inc	\$1,834,196.38
DOLI Construction Corporation	\$2,070,047.00

Reference checks for, JOAO Bradley Construction Co., Inc. (Bradley) have identified no issues. Bradley successfully completed the Allentown Division Cycles 2 and 3 water main replacement Projects, and prior to the Lease the Contractor performed many water main replacements for the City. Bradley is also currently retained by LCA's Allentown Division Distribution and Collection Department for emergency repairs. Therefore, we recommend awarding the General Construction contract to JOAO Bradley Construction Co., Inc., subject to the receipt of the necessary bonds, insurance and other required documentation.

COST SHARING AGREEMENT:

Through coordination efforts, LCA and the City developed a Cost Sharing Agreement for final paving restoration of City streets for the Cycle 5 project. During design phase for the project, Capital Works reviewed paving restoration cost data from prior City water main replacement projects and determined that a cooperative arrangement with the City Streets department would yield significant cost savings, better control over construction schedule, and improved quality control. This standalone agreement for the Cycle 5 street restoration work includes milling, overlay, and ADA ramp construction within City street right-of-ways. The agreement prescribes LCA pay the City based on the City's costs of labor and paving materials for the work to be performed by the City. Both Capital Works and the City Compliance Office agree this is a win-win situation. The Agreement contains clearly outlined procedures and responsibilities for each party, and includes provisions for scheduling, payment, material handling, inspection, and notification of completion.

PROFESSIONAL SERVICES CYCLE 5

1. Construction Engineering & Management

Gannett Fleming Inc., the design engineer of record, will provide construction engineering and administration services for the construction phase of the project. The work will generally include:

- Conduct pre construction conference.
- Review contractor's construction schedule and updates for compliance with project.
- Arrange and conduct monthly progress meetings and provide meeting minutes.
- Review all contractor submittals to ensure that design objectives and requirements of the Contract Documents are met.
- Prepare Change Orders.
- Respond to contractor Requests-for-Information.
- Review certified payrolls.
- Conduct walkover of the project site with contractors and LCA representatives.
- Provide LCA with recommendation on completeness of work, final acceptance and release of final payment.

2. Construction Inspection

Keystone Consulting Engineers (KCE) will provide daily construction inspection related services for the project. The work will generally include:

- Act as the daily field contact person for the project.
- Attend pre-construction & monthly progress meetings
- On-site contract management and coordination
- Maintain daily record of project activities, quantities of work performed, site conditions, etc.
- Review documentation for change order requests
- Review monthly pay estimates
- Perform substantial and final completion inspections

Keystone Consulting Engineers (KCE) previously provided construction inspection services in Cycle 3 AD water main replacement projects and has provided construction phase services on other LCA water and wastewater projects. KCE's provided high level of technical expertise at a reasonable cost.

A Professional Services Authorization is attached for both firms for Board approval.

SCHEDULE:

Assuming approval of the Construction Phase at the April 12, 2021 Board meeting, construction will commence in late Spring and all water main replacements for Cycle 5 will be operational by October 1, 2021 (the substantial completion date).

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.:	AD-W-21-1	BUDGET FUND:	Allentown Div\Water\Capital
PROJECT TITLE:	Allentown Division -Water Main Replacement Cycle 5	PROJECT TYPE:	<input checked="" type="checkbox"/> Construction <input type="checkbox"/> Engineering Study <input type="checkbox"/> Equipment Purchase <input type="checkbox"/> Amendment No.
THIS AUTHORIZATION	Construction Phase - \$ 2,011,718		

DESCRIPTION AND BENEFITS:

The amended Operating Standards of the Lease Agreement (Agreement) in the 2020 settlement with the City of Allentown require LCA replace one (1) mile of aged spun and/or pit cast-iron water main in 2021. Moving forward for 2022 thru 2024, LCA is required to replace at least 3 miles of water main within that time period, such that a minimum of four (4) miles of water main are replaced from 2021 through the end of 2024.

The replacements of these mains are critical to meeting the requirements of the Lease Agreement but also will provide increased reliability and resiliency of water service for our customers.

This authorization includes 1.13 mile of main replacement and will satisfy the 2021 Lease requirements per the Operating Standards.

Cycle-5 Construction Phase

Please reference the Board Memo for additional information.

REQUESTED THIS AUTHORIZATION	
Construction Phase Cycle 5	
Staff	\$50,000
Professional Services	
Construction Engineering / Management	\$43,540
Inspection	\$75,000
General Construction Contract – Joao & Bradley, Inc.	\$1,547,636
Final Paving Contract (Cost Sharing Agreement) – City of Allentown	\$195,542
Contingency	\$100,000
Total This Authorization	\$2,011,718

REVIEW AND APPROVALS:

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



Lehigh County Authority

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

PROFESSIONAL SERVICES AUTHORIZATION
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Professional: GANNETT FLEMING, INC.
P.O. Box 67100
Harrisburg, PA 17106

Date: April 12, 2021

Requested By: Jason Peters

Approvals

Department Head: _____

Chief Executive

Officer: _____

Allentown Division – Water Main Replacement Program Cycles 5

This Authorization- Construction Phase, Cycle-5: \$43,540

Gannett Fleming, Inc. will provide construction phase services including but not limited to conducting pre-construction, progress and close out meetings; catalog cut / shop drawing review and approval; change order administration; RFI responses; and technical assistance within the following Professional Services.

Professional Services

- | |
|---|
| 1. Construction Engineering and Management Services |
|---|

Please reference the cover Memo for additional information.

Cost Estimate (not to be exceeded without further authorization): \$43,540

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

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

PROFESSIONAL SERVICES AUTHORIZATION

Professional: KEYSTONE CONSULTING
ENGINEERS
5012 Medical Center Circle,
Suite 1
Allentown, PA 18106

Date: April 12, 2021

Requested By: Jason Peters

Approvals

Department Head: _____

Chief Executive

Officer: _____

Allentown Division – Water Main Replacement Program Cycle 5

This Authorization- Construction Phase, Cycle-5: \$75,000

Keystone Consulting Engineers will provide construction inspection related services including but not limited to attending pre-construction, progress and close out meetings, and technical assistance for the following Professional Service.

Professional Service
1. Construction Inspection Services

Please reference the cover Memo for additional information.

Cost Estimate (not to be exceeded without further authorization): \$75,000

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:** _____

FINANCE & ADMINISTRATION

ACTION ITEM

1. PENNVEST Financing Resolutions – Allentown Division – Water Filtration Plant; High Lift Pump VFD Upgrade Project – April 12, 2021

Three Resolutions are required to be reviewed and approved by the Board in order to complete the planned PENNVEST loan financing for the Allentown Division Water Filtration Plant project to upgrade the High Lift Pumps and Variable Frequency Drives (VFDs).

2. Approval of 2022-2026 Capital Plan – April 26, 2021

The status of the 2022-2026 Suburban Division, Allentown Division, and Administration Capital Plan will be reviewed with the Board by Staff. Staff will present a summary of the 2022-2026 Capital Plan and discuss the content of any public comments received. Board Approval of the Capital plan will be requested by Staff at the 4/26/2021 meeting.

DISCUSSION ITEMS

INFORMATION ITEMS

1. Recently Purchased Investments – Certificates of Deposit (CDs)

CERTIFICATES OF DEPOSIT						
25-Feb-21						
Fund	Bank	Location	Gross Amount	Date of Purchase	Date Due	Net Rate %
WW Capac	Eaglemark Savings Bank	Carson City, NV	249,000.00	1/20/21	1/20/23	0.100
WW Capac	Bank United, National Association	Miami Lakes, FL	249,000.00	1/22/21	1/23/23	0.100
WW Capac	BMW Bank Of North America	Salt Lake City, Ut	249,000.00	1/22/21	1/23/23	0.100
WW Capac	John Marshall Bank	Reston, VA	249,000.00	1/28/21	1/27/23	0.100
LLRI CR	Enerbank USA	Salt Lake City, Ut	245,000.00	1/29/21	1/30/23	0.100
LLRI CR	Marlin Business Bank	Salt Lake City, Ut	245,000.00	1/29/21	1/30/23	0.100
LLRI CR	United Fidelity Bank FSB	Evansville, IN	125,000.00	2/5/21	2/6/23	0.100

Cons Wtr (2)	Consolidated Water (2)
LLRI CR	Little Lehigh Relief Interceptor Capital Reserves
Cons LL2 (314)	Consolidated Little Lehigh Relief Interceptor 2
WW Capac	Wastewater Capacity
2010 Wtr Cons A	2010 Water Construction, Series A Bond
Wtr R&R	Renewal and Replacement

2. Developments

Water system construction is occurring in the following developments:

8323/8449 Congdon Hill Drive, 2 industrial lots with warehouses, LMT

8615/8783 Congdon Hill Drive, 2 industrial lots with warehouses, LMT

Fields at Indian Creek, Phases 4 & 5, 86 residential units (sfd), water and sewer, UMiIT & Emmaus

Kohler Tract, 123 residential lots (sfa), water and sewer, UMiIT

Water system plans are being reviewed for the following developments:

749 Route 100, 1 industrial lot with warehouse, UMT
1047 Cetronia Road, 8-unit apartment building, UMT
5329-5347-5357 Hamilton Blvd., 1 commercial lot, LMT
5420 Crackersport Road, 1 commercial lot, UMT
ABE Doors & Windows Redevelopment, 1 commercial lot, LMT - NEW
ATAS International, 1 industrial lot, UMT
Estates at Maple Ridge, 30 residential units (sfd), UMT
Hidden Meadows, Phase 2, 86 townhouse units (sfa), UMT
Laurel Field, Phase 5, 25 townhouses, UMT
Lehigh Hills, Lot 5 Phase 2, 240 residential units (sfd.), UMT
Lehigh Hills Townhouses, 24 townhouse units (sfa), UMT
Madison Village at Penn's View, 66 manufactured homes, 1 lot, water and sewer, LynnT
Mountain View Estates, 27 residential units (sfd), LMT
Parkland Crossing (formerly 1224 Weilers Rd Twins), 144 townhouse units, UMT
Ridings at Parkland – Phase 2, 38 residential units (sfd), NWT
Schoeneck Road, Lot 1, 1 lot warehouse, LMT
Sheetz – Cetronia Road, 1 commercial lot, UMT - NEW
Shepherds Corner, 1 commercial lot, LMT
The Annex at Fields at Indian Creek, 22 S.F. residential units, Emmaus Borough
Towneplace Suites by Marriott, 91-room hotel, UMT
West Hills Business Center-Bldg H – 1 Commercial Lot, Weisenberg T

Sewage Facilities Planning Modules Reviewed in Prior Month:

812 S. Front St., Allentown, 579 gpd.
1384 Storage LLC, Allentown, 238 gpd.
6245 Mountain Road, LMT, 223 gpd.
UMT Community Center at Grange Road Park, UMT, 4,680 gpd.

WATER

ACTION ITEM

1. Allentown Division – Water Main Replacement Program Cycle 5 – April 12, 2021

The project is for the annual replacement of aged and/or failing cast iron water mains in multiple locations throughout the City, in accordance with the new amended lease requirements (one mile per year), based on the design engineer's risk prioritization protocol. The design engineer (Gannett Fleming) halted work on Cycle 5 in 2019 following City Compliance office acceptance of the Cycle 5 main replacement prioritization, pending available funding. LCA restarted Cycle 5 design phase for construction in 2021 of a water main replacement project. As of November 2020, LCA began the process of negotiations for cost sharing agreement with the City for road surface restoration. In December 2020 LCA formally submitted the substantially complete plans and specifications to the City for approval, and City comments were reviewed on January 19, 2021. The project was advertised for bid on March 1, 2021, pre-bid meeting was held on March 17, 2021, and bids opened on March 31, 2021. Board authorization of bid award and approval for the construction phase of this project is to be requested at the April 12, 2021 LCA Board meeting.

DISCUSSION ITEMS

INFORMATION ITEMS

1. Allentown Division – Water Filtration Plant: SCADA System Replacement

The project consists of the replacement of the existing SCADA System at the Water Filtration Plant. The purchase and installation of new servers, new control panel cabinets, new cabling, and new programming software will encompass this project. Board approval to purchase this equipment was granted at the August 27, 2018 Board Meeting. Replacement will be completed by early 2020. Construction is 99% complete. This project will be funded by LCA Allentown Division. Majority of hardware in place and running. Working through reporting and data collection items. Project is complete.

2. Allentown Division – Water Filtration Plant: High Lift Pump VFD Replacements

The Water Filtration Plan (WFP) supplies water to residential and commercial customers in the City of Allentown, as well as wholesale water to surrounding communities. One of the critical elements at the WFP is the High Service Pumping System (HSPS), which is the primary means of conveying treated water into the distribution system. The HSPS has experienced regular failures from aging electrical components. The July 2017 Allentown Water Master Plan categorizes the pump variable frequency drives (VFDs) in very poor condition and notes that the VFDs are no longer supported by the manufacturer. This project will replace two of the existing VFDs and add a third VFD to the constant speed pump. Board approval was granted at the 8/12/19 Meeting for the design phase of this project, and the design was substantially completed in 2020. The design engineer also completed an "Arc-Flash" study in 2020 to identify related electrical deficiencies at the WTP. Final design engineering work resumed in September 2020 following execution of the amended Lease Agreement with the City. Capital Works met with a representative of PennVEST on 9/18/20 to discuss an upcoming application submission and final design completion schedule. Final design was completed in November 2020. Capital Works' submitted the funding application and supporting documentation to PennVEST by the 11/4/20 application submission deadline for the 1/20/21 PennVEST meeting. The application for funding was approved at the 1/20/21 PennVEST meeting, and the construction bids were opened on 3/8/21. The board authorized award of construction phase contracts at the 3/22/21 board

meeting. The PennVEST settlement paperwork will be drawn up for submission to PennVEST following receipt of executed agreements, bonds and insurance.

3. **Suburban Division – Upper Milford-CLD Interconnection Project (Kohler Tract)**

The project features the installation of a new booster pumping station and water main extension to interconnect the Central Lehigh Division (CLD) with the Upper Milford Division (UMD) allowing the abandonment of the UMD water supply facilities, and to provide water service to the proposed 123-lot Kohler Tract subdivision in Upper Milford Township. Costs are being shared between the LCA Suburban Division and the developer of the Kohler Tract (Jasper Ridge). Pumping station bids were opened on 4/25/19. Board approval for the construction phase of the project was granted at the 5/13/19 meeting and a preconstruction meeting was held on 6/25/19. The NPDES permit was issued on 3/9/20 and a premobilization teleconference was held on 3/19/20. Upper Milford Township has issued building permits. Construction is more than 96% complete. The contractors are addressing the remaining punch list items. The station went on-line on November 19th. **(No Change)**

4. **Suburban Division – Watershed Monitoring Program**

The project will include setting up a surface water flow-monitoring network for the Little Lehigh Creek. The work is in response to the Watershed Monitoring Plan that was developed and reported to LCA by AI Guiseppe (SSM, Inc.) in 2017. In 2018, USGS selected the Delaware River Basin to pilot the National Next Generation Integrated Water Observing System (NGWOS). The Little Lehigh Watershed was picked as a targeted area of the NGWOS Project and additional surface water and ground water monitoring stations will be developed. USGS and LCA met on 11/19/2019 to discuss the proposed monitoring stations and the program in general. A follow up meeting was held on 12/16/2019. USGS and LCA have now found all three GW monitoring wells, LE860, LE 861 and LE862, who's usage had all been discontinued decades ago and their locations were presently unknown. USGS is now checking the viability of using them again. USGS has now completed the installation of (4) new surface water (SW) Gauging Stations in the Little Lehigh Watershed and all are collecting data. Two additional SW stations need to be relocated because of the intermittent streams they were originally planned to monitor. Additional ground water (GW) flow monitoring stations are in the planning stages. All six (6) Fybr sites are currently collecting flow data and the calibration process is expected to last several months. Four (4) out of eight (8) planned weather stations are currently operational and are recording data. **(No Change)**

5. **Suburban Division – Buss Acres Pump Station Replacement Construction**

The project consists of the consolidation and replacement of two well stations with a single new pump station and a new water storage tank to replace two antiquated hydropneumatic pump stations. The new station will be a variable frequency drive controlled double pumping system with full SCADA control. The design will include radon reduction elements and also accommodate the future installation of additional radon removal equipment, to be implemented upon DEP's mandate of a regulatory limit. The project is in construction phase. The Notice to Proceed was issued to the contractors on 9/24/19. Construction began in February 2020 and is approximately **85%** complete. Equipment delivery delays from the pre-cast building manufacturer have slowed the progress of this project.

6. **Suburban Division – Water Meter Reading Equipment Upgrade**

LCA's capital program includes the replacement of 20,000 transceiver units, and 10,000 units will be replaced 2019 with the remaining to be replaced in 2020 under separate authorization. The new units have a 20-year battery life and are compatible with the new meter reading software purchased in 2017. This project will replace 100% of the remaining old style radio units over a two-year period. Construction phase services for the first round of 10,000 units was approved at

the 5/13/19 Board meeting. Construction began in July 2019 and a change order was issued to the contractor for the installation of the remaining transceiver units that were originally scheduled for replacement in 2020, in order to expedite the completion of the work under the program and take advantage of favorable contract unit pricing. The project is in final closeout.

7. Suburban Division - Additional (Redundant) Water Supply - Small Satellite Divisions

This Project focuses on the development of an additional well for the Madison Park North (MPN) system per DEP guidelines to have a backup source of water supply. An agreement is in place with an adjoining property owner to MPN to drill a test well on their property. The “step drawdown test” was performed on 3/26/19 and indicated that the test well is a viable backup source to Well 1. A Pre-Drilling and Aquifer Test Plan was approved by DEP in late September of 2019. Authorization was granted at the June 22 Board meeting for aquifer testing of the proposed well as per the combined Pre-Drilling and Aquifer Test Plan. Well testing was performed in August in coordination with LCA’s engineer. Testing was halted upon discovery of a water bearing zone blocked by casing pipe grouting. A second test well location has been identified on the same property and well drilling has been completed with positive results. Test Well 2 is more productive than the existing source for the system (Well 1). A sustained aquifer test of Well 2 was performed in March; however, an unpredicted heavy rainfall event invalidated the test. Another aquifer test will be completed as soon as hydrogeologic conditions are favorable, with DEP permitting to follow.

8. Arcadia West Division – Water Storage Tank Replacement

The Arcadia West water storage tank has had several leaks in recent years and the coating has reached the end of its useful life. This project is for the replacement of the tank with a new concrete reservoir. Design phase authorization was awarded to Entech Engineering at the April 27, 2020 Board meeting. This project will be funded by the LCA Suburban Division. DEP permitting has been obtained, the design is complete and the project is out for bid. Bids will be received on April 22, 2021.

9. Allentown Division – 36" DI Water Main Condition Assessment

Water distribution system consultant Gannett Fleming, Inc is working with Pure Technologies to develop a condition assessment project focusing on the 36" ductile iron transmission line that feeds the north end of Allentown and Huckleberry Ridge Reservoir. This line has had two recent major failures and it would be beneficial to determine if there is a root cause for these failures that can be corrected to prevent further damage and water loss. The work was performed on December 14-15, 2020. A full report will be available within a few weeks, hopefully late March or early April. **(No Change)**

10. Suburban Division – Fixed Base Meter Reading Stations

The project focuses on securing land development and zoning approvals to construct eight fixed base water meter reading stations located throughout the Suburban Division water service area. The land development and zoning approvals will allow for the future construction of the stations as part a program to transition to a centralized advanced metering infrastructure system which will provide more consistent, timely and accurate billing to the customers. Approval of a consulting engineer to provide the site development engineering services will be requested at a future Board meeting.

WASTEWATER

ACTION ITEM

1. **Suburban Division - Heidelberg Heights 2021 Sanitary Sewer Replacement Project – April 26, 2021**

In accordance with the adopted Consent Order and Agreement (CO&A) executed by LCA and DEP, LCA is required to complete annual inflow and infiltration mitigation projects to eliminate hydraulic overloads and bypass events at the Heidelberg Heights wastewater treatment plant. The CO&A requires that all original vitrified clay sewer main and lateral pipe be replaced within the next 5 years. This year's sewer replacement project was advertised for bid on March 9, 2021 and bids were opened on March 31, 2021. Board authorization of bid award and approval for the construction phase of this project is to be requested at the April 26, 2021 LCA Board meeting.

DISCUSSION ITEMS

INFORMATION ITEMS

1. **Allentown Division – Kline's Island WWTP: Phase 1 AO Design Improvements**

This project includes the design of the AO improvements at the wastewater treatment plant. This conceptual design concept was approved by the City and the relevant final deliverables were received by LCA. The City then directed LCA to proceed with the final design of improvements related to the blending alternative. Board approval for the Professional Services Authorization with Kleinfelder East, Inc. was granted at the September 11, 2017 Board Meeting. The project is identified as Administrative Order Work and will be funded by the City. The 30% design drawings and specifications have been received. The City directed to "pause" the design phase of the project. The City has now directed LCA to keep this project on indefinite hold. **(No Change)**

2. **Allentown Division – Kline's Island WWTP: Max Monthly Flow Capacity Evaluation**

DEP has noted that the KIWWTP has been performing at a high level and meeting its permitted effluent quality limits during a period of prolonged wet weather since early 2018. This study will provide the basis for confirming the plant's maximum monthly average that can be sustained during prolonged periods of wet weather – while remaining in full compliance with effluent quality requirements of the plant's permit. Approval of the study was granted at the 8/26/19 Board Meeting. The study was completed in mid-October 2019 and a Part II Permit was sent to DEP on 10/18/19. The permit was resubmitted in late January 2021 (without formal action yet taken by DEP on the Interim Act 537 Plan - submitted in September 2020). This project is considered an AO expense under terms of the Lease and is City funded. **(No Change)**

3. **Allentown Division – Lehigh Street (Rte. 145) Water and Sewer Main Relocation Project**

As part of the Pennsylvania Rapid Bridge Replacement Program, the proposed replacement of the Lehigh Street Bridge near the intersection with MLK Boulevard has required the relocation of existing City water and sewer lines that are located within the PennDOT right of way. Because the bridge is owned by Lehigh County and not the Commonwealth, the normal PennDOT relocation reimbursement schedules do not apply. Therefore, the County and LCA have executed an agreement on cost reimbursement on similar terms. LCA's engineer is working on behalf of LCA on a final sewer relocation design that minimizes the extent of the relocation. There will be less water infrastructure relocation work required since the existing water main is attached under the bridge and will be reattached after the new bridge is constructed. Construction will commence in 2021. **(No Change)**

4. **Kline's Island Sewer System – Regional Sewer Capacity & Wet-Weather Planning – Interim Act 537 Plan Preparation**

Following several months of discussion with the Pennsylvania Department of Environmental Protection (PA-DEP), all municipalities flowing into the Kline's Island Wastewater Treatment Plan have agreed to complete an Interim Act 537 Plan ("Interim Plan") by September 2020. This Interim Plan will primarily consist of projecting new connections to the regional sewer system from 2021 through 2025 and outlining steps to be taken during this timeframe to prepare a full Regional (Long-Term) Act 537 Plan ("Regional Plan"). This two-step planning process has been developed to allow all municipalities to work cooperatively toward a Regional Plan to meet future sewer capacity needs of the region, and to provide proper regulatory oversight and control of new connections to the system while the Interim Plan is in force from 2021 to 2025. To begin the process of compiling the Interim Plan, a consulting engineer has been preliminarily retained, and approval of their full Professional Service proposal was granted at the February 10, 2020 Board meeting. Costs associated with the development of the Interim Plan 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. As of late August 2020, the Interim 537 Draft is 100% completed and was delivered to sixteen planning commissions on 3/16/2020. Planning commission meetings occurred with public advertisement opening on 6/10/20 and closing on 7/10/20. Municipal resolution adoptions occurred in August and the Plan was delivered to DEP on 9/4/20. In late January 2021, DEP requested an additional 60 days to review the Interim Act 537. As of late March 2021, no response has been received. The KISS Region is proceeding on schedule with its commitments as outlined in the Plan.

5. **Kline's Island Sewer System – Regional Sewer Capacity & Wet-Weather Planning – Sewage Billing Meter QA/QC Data Analytics and 2021 Flow Metering Preparation**

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 flow metering data will be used to prepare modeling and identify the capital improvements needed to meet the future sewage capacity needs of the region through 2050. The flow metering will include a mix of temporary meters and the existing sewage billing meters. Data delivery and storage procedures, quality assurance, and flow analytics were implemented in 2020 for these sewage billing meters. Without this meter development program, the data cannot be used from these billing meters. A consulting engineer's professional service proposal was granted at the April 27, 2020 Board meeting. Costs associated with the development of the QA/QC data analytics and the 2021 flow metering preparation 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. As of late March 2021, the flow metering program will utilize 23 existing sewer billing meters.

6. **Regional Act 537 Plan Alternatives Analysis: Pretreatment Plant Upgrade Option**

To begin the process of developing the long-term Regional Act 537 Plan, the evaluation of the LCA Pretreatment Plant Alternatives was identified as an immediate need to assist with completing the full alternatives analysis to be completed within the next five years. The alternative to upgrade the Pretreatment Plant to full treatment was previously evaluated in the 2011-2016 timeframe. Additional study is required to fully evaluate the facility's capacity to treat current and future dry-day, wet-weather, and peak flows. To complete this evaluation, LCA staff has received proposals for two engineering firms that will serve in Program Manager and Technical Lead roles. The Program Manager will oversee all alternatives being evaluated at both the Pretreatment Plant and Kline's Island Wastewater Treatment Plan in Allentown as the Act 537 Plan is being developed. The Technical Lead will provide specific engineering and treatment plant modeling services to support evaluation of the Pretreatment Plant alternatives. Board

approval for these professional services authorizations was granted at the 8/24/2020 meeting. Final reports are expected by June 2021. **(No change)**

7. **Suburban Division – Western Lehigh Service Area: 2020 Flow Metering Program**

Future flow metering work is anticipated over the next several years for both the Western Lehigh service area as well as the entire regional Kline's Island Sewer System. In 2020, the Western Lehigh group will conduct flow metering for a period of eight months to gather additional data on inflow and infiltration and the impact of prior rehabilitation work. It is anticipated that more extensive flow metering will be required in 2021 and 2022 to develop a Regional Plan. Approval of a Professional Services Authorization and three-year contract with Flow Assessment Services was granted at the February 10, 2020 Board meeting. On February 10, 2020, the Board approved a Professional Services Authorization for Arcadis to provide quality assurance and data analysis services for the 2020 flow monitoring program. As of late March 2021, data collection is 100% completed and the Rain Derived I&I (RDII) analysis is underway with each individual Signatory.

8. **Suburban Division – Western Lehigh Service Area: 2020 Sewer Modeling**

The Western Lehigh Sewer Partnership (WLSP) hydraulic model has been calibrated using 2019 flow meter and rainfall data and is available to support long-term Act 537 planning for the Western Lehigh Interceptor (WLI). Five separate modeling tasks will be performed in order to facilitate broader Kline's Island Sewer System (KISS) planning need discussions. The results of this 2020 modeling will help to inform further future modeling decisions and alternative analyses that will occur during the full KISS model calibration period in 2022. A consulting engineer has been retained and full authorization was granted at the 5/11/2020 Board meeting. A presentation was presented to the Board at the 8/10/20 Board Meeting. Various modeling alternatives are still ongoing and the full model results will be available by the second quarter of 2021. The project is funded by the LCA Suburban Division. **(No change)**

9. **Suburban Division – Park Pump Station Force Main Rehabilitation**

The Park Pump Station and Force Main line were constructed in 1980 to provide wet weather relief to the Little Lehigh Creek Interceptor, which conveys wastewater from ten municipalities from outlying areas to the Kline's Island Wastewater Treatment Plant (KIWWTP). The force main consists of 8,715 linear feet of prestressed concrete cylinder pipe (PCCP) of various sizes (2,615' of 24"; 2,695' of 30"; and 3,405' of 36"), and connects with the 54" sanitary sewer interceptor that runs to KIWWTP. PCCP is particularly sensitive to deterioration due to hydrogen sulfide gas from wastewater, and corrosion of exposed reinforcing steel can result in structural degradation and pipe failure. An internal investigation of the pipe is required to assess the condition of the PCCP pipe and identify damage areas, in order to determine the locations and extent of rehabilitation needed to restore the level of service, prolong service life, and mitigate the risk of failure. LCA will conduct a limited manned inspection (tentatively Q2 of 2021) of the force main pipe at 5 air release valve (ARV) locations, 100 feet in both directions from the ARV manhole, which will be used as the initial evaluation of the representative condition of the pipe. Three, one-day trial runs (on a Saturday) were completed in Q4 of 2020 to verify the amount of time available to keep Park Pump Station offline. The pump station must be inactive in order to perform the investigations. Tentative work dates for the full scale evaluation is April 10-11, 2021. **(No change)**

10. **Suburban Division – Wynnewood WWTP Upgrade Project**

Wynnewood Terrace WWTP was constructed in 1980 by the developer to serve the Wynnewood Terrace subdivision, located in the Laury's Station area in North Whitehall Township. Sewer service is provided to approximately 217 residential and 2 commercial properties. LCA acquired the system in 2003. The plant, while meeting effluent limits, has

reached the end of its useful life with respect to corroded structural steel tanks and outdated mechanical equipment and is to be replaced with this project. The new facility shall meet the effluent limits criteria established in the DEP and DRBC permits, including new or additional limits that may be imposed during the permitting process. Design phase was authorized in February 2017 and was concluded in late Summer 2018. The DEP Part 2 Water Quality Management Permit was received in March 2018. The project was advertised for bid in August 2018, bids were opened in September 2018, and bids were authorized for award at the October 22, 2018 Board meeting. Construction work mobilized in early 2019 and was substantially completed in October 2020, with testing, start-up and training tasks completed. Construction is approximately 99% complete as of November 2020. Outstanding work consists of final restoration and demolition of the existing plant. **(No Change)**

11. Suburban Division - Lynn Township Corrective Action Plan

Excessive inflow and infiltration (I&I) and high wet-weather flows into the Lynn Township sewer system has been ongoing and increasingly challenging to address. As noted in LCA's monthly operations reports, treatment plant bypasses and sanitary sewer overflows have occurred in this system and must be addressed. On 6/4/19 a meeting was held with DEP, Lynn Township and LCA representatives as a result of a hydraulic overload at the wastewater treatment plant, based on 2018 Chapter 94 Report monthly plant flows. At the meeting, DEP directed LCA to submit an amendment to the pre-existing Corrective Action Plan (originally submitted by Lynn Township Sewer Authority) to include an updated system condition assessment and an outline of steps to be taken to mitigate I/I flows and maintain NPDES permit compliance. The Corrective Action Plan (CAP) includes structural and non-structural initiatives and involves coordination with the host municipality. The framework for the CAP was shared with the Board in February 2019. A meeting was held at Lynn Township with DEP in June 2019 to discuss the Lynn Township CAP and Township sewer planning/growth issues, and DEP directed LCA to submit a CAP Amendment by the end of summer 2019. The CAP Amendment contained an updated sewer system condition assessment and a corrective plan to further mitigate I/I flows. Updated CCTV work of the entire system was substantially completed in August 2019, and the inspection data was summarized in the CAP Amendment and is being used to scope a capital repair project. The Lynn Township Board of Supervisors adopted a sewer system rules and regulations ordinance on 9/12/19, which gives LCA the authority to inspect private laterals and facilities for illegal connections and perform follow-up enforcement. A meeting with DEP and Lynn Township representatives was held on 1/15/20 to discuss the CAP Amendment and plan moving forward. DEP sent a letter to LCA dated 6/8/20 granting 55 EDUs of sewer allocation relief for new connections to the system. **(No Change)**

12. Suburban Division - Heidelberg Heights Corrective Action Plan

On 2/11/19, DEP submitted a notice of violation to LCA regarding bypasses and permit exceedances at the Heidelberg Heights wastewater treatment plant. As discussed with the LCA Board during several meetings in 2018, this small satellite system has been challenged by high groundwater levels and significant infiltration and inflow (I&I) of clear water into the sewer system during rain events. LCA staff met with DEP officials on March 6, 2019 to discuss the problems and, as a result, LCA prepared a comprehensive Corrective Action Plan (CAP) and submitted DEP on 5/5/19. A draft of the plan was attached for Board review at the 4/22/19 Board meeting. The final CAP was submitted to DEP on 4/29/19. The Heidelberg Heights Board of Supervisors approved the advertisement for adoption of a sewer system rules and regulations ordinance on 9/19/19, which gives LCA the authority to inspect private laterals and facilities for illegal connections and perform follow-up enforcement. The ordinance was adopted by the township the in October 2019. A Consent Order & Agreement (CO&A) was drafted by DEP and sent to LCA in May 2020, which incorporates the projects and schedule outlined in LCA's proposed CAP. The final CAP was adopted by resolution by the LCA

board at the 6/22/20 meeting. The annual CAP report was submitted to DEP per Contact Order and Agreement requirements in late March 2021. **(No Change)**

13. Suburban Division – Sand Spring WWTP Upgrade Project Construction

The Sand Spring WWTP was constructed in 1972 by the developer to serve the Sand Spring development, located in the Schnecksville area in North Whitehall Township. Sewer service is provided to approximately 248 apartment units, 8 commercial properties, and an elementary school. Lehigh County Authority (LCA) acquired the system in 2005.

The plant, while meeting effluent limits, has reached the end of its useful life. The plant is constructed of in-ground steel tanks that are in poor condition, with areas of corrosion and loss of structural integrity. The mechanical and electrical systems are also at the end of their service life and in need of replacement. The proposed project includes replacement of the existing treatment facility in entirety with new technology and concrete tanks appropriate for the wastewater flows and loading characteristics. The new facility shall meet the effluent limits criteria established in the respective DEP and DRBC permits, including new or additional limits that may be imposed during the permitting process. Design phase was authorized in February 2017 and final design was delayed due to DEP Part 2 Water Quality Management and NPDES permitting issues. DEP approval of the Water Quality Management Permit was received in late December 2018, the design was finalized in late Spring 2019, and the project was advertised for bid in July 2019. Bids were opened on 8/13/19 and construction phase authorization was approved at the 8/26/19 Board meeting. A pre-construction meeting was held on 11/1/19 following execution of contract documents. Conditional Use approval and land development waiver were granted by North Whitehall Township in Spring 2020. Construction mobilization for site work occurred in late winter 2020 and construction is proceeding. Substantial completion and start-up of the new facility is anticipated in Spring 2021. **(No Change)**

14. Suburban Division - Trexlertown Area Capacity Solution Alternative

As part of the Western Lehigh service area's Sewer Capacity Assurance & Rehabilitation Program (SCARP), a conveyance capacity "bottleneck" was identified in the Trexlertown area of the Western Lehigh Interceptor, and this area was assigned a high priority due to occurrence of sanitary sewer overflows and basement backups in the vicinity. A parallel interceptor was originally conceived to run approximately from Cetronia Rd to Spring Creek Rd. The concept was modified to focus on providing storage capacity in the system for this area, due to concerns about downstream hydraulic impacts. This project is an interim solution to address local impacts of the system bottleneck, and will become part of the future long-term solution to alleviate regional conveyance capacity challenges. A pre-design feasibility study is being performed to evaluate various engineering alternatives, including an "in-line" parallel storage tank, conventional concrete tank (flow equalization basin), or other options. Award of the pre-design feasibility study to HDR was authorized at the 10/21/2019 Board meeting. The study is proceeding based on modeling information provided to date from Arcadis. A final report was received in March 2021 and is being reviewed.

15. Suburban Division – Lynn Township Manhole Rehabilitation Project

This project involves the rehabilitation of manholes in the Lynn Township service area found to be structurally deficient &/or leaking. The project includes frame and cover replacement, interior pipe connection grouting, exterior concrete work and sealing of manholes, and sealing around manhole frames located within roadway surfaces that are found experiencing infiltration through the frame and cover. The purpose of the project is to eliminate inflow and infiltration into manholes in the system. The project scope includes approximately 185 manholes will be rehabilitated in 2020. The project was advertised for bid in early June 2020, bids were opened

on 6/26/20, and construction phase authorization was approved at the 7/13/20 LCA board meeting. Construction will be completed by early 2021. **(No Change)**

16. Suburban Division - Heidelberg Heights 2020 Sanitary Sewer Replacement Project

In accordance with the adopted, executed Corrective Action Plan mandated by DEP, LCA is required to complete annual I/I mitigation projects to eliminate hydraulic overloads and bypass events at the Heidelberg Heights wastewater treatment plant. The Order requires that all original vitrified clay sewer main and lateral pipe be replaced within the next 5 years. This project was originally advertised for bid in March 2020 and bids were opened on 3/24/20. The low bid price exceeded this capital project construction budget for 2020, and the LCA board authorized rejection of bids at the 4/13/20 board meeting. The project scope was modified to reduce cost and the project was re-advertised for bid in June 2020, bids were opened on 7/13/20, and board authorization of construction phase was approved at the 7/27/20 LCA board meeting. Construction will be substantially completed by early 2021. **(No Change)**

17. Suburban Division – Western Lehigh Manhole Rehabilitation Project – Phase 2

This project involves the rehabilitation of key manholes in the Western Lehigh Interceptor service area. The project includes flood-proofing, interior pipe connection grouting, exterior concrete work and sealing of manholes, particularly those manholes in close proximity to the floodway, which experience floodwater inundation. The purpose of the project is to eliminate floodwater inflow into the system. The project scope for Phase 1 included 50 manholes that were rehabilitated in 2020 as part of a phased manhole rehabilitation program. The project was advertised for bid in April 2020, bids were opened on 5/12/20, and construction phase authorization was approved at the 6/8/20 board meeting. The Phase 1 project construction was completed in early 2021. Phase 2 of the WLI Manhole Rehabilitation Project, which includes manholes moving downstream in the WLI drainage basin, is in design phase at this time and is anticipated to be bid in late Spring 2021.

18. Allentown Division – Kline's Island WWTP: Sodium Hypochlorite System Installation Project – Construction Phase Approval

This project involves the replacement of the existing gaseous chlorination system at the Kline's Island Wastewater Treatment Plant (KIWWTP). The use of gaseous chlorine for effluent disinfection, while reliable, is outdated and creates significant public health and employee safety risks. In addition, the existing equipment has reached the end of its useful life. The 2018 KIWWTP Master Plan recommended abandoning gaseous chlorine and switching to (liquid) sodium hypochlorite. The design commenced in March of 2019 and was completed in early 2020. The project was advertised for bid in February 2020 and bids were opened on 4/14/20. Construction phase was authorized at the 6/8/2020 Board meeting and the contractor mobilized in late summer 2020. The project is anticipated to be completed in late Spring of 2021. The project is funded by the LCA Allentown Division. **(No Change)**

19. Suburban Division – Western Lehigh Service Area: Revenue Planning Tool

As part of the long-term Act 537 planning process, a revenue planning tool is required to help predict the impact of proposed system modifications in the Western Lehigh Service Area. This tool will simulate financial impacts based on current and future flows and loads and utilizing the terms of existing inter-municipal agreements. For the alternatives being evaluated by LCA's engineering consultants for potential upgrade of the Pretreatment Plant to full treatment, the revenue planning tool will simulate changes in future flows and loads and general financial analyses to assist with decision-making regarding these alternatives. Prior phases of this work were completed in 2019 and 2020 to review the assumptions and parameters required to develop the financial model. Authorization for Phase 2 (development of the actual revenue planning tool)

was approved at the 12/14/2020 Board Meeting. Final tool delivery is expected before June 2021. (No Change)

20. **Kline's Island Sewer System – Regional Sewer Capacity & Wet-Weather Planning: 2021 Model Expansion and Calibration**

The prior KISS sewer model from 2014 included only the City of Allentown and LCA/Western Lehigh municipalities. The primary goal of this work is to expand the sanitary sewer model into the surrounding Signatories (Coplay, Whitehall, North Whitehall, Hanover, South Whitehall, Salisbury, and Emmaus). Calibration of this expanded model to current flow characteristics will aid in the identification and evaluation of regional alternatives for solutions to both treatment and conveyance through the year 2050 Act 537 planning horizon (the LCA/Western Leigh portion of this model calibration work was completed in 2019 and 2020). The end result of this proposed work will provide one comprehensive, calibrated sewer model for the entire KISS system using 2021 temporary meter flow data and rainfall data. On February 22, 2021, Board approval was granted for this next phase of Act 537 planning efforts. (No Change)

21. **Allentown Division – Sanitary Sewer Collection System: Rain Derived Inflow and Infiltration (RDII) Analysis**

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. Data from approximately 43 temporary flow meters and five rain gauges from the 2021 flow metering program will be used for this analysis. The analysis itself will begin in late 2021 and will be concluded by March of 2022. On February 22, 2021, Board approval was granted for this project. (No Change)

22. **Kline's Island Sewer System – Act 537 Planning: 2021 Flow Data QA/QC**

As part of the Interim Act 537 Plan, the municipalities served by the Kline's Island Sewer System have committed to completing a sewage flow metering and modeling project beginning in 2021. The flow metering data will be used to prepare sewer modeling and identify the capital improvements needed to meet the future sewage capacity needs of the region through 2050. The flow metering program will include a mix of temporary meters (~63), existing sewage billing meters (~24), and various permanent, non-billing Signatory meters (~11). Flow metering services will be provided by Flow Assessment Services, as previously authorized in 2020. To ensure the data collected from the nine-month monitoring period are accurate and to ensure the validity of the resulting hydraulic model, a rigorous quality assurance and quality control program must be implemented. Approval of a consulting engineer's proposal for this work was granted at the January 25, 2021 Board meeting. Costs associated with these services 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. The 2021 flow characterization study will be completed by October or November of 2021. (No Change)

23. **Suburban Division – Park Pump Station Phase 2 Upgrade**

The Park Pump Station Phase 1 Upgrade was completed in early 2020, and consisted of new pumps, new pump control center with variable frequency drives, new automatic transfer switch, new wet well level control system, upgraded HVAC system, roof replacement, new pump removal access hatch, new pump hoist system, and associated mechanical and instrumentation equipment. The existing 40-year old generator does not have the capacity to handle the full loads of the upgraded station at 100% design flow and is at the end of its useful life. The Phase

2 Upgrade project consists of replacement of the original station backup generator system. The designer of record for the Phase 1 Upgrade was Whitman, Requardt & Associates, LLP (WRA). As WRA is already very familiar with the power systems and controls at the station, Capital Works requested a design phase proposal from the firm for the Phase 2 project. Authorization of design phase was granted at the March 22, 2021 Board meeting. Design is anticipated to be completed by the end of 2021.

24. **Allentown Division – Sanitary Sewer Collection System: I&I Source Reduction Program Plan (Year 2)**

This project includes the design of the City of Allentown's I&I Source Reduction Program Plan. In 2014, Video Pipe Services complete various CCTV inspections throughout twenty Primary and Secondary Basins. All pipe segments that called for complete pipe replacement have already been repaired. The remaining source reduction activities within the twenty Basins have been organized into a 5-Year Plan, with each year focusing on a different geographic region of the City's sewer collection system. Design has been approved for all five years, with the first project completed in 2020 and the last project finishing in 2024. Board approval for the construction phase was granted at the March 22, 2021 Meeting. This project is considered an AO expense under terms of the Lease and is City funded.