



LEHIGH COUNTY AUTHORITY

LCA Main Office:
1053 Spruce Road
Wescosville, PA 18106
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Agendas & Minutes Posted:
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BOARD MEETING AGENDA – October 8, 2018

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

- *September 24, 2018 Board meeting minutes*

4. Public Comments

5. Action / Discussion Items:

FINANCE AND ADMINISTRATION

- *2019 Western Lehigh User Rates (pink)*
- *2019 Preliminary Budget – Discussion only*

WATER

- *Allentown Division – Water Filtration Plant: Carbon Dioxide Feed System (green)*

WASTEWATER

6. Monthly Project Updates / Information Items (1st Board meeting per month) – **October 2018 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

Meetings begin at Noon at LCA's Main Office, unless noted otherwise below.

October 22, 2018

November 12, 2018

November 26, 2018

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

September 24, 2018

The Meeting of the Lehigh County Authority was called to order at 12:01 p.m. on Monday, September 24, 2018, Chairman Brian Nagle presiding. Other Members present at the commencement of the meeting were: Linda Rosenfeld, Jeff Morgan, Richard Bohner, Norma Cusick, and Ted Lyons. Authority Staff present were Liesel Gross, Brad Landon, Chuck Volk, Ed Klein, Pat Mandes, Susan Sampson, Chris Moughan, John Parsons, and Lisa Miller.

REVIEW OF AGENDA

Chairman Nagle announced that today's Board meeting is being videotaped and streaming live and recordings will be posted to the Authority's website.

Liesel Gross stated there are no changes to the agenda and verified the Board received the 2013C Bond refinancing supplemental paperwork that was emailed the week prior. Ms. Gross also verified the Board had a hardcopy of the 2019 Preliminary Budget which was distributed at today's meeting and copies of the August 2018 Financial Review which was also previously emailed and distributed at today's meeting. There will also be an Executive Session at the end of the meeting to discuss matters of potential litigation.

APPROVAL OF MINUTES

September 10, 2018 Regular Meeting Minutes

Richard Bohner noted that the word *Assistant* should be removed from his title on page three under his signature.

On a motion by Richard Bohner, seconded by Norma Cusick, the Board approved the Minutes of the September 10, 2018 meeting as corrected (5-0). Linda Rosenfeld abstained.

PUBLIC COMMENTS

None.

ACTION AND DISCUSSION ITEMS

Resolution No. 9-2018-1 – Allentown Division 2013C Bond Refinancing

Liesel Gross announced that, along with Ed Klein, Chris Gibbons from Concord Public Financial Advisors, Inc. and Tim Horstmann from McNees Wallace & Nurick were present to review the refinancing of the 2013C Bond and answer any questions. Ms. Gross distributed a printed copy of the Lehigh County Authority – City Water/Sewer Lease Bond Debt Service handout that was emailed to the Board prior to the meeting. LCA Staff have been working on a plan to refinance the 2013C Bonds prior to their maturity date of December 1, 2018. On Friday, September 14, 2018, LCA received a fully executed copy of a revised consent agreement, signed by the Authority, the City of Allentown, and the bond trustee, M&T Bank, allowing the refinancing of the 2013C Bonds to be completed on a parity basis with the original bond issue. On this basis, LCA also received a proposal from Lafayette Ambassador Bank to purchase the 2018 Bond in the maximum principal amount.

Kevin Baker arrived at 12:06 p.m.

Chris Gibbons explained the terms of the loan and the financing proposal.

Tim Horstmann gave an overview of Resolution No. 9-2018-1 which authorizes and directs the issuance of the Authority's water and sewer revenue bond (City of Allentown Concession), Series 2018 (Federally taxable), in the maximum principal amount not to exceed \$18,735,000.00, to be purchased through Lafayette Ambassador Bank and any and all other actions as stated in the resolution with closing on October 11, 2018.

Some discussion followed regarding financing costs and total debt service added to the Authority cash flow. Ed Klein explained the additional costs, which were outlined in the packet and materials prepared by Concord Financial and explained the total financing costs were lower than expected.

On a motion by Norma Cusick, seconded by Linda Rosenfeld, the Board approved Resolution No. 9-2018-1 (7-0).

2019 Preliminary Budget

The 2019 Preliminary Budget was distributed at the meeting and provided for discussion. Liesel Gross explained the preliminary Budget would be presented at this meeting, followed by an additional, updated presentation at the October 8, 2018 Board meeting. The final Budget would be presented for approval at the October 22, 2018 meeting. The Budget must be approved by November 1, 2018.

Ed Klein gave a PowerPoint presentation of the 2019 preliminary Budget highlighting cash flows and assumptions. There was some discussion regarding Capital Expenditures and Suburban Water and Wastewater projects. Chuck Volk explained the project status of various projects included in the 2019 Capital Budget, illustrating that the Budget primarily includes projects that have been previously authorized or discussed with the Board.

Scott Bieber arrived at 12:48 p.m.

Ed Klein reviewed the City Division finances and explains that the proposed 2019 Capital Budget is significantly reduced due to the lack of available funds. The Board voiced their concerns regarding critical or required projects that are not budgeted for 2019. Liesel Gross explained that there are a few major outstanding items that must be resolved prior to incorporating additional projects into the Budget. Issues related to revenue sufficiency are the key problem, which is being addressed through legal avenues and discussions with the City of Allentown. The Authority will be unable to self-fund or finance any significant capital projects until these issues are resolved. The prioritization of projects will occur at that time.

At the October 8th Board meeting, there will be a second review of the Budget with any changes from the preliminary Budget, along with the User Charge Report for the Western Lehigh Interceptor. At the October 22nd Board meeting, the final Budget will be presented for approval. Once the Budget process is completed, the five year Capital Plan will be rolled out in November or December.

LCA Pension Program – 2019 Minimum Municipal Obligation (MMO)

Ed Klein presented the 2019 Minimum Municipal Obligation (MMO) memorandum and worksheet for the Authority's Pension Plan to the Board. No action is required.

MONTHLY FINANCIAL REVIEW

Ed Klein gave an overview of the August 2018 financial report, highlighting variances between budgeted expenses and actual or forecasted expenses.

MONTHLY SYSTEM OPERATIONS OVERVIEW

John Parsons reviewed the Monthly System Operations Overview report for August 2018. Mr. Parsons commented that August was a challenging month due to the excessive amount of rainfall. Scott Bieber questioned the heavy flow into the pretreatment plant and where the high volume of Infiltration and Inflow was coming from. Chuck Volk explained that the reported high flows at the pretreatment plant are inaccurate due to the recirculation of sewage through the plant due to surcharge conditions in the Western Lehigh Interceptor.

STAFF COMMENTS

None.

SOLICITOR'S COMMENTS

None.

PUBLIC COMMENTS / OTHER COMMENTS

None.

Chairman Nagle commented on a newspaper article regarding Aqua America's request for a rate increase and highlights the difference between a for-profit entity and a not-for-profit entity.

Chairman Nagle called a recess at 1:54 p.m. The meeting reconvened at 2:00 p.m.

EXECUTIVE SESSION

An Executive Session was held at 2:00 p.m. to discuss potential litigation. The Executive Session ended at 2:28 p.m.

ADJOURNMENT

There being no further business, the Chairman adjourned the meeting at 2:28 p.m.

Richard Bohner
Secretary



LEHIGH COUNTY AUTHORITY

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MEMORANDUM

Date: September 28, 2018

To: Board of Directors & Management Staff

From: Jennifer Montero

Re: Proposed 2019 WLI, LLRI-Phase 1 and LLRI-Phase 2
Wastewater User Charges

Attached is a copy of the "2019 Report on Wastewater User Charges". This is the annual report that explains the derivation of the various billing rates that are charged to the users of the Western Lehigh Interceptor, Little Lehigh Relief Interceptor Phase 1, and Little Lehigh Relief Interceptor Phase 2.

As you will read in the Executive Summary on page 3, **rates to an average residential user are predicted to decrease overall by 1%.** The decrease in WLI rates is primarily due to a 12% decrease in the City rates along with a decrease in the amount of capital costs included in the WLI O&M budget. The decrease in the LLRI-I rate is due to a decrease in the amount of reserves included in the cost portion of the rate to fund the Park Pump Station Rehabilitation project, as a sufficient amount of reserves currently exist to fund that project.

LCA has implemented estimated quarterly billing procedures effective January 2009. Estimating the quarterly bills have provided consistent Signatory payments and has resulted in having payments approximately one month prior to remitting LCA payment to the City. The estimates are based on a prior four quarter average and are being reviewed by the respective Signatory. The four quarterly estimated bills are reconciled the following year.

We request that the Board give Preliminary Approval of the rates.

LEHIGH COUNTY AUTHORITY

2019 REPORT ON WASTEWATER USER CHARGES

September 28, 2018

LEHIGH COUNTY AUTHORITY
2019 REPORT ON WASTEWATER USER CHARGES

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EXECUTIVE SUMMARY

This summary provides an overview of the various assumptions included in the Lehigh County Authority (LCA) "2019 Report on Wastewater User Charges." Further detailed information can be found in the report.

1. Waste Strength

The assumed concentration for all Non-Exceptional Strength users will be 250 ppm for BOD, 275 ppm for TSS, and 35 ppm for TKN. Exceptional Strength Limits will be 300 ppm for BOD, 360 ppm for TSS, and 85 ppm for TKN.

The assumed concentration for discharge to the Kline's Island Wastewater Treatment Plant is 141 ppm for BOD, 164 ppm for TSS, and 33 ppm for TKN which are net values without Emmaus discharges. These strengths are based on the continuation of the LCA Wastewater Treatment Plant (PTP) in Fogelsville reducing all waste strength that passes through it and with brewing operations at Boston Beer.

2. Payments to the LCA Wastewater Pretreatment Plant (PTP)

Credits will be given to the PTP, at City unit rates, for pounds of BOD and TSS removed by the operation of the PTP in excess of the required removal of certain industrial strengths. These credits are as mentioned in the 4/17/91 Amendment to the 4/1/83 Agreement between LCA, the LCA Signatories, and the County.

3. User Rates

The following rates are proposed for 2019 as shown in comparison to the budgeted 2018 rates and represent a decrease of 1% from the 2018 rates for a typical residential customer.

	<u>2018</u>	<u>2019 Proposed</u>
<u>LCA SIGNATORIES</u>		
Western Lehigh Interceptor		
FLOW (per 1,000 gals)	0.98	.089
BOD (per pound)	0.29	0.28
TSS (per pound)	0.25	0.25
TKN (per pound)	0.37	0.43
ALLOCATION (per 1,000 gals per day)	0.18	0.29
Little Lehigh Relief Interceptor		
PHASE 1 (per 1,000 gals)	0.27	0.22
PHASE 2 (per 1,000 gals)	0.03	0.03
<u>EMMAUS</u>		
Western Lehigh Interceptor		
FLOW (per 1,000 gals)	.23	0.30
<u>OTHER USERS</u> – L. Macungie, Salisbury, & S. Whitehall		
Little Lehigh Relief Interceptor – Phase 1		
FLOW (per 1,000 gals)	0.21	0.19

3. User Rates (continued)

NOTES:

Western Lehigh Interceptor: LCA has elected to use a combination of operating funds and Western Lehigh Interceptor fees collected from new connections to pay certain administrative order (AO) capital projects such as the Signatory I&I Investigation and Remediation Program and Test and Seal. Sixty percent of the costs will be recovered through user charges over a 10-20 year period while the capital recovery fees will cover 40% of the costs.

For 2019, we have estimated the City Division's unit charges using a 2018 estimate for total hydraulic and organic loadings based on actual 1st and 2nd quarter 2018 signatory flows and a projection of total flows into Kline's Island Wastewater Treatment Plant.. The City rates show a 12% decrease. The decrease in rates is largely due to the sharp decline (75%) in pay-as-you-go capital included in the 2019 rates.

Little Lehigh Relief Interceptor – PHASE 1: The rate for 2019 will decrease by 10% from the 2018 rate for non-LCA signatory users and 19% for LCA signatory users. The decrease reflects the discontinuation of reserve fund amounts included in the rate cost basis for the Park Pump Station project. The current reserve amount included in the rate for both groups of rate payers is earmarked for the Park Pump Station Force Main Rehabilitation project. The non-LCA signatory users are being charged an extra component in their rate for the Park Pump Station Rehabilitation project. This is due to the LCA signatory portion of the project being paid for by funds available to them via reserves from WLI rates and capital recovery fees.

Little Lehigh Relief Interceptor – PHASE 2: The rate for 2019 will remain the same as the 2018 rate at .03/1,000 gallons.

4. User Payments

Quarterly Estimated Payments: To improve the WLI operating fund cash flow, Signatories will receive an estimated quarterly bill. Estimating the quarterly bills will provide consistent Signatory payments and will result in having payments arriving prior to LCA's payment to the City (City Division) for treatment and transportation costs. Submission of the Signatory data is still required but the timing of the submission is no longer as critical. The estimated quarterly bill for each Signatory for the year 2019 is attached to this report, "Estimated Quarterly Bill Procedures" as Appendix B.

I. INTRODUCTION

This report is intended to demonstrate how the user rates for 2019 were developed. It also reports comparative historical data. The Lehigh County Authority (LCA) Wastewater facilities – the Western Lehigh Interceptor (WLI), and the Little Lehigh Relief Interceptor, Phases 1 and 2 (LLRI-P1 and LLRI-P2) are legally and financially independent of each other.

Background – WLI

In 1971, LCA constructed the WLI to serve four municipalities – Upper and Lower Macungie Townships and the Boroughs of Alburtis and Macungie. Since then, Upper Milford, Lowhill and Weisenberg Townships have been added. Collectively, the municipalities are referred to as the “Signatories” (or “Signatory”). LCA also provides service to a portion of the Borough of Emmaus (“Emmaus”).

LCA, serving as agent for the Signatories, contracts with the City of Allentown (City) for the transportation, treatment and disposal of wastewater from the Signatory area (see “City of Allentown – Concession Lease” on page 6). Discharges to the City are based on constant flow measurements and periodic sampling and analyses to determine discharge strength.

The WLI consists of 20.6 miles of gravity sewer line and several parallel relief lines, including the Western Lehigh Relief Facilities (WLRF – a pump station and 3 miles of force main) that were completed during 1998 and the Spring Creek Force Main Extension (5 miles of force main) completed in 2005. In 2010, the 3 million gallon Flow Equalization Basin was constructed at the PTP to be utilized in storing wet weather flows to reduce the risk of sanitary sewer overflows within the WLI system.

Background – LLRI

Under the provisions of agreements with the City, all municipalities are required to construct relief facilities whenever jointly-used City-owned sewer lines become overloaded. In 1973, the City notified the Signatories, Salisbury Township (Salisbury) and South Whitehall Township (South Whitehall) that the City-owned Little Lehigh Interceptor required relief.

Under an agreement dated February 10, 1981, LCA was authorized to plan and construct the required facilities. The agreement contemplated two financially independent sets of facilities. The first, known as Phase 1, relieves the City’s Little Lehigh Interceptor and serves the Signatories, Salisbury and South Whitehall. It consists of the Park Pump Station and a large diameter force main, extending from the Park Pump Station to the Allentown Interceptor, just upstream of the City treatment plant. The second, known as Phase 2, relieves the City’s Emmaus Interceptor from Keck’s Bridge to the Park Pump Station and serves the Signatories.

Existing Billing Practices – WLI

Costs attributable to the WLI and the use of the City facilities are allocated through user rates among the Signatories based on three criteria: (1) flow, (2) strength, and (3) treatment allocation. Costs attributable to the operation of the WLI (excluding Exceptional Strength Analyses costs), the City interceptors, and a portion of the City treatment plant operational costs are allocated based on flow. The balance of the City treatment plant operational and the WLI Exceptional Strength Analyses costs are allocated to the three waste strength parameters of BOD, TSS and TKN. Allocation of the City costs are based on the City’s user charge

system, developed in 1979. All City and LCA debt service costs are allocated based on wastewater treatment allocations to the Signatories.

Emmaus, because it deals directly with the City for its treatment and transportation needs and because it has made a capital contribution in lieu of paying future debt service, pays user charges based only on WLI operating costs.

Billing practices used herein were established in the April 1, 1983 Service Agreement. Billable flows and strengths to each Signatory are based on a summation of the individual customer discharges within each Signatory service area. Inflow and infiltration (I/I) attributable to the WLI service area is shared proportionately by all Signatories.

Existing Billing Practices – LLRI

Costs attributable to LLRI-P1 are allocated among the Signatories, Salisbury and South Whitehall in proportion to metered wastewater flows tributary to the City's Little Lehigh Interceptor, except that South Whitehall flows are reduced by 500,000 gallons per day (gpd,) based on a City commitment to transmit that wastewater on South Whitehall's behalf.

Costs attributable to LLRI-P2 are allocated among only the Signatories based on billable wastewater flow. The Authority has established a rate per 1,000 gallons to cover expected expenses. Therefore, as in 2018, a rate of \$0.03 will be applied to the Signatory billing.

City of Allentown – Concession Lease

In August 2013, LCA assumed responsibility for the operation of the City of Allentown water and wastewater systems (City System), now referred to as the LCA Allentown Division. As part of this 50-year lease, LCA is now responsible for calculating annual City wastewater rates and billing City Signatories for wastewater usage. The 2019 rates have been calculated according to Municipal Service Agreements. Signatories will remain responsible for their share of the previously existing City Debt Service plus additional amounts for ongoing capital improvements. The City System is legally and financially independent of the of the LCA systems.

II. BILLING BASIS DETERMINATION

Discharge from each residential, commercial or industrial user is estimated and summed within each Signatory service area.

Flow Determination

Flows are determined based on one of the following methods. Where a sewer meter is available, periodic readings are used. If a sewer meter is not available, periodic readings of the water meter are used for commercial and industrial customers. For residential users receiving water service as of 1 January, the first quarter's metered water usage is used. For residential users connecting after 1 January, or for users not having a water meter, 220 gpd is used.

Strength Determination

Assumed Average Strength and Exceptional Strength Limits proposed for 2018 are:

Discharge Type	Parameter	
	Assumed Average Strength	Exceptional Strength
BOD	250 ppm	300 ppm
TSS	275 ppm	360 ppm
TKN	35 ppm	85 ppm

As in previous years, all industrial and certain commercial users with greater than 25,000 gallons per billing period will be sampled and tested at least once per year in order to determine the strength of their discharge. Any user with BOD, TSS or TKN discharge in excess of the Exceptional Strength Limit will be billed based on those test results. All users with discharge below the Exceptional Strength Limit will be billed at the Average Strength level.

Sampling and testing frequency, duration and other related guidelines are described in the "User Charge Sampling & Analysis Procedures and Billing Computations," attached to this report as Appendix A.

The LCA Pretreatment Plant (PTP) is required to treat certain industrial discharges to 210 ppm for BOD and 230 ppm for TSS. Through the operation of the PTP, those industrial discharges, together with other customer discharges located upstream of the PTP, will be significantly reduced below those required levels. An agreement between the Signatories, LCA and the County (prior PTP owner) identifies how billings, and credits for those additional removals, will be calculated. Those terms have been used in calculating total system billables and the credit for this report.

Emmaus Billing Basis

The Emmaus Service Agreement (7/1/86) provides that Emmaus will participate in WLI operating and maintenance costs, including administrative costs, while excluding debt service. Administrative costs are allocated based on the ratio of salaries applicable to WLI operation and maintenance to total WLI salaries. The minimum and maximum limits for allocation of Administrative costs are 32% and 52% respectively.

III. CAPITAL RECOVERY FEES

Background

Since 1985, capital recovery fees have been charged to the Signatories to recover the purchase cost of treatment capacity from the City (Treatment allocation Fee) and the construction cost of the WLI (Interceptor Fee). Since 1986, a Relief Interceptor Fee has also been charged to all new connections. The Interceptor Fee is recovering costs of the original interceptor, the various relief facility projects and the flow equalization basin.

A review of all fees is conducted annually with proposed changes made effective in July. All fees are determined in accordance with Pennsylvania Law (Act 57 of 2003.)

Use of Capital Recovery Fees

The Interceptor fees currently collected for new user connections to the WLI are currently held in a reserve account to retire additional WLI debt, fund capital projects or pay for unexpected expenses.

Since the bonds that financed the Relief Interceptor were retired, collected fees have been placed in an account and will be funding a portion of the WLI system capital costs.

Concerning treatment capacity, as the service area continues to grow and the need for treatment capacity grows, the treatment fees collected are placed in a reserve fund to either purchase additional capacity or to fund additional capacity options.

IV. WLI USER CHARGE DEVELOPMENT

This section describes the methods used to calculate WLI User Charges. Four general steps are followed:

1. Year 2019 costs have been estimated based on prior years' cost, flow and loading trends.
2. Costs have been allocated to five billing parameters – FLOW, BOD, TSS, TKN and ALLOCATION.
3. A billing basis has been estimated for each billing parameter.
4. Unit costs were determined for each parameter by dividing the total costs by the billing basis.

Two types of costs are incurred – City and LCA. City charges include three types of costs – debt service, interceptor use, and operation and maintenance. LCA charges include two types of costs – debt service and operation and maintenance.

Assumptions

For estimating City costs, the following assumptions have been made for LCA total discharge to the City:

	<u>2018</u>	<u>2019</u>
LCA Total Allocation in City Plant	10.78 MGD	10.78 MGD
Average Daily FLOW	8.31 MGD	9.503 MGD
Average BOD Concentration	147.1 ppm	141 ppm
Average TSS Concentration	160.4 ppm	164 ppm
Average TKN Concentration	30.7 ppm	33 ppm

City Debt Service

LCA is required to pay a portion of the pre-concession lease debt service on the bonds that were purchased to finance the City Plant improvements based on the LCA share of treatment capacity. LCA's estimated share of these total debt service costs is \$127,498 for 2019. An additional debt service amount of \$565,297.57 is also being charged for projects for which LCA has executed since it began operating the City Plant in 2013. These projects include the replacement of the belt filter press, motor control center, Substation #2 rehabilitation, and digester cover replacement at the Kline Island Wastewater Treatment Plant and roof replacements at both the Kline Island Wastewater Treatment Plant and the Distribution and Collections Building. Also included in total City Debt Service is an annual payment of \$39,674 for financed Administrative Order projects, bringing total City Debt Service for 2019 to \$732,470.

City Interceptor Use

In lieu of debt service, LCA pays a fixed rate of \$0.01 per 1,000 gallons for the use of the City interceptors. For 2019, the estimated cost is \$34,688.

City Operation and Maintenance

LCA pays the City for all flow and pounds discharged. In setting rates, annual operation and maintenance costs and loadings for the City Plant are estimated, thus allowing unit rates to be estimated. The following City unit rates, shown in comparison to the previous year's rates, were estimated by LCA:

	2018 Rates	2019 Rates
FLOW (per 1,000 gals)	0.210	0.186
BOD (per pound)	0.265	0.234
TSS (per pound)	0.220	0.197
TKN (per pound)	0.371	0.323

The components of the City costs are summarized in the Table - "Allentown Estimated Costs" (page 13). Pay-as-you-go capital expense decreases resulted in a 12% overall rate decrease over the 2018 estimated rates.

LCA Debt Service

The 2019 Debt Service is estimated at \$398,554. The Debt Service is based on PennVest loans approved to fund the Flow Equalization Basin project mentioned in the Introduction.

LCA Operation and Maintenance

Operation and maintenance costs are shown in the Table - "Operation & Maintenance Costs" (page 14). As earlier mentioned, since Emmaus does not participate in all operation and maintenance costs, separate costs that Emmaus and the Signatories share in are shown in the Table - "O&M Costs Shared by Signatories and Emmaus" (page 15).

As in previous User Rate Reports, the costs of Exceptional Strength Analyses are equally divided between BOD, TSS and TKN. These costs are net of any Signatory reimbursements.

Billing Basis

To estimate the 2019 billable discharges, the second half of 2017 and the first half of 2018 billings were reviewed. Projected growth, where applicable, for each Signatory was added. A summary of this information may be found in the Table - "Billing Basis O&M" (page18).

Rate Design

Although rate calculation options are almost limitless, several legal requirements eliminate many of the options. First, federal law and regulations provide that "each recipient of the waste treatment services within the applicant's service area will pay its proportionate share of the cost of operation (including replacement) "of all waste treatment service provided by the applicant."

Second, Pennsylvania's Municipality Authorities Act requires that rates be "uniform and reasonable."

Finally, the Service Agreements require that a rate methodology substantially identical to that adopted by the City be used and that debt service costs attributable to the City facilities and to the WLI be allocated in proportion to the hydraulic allocation.

Based on the aggregate of these restrictions, unit costs for FLOW, BOD, TSS, TKN, and ALLOCATION are based on the total billables divided into the total cost for each parameter. City debt service and other costs are only allocated to the Signatories and not Emmaus. LCA operation and maintenance costs related to the WLI are allocated to both the Signatories and Emmaus.

User Rate Adequacy

Using the proposed unit rates, multiplied by the various customer billing bases, a total expected revenue of \$7,271,856 is estimated. Comparing this revenue to the expense of \$7,271,856 shown on the Table - "Cost Allocation Summary" (page 17) indicates an overall coverage of 0%.

WESTERN LEHIGH INTERCEPTOR
TABLES

ALLENTOWN ESTIMATED COSTS

	2018 Est Budget	2019 Estimate
DEBT SERVICE:		
Summary	\$ 378,115	\$ 732,470
Other Interceptor	30,345	34,688
DEBT SERVICE SUBTOTAL	\$ 408,460	\$ 767,158
 OPERATION AND MAINTENANCE:		
Flow	\$ 637,014	\$ 646,064
BOD	985,903	951,002
TSS	891,740	932,724
TKN	288,036	306,800
OPERATION AND MAINTENANCE SUBTOTAL	\$ 2,802,693	\$ 2,836,590
 TOTAL ALLENTOWN COSTS	\$ 3,211,153	\$ 3,603,748

OPERATION & MAINTENANCE COSTS

ITEM	2018 BUDGETED LCA COSTS	2019 ESTIMATED LCA COSTS
DEBT SERVICE:		
Financing and Bond Issues	\$ 332,129	\$ 398,554
OPERATING & MAINTENANCE CHARGES:		
Personnel		
Personnel Subtotal	\$ 118,375	\$ 82,250
Purchase of Services		
General Services	108,186	\$ 90,159
Employee Benefits	45,231	\$ 34,390
Utilities	37,922	\$ 47,815
Engineering	5,000	\$ 6,500
Exc. Str. Analyses (External)	43,000	\$ 43,000
General Analyses (External)	3,100	\$ 3,100
Maintenance	190,600	\$ 198,015
Misc. Purchase of Services	63,415	\$ 162,430
I/I Rehabilitation Program	-	\$ -
Rental Charges	23,347	\$ 16,534
Purchase of Services Subtotal	\$ 519,800	\$ 601,944
Materials and Supplies		
Fuel	\$ 11,000	\$ 10,000
Misc. Materials & Supplies	24,300	\$ 33,350
Materials & Supplies Subtotal	\$ 35,300	\$ 43,350
Equipment		
Equipment	51,650	\$ 39,802
Amoritized Equipment	0	\$ 35,622
Equipment Subtotal	\$ 51,650	\$ 75,424
Capital Funding (Sig. + Emmaus)		
Capital Funding	0	\$ -
Amoritized Planning & Flow Monitoring (AO projects)	156,635	\$ 214,174
Capital Funding Subtotal	\$ 156,635	\$ 214,174
TOTAL OPERATING & MAINTENANCE	\$ 881,760	\$ 1,017,142
Pay-Go Capital Projects (Non-AO)	767,000	\$ -
Reserve Amount for Future Projects	200,000	\$ 600,000
TOTAL LCA EXPENSES	\$ 2,180,889	\$ 2,015,695
Less: Miscellaneous Revenue	(100,000)	\$ (100,000)
TOTAL LCA CHARGES	\$ 2,080,889	\$ 1,915,695

O&M COSTS SHARED BY SIGNATORIES AND EMMAUS

ITEM	2019 ESTIMATED LCA COSTS	PERCENT ALLOCABLE TO EMMAUS	PORTION SHARED BY SIGNATORIES AND EMMAUS
DEBT SERVICE:			
1996 Financing & Bond Issue	\$ 398,554	0.0%	\$ -
OPERATING & MAINTENANCE CHARGES:			
Personnel			
Personnel Subtotal	\$ 82,250	52.0%	\$ 42,770
Purchase of Services			
General Services	\$ 90,159	52.0%	\$ 46,883
Employee Benefits	34,390	52.0%	17,883
Utilities	47,815	100.0%	47,815
Engineering	6,500	100.0%	6,500
Exc. Str. Analyses (External)	43,000	0.0%	-
General Analyses (External)	3,100	100.0%	3,100
Maintenance	198,015	100.0%	198,015
Misc. Purchase of Services	162,430	100.0%	162,430
I/I Rehabilitation Program	-	100.0%	-
Rental Charges	16,534	52.0%	8,598
Purchase of Services Subtotal	\$ 601,944		\$ 491,224
Materials and Supplies			
Fuel	\$ 10,000	100.0%	\$ 10,000
Misc. Materials & Supplies	33,350.00	100.0%	33,350.00
Materials & Supplies Subtotal	\$ 43,350		\$ 43,350
Equipment			
Equipment Subtotal	\$ 75,424	100.0%	\$ 75,424
Capital Funding			
Capital Funding Subtotal	\$ 214,174	100.0%	\$ 214,174
TOTAL OPERATING & MAINTENANCE	\$ 1,017,142		\$ 866,942
Reserve Fund Allocation	-	0.0%	-
TOTAL LCA EXPENSES	\$ 1,415,695		\$ 866,942
Less: Miscellaneous Revenue	(100,000)		(100,000)
TOTAL LCA CHARGES	\$ 1,315,695		\$ 766,942

TOTAL SYSTEM COSTS

	2018 Budget	2019 Estimate
DEBT SERVICE:		
Allentown	\$ 408,460	\$ 767,158
LCA	332,129	398,554
	<u> </u>	<u> </u>
DEBT SERVICE SUBTOTAL	<u>\$ 740,589</u>	<u>\$ 1,165,712</u>
 OPERATION AND MAINTENANCE:		
Allentown	\$ 2,802,693	\$ 2,836,590
LCA	1,748,034	1,684,142
	<u> </u>	<u> </u>
OPERATION AND MAINTENANCE SUBTOTAL	<u>\$ 4,550,727</u>	<u>\$ 4,520,732</u>
 COUNTY CREDITS		
BOD	\$ 1,632,580	\$ 1,214,488
TSS	663,773	537,925
	<u> </u>	<u> </u>
TOTAL COUNTY CREDITS SUBTOTAL	<u>\$ 2,296,353</u>	<u>\$ 1,752,413</u>
 TOTAL SYSTEM COST	<u><u>\$ 7,587,669</u></u>	<u><u>\$ 7,438,856</u></u>

COST ALLOCATION SUMMARY

	Total Cost	ALLOCATION PARAMETER				
		Flow	Allocation	BOD	TSS	TKN
O&M						
Allentown O&M	\$ 2,836,590	\$ 646,064	\$ -	\$ 951,002	\$ 932,724	\$ 306,800
LCA O&M	1,684,142	1,474,142		14,333	14,333	14,333
Total O&M	\$ 4,520,732	\$ 2,120,206	\$ -	\$ 965,335	\$ 947,057	\$ 321,133
LCA WTP CREDITS *	\$ 1,752,413	\$ -	\$ -	\$ 1,214,488	\$ 537,925	\$ -
DEBT SERVICE						
Allentown Interceptor	\$ 30,345	\$ 34,688	\$ -	\$ -	\$ -	\$ -
Summary of Allentown Debt	732,470	-	732,470	-	-	-
LCA	398,554	-	398,554	-	-	-
Total Debt Service	\$ 1,161,368	\$ 34,688	\$ 1,131,023	\$ -	\$ -	\$ -
TOTAL COSTS	\$ 7,434,513	\$ 2,154,894	\$ 1,131,023	\$ 2,179,823	\$ 1,484,982	\$ 321,133

* Credits to the LCA WTP are paid at City unit rates for non-required removals

BILLING BASIS O&M

	<u>Flow gpd</u>	<u>BOD lb/day</u>	<u>TSS lb/day</u>	<u>TKN lb/day</u>
<u>Signatory Area</u>				
Alburtis	140,389	337	367	59
Macungie	180,429	430	436	58
Lower Macungie	1,415,645	3,209	3,353	443
Upper Macungie *	4,331,240	16,485	10,804	1,379
Weisenberg	31,645	74	73	9
Upper Milford	172,980	763	576	64
Lowhill	6,149	13	14	2
Pretreatment Plant & Haulers	<u>171,871</u>	<u>358</u>	<u>394</u>	<u>50</u>
LCA SYSTEM SUBTOTAL	6,450,348	21,669	16,017	2,064
Emmaus	<u>555,347</u>			
TOTAL	<u>7,005,695</u>	<u>21,669</u>	<u>16,017</u>	<u>2,064</u>

* Includes Boston Beer

Billing Basis for Debt Service

10.780 Million Gallons Per Day

UNIT COST SUMMARY

Item	Annual Cost	Billing Basis (gpd or lb/day)	Unit Cost (\$/1000 gal or \$/lb)
FLOW - Allentown Costs	\$ 680,752	6,450,348	\$0.2891
- Interceptor Costs/ Signatories	\$ 707,200.12	6,450,348	\$0.3004
- Interceptor Costs/ Signatories & Emmaus	\$ 766,942	7,005,695	\$0.2999
BOD (lb)	\$ 2,179,823	21,669	\$0.2756
TSS (lb)	\$ 1,484,982	16,017	\$0.2540
TKN (lb)	\$ 321,133	2,064	\$0.4263
ALLOCATION	\$ 1,131,023	10,780,000	\$0.2874

V. RELIEF INTERCEPTOR USER CHARGE DEVELOPMENT

This section describes the methods used to calculate user rates for the Little Lehigh Relief Interceptor System.

For both Phases, the total costs are divided by the billable flow. Billable flows differ between Phase 1 and Phase 2. Phase 1 provides service to the Signatories, Salisbury, South Whitehall, and Lower Macungie Township - Phase II and the Brookside Diversion. Phase 2 provides service only to the Signatories.

Costs for both Phases are shown in the Tables - "Phase 1-Operation & Maintenance Costs" (page 22) and "Phase 2-Operation & Maintenance Costs" (page 23).

Debt Service - Phase 1

In January 1993, the bonds issued for construction of Phase 1 were retired. No additional projects that required bond issues are ongoing and no debt service is included in the rate tables for this year.

User Rate Adequacy

For Phase 1, using the rate proposed, multiplied by the billing units derived in the table - "Billing Basis (For Phase 1) (page 24)," total revenue of \$559,858 is estimated. Comparing this revenue to the total expense of \$559,858 as shown on Table - "Phase 1-Operation & Maintenance Costs" (page 22), indicates an overall coverage of 0%.

For Phase 2, using the rate proposed, multiplied by the billing basis derived in the table - "Phase 2 - Cost Allocation" (p.26), total revenue of \$77,481 is estimated. Comparing this revenue to the total expense of \$77,481 as shown on Table - "Phase 2-Operation & Maintenance Costs" (page 23), indicates an overall coverage of 0%.

LITTLE LEHIGH RELIEF INTERCEPTOR

PHASES 1 AND 2

TABLES

PHASE 1 - OPERATION & MAINTENANCE COSTS

ITEM	2018 BUDGETED LCA COSTS	2019 ESTIMATED LCA COSTS
DEBT SERVICE & FINANCING EXPENSES:	\$ -	\$ -
OPERATING AND MAINTENANCE CHARGES:		
Personnel		
Personnel Subtotal	\$ 25,497	\$32,319.65
Purchase of Services		
General Services	\$ 23,302	\$35,427.42
Employee Benefits	9,742	\$13,513.54
Utilities	128,520	\$162,400.00
Maintenance Services	110,500	\$135,300.00
Miscellaneous Services	2,420	\$11,700.00
Engineering	5,000	\$5,000.00
Rental Charges	5,029	\$6,497.11
Purchases of Services Subtotal	\$ 284,513	\$ 369,838
Materials and Supplies		
Fuel	\$ 3,000	\$3,000
Misc. Materials & Supplies	11,700	\$11,700
Misc. Equipment	33,650	\$44,000
Materials and Supplies Subtotal	\$ 48,350	\$ 58,700
TOTAL OPERATING & MAINTENANCE COSTS	\$ 358,360	\$460,858
Pay-as-you-go Capital Project Funding	\$ -	0
Reserve Amount for Future Projects	400,000	\$100,000
TOTAL LCA EXPENSES	\$ 758,360	\$ 560,858
Less: Miscellaneous Revenue	(1,000)	(1,000)
TOTAL LCA CHARGES	\$ 757,360	\$ 559,858

PHASE 2 - OPERATION & MAINTENANCE COSTS

ITEM	2018 BUDGETED LCA COSTS	2019 ESTIMATED LCA COSTS
DEBT SERVICE & FINANCING EXPENSES:	\$ -	\$ -
OPERATING AND MAINTENANCE CHARGES:		
Personnel		
Personnel Subtotal	\$ 18,017	\$ 17,866
Purchase of Services		
General Services	\$ 16,466	\$ 19,584
Employee Benefits	\$ 6,884	\$ 7,470
Maintenance Services	\$ 13,000	\$ 13,000
Utilities	\$ 120	\$ 120.00
Rental Charges	\$ 3,554	\$ 3,592
Purchases of Services Subtotal	\$ 40,024	\$ 43,765
Materials and Supplies		
Fuel	\$ 350	\$ 350
Misc. Materials & Supplies	1,500	1,500.00
Equipment	6,000	15,000
Materials and Supplies Subtotal	\$ 7,850	\$ 16,850
TOTAL OPERATING & MAINTENANCE COSTS	\$ 65,891	\$ 78,481
TOTAL LCA EXPENSES	\$ 65,891	\$ 78,481
Less: Miscellaneous Revenue	(1,000)	(1,000)
TOTAL LCA CHARGES	\$ 64,891	\$ 77,481

BILLING BASIS (For Phase 1)

<u>Municipality</u>	<u>Flow (gpd)</u>	<u>% Share</u>
Salisbury	373,635	3.48
South Whitehall	538,799	5.02
Lower Macungie-Phase II & Brookside	309,565	2.89
LCA Signatories	<u>9,503,613</u>	<u>88.61</u>
Total	<u><u>10,725,613</u></u>	100.00

LCA SIGNATORY BREAKDOWN BILLING BASIS (For Phase 1 and Phase 2)

<u>Signatory</u>	<u>Billable Flow (gpd)</u>	<u>% Share</u>
Alburtis	140,389	2.24
Lower Macungie	1,415,645	22.55
Macungie	180,429	2.87
Upper Macungie	4,331,240	68.99
Upper Milford	172,980	2.76
Weisenberg	31,645	0.50
Lowhill	6,149	<u>0.10</u>
Subtotal	6,278,476	100.00
 Infiltration/Inflow	 <u>3,225,137</u>	
Total	<u><u>9,503,613</u></u>	

**PHASE 1 - COST ALLOCATION
AMONG ALL USERS**

Municipality	Flow % Share	Costs
Salisbury	3.48	\$ 19,503
South Whitehall	5.02	28,124
Lower Macungie - Phase II & Brookside	2.89	16,159
LCA Signatories	88.61	496,072
Total	100.00	\$ 559,858

<u>Annual Cost</u>	<u>Billing Basis (gpd)</u>	<u>Unit Costs \$/1000 gals.</u>
\$559,858	10,725,613	\$0.1430
(See Table "Phase I- Operation and Maintenance Costs")		
\$167,510	10,725,613	\$0.0428
(\$3.35M amortized over 20 years at 0% for Park Pump Station Rehabilitation)		
<u>Total costs</u>		<u>Total Rate</u>
\$727,368	10,725,613	\$0.1858

Note: To determine unit cost: Divide total annual cost by converted billing basis

(Converted billing basis = ((10,725,613/1000)*365)

AMONG LCA SIGNATORIES

Signatory	Flow % Share	Costs
Alburtis	2.24	\$ 11,092
Lower Macungie	22.55	111,852
Macungie	2.87	14,256
Upper Macungie	68.99	342,218
Upper Milford	2.76	13,667
Weisenberg	0.50	2,500
Lowhill	0.10	486
Total	100.00	\$ 496,072

<u>Annual Cost</u>	<u>Billing Basis (gpd)</u>	<u>Unit Costs \$/1000 gals.</u>
\$ 496,072	6,278,476	\$ 0.2165

Note: To determine unit cost divide annual cost by billing basis times number of days in year divided by 1,000.

PHASE 2 - COST ALLOCATION

<u>Signatory</u>	<u>Flow % Share</u>	<u>Costs</u>
Alburtis	2.24	\$ 1,733
Lower Macungie	22.55	17,470
Macungie	2.87	2,227
Upper Macungie	68.99	53,451
Upper Milford	2.76	2,135
Weisenberg	0.50	391
Lowhill	0.10	76
Total	100.00	\$ 77,481

<u>Annual Cost</u>	<u>Billing Basis (gpd)</u>	<u>Unit Costs \$/1000 gals.</u>
\$77,481	6,278,476	\$ 0.03

Note: To determine unit cost, divide annual cost by billing basis times number of days divided by 1,000.

APPENDIX A (Revised 11/30/16) USER CHARGE SAMPLING AND ANALYSIS PROCEDURES

The purpose of this document is to assist signatory municipalities using the Western Lehigh Interceptor (WLI) regarding sampling and analysis of non-residential users of their respective wastewater collection system. This document also describes the billing process and how test results are applied to the process.

LCA'S ROLE AS THE AGENT FOR THE MUNICIPALITIES

As the agent of the requesting municipality, Lehigh County Authority (LCA) will provide sampling and coordinate analysis of all designated users. Results reports with calculated averages used for billing ("Monitoring Data") and if applicable, additional sampling/analysis costs will be sent to the municipalities the month following sample collection. Difficulties encountered with an appropriate sampling site location, customer service or other inquiries will be directed to the municipality. LCA will be available to assist in addressing concerns.

MUNICIPALITIES ROLE

Using Monitoring Data provided by LCA and flow data (provided by LCA or municipality), the municipality will prepare monthly and/or quarterly reports for billing purposes, depending on user flow and monitoring frequency. Prepared reports will be submitted to LCA by the end of the month following the previous quarter. Agreed upon summary figures will be used for final billing to the municipality.

WLI USERS—LIST OF CUSTOMER TYPES

1. Residential Users
2. Non-residential Users
 - a. Non-sampled Users
 - b. Sampled Users
 - i. Sampled-low flow
 - c. Restaurant
 - i. Restaurant-low flow

NON-RESIDENTIAL TYPES TABLE

Non-Residential Type	Abbreviation	Description
Non-Sampled User	N	Industrial/commercial user assumed to have residential (flow) strength, such as banks and office buildings.
Sampled User	S	Industrial/commercial user whose flow strength has the potential to surpass the Extra Strength Limit (ESL) (based on technical literature on type of operation at facility, spot tests, and experience of other wastewater utilities).
Sampled-Low Flow User	S-LF	Used when a typically sampled site has quarterly flow less than 25,000 per annual average.
Restaurant	R	Commercial user whose facility processes food--has direct service connection to the municipal sewer system. Does not include facilities where food is served, but prepared elsewhere.
Restaurant-Low Flow	R-LF	Used when a typically sampled restaurant site has an annual average flow of less than 25,000 gallons per billing period.

Parameter	Average Strength Limit (ASL) (ppm)	Extra Strength Limit (ESL) (ppm)
BOD (Biochemical oxygen demand)	250	300
TSS (Total suspended solids)	275	360
TKN (Total Kjeldahl nitrogen)	35	85
FOG (Fats, oils & grease)	N/A	50

WASTEWATER STRENGTH TABLE BY PARAMETER

INITIAL DESIGNATION DETERMINATION

The initial sample type designation of a non-residential user is based on the probability of high strength discharge, as determined from technical literature, spot tests, experience of other utilities, or from the information provided by the user.

Types of businesses to sample:

Restaurants

Manufacturing

Brewing and distilling operations

Water Bottlers

Food processing

Soft drink/juice processing/bottling

Grocery stores that process meat or other food preparation

The municipality shall have a process in place where-by they identify new users and notify LCA of any new non-residential users and add them to the monthly/quarterly billing report in the appropriate section of the report—Sampled/Restaurants or Non-sampled (non-residential users). LCA may contact the municipality to discuss and arrange initial monitoring of facilities not listed on the billing report or listed as non-sampled when it appears as though they have the potential for producing extra strength waste.

During the municipal review process for a new Sampled User or new Restaurant, a sampling location will be required to be shown on the drawings and approved by the municipality. The municipality will also make the determination if a grease interceptor/grease trap is required. For existing buildings, LCA will review the proposed sampling location and determine if the installation of a sampling manhole and/or a grease interceptor is necessary.

The municipality shall furnish LCA with the following information for all Sampled and Restaurant Users and of the interceptor prior to the selection of the sample site:

1. User designation—Sampled User (S) or Restaurant (R)
2. Name of company
3. Property address
4. Municipal building identification code (if applicable) or account number
5. Business contact information—responsible person and phone number
6. Number of normal working days or days of operation
7. Description of business operations
8. Sampling location

This information will be used for scheduling and reporting. Please promptly provide updates to LCA to ensure proper scheduling and correct information for reports.

ANNUAL DESIGNATION

By December 15 of each year, the municipality shall furnish LCA with an annual average flow report for non-residential users. For this calculation, average the prior year QTR 4, the current year QTRs 1, 2, and 3 flows. This is an example of a basic report design:

SITE ID	BUSINESS NAME	2015 QTR 4	2016 QTR 1	2016 QTR 2	2016 QTR 3	ANNUAL AVG FLOW
4	Company X	200,000	200,000	200,000	200,000	200,000

Notes: Unless the site has flow >1,000,000 in a billing period, the annual average flow calculated in December of the prior monitoring year sets the monitoring frequency for the non-residential user for the next monitoring year. Do not change the monitoring frequency of sites based on the flow of one billing period or at any other time throughout the year.

Low Flow Sites: All industrial/commercial sites that were previously sampled but now have an annual average flow per billing period <25,000 gallons will be excluded from monitoring. These sites will be listed as either S-LF or R-LF indicating low flow. LF sites will be placed back on the schedule for monitoring if the annual average flow per billing period exceeds 25,000 gallons. Low flow sites should be moved to the non-sampled portion of your quarterly billing report with LF added to the site type and ID number to make them easier to track. Use Average Strength billing parameters for LF sites regardless of previously reported test results. Treat LF sites like any other non-sampled site while the flow remains low (less than 25,000 annual average).

SAMPLING FREQUENCY

SAMPLING FREQUENCY BASED ON ANNUAL AVERAGE FLOW

Annual Average Flow per Billing Cycle	Sample Frequency-Sampled User	Sample Frequency-Restaurant
<25,000 gals	Not sampled	Not sampled
25,000 to 99,999 gals	One day per year	3-days per year (Wed, Thurs, Fri or Thurs, Fri, Sat) plus FOG for 1 day
100,000 to 999,999 gals	Work week per year	
> 999,999 gals	Work week per billing period	3-days per billing period (Wed, Thurs, Fri or Thurs, Fri, Sat) plus FOG for 1 day
Notes: Any new Sampled User will initially be sampled for a work week. Scheduling will be required per billing period, if a site has a flow >1,000,000 gallons per billing period and has exceeded one of the extra strength limits.		

The discharge from each Sampled User will be analyzed at least once per year. Each sample will be analyzed for pH, BOD (biochemical oxygen demand), TSS (total suspended solids), and TKN (total Kjeldahl nitrogen). Fats-Oils-Grease (FOG) concentration will be analyzed if food products are produced at the facility or at the request of the municipality.

LCA may sample the non-residential location at any time during the calendar year, but will try to schedule sampling in the same quarter each year.

Initial sampling for any new Sampled User will be for a work week (providing flow is greater than 25,000 gallons per billing period). The Table for sampling frequency by annual flow does not apply for initial monitoring. This also does not apply to Restaurant Users, which are sampled for 3 consecutive days with quarterly flow >25,000 gallons.

The discharge from each Restaurant will be analyzed at least 3 consecutive days annually, either Wednesday-Thursday-Friday or Thursday-Friday-Saturday. Each daily sample will be analyzed, at a minimum, for pH, BOD, TSS, and TKN. FOG concentration will be analyzed at least one day during the sampling period.

REQUESTED ADDITIONAL SAMPLING AND ANALYSIS

A municipality may request additional sampling and analysis of any Sampled or Restaurant User. Sample collection and analysis costs will be noted on the results reports to the municipality. Billing for additional Monitoring Data will be addressed in the final bill of the year.

The Monitoring Data will be used for billing purposes for that billing period and all successive billing periods until new Monitoring Data become available after the completion of the next monitoring event.

NON-SAMPLED USER SAMPLING AND ANALYSIS

A municipality may request sampling and analysis of any non-residential user not included in the Sampled or Restaurant User definition. Test costs and sample collection costs will be billed to the municipality with the results reports.

While the municipality may use the results of the sampling and analysis for billing, LCA will not use the results for purposes of billing the municipality. However, results greater than the extra strength limits may indicate that the user should be added to the municipality's Sampled list.

BILLING COMPUTATION

With the exception of pH, results for each parameter will be averaged and used for billing purposes. The acceptable pH range is 6.5-10.5 pH units upstream of the LCA Wastewater Pretreatment Plant, or 5.0-12.0 pH units below the plant. The municipality will be notified if any result is out of range so that they can determine the cause and initiate corrective action.

To calculate pounds:

If all average results—other than pH—are less than the ESL (BOD-300ppm, TSS-360ppm, and TKN-85ppm), the ASL (BOD-250ppm, TSS-275ppm, and TKN-35ppm) will be used for billing calculations. If any average result is greater than the ESL, the result will be used for billing that parameter and ASL will be used for any parameter average result less than the ESL. The calculation for pounds is: $\text{flow} \times 8.34 \times \text{ppm}$.

Example: Average results are: BOD-400, TSS-300, and TKN-100. The BOD result is greater than the ESL of 300--calculate using 400. TSS is less than the ESL of 360--calculate using the ASL of 275. The TKN is greater than the ESL of 85--calculate using the result of 100.

SAMPLING AND ANALYSIS CHARGES

If a user in the Sampled User or Restaurant category is sampled and found to discharge flow with strength below the ESL, sampling and analysis charges will be waived.

If a user is found to discharge greater than the ESL (a result greater than any one of the billing parameters not including FOG), sampling and analysis charges will be billed to the municipality for annual sampling, or any repeated sampling found to exceed any extra strength limit.

The limit for FOG (fats-oils-grease) analysis is 50 ppm. If result is greater than this limit, the municipality will be billed for sample collection and analysis.

APPENDIX B
(10/22/15)
ESTIMATED QUATERLY BILL PROCEDURES

Estimated Quarterly Bills

- Four quarterly bills will be estimated.
- The estimated quarterly bill amount will be calculated in October for the following year.
- The estimated quarterly bill will be based on a 4 quarter average and the following year's User Charge Report.
- Signatories will be notified of the following year's quarterly estimated bill amount in September or October of each year.
- Quarterly estimated bills will be issued on or about the first of the following months: April, July, November, and January.
- Quarterly estimated bills will be due 30 days after the billing date.
- LCA will enforce the 5% penalty for late payment. The penalty shall be 5% of the payment due if not paid within 30 days from the billing date and an additional 5% of the payment due if not paid within 60 days, and thereafter an additional 1% per month or fraction thereof.
- Signatories must provide actual quarterly data in a timely manner.
- Actual bills will be calculated during the year but no later than May of the following year.
- Adjustments for reconciliation of the prior year's quarterly estimated bills and reconciliation of the City bill will be issued no later than July of each year.

MEMORANDUM

Date: October 1, 2018

To: Lehigh County Authority Board
From: John Parsons, Chief Operations Officer
Subject: Allentown Water Treatment Plant
Carbon Dioxide Feed System – Construction Phase

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Capital Project Authorization – Construction Phase	\$ 151,668.40
2	Professional Services Authorization – D’Huy Engineering	\$ 18,900

PROJECT OVERVIEW:

The Allentown Water Plant was put in to service in 1928. Since that time, aluminum sulfate (alum) has been the primary coagulant for chemical treatment. In 1928, there were very few alternatives as far as water treatment coagulants go. Alum generally performed very well but there were always certain conditions when it did not perform well, namely during the cold winter months, and during the fall when there was high amounts of color in the water from leaf decay.

Several years ago, Water Plant staff decided to look in to more progressive treatment compounds. During our evaluations, we discovered that many surface water treatment plants had already switched over to Polyaluminum Chloride (PACl). Subsequent jar testing analyses indicated the Allentown raw water supplies would be treated much more efficiently if the plant switched to PACl. Pilot testing on the water plant was done in 2017, and very good results were produced.

During the evaluation process, it was determined that there was an extremely narrow pH range where optimum treatment would be realized. Unfortunately, the plant’s primary surface water source, namely the Little Lehigh Creek, has a very wide pH range that can routinely get as high as 8.70. The Water Plant has never had a chemical (acid) system in-place so there is no current way to bring the pH down to the optimum range of 7.50-7.75. Historically, the plant operators would

overdose the alum feed to lower the pH, which worked for that purpose but led to other treatment problems such as mud balls in the filter media that we now have trouble removing from the filters because the backwash system as designed and built in 1953 is extremely inefficient.

A separate project was developed to determine which acid would be the best application for the Water Plant. Choices included Sulfuric Acid and Hydrochloric Acid, both of which are strong acids and would be difficult for the operators to deal with. The third choice was adding Carbon Dioxide (CO₂), which would react with the water to form Carbonic Acid, which is a weak acid and would be much safer and easier for the plant operators and maintenance staff to deal with compared to the other alternatives.

With the assistance of D'Huy Engineers, bid specifications were developed for the construction of a storage pad for the CO₂ tank and adding conduits and other piping that are needed for a CO₂ feed system. The construction bids were due on 9/27/2018. The results of the construction bids and recommendations moving forward are being presented to the Board on 10/8/2018 for approvals.

FINANCIAL:

The project will be funded by the LCA Allentown Division.

PROJECT STATUS:

Previously the Board approved the design phase of this project. We are currently seeking board approval for the construction phase.

CONSTRUCTION PHASE

The construction phase includes activities that are necessary to install a CO₂ feed system. The work will include building a concrete platform for the tank to rest on, mounting of all piping and conduits that are needed to deliver the CO₂ from the delivery truck to the tank and to move the CO₂ from the tank to the feed point. New instrumentation will need to be mounted and connected to existing Programmable Logic Controllers (PLCs) so the CO₂ feed system can be run from the Operators Control Room.

BIDDING SUMMARY:

The construction bids were received on 9/27/2018. The results are summarized below:

General Construction

<u>Bidder</u>	<u>Amount</u>
Zimmerman Environmental	\$122,768.40
JEV Construction LLC	\$128,000.00
Blooming Glen Contractors	\$139,870.00

Based on the review of the bids, we recommend awarding the Construction Contract to Zimmerman Environmental. The contract is subject to receipt of all required bonds, insurance, and other required documentation.

PROFESSIONAL SERVICES

D'Huy Engineers have been our design consultant on this project and will provide construction engineering and on-site inspection services for the construction phase of the carbon dioxide feed system installation. Their scope includes:

1. Schedule and chair a preconstruction meeting
2. Review shop drawings and respond to RFIs.
3. Provide work review visits and assist with contract administration.
4. Assess work for substantial completion and open items
5. Compile as-built drawings.

PROJECT SCHEDULE: The project is to be completed by the end of 2018.

FUTURE AUTHORIZATIONS-

No future authorizations are anticipated.

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.:	AD-W-18-4	BUDGET FUND:	Allentown Div\Water\Capital
PROJECT TITLE:	Allentown Water Treatment Plant CO2 Feed System - Construction Phase	PROJECT TYPE:	<input checked="" type="checkbox"/> Construction <input type="checkbox"/> Engineering Study <input type="checkbox"/> Equipment Purchase
THIS AUTHORIZATION:	\$ 151,668.40		
TO DATE (W/ ABOVE)	\$ 190,468.40		

DESCRIPTION AND BENEFITS:

The Project includes the installation of a Carbon Dioxide (CO2) feed system for the Allentown Water Filtration Plant. Plant operations is in the process of converting from Aluminum Sulfate (alum) to Polyaluminum Chloride (PACl) as the plant's primary coagulant. Optimal treatment using PACl requires a very narrow pH range for the raw water. The plant was never outfitted with an acid system to lower pH so this project will be accomplishing just that. A Carbon Dioxide system was chosen over Hydrochloric Acid and Sulfuric Acid because CO2 will be much safer and easier to use by the plant staff.

In addition to the installation of the CO2 feed system, the construction contract will include adding several new meters to assist in plant operations. The Contractor will also be running all necessary piping, conduits, power, etc to connect the new system to the existing plant SCADA system.

Authorization Status:

Requested This Authorization	
Construction Contract	\$122,768.40
Staff	\$5,000.00
Professional Services	\$18,900.00
Contingency	\$5,000.00
Total This Authorization	\$151,668.40

Future Authorizations	
None anticipated	

REVIEW AND APPROVALS:

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



Lehigh County Authority

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

PROFESSIONAL SERVICES AUTHORIZATION

Professional: D'HUY ENGINEERING, INC.
One East Broad Street, Suite 310
Bethlehem, PA 18018

Date: October 1, 2018

Requested By: John Parsons

Approvals

Department Head: _____

Chief Executive

Officer: _____

Allentown Water Treatment Plant, Carbon Dioxide Feed System

Previous Authorization- Design Phase: \$38,800

This Authorization – Construction Phase **\$18,900**

D'Huy Engineering, Inc. will perform construction phase and related services for the installation of the carbon dioxide feed system at the Allentown Water Plant. Following in a non-inclusive list of the tasks that D'Huy will perform during the remainder of this project:

Professional Services
1. Schedule and chair a pre-construction meeting
2. Review shop drawings and respond to RFIs.
3. Provide work review visits and assist with contract administration
4. Assess work for substantial completion and open items
5. Compile as-built drawings

Cost Estimate (not to be exceeded without further authorization): \$18,900

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 ITEMS****1. 2019 Western Lehigh Rates – October 8, 2018**

The WLI User Rates will be presented to the Board for review and preliminary approval. The rates will be presented to the municipal signatories for comment, and final rates incorporated into the 2019 Budget.

2. 2019 Budget – October 22, 2018

Final revisions to the 2019 Budget will be reviewed and discussed. Approval for the 2019 Budget will be sought at the October 22, 2019 Board meeting.

DISCUSSION ITEMS**1. 2019 Budget – October 8, 2018**

Revisions to the 2019 Budget will be reviewed and discussed. An updated budget pack will be provided to the Board at the meeting.

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

CERTIFICATES OF DEPOSIT						
27-Jun-18						
Fund	Bank	Location	Gross Amount	Date of Purchase	Date Due	Net Rate %
LLRI CR	Eaglebank	Bethesda, MD	245,000.00	5/31/18	3/31/20	2.60
LLRI CR	BMO Harris Bank National Assn	Chicago, IL	245,000.00	5/31/18	6/1/20	2.80
LLRI CR	UBS Bank USA	Salt Lake City, UT	200,000.00	6/13/18	6/15/20	2.80

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:

67 Werley Road, 112 apartments & clubhouse, UMT – No Change

5354 Hamilton Blvd., 1 commercial lot, LMT – No Change

Above & Beyond (personal care facility), 2 commercial lots, UMT – No Change

CVS, 1 commercial lot, LMT – No Change

Fields at Indian Creek, Phase 3, 57 residential units (sfd), UMiIT/Emmaus, water & sewer – No Change

Kohler Tract, 123 residential lots (sfa), UMiIT, water and sewer – No Change

Mary Ann's Plaza, 1 lot with 5 commercial units, NWT – No Change

Parkland School District, new elementary school, 1 lot, UMT – No Change

Spring Creek Properties Settlement Subdivision, Lot 1, 1 commercial lot, LMT

Spring View (Bortz Tract), 14 commercial units, UMT – No Change
Trexler Business Center, 1 lot with 6 commercial buildings, LMT – No Change
Trexler Fields, Phase 1B/8/9, 100 residential lots (sfa), UMT – No Change

Water system plans are being reviewed for the following developments:

5329-5347-5357 Hamilton Blvd., 1 commercial lot, LMT – No Change
5374/5392 Hamilton Blvd., 1 commercial lot, LMT – No Change
Cedarbrook Road Industrial Park, 2 industrial lots, LMT – No Change
Diocesan Pastoral Center, 2 commercial lots, 3 additional lots and residual lot for existing cemetery, LMT – No Change
Farr Tract, 17 residential lots (sfd), LMT – No Change
Grant Street Townes, 18 residential lots (sfa), WashT – No Change
Hickory Park Estates, 3 residential lots (sfd), UMT – No Change
Hillview Farms, 31 residential lots (sfd), LMT/SWT – No Change
Indian Creek Industrial Park, 6 commercial lots, UMiT, water and sewer – No Change
Lehigh Hills, Lot 2 Pad Sites, 1 commercial lot with medical office building & restaurant, UMT – No Change
Lehigh Hills, Lot 5, Phase 1, 273 apartments & clubhouse, UMT – No Change
Lower Macungie Township Community Center Expansion, 1 institutional lot, LMT – No Change
Madison Village at Penn's View, 66 manufactured homes, 1 lot, LynnT, water and sewer – No Change
Millbrook Farms, Section VI, 45 residential lots (sfd), LMT – No Change
Morgan Hills, 40 residential lots (sfd), WeisT, water and sewer – No Change
Ridings at Parkland, 63 residential units (sfd), NWT – No Change
Schoeneck Road, Lot 1, 1 lot warehouse, LMT – No Change
Shepherd's Corner, 1 commercial lot, LMT – No Change
Stone Hill Meadows, Phase 2, 85 residential units (sfd), LMT – No Change
Towneplace Suites by Marriott, 91-room hotel, UMT – No Change
Weilers Road Twins, 82 residential lots (sfa), UMT – No Change
Woodmere Estates, 60 residential units (sfd), UMT – No Change

Sewage Planning Modules Reviewed in Prior Month:

Lutron Electronics, LMT, 1250 gpd.
4351 Indian Creek Road, LMT, 223 gpd.

WATER

ACTION ITEMS

1. Allentown Division – Water Filtration Plant: Carbon Dioxide Feed System – October 8, 2018

The project consists of the addition of a carbon dioxide feed system at the Allentown Water Plant. With the present conversion from alum to polyaluminum chloride (PACl) as the plant's primary coagulant, proper treatment requires the raw water to be kept within a very small pH range for optimum treatment. The acid feed system will control pH within tight parameters to achieve treatment goals. A Major Permit Application has been submitted to PaDEP. This project has been delayed several times mostly due to the permitting process, and the goal for Installation and startup is now in the Q4 timeframe. Approval for the construction phase will be requested at the October 8, 2018 Board meeting. This project will be funded by LCA Allentown Division.

2. Suburban Division – Mechanical Asset Management Upgrade Project – October 22, 2018

This next phase of Asset Management upgrade work focuses on mechanical components, along with some HVAC and electrical system improvements at ten locations in the Suburban Division. The upgrade locations were determined from asset management data collected from internal interviews conducted by Capital Works with senior Operations staff, and based on risk rating. Also as part of the design phase of this project is the condition assessment of seven (7) hydropneumatic tanks that were placed into service in the 1970s and are reaching the end of their service lives. Design phase was authorized in April 2018, the project was advertised for bid in September and bids will be opened on October 11, 2018. Authorization for award of bids will be requested at the October 22, 2018 Board meeting.

DISCUSSION ITEMS

INFORMATION ITEMS

1. Allentown Division – Hamilton Street Cedar Creek Bridge Water Main Relocation Project

As part of the Pennsylvania Rapid Bridge Replacement Program, the replacement of the Cedar Creek Bridge on Hamilton Street has required the relocation of approximately 500 linear feet of water main. The construction phase was approved at the December 2016 Board meeting and the construction phase at the January 2018 meeting. As of February 22, 2018, the contractor has completed a majority of the relocation work for LCA's facilities; however, they were pulled off the site due to construction conflicts. It is anticipated at this time the contractor will return by late October to finish all of the LCA line relocation. It is anticipated that this work will be reimbursed 100% by the state and that the construction related activities will be incorporated within the state's work.

2. Allentown Division – Water Main Replacement Program Cycle 4

The project is the replacement of 0.97-mile of aged and/or failing cast iron water main in multiple locations throughout the City, in accordance with our prioritization protocol. We propose to utilize the 1.1 mile credit of excess water main replacement length accumulated from previous years in order to satisfy the 2.0 miles of annual pipe replacement as outlined in the lease. This Project is required under the Operating Standards in the Concession Agreement and will be funded by the LCA Allentown Division. The reduced-scale project was re-bid following rejection of the bids for the original 2.2 mile project. The project was authorized by the Board on 9/10/18 and will be completed by December 2018. **(No Change)**

3. Allentown Division – Water Filtration Plant: Roof Replacement Phase II

The project consists of various replacements at the Kline's Island Wastewater Treatment Plant, Water Filtration Plant, and miscellaneous gatehouses and pump stations. Phase I of the project

was completed in mid-2016. Phase II of the project was advertised on 3/6/2018 and bids were received on 3/27/2018. Board approval for the construction phase of the project was granted at the 4/23/2018 Meeting. Construction was completed in late August and minor punchlist items remain. This project was funded by LCA Allentown Division.

4. **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 late 2019. This project will be funded by LCA Allentown Division.

5. **Suburban Division - Water Main Replacement Program Cycle 4**

The project consists of the replacement of approximately 1.36 miles of aged and/or failing Cast Iron water main throughout multiple location in the Suburban Division. The LCA Suburban Division will fund the project. The project bids were opened on July 18, 2018 and project authorization was awarded at the 7/23/18 board meeting. Construction is to be completed in Q4 of 2018. **(No Change)**

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

The project will feature 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. Design of the pump station is under way. The Public Water Supply (PWS) permit has been issued by DEP. One property owner has granted us a water line easement. We are investigating an alternate site for the pumping station. **(No Change)**

7. **Suburban Division – CLD Auxiliary Pump Station Project**

The project consists of installation of a new booster pumping station with SCADA and water main extension to pump water from the Lower Pressure System to the Upper Pressure System. The LCA Suburban Division will fund the project. Bids for the project were received on 6/29/18. Board approval for the construction phase of the project was granted at the 7/23/18 meeting. A preconstruction meeting was held on August 28th and construction should be completed by late Spring 2019. **(No Change)**

8. **Suburban Division – Buss Acres Pump Station Replacement**

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 accommodate the future addition of radon removal equipment to be implemented upon DEP's mandate of a regulatory limit. Design phase was authorized at the 8/28/17 Board meeting. The Public Water Supply Permit was submitted to DEP at the end of July and bid phase is expected to occur in the last quarter of 2018. **(No Change)**

9. **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. Flow monitoring in 2018 will focus on the Little Lehigh Creek only. In 2019, LCA will develop plans to add new monitoring wells to supplement existing groundwater data that is being collected. Total daily flow recordings at Schantz Spring that will need to include the spring field bypass and the tank overflows as well. SSM will assist LCA in calibrating surface flows under the bridges based on the recorded stream

elevations. Authorization for the award of the project was approved at the 3/26/2018 Board meeting. LCA and Fybr are currently gaining PennDOT and PPL approvals that will allow us to mount our equipment on their bridges and poles, which has turned out to be a very slow process. **(No change)**

10. Suburban Division – Water Meter Replacement Project

The project consists of the replacement of approximately 2000 residential meters and 430 commercial meters as well as replacing “non-read” meters with new transceiver units. Residential meters which are 20 years and older and commercial meters 15 years and older will be replaced. All meters will be upgraded to the most current radio read capability. The project was approved at the September 25, 2017 Board meeting. The Notice to Proceed was issued in November. Replacement of meters began the second week of January 2018 and the project is substantially complete. The contractor will be returning in October to install additional transceiver units on “non-read” meters as part of an approved change order.

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

This Project addresses the needs of three satellite water systems that currently are operating on one source of supply and have no redundant water supply. The Madison Park North system has only one well, and an additional well is planned to be developed and constructed. The Clear View Farms and Mill Creek systems have one operating well each, but have at least one other existing well that has water supply or quality issues and cannot be presently utilized. An engineer has been retained to assist with the development of a second well for Madison Park North and the rehabilitation of an existing well at Clear View Farms. An agreement is in place with an adjoining property owner to Madison Park North to drill a test well on their property, in coordination with DEP guidelines.

WASTEWATER

ACTION ITEMS

1. **Suburban Division – Wynnewood WWTP Upgrade Project – October 22, 2018**

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. 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 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 and bids were opened in late September 2018. Authorization for award of bids is to be requested at the October 22, 2018 Board meeting.

DISCUSSION ITEMS

INFORMATION ITEMS

1. **Allentown Division – Kline's Island WWTP: Miscellaneous Clarifier Improvements**

In December 2016, the drive unit on Final Clarifier #5 at Kline's Island WWTP experienced a complete failure. The drive was the original unit that was installed during construction of the clarifier in 1968. An emergency declaration was declared to reduce the installation time by several weeks. A request for a retroactive emergency declaration was requested and approved at the January 9, 2017 Board meeting. The drive was installed in April 2017 and is now fully operational. The remaining mechanisms of Final Clarifier #5, and the drive unit and similar mechanisms of Final Clarifier #6 have also reached the end of their useful life and will be replaced in early 2018. Construction approval was granted at the August 28, 2017 Board meeting. Construction was completed at the end of August 2018 and minor punchlist items remain. This capital project will be funded by the LCA Allentown Division.

2. **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 has now directed to "pause" the design phase of the project as the EPA is scheduled to provide further AO direction. **(No Change)**

3. **Allentown Division – Kline's Island WWTP Master Plan**

This project involves the development of a Master Plan that is required as part of the lease with the City of Allentown. The Master Plan is similar in scope to what was done previously for the Allentown Water System in 2017, and will include Condition Assessments, Process Optimizations, and both short-term and long-term Capital Improvement Plans. The city lease

requirements dictate that the Master Plans must be updated every 5 years for the duration of the lease, and 2018 is the first year that a Master Plan is to be prepared for the wastewater system. A Request for Proposal (RFP) was released to five (5) qualified firms on 12/15/2017 and the proposal due date was 1/26/2018. Authorization for the award of the contract was approved at the 3/12/2018 Board meeting. A kickoff meeting was held on May 24, 2018. Data collection and site assessments have been completed. Condition Assessment and Process Optimization Workshops have been conducted. The project is to be finished by the end of 2018. This project will be funded by LCA Allentown Division. **(No Change)**

4. **Allentown Division – Kline’s Island WWTP: Primary No. 2 Digester Miscellaneous Improvements**

This project includes miscellaneous improvements (additional scumbuster and control panel, minor pipe replacement, etc.) for the Primary No. 2 Digester at the wastewater treatment plant. The project was advertised in late April 2018 and bids were received on May 24, 2018. Construction approval granted at the June 11, 2018 Board Meeting. Construction began in early August and was completed at the end of September. Minor punchlist items remain. This capital project will be funded by the LCA Allentown Division.

5. **Allentown Division – Kline’s Island WWTP: Electrical Substation Replacement**

This project involves the replacement of the existing Substation No. 2. The equipment was installed in 1977 and has reached the end of its useful life. The City has reviewed this and has approved this project as a Major Capital Project. Approval of the design engineer was granted at the May 8, 2017 Board Meeting. The project was advertised in early May 2018 and bids were due on June 8, 2018. Approval of the construction contract (Base Bid) was granted at the July 9, 2018 Board Meeting. The construction phase of the project began in August of 2018 and will be completed by October 2019. This Major Capital Project will be funded by the LCA Allentown Division.

6. **Suburban Division – Test & Seal Project, Western Lehigh Interceptor Service Area**

Project consists of sanitary sewer cleaning, inspections via CCTV, cured-in-place point repairs, pressure testing and chemical grout sealing of joints, and post construction inspection for sanitary sewer lines located in western and central Lehigh County previously identified as areas subject to leakage. This project is part of the SCARP program. Construction began in August 2016 and finished by Summer 2017. Additional scope work under existing contract has been performed and is anticipated to be closed out by Fall 2018 **(No Change)**.

7. **Suburban Division – Spring Creek Pump Station**

This project involves the following upgrades to the existing pumping station: Install a comminutor to reduce buildup of debris on the bar screens, replace the manually operated weir gates with new motorized weir gates, and upgrades to the SCADA system. Design of the project is complete. The Notice to Proceed was issued on December 12, 2017. The project is currently under construction. High flows to the pump station due to wet weather events have delayed work on the project so completion is expected to be pushed back to the Fall of 2018. **(No Change)**

8. **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. Capital Works is planning a limited manned inspection 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. Using this data, the need for performing a complete pipeline condition assessment will be determined, possibly utilizing a new electromagnetic technology for performing an internal pipe condition assessment that entails minimal interruption of operation of the pump station and force main. LCA and Arcadis are currently waiting for a dry weather period in late Summer 2018 to conduct test trials at the PTP for reducing flow to the Park Pump Station via utilization of the pretreatment plant flow equalization basin (hold back flow) in order to determine the acceptable duration for a temporary shut-down of the station in order to perform the force main inspection **(No Change)**.

9. **Suburban Division – Park Pump Station Upgrade**

The Park Pump Station is to be upgraded to address mitigate risk of failure, restore station capacity, and prolong the service life of this critical facility. Design was completed in December 2017. The Park Pump Station Upgrade was advertised for bid in December 2017, pre-bid meeting was held on 1/4/18, and bids were opened 2/1/18. Construction phase was authorized at the 2/12/18 Board meeting. Notice to proceed for the construction contracts was issued dated 3/26/18. A pre-construction meeting was conducted in early April 2018, and construction is anticipated to be completed by Summer 2019. **(No Change)**

10. **Suburban Division – Heidelberg Heights Wastewater Treatment Plant Improvements**

As part of an asset management approach to maintaining the level of service and mitigating risk of failure at the Heidelberg Heights Wastewater Treatment Plant, a condition assessment evaluation is being performed for the Equalization/Sludge Holding tank. This steel tank is part of the original plant, installed in the mid-1970s, and is compartmentalized to serve as both a raw sewage equalization tank (for sequenced pumping to the newer SBR tanks), and for storing liquid sludge (for pump and haul removal). The exposed portions of this tank display areas of corrosion, and the tank was drained and cleaned and a thorough assessment was performed to determine structural integrity and remaining service life, and a study provided to LCA. Design phase services will be completed in early 2019 for structural improvements to the tank per the study recommendations.

11. **Suburban Division – Sand Spring WWTP Upgrade Project**

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 should be concluded by late 2018; progress has been delayed due to DEP permitting issues. Following DEP approval of the Water Quality Management Permit (expected in Q4 this year), the project will proceed to bid phase. **(No Change)**

12. **Suburban Division – SCARP**

EPA is considering terminating the Administrative Order after submission and approval of a regional flow management strategy (RFMS) inclusive of all EPA AO respondents. EPA has indicated that the following critical elements should be included in the program: collection system operation and maintenance plan, system characterization, source removal, flow modeling, and flow targets. Should this action take place, then the Pa. Department of Environmental Protection would resume its enforcement oversight of the program through the Chapter 94 regulations.

The submission for all City Signatories was sent to EPA for the August 1st deadline. The submission included the RFMS inclusive of all Signatories, individual Operation & Maintenance plans, and individual Source Reduction Plans.

Reports are being prepared to present to all Signatories so there is an understanding of what system conditions caused the various bypasses and overflows in August during the wet weather events. Peak flow reporting was initiated for the City signatories for 8 storms between May and mid-September that generated flows at the WWTP in excess of 60 mgd.