



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

Agendas & Minutes Posted:
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LEHIGH COUNTY AUTHORITY

Published: September 11, 2023

BOARD MEETING AGENDA – September 18, 2023 – 12:00 p.m.

In-Person or Virtual Meeting Attendance Options Available: Meetings of the LCA Board of Directors will be held at LCA's Main Office as well as online using the Zoom Meetings application, which includes a telephone option. Public participation is welcomed both in-person or virtually. 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 if you are attending virtually. If attending in-person at LCA's Main Office, please follow all safety and sanitation protocols posted.

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

- Additions to Agenda (vote required if action will be taken)

3. Approval of Minutes

- No Minutes requiring approval

4. Public Comments

5. Action / Discussion Items:

FINANCE AND ADMINISTRATION

- *2024 Budget: Preliminary Review (Discussion)*
- *Resolution 9-2023-1: Destruction of Authority Documents (Approval) (yellow) (digital Board packet, pages 3-5)*

WATER

- *Allentown Division - Emergency Declaration: Union Boulevard & Dauphin Street Main Break (Approval) (blue) (digital Board packet, pages 6-7)*

WASTEWATER

- *Allentown Division - Emergency Declaration: Kline's Island WWTP Primary Settling Tank Sludge Removal (Approval) (green) (digital Board packet, pages 8-9)*
- *Kline's Island WWTP: Main and Auxiliary Pump Station Improvements (Approval) (salmon) (digital Board packet, pages 10-20)*

6. Monthly Project Updates / Information Items (1st Board meeting per month) (*digital Board packet, pages*)
7. Monthly Financial Review (2nd Board meeting per month) (digital Board packet, pages) – **August 2023 report to be distributed at a later date**
8. Monthly System Operations Overview (2nd Board meeting per month) (digital Board packet, pages) – **August 2023 report to be distributed at a later date**
9. Staff Comments
10. Solicitor's Comments
11. Public Comments / Other Comments
12. Board Member Comments
13. Executive Sessions
14. Adjournment

UPCOMING BOARD MEETINGS		
October 9, 2023	October 23, 2023	November 13, 2023

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.

RESOLUTION No. 9-2023-1

(Duly adopted 18 September 2023)

A RESOLUTION AUTHORIZING DISPOSITION OF CERTAIN RECORDS.

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

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

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

- 1 . In accordance with the State Retention Schedule, the Authority is authorized to dispose of the records contained in the Schedule “A” hereto (“Scheduled Records”).
- 2 . Authority staff members are authorized and directed to take such steps as are necessary or convenient to implement the disposition of the Scheduled Records.
- 3 . This Resolution shall take effect immediately.

On motion of _____, seconded by _____, this Resolution was adopted the 18th day of September, 2023.

Tally of Votes: Yeas _____ Nays _____

SCHEDULE "A"
to
RESOLUTION NO. 9-2023-1

SCHEDULE OF RECORDS SUBJECT TO DISPOSITION

Document Date(s)	Description	Quantity	File Tag
2015 - 2017	Settlements and Service Orders	3 Boxes, 1 Binder	FN-39
2017 - 2019	COA Payment Slips	35 small boxes	FN-12
2018 – 2019	SUB Payment Slips	23 small boxes	FN-12
2019	COA & SUB Adjustments	3 boxes	FN-12

MEMORANDUM

Date: September 11, 2023

To: LCA Board of Directors
Liesel Gross, CEO

From: Christopher Moughan, Director of Services and Technology

Re: Allentown Division - Emergency Declaration: Union Blvd and Dauphin St Main Break

Lehigh County Authority (LCA) crews were dispatched to a call reporting water in the street on Friday, August 25, 2023 at the New England Bridge near the intersection of Union Blvd and Dauphin St in Allentown. It was determined that there was a break in the 12-inch main installed in 1922.

Excavation began on the east side of the bridge, and it was determined based on proximity to the bridge and magnitude of the break that a full repair was not possible. The LCA crew cut and capped the east side so that surrounding businesses' water service could be restored. LCA had multiples crews on site for a 24+ hour time period. On the west side of the bridge, Scheuermann Excavating was called in on Saturday August 26th, to install a valve and single-use blow-off valve. Once they completed their work, water service was restored to one business that had remained without service from the night before.

During this time period, LCA's engineering department was consulted for support, and it was determined that outside engineering support would be needed to properly repair this 12-inch line due to the proximity to the New England Bridge. Gannett Fleming ran a hydraulic model analysis to determine possible system issues created by having this section of water main out of service. This analysis revealed that three additional high-risk dead-end sections of the water distribution network were created, and a 500 gallon per minute reduction in fire flow would be experienced while this section of water main is out of service. These are critical concerns, justifying an emergency declaration and immediate action to fully repair the water main. Water pressures in the area will see minimal if any decrease.



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To allow the engineering work to continue quickly, the emergency declaration was approved administratively by Liesel Gross, CEO, on August 30, 2023. Engineering review is underway, and preliminary cost estimates are:

Completed Work to Date

Vendor	Service/Materials	Cost*
Flagger Force	Traffic Service	\$4,081.46
Scheuermann Excavating	Emergency Repair	\$5,190
LB Water	Material	\$2,000
Total		\$11,271.46

*Final Invoices Pending

Work to be Completed

Vendor	Service/Materials	Cost**
HDR	Engineering Support	\$52,000
Construction (contractor TBD)	Construction Services	\$175,000
Total		\$227,000

**Estimated

The total estimated cost for the emergency work is expected to be \$238,271.46. The final repair date will be scheduled as soon as possible.

The LCA Board of Directors is asked to approve this declaration retroactively to August 25, 2023 to cover the expenses already incurred, as well as upcoming work to properly restore the water system on the east side of Allentown, and waive standard purchasing guidelines as a result of acting as expeditiously as possible to address the emergency.

MEMORANDUM

Date: September 11, 2023

To: LCA Board of Directors
Liesel Gross, CEO

From: Andrew Moore, Director of Plant Operations

Re: Allentown Division - Emergency Declaration: Primary Settling Tank Sludge Removal

During the month of August 2023, Lehigh County Authority (LCA) experienced increasing difficulty in its solids processing at the Kline's Island Wastewater Treatment Plant (KIWWTP) in Allentown. This situation has not been resolved, and places the facility at risk for not meeting its NPDES permit limits for ammonia in September 2023. In addition, some odor complaints have been received from residents in the community surrounding the treatment plant.

The solids issues at KIWWTP stems from a mechanical failure at the LCA Pretreatment Plant (PTP), which resulted in a discharge of excessive solids to KIWWTP. In July, the KIWWTP influent total suspended solids averaged 155 mg/L, whereas the average rose to 232 mg/L in August. This increase roughly equates to an additional 23,000 pounds per day or 717,000 total pounds in August. The solids are not efficiently removed via the normal process due to the characteristics of the sludge, which has resulted in excessive sludge blankets in the plant's primary clarifiers. The primary clarifiers play a vital role in removing solids and organics before being introduced to the Plastic Media Trickling Filters (PMTF). The PMTFs provide significant biological treatment of organics and starts the process of nitrification. As the solids and organic loading from the primary clarifiers rises, nitrification efficiency within the PMTFs decreases. As the plant has been unsuccessful at removing the sludge blankets, the risk of not being able to comply with the NPDES ammonia limit increases.

In order to aggressively remove the solids, an emergency declaration was approved administratively on September 7, 2023. Mobile Solids Solutions was contracted to remove the solids directly from the primary settling tanks and dewater the material utilizing a belt press. The



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solids do not meet land application requirements and will be disposed of at the landfill. This approach will allow for the solids to be removed quickly and provide the greatest chance of complying with regulatory requirements. Based on the sludge blanket levels and solids concentration, there is an estimated 208 dry tons of solids within the four primary settling tanks.

Estimated Costs:

Vendor	Service	Unit Cost	Cost
Mobile Solids Solutions	Sludge Dewatering	\$1,182 (dry tons)	\$269,856
Waste Management	Disposal	\$68 (Wet Tons)	\$70,720
Contingency*		10%	34,058
Total			\$374,633

*Contingency added for unknown factors while removing the solids

The total estimated cost for the emergency work is expected to be \$340,576. The LCA Board of Directors is asked to approve this declaration retroactively to September 8, 2023, to cover the expenses already incurred and waive standard purchasing guidelines as a result of acting as expeditiously as possible to address the emergency.

MEMORANDUM

Date: September 18, 2023

To: Lehigh County Authority Board of Directors
From: Amy Rohrbach, Project Manager
Subject: Allentown Division – KIWWTP Main and Auxiliary Pump Station Improvements Preliminary Design and Physical Modeling

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Capital Project Authorization – Preliminary Design and Physical Modeling	\$286,060
2	Professional Services Authorization – Kleinfelder, Inc. (1), (2)	\$266,060

(1) Included in the Capital Project Authorization

(2) Does not include final design, bidding, and construction phase related engineering services

PROJECT BACKGROUND

As part of the plan to increase peak wet-weather flow capacity at the Kline’s Island Wastewater Treatment Plant (KIWWTP), upgrades are needed at the main pumping station (MPS) and auxiliary pumping station (APS) to increase pumping capacity from 87 million gallons per day (MGD) to 100 MGD. This upgrade will reduce the frequency of Outfall 003 activations during extreme wet-weather events. In addition, the main influent pumps at the MPS were built in the late 1960s and are past their useful life, and, the vacuum prime system at the MPS is ineffective and needs replacement. Over the past year, LCA’s consultant, Kleinfelder, Inc., has evaluated various alternatives to upgrade the main and auxiliary pumping stations in order increase peak wet weather flow capacity to the 100 MGD target. Kleinfelder’s preliminary evaluation involved detailed engineering analyses and Computational Fluid Dynamics (CFD) modeling to identify feasible pump upgrade alternatives for retrofit installation at the existing MPS and wet well. Based on the alternatives evaluated, it was determined that the best option is to replace the four (4) existing vacuum primed pumps in the MPS with four (4) 20 MGD vertical turbine pumps, as well as replace the two (2) existing vertical pumps in the APS with two (2) larger 40 MGD vertical pumps.

Now that a selection has been made, preliminary design is necessary to further develop the recommended improvements to the main and auxiliary pumping stations. This will include physical modeling, as recommended by the Hydraulic Institute for pumping systems of this size and criticality. Capital cost estimate updates will also be developed for all three KIWWTP Wet-Weather Capacity Enhancement Projects as outlined in the proposed 2024-2028 Capital Plan: the MPS/APS Upgrade project; Intermediate Pump Station and 480v MCC Upgrade project; and the Tertiary Bypass project.

Kleinfelder, Inc. was retained to perform the original study for these wet-weather improvements, and they have proven experience and familiarity with the KIWWTP. Kleinfelder, Inc. would be the preferred firm to advance this design.

FINANCIAL

This Project will be funded by the LCA Allentown Division. Upon completion, the Preliminary Design Submission will be submitted to the City of Allentown for Major Capital Improvement review and approval. Prior discussion with the City indicates that this project will represent a Major Capital Improvement, thereby allowing the cost to be recovered via a capital cost recovery charge in the LCA Allentown Division.

THIS APPROVAL – PRELIMINARY DESIGN PHASE ENGINEERING AND PHYSICAL MODELING

Lehigh County Authority (LCA) intends to retain the services of Kleinfelder, Inc. to provide the preliminary design and physical modeling services. The following table summarizes the professional services to be performed under this approval:

Professional Services ⁽¹⁾
1. Attend kick-off meeting with LCA staff
2. Attend progress meetings and provide regular updates
3. Preparation of 30% design including preliminary process mechanical design, preliminary electrical and HVAC design, and structural and building modifications evaluation. ⁽²⁾
4. Preparation of Preliminary Basis of Design Memorandum
5. Preparation of updated Capital Cost Estimates for all 3 wet-weather flow capacity projects identified in the Master Plan
6. Physical modeling of the main and auxiliary pumping stations to confirm performance ⁽³⁾

(1) For Preliminary Design Phase and Physical Modeling Only

(2) D'Huy Engineering will be a sub to Kleinfelder on the Electrical, HVAC, and structural components.

(3) Clemson Engineering will be used to perform the physical modeling.

PROJECT SCHEDULE

Assuming approval of the preliminary engineering and physical modeling phase at the September 18, 2023 Board meeting, it is anticipated that the work will be completed by end of 2023 at which time LCA will submit to the City of Allentown for Major Capital Improvements approval.

FUTURE AUTHORIZATIONS – FINAL ENGINEERING DESIGN & BIDDING PHASE

Following Preliminary Design and City of Allentown approval for Capital Cost Recovery submission, a Final Design proposal will be requested from Kleinfelder, Inc. and will be presented to the Board for approval.



September 8, 2023

VIA EMAIL

Amy Rohrbach
Project Manager
Lehigh County Authority
P.O. Box 3348
1053 Spruce Street
Allentown, PA 18106

**RE: KLINE'S ISLAND WASTEWATER TREATMENT PLANT (KIWWTP)
PROPOSAL FOR REVISED MAIN AND AUXILIARY PUMPING STATIONS IMPROVEMENTS
PRELIMINARY DESIGN AND PHYSICAL MODELING**

Dear Ms. Rohrbach:

Kleinfelder, Inc. is pleased to present this proposal to perform a Preliminary Design and Physical Modeling for the revised improvements to the KIWWTP Main and Auxiliary Pumping Stations that were recommended following an evaluation of multiple alternatives to enhance the reliability of peak flow pumping while achieving the fundamental Master Plan objective of replacing essential equipment that is approaching the end of its service life. Background information related to this proposal is presented below followed by the proposed scope of services, schedule, and cost proposal.

BACKGROUND

In July 2022, preliminary design memoranda were submitted to LCA for three (3) separate projects to collectively increase the peak wet weather flow capacity of the KIWWTP from approximately 87 mgd to 100 mgd to reduce the frequency of Outfall 003 activations at the KIWWTP and to reduce sanitary sewer overflows. The three (3) separate projects were: (1) improvements to the main and auxiliary pumping stations, (2) improvements to the primary effluent pumping system and (3) implementation of capacity enhancement improvements consisting of eliminating a hydraulic bottle neck in the existing force main from the main and auxiliary pumping stations, and piping and valving modifications to enable temporary diversion of biologically treated flow around the KIWWTP's tertiary treatment system during severe wet weather events. As requested by Lehigh County Authority (LCA) during the preliminary design review meeting, the installation of splash shields was recommended to ensure that turbulent wastewater flow during a severe wet weather event does not splash over the walls of the aerated grit chambers or the primary influent distribution chamber.

During the meeting in July 2022 to discuss the three (3) separate projects, there was consensus on the improvements to be implemented for the primary effluent pumping system and for the capacity enhancements. However, because the original concept for improvements to the main and auxiliary pumping stations was to replace the aging equipment with like-kind equipment, this meant that the continued use of vacuum primed pumps and a vacuum priming system would be required into the future, which is not currently a commonly used approach for pumping systems

because it introduces an additional potential failure point in the pumping system thus impacting resiliency. As a result, there was a desire to consider alternatives to eliminate the need for vacuum primed pumps and a vacuum priming system. An extensive evaluation of alternatives followed, leading to the recent selection of an alternative that replaces the four (4) vacuum primed pumps in the main pump station with four (4) 20 mgd vertical turbine pumps, and which replaces the two (2) existing vertical pumps in the auxiliary pump station with two (2) larger 40 mgd vertical pumps. The primary benefit of this alternative is that it eliminates the need for a vacuum priming system, it provides 100 mgd of pumping capacity with one (1) 40 mgd and one (1) 20 mgd out of service, thus greatly enhancing reliability, and it also would provide 120 mgd of pumping capacity with one (1) 40 mgd pump out of service, which will likely be required for a future phase of implementing Act 537 plan improvements.

LCA has requested that a preliminary design be developed for the recommended improvements to the main and auxiliary pumping stations, including physical modeling which is recommended by the Hydraulic Institute for pumping systems of this size. Physical modeling will be performed by Clemson Engineering Hydraulics (which was recently acquired by Verdantas) as a subconsultant to Kleinfelder. LCA has also requested that the previously developed capital cost estimates for the primary effluent pumping system improvements and the capacity enhancement improvements be updated due to the impact of inflation which has occurred since capital cost estimates were originally developed.

Kleinfelder will engage D'HUY Engineering, inc. (DEI) as a subconsultant. for electrical and HVAC preliminary design services for the main and auxiliary pumping stations and to update the prior electrical construction cost estimate for the primary effluent pumping system, based on he previously recommended improvements to the primary effluent pumping system. DEI is well known to LCA through its many projects at the KIWWTP and other LCA facilities.

Due to the additional weight and physical size of the revised pumping systems in the main and auxiliary pumping stations, Kleinfelder will also engage DEI, which has detailed knowledge of the buildings and other structures at the KIWWTP, to evaluate the preliminary scope and cost of structural and other building improvements needed to accommodate the pumping system improvements.

SCOPE OF SERVICES

The proposed scope of services consists of the following tasks.

- Task 1 – Preliminary Process Mechanical Design
- Task 2 – Preliminary Electrical and HVAC Design
- Task 3 - Structural and Building Modifications Evaluation
- Task 4 – Physical Modeling
- Task 5 – Capital Cost Estimate Updates
- Task 6 – Draft Preliminary Basis of Design Memorandum
- Task 7 - Final Preliminary Basis of Design Memorandum
- Task 8 – Meetings and Site Visits
- Task 9 – Project Administration and QA/QC

The activities that will be performed in each task are described below.

Task 1 – Preliminary Process Mechanical Design

For the preliminary process mechanical design, Kleinfelder will perform the following activities:

1. Finalize selection of impeller size and speed for the 20 mgd vertical turbine pumps in the main pump station, and the 40 mgd vertical pumps in the auxiliary pump station, considering both flow serves pumps and Fairbanks more pumps.
2. Based on the comparison of manufacturer pumps, select the design basis manufacturer for the 20 mgd vertical turbine pumps and for the 40 mgd vertical pumps.
3. Prepare final pump and system head curves for the combined main and auxiliary pumps for the 100 mgd design basis peak wet weather flow.
4. Develop preliminary design of the main pump station wet well hydraulic improvements based on the concepts developed during CFD modeling.
5. Prepare preliminary demolition drawings.
6. Prepare preliminary equipment installation drawings for pumps, valves and hydraulic improvements in the main pump station wet well.
7. Develop a preliminary maintenance of plant operation (MOPO) plan for sequential replacement of equipment to achieve the lowest possible impact on plant operations, including the need for temporary bypass pumping.

Task 2 – Preliminary Electrical and HVAC Design

For the updated preliminary electrical design for the four (4) 20 mgd vertical turbine pumps in the main pump station and the two (2) 40 mgd vertical pumps in the auxiliary pump station, DEI will perform the following activities:

1. Perform an updated electrical system evaluation based on the electrical load generated by the new motors and VFDs for the Main and Auxiliary Pumps.
2. Preliminary electrical design including development of preliminary electrical drawings.
3. Development of a preliminary sequence of electrical construction.
4. Evaluation of the heat released from the new VFDs on the existing HVAC systems in the main and auxiliary pumping stations and identification of HVAC modification requirements.
5. Update the preliminary electrical and HVAC construction costs for the main and auxiliary pumping stations improvements.

Task 3 – Structural and Building Modifications Evaluation

DEI will perform the following activities to evaluate and establish the required structural and other building modifications which are anticipated to include the following:

1. To accommodate the vertical turbine pumps layout, demolition of the existing concrete platform above the pumps may be required along with the addition of a raised floor above the existing pump room floor to enable new pump installation.

2. Relocation of the main pump station interior wall between the pump room and the locker room to enable access to the new pumps.
3. Evaluation of the main pump station existing bridge crane and associated structural members based on the weight and height of the new pumps and motors.
4. Evaluation of the main pump station and auxiliary pump station structures, evaluate the ability of the existing structures to support the proposed pumps which are larger/heavier than the existing pumps.
5. Provide conceptual level CAD drawings (no structural reinforcing or other specific details will be provided) showing the necessary demolition and new structural/architectural work to accommodate the new pumps in the main and auxiliary pumping stations.
6. Prepare a conceptual level construction cost estimate for the structural and building modifications.

The anticipated list of preliminary drawings that will be developed by the design team is presented below.

Drawing	Description
G-1	Cover Sheet with list of Drawings
C-1	Existing Site Plan
C-2	Existing Partial Yard Piping Plan
SD-1	Main Pump Station Partial Building Demolition Plan
S-1	Main Pump Station Proposed Building Modification Plan
S-2	Main Pump Station Building Modification Sections
S-3	Auxiliary Pump Station Proposed Building Modification Plan
D-1	Main Pump Station Mechanical Demolition Plans
D-2	Main Pump Station Mechanical Demolition Sections and Details
D-3	Auxiliary Pump Station Mechanical Demolition Plans
D-4	Auxiliary Pump Station mechanical Demolition Sections and Details
M-1	Mechanical Legend and Notes
M-2	Main Pump station Plans
M-3	Main Pump station Sections
M-4	Main Pump Station Wet Well Hydraulic Improvements Plan and Sections
M-5	Auxiliary Pump Station Plans
M-6	Auxiliary Pump Station Sections
H-1	Main Pump Station Building HVAC Plan
H-2	Auxiliary Pump Station Building HVAC Plan
E-1	Electrical Site Plan
E-2	Main Pump Station MCC-1 Modified Single Line Diagram
E-4	Auxiliary Pump Station 480V Modified Single Line Diagrams
E-6	Main Pump Station Power Plan
E=7	Auxiliary Pump Station Power Plan

Task 4 – Physical Modeling

Clemson Engineering Hydraulics will perform physical modeling of the main and auxiliary pumping stations to confirm that the proposed pumping station improvements will perform successfully under a wide range of conditions with various pumps temporarily out of service without pump cavitation for other adverse conditions, at the initial design basis peak wet weather flow of 100

mgd and at the future design basis peak wet weather flow of 120 mgd.

Physical modeling will also enable optimization of the wet well hydraulic improvements that were identified during CFD modeling as being necessary to achieve swirl angles less than 5 as recommended by the Hydraulic Institute.

Physical modeling will also enable confirmation of whether the vertical turbine pumps supplied by the two (2) predominate manufacturers of vertical turbine pumps perform equally or not. This information will be used to establish whether the pumps can be bid as equals or if a sole source specification will be necessary.

It is noted that physical modeling will not be complete until several months after the preliminary design is complete. Therefore, the findings from the physical modeling will be used during final design to make final adjustments to the wet well hydraulic improvements and to make final adjustments to the pump specifications, etc.

Task 5 – Capital Cost Estimate Updates

The following capital cost estimates will be updated in this task.

1. An updated class 4 capital cost estimate for the main and auxiliary pumping station improvements will be prepared by Kleinfelder and will incorporate the updated electrical and HVAC construction costs estimated by DEI in Task 2 and the structural and building improvements construction cost estimated by DEI in Task 3. Kleinfelder will also utilize the GC OH&P percentage and the soft cost factors recently developed by AECOM for 537 Plan cost estimating. The updated capital cost estimate will be prepared in the same format and at the same level of detail as the capital cost estimate presented in the July 2022 preliminary design memorandum.
2. An updated class 4 capital cost estimate for the primary effluent pumping system improvements preliminary design as presented in the July 2022 preliminary design memorandum. Rather than to update the cost based on the change in ENR construction cost index, updated costs for the pumping equipment and key electrical equipment will be obtained to accurately estimate the updated capital cost. DEI will estimate the updated electrical construction cost and Kleinfelder will utilize this information in the updated capital cost estimate. Consistent with the above, Kleinfelder will also utilize the GC OH&P percentage and the soft cost factors recently developed by AECOM for 537 Plan cost estimating. The updated capital cost estimate will be prepared in the same format and at the same level of detail as the capital cost estimate presented in the July 2022 preliminary design memorandum.
3. An updated class 4 capital cost estimate for the KIWWTP wet-weather capacity enhancement improvements will be prepared by Kleinfelder and will incorporate the addition of a splash shield as recommended during the preliminary design meeting in July 2022. Based on the nature of these improvements, which does not include major equipment, the cost estimate will be updated based on the change in ENR 20 City construction cost index, the addition of a splash shield and the GC OH&P percentage and the soft cost factors recently developed by AECOM for 537 Plan cost estimating. The updated capital cost estimate will be prepared in the same format and at the same level of detail as the capital cost estimate presented in the July 2022 preliminary design

memorandum.

Task 6 - Draft Preliminary Basis of Design Memorandum

The activities performed in Tasks 1 through 5 will be summarized and presented in a draft Preliminary Basis of Design Memorandum, which will be submitted to LCA for review. Kleinfelder will provide four (4) paper copies and a PDF of the draft Preliminary Basis of Design Memorandum. Because the physical modeling will require more time than the preliminary design, the preliminary design memorandum will describe status of physical modeling.

Following LCA's review, a meeting will be held under Task 8 to discuss review comments and to achieve consensus on the preliminary design and the updated capital cost estimates.

Task 7 – Final Preliminary Basis of Design Memorandum

Following the Task 8 meeting to discuss the draft Preliminary Basis of Design Memorandum, KLF will prepare the final Preliminary Basis of Design Memorandum and will provide LCA with four (4) paper copies and a PDF.

Task 8 – Meetings and Site Visits

The following meetings and site visits are anticipated:

1. A kick-off meeting which will be virtual.
2. A site visit to assess vary as-built conditions related to installation and operation of the vertical turbine pumps in the main pump station and vertical pumps in the auxiliary pump station.
3. A virtual meeting to discuss progress at the approximate midpoint of the preliminary design.
4. An in person meeting to discuss the draft Preliminary Basis of Design Memorandum which will be held at the KIWWTP.

Task 9 – Project Administration and QA/QC

In this task, Kleinfelder will coordinate with DEI regarding its preliminary engineering activities, will perform QA/QC review of the draft Preliminary Basis of Design Memorandum, and will provide ongoing communication with LCA regarding project status, information needs, etc.

SCHEDULE

Kleinfelder will submit the draft Preliminary Basis of Design Memorandum to LCA for review within eight (8) weeks following authorization to proceed. The final Preliminary Basis of Design Memorandum will be submitted to LCA within two (2) weeks following the meeting to discuss the draft Preliminary Basis of Design Memorandum.

COST PROPOSAL

Kleinfelder's estimated cost to execute the scope of services described above is presented in the table on the following page.

TASK	DESCRIPTION	COST
1	Preliminary Process Mechanical Design	\$38,210
2	Preliminary Electrical and HVAC Design	\$239,090
3	Structural and Building Modifications Evaluation	\$28,500
4	Physical Modeling	\$107,060
5	Capital Cost Estimate Updates	\$13,200
6	Draft Preliminary Basis of Design Memorandum	\$14,000
7	Final Preliminary Basis of Design Memorandum	\$5,430
8	Meetings and Site Visits	\$13,420
9	Project Administration and QA/QC	\$7,150
	TOTAL	\$266,060

The total fee of \$266,060 will not be exceeded without a change in scope and LCA's prior approval.

We appreciate the opportunity to further serve LCA. If you have any questions or need additional information, please contact me at (609) 454-4555 or via email at TBradley@Kleinfelder.com.

Sincerely,



Timothy D. Bradley, P.E.
Vice President

cc: Albert J. Capuzzi, P.E.
Charles E. Volk, P.E.

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.:	AD-S-19	BUDGET FUND:	Allentown Div\WW\Capital
PROJECT TITLE:	Allentown Division – KIWWTP Main and Auxiliary Pump Station Upgrades Project Preliminary Design Phase and Physical Modeling		PROJECT TYPE:
THIS AUTHORIZATION:	\$286,060	<input type="checkbox"/>	Construction
TO DATE (W/ ABOVE)	\$398,820	<input checked="" type="checkbox"/>	Engineering Design
		<input type="checkbox"/>	Equipment Purchase
		<input type="checkbox"/>	Amendment No. 1

DESCRIPTION AND BENEFITS:

The purpose of this project is to increase peak wet weather flow capacity at the KIWWTP. This project, along with two other wet weather capacity improvements projects, was identified in the KIWWTP Master Plan as a 0 – 5 year upgrade prioritization. Kleinfelder will provide 30% design phase services for the project as well as scale modeling of the pump and wet well configurations selected in the preliminary design phase. Kleinfelder, Inc. has been working with LCA on the Master Plan and has vast knowledge of the plant and extensive experience in designing large pumping systems.

AUTHORIZATION STATUS:

Prior Authorizations	
<i>Conceptual Design Phase – Kleinfelder, Inc.</i>	<i>\$112,760</i>
Requested This Authorization – Preliminary Design Phase and Physical Modeling	
Preliminary Design Phase Engineering Services, including Physical Modeling: Kleinfelder, Inc.	\$266,060
Staff	\$10,000
Contingencies	\$10,000
Total This Authorization	\$286,060

Future Authorizations	
Final Design and Bid Phase	
Construction Phase	

Total Estimated Project	\$12,600,000
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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: KLEINFELDER, INC.
150 College Rd West, Suite 100
Princeton, NJ 08540

Date: September 18, 2023
Requested By: Amy Rohrbach

Approvals
Department Head: _____
Chief Executive Officer: _____

Allentown Division – KIWWTP Main and Auxiliary Pump Station Improvements: Preliminary Design and Physical Modeling

Kleinfelder, Inc. will perform the following additional preliminary engineering design services as an amendment to the PSA dated 11/17/21 for the KIWWTP Main and Auxiliary Pump Station Improvements Project. This amendment will provide preliminary design development of the recommended improvements to the main and auxiliary pump stations. This design includes four 20 mgd vertical turbine pumps in the MPS and two 40 mgd vertical turbine pumps in the APS as well as physical modeling which is recommended by the Hydraulic Institute for pumping systems of this size. The following professional services are included:

Professional Services ⁽¹⁾
1. Preliminary Process Mechanical Design
2. Preliminary Electrical & HVAC Design
3. Structural & Building Modifications Evaluation
4. Physical Modeling by Clemson Engineering Hydraulics
5. Capital Cost Estimate Updates
6. Draft Preliminary Basis of Design Memorandum
7. Final Preliminary Basis of Design Memorandum
8. Meetings and Site Visits
9. Project Administration & QA/QC

(1) Per attached 9/8/23 Kleinfelder proposal letter

Preliminary Design Phase:

This Authorizations: \$266,060

Prior Authorizations: \$112,760

Total Authorization to Date (not to exceed without further authorization): \$378,820

Time Table and Completion Deadline: Anticipated 12 weeks to final Preliminary Basis of Design Memorandum submittal. Physical Modeling will not be completed for several months after preliminary design.

(For Authority Use Only)

Authorization Completion:

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