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Agendas & Minutes Posted:
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LEHIGH COUNTY AUTHORITY

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BOARD MEETING AGENDA – June 10, 2024 – 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

- *May 20, 2024 Board Meeting minutes*

4. Public Comments

5. Action / Discussion Items:

FINANCE AND ADMINISTRATION

- *Disposition of Real Property (Approval) (gray) (digital Board packet, pages 7-9)*

WATER

WASTEWATER

- *Sanitary Sewer Collection System: City of Allentown Interceptor Inspections (Approval) (ivory) (digital Board packet, pages 10-22)*
- *KISS Act 537 Planning: Financial & Institutional Evaluation Phase 3 (Approval) (blue) (digital Board packet, pages 23-32)*
- *Upper Western Lehigh Pump Station & Force Main (Approval) (yellow) (digital Board packet, pages 33-38)*
- *Kline's Island WWTP: Wet Weather Improvements - Phase 1 (Approval) (green) (digital Board packet, pages 39-64)*

6. Monthly Project Updates / Information Items (1st Board meeting per month) (digital Board packet, pages 65-74) - **June 2024 report attached**
7. Monthly Financial Review (2nd Board meeting per month) (digital Board packet pages)
8. Monthly System Operations Overview (2nd Board meeting per month) (digital Board packet, pages)
9. Staff Comments
10. Solicitor's Comments
11. Public Comments / Other Comments
12. Board Member Comments
13. Executive Sessions
14. Adjournment

UPCOMING BOARD MEETINGS		
June 24, 2024	July 8, 2024	July 22, 2024

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

May 20, 2024

The Regular Meeting of the Lehigh County Authority Board of Directors was called to order at 12:01 p.m. on Monday, May 20, 2024, Chairman Brian Nagle presiding. The meeting was hybrid via in-person and video and audio advanced communication technology ("ACT"), using the Zoom internet application, including telephone option. Each Board member and other attendees of the meeting were able to hear each other attendee and be heard by each other attendee. The public could also participate in the meeting in-person or via ACT, using the Zoom internet application, including telephone option. A Roll Call of Board members present was taken. Brian Nagle, Amir Famili, Jeff Morgan, Norma Cusick, Sean Ziller, and Marc Grammes were present for Roll Call, and remained for the duration of the meeting. Linda Rosenfeld joined the meeting at 12:06 p.m.

Attorney Kevin Reid, the Authority's Solicitor, was present along with Authority Staff, Liesel Gross, Ed Klein, Chris Moughan, Andrew Moore, AJ Capuzzi, Phil DePoe, Chuck Volk, Susan Sampson, and Lisa Miller.

Chairman Nagle announced that the Board received their electronic and hard copies of the Board packet in advance. He then asked if anyone did not receive their copy of the packet. A copy of the packet is also available online.

REVIEW OF AGENDA

Liesel Gross announced that there are no changes to the agenda and noted that the April reports were distributed the day after the packet mailing. The packet has been updated on the website. Also, there will be an Executive Session after the close of the regular session to discuss a personnel matter.

APPROVAL OF MINUTES

April 22, 2024 Meeting Minutes

Jeff Morgan noted a grammatical error. On a motion by Jeff Morgan, seconded by Amir Famili, the Board approved the minutes from the April 22, 2024 meeting as corrected (6-0).

PUBLIC COMMENTS

None.

Resolution No. 5-2024-1: Destruction of Authority Documents

Liesel Gross explained that the Resolution is a standard process whereby the Authority Board must formally approve the disposition of certain records in accordance with the Pennsylvania Municipal Records Act.

On a motion by Jeff Morgan, seconded by Sean Ziller, the Board approved Resolution No. 5-2024-1 (6-0).

Water Utility Benchmarking Study: Staffing Survey

Liesel Gross introduced Jim Ginley, of Jim Ginley Consulting LLC, who was hired to assist with a staffing analysis. The Authority needs to understand its future staffing needs with the growth in the capital program and new regulatory requirements. The overall purpose of the survey is to connect with other utilities to see what they are doing regarding organizational structure, staffing, and functions in key areas. Mr. Ginley provided an overview of the process and presentation of the study.

He provided a review of the areas where the Authority is well positioned and also where the Authority needs to focus. Liesel Gross added that the recommended enhancements to the organizational structure and the positions identified will be presented in more detail to the Board in June, following staff review and analysis of budget impacts, if any.

There was some Board discussion regarding Mr. Ginley's presentation in the areas of Human Resources staffing and process improvement opportunities. Amir Famili asked about opportunities to reduce future staffing requirements through improved processes. There was some discussion about the current projects to upgrade the financial software system and install new capital project management software, which will help to streamline certain processes. However, the capital project workload is increasing dramatically due to new regulatory requirements and the Authority is not able to manage that large project increase through process improvement alone. Chairman Nagle asked if there was any discussion regarding the roll of the Board and the interaction of the Board with Staff. Mr. Ginley said this was not part of the scope of work for the staffing analysis and utility survey, but the utility leaders who participated in this process would likely be willing to provide additional insight on that topic if the Authority would like to pursue it.

Water System Interconnections – Design Phase Cost-Sharing Agreement

Liesel Gross provided the background of the intermunicipal agreement between the City of Allentown and the City of Bethlehem regarding emergency water service interconnections. The City of Bethlehem has pursued having the existing system interconnections evaluated and having them upgraded to ensure they are functional in the event of an emergency. The proposed agreement is a multi-municipal agreement laying out that the Authority will pay for 50 percent of the costs for design phase work. There was discussion regarding the future work needed for the next phase of the project. Brian Chamberlain, City of Allentown Office of Compliance, commented that the reason the system interconnections were not regularly activated is due to an issue with different pressures between the two systems in certain sections.

On a motion by Linda Rosenfeld, seconded by Marc Grammes, the Board approved the Intermunicipal Water Service Agreement between Lehigh County Authority, City of Allentown, Bethlehem Authority, and the City of Bethlehem regarding design phase for the water system interconnections, authorizing the Chief Executive Officer to execute the agreement, contingent upon approval of all four parties, and allowing for any minor updates and revisions to the agreement that may be required, subject to review by the Authority Solicitor (5-0). Jeff Morgan and Sean Ziller abstained.

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

Brian Nagle – yes
Amir Famili – yes
Jeff Morgan – abstain
Norma Cusick – yes
Linda Rosenfeld – yes
Sean Ziller – abstain
Marc Grammes – yes

Pretreatment Plant – Critical Upgrades

Chuck Volk provided an overview of the design and bid phase services for near-term upgrades at the Pretreatment Plant (PTP). It is critical to address the needs at the plant to maintain performance and avoid any violations at the Kline's Island Wastewater Treatment Plant. AECOM was hired to identify and scope critical needs at the PTP and have provided the following recommendations to

address immediate areas for upgrade: Secondary clarifier rehabilitation, High Purity Oxygen plant upgrades, Aeration Deck (Bioreactor) upgrades, and Influent and Effluent Flow Metering improvements. This project will keep the plant functional until long-term upgrades are determined.

Amir Famili asked if the proposal would change if the scope of the Act 537 Plan would change. Mr. Volk said these upgrades would need to be done regardless because of the high risk for failure which could cause major problems at Kline's Island. Liesel Gross commented that there are capital funds for this project.

On a motion by Norma Cusick, seconded by Jeff Morgan, the Board approved the Capital Project Authorization for the Design & Bid Phase in the amount of \$254,320.00 which includes the Professional Services Authorization for the Design & Bid Phase engineering services to AECOM in the amount of \$219,320.00 (7-0).

Sanitary Sewer Collection System: I&I Source Reduction Program (LCA Year 2)

Jason Peters gave an overview of the Year 2 Inflow and Infiltration (I&I) Source Reduction Program project that is required as part of the Act 537 Plan. The Year 2 project will include heavy cleaning, joint testing, joint grout sealing, and cured in-place-pipe lining (CIPP) in specific sewer basins in the City's sewer system that have been identified as having high rates of rainfall derived I&I. The work will be conducted in the St. Elmo basin. Mr. Peters stated that this project will utilize more CCTV work than the Year 1 project to assist with pinpointing repair locations.

Amir Famili asked if the Authority is locked in with Kleinfelder and will the Authority seek other comparable bids to be sure we are getting the best cost. Chuck Volk explained that competitive bids were received for the Year 1 project and Kleinfelder was cost effective. Other consultants will be recommended for the future projects to ensure competitive pricing and services.

There was some discussion regarding how the municipalities are taking care of their I&I efforts for the Act 537 Plan. Mr. DePoe commented that the municipalities are each doing different work and at different times. Quarterly reports are available and can be shared with the Board if desired.

On a motion by Norma Cusick, seconded by Amir Famili, the Board approved the Capital Project Authorization for Design & Bid Phase Engineering Services in the amount of \$461,771.00 which includes the Professional Services Authorization for Design & Bid Services to Kleinfelder in the amount of \$436,771.00 (7-0).

MONTHLY FINANCIAL REVIEW

Ed Klein gave an overview of the April 2024 financial statements, highlighting variances between actual expenses and budgeted or forecasted expenses. Mr. Klein reported that all three funds were favorable for April with both net income and cash flows performing better than forecast. He noted that the forecast was increased in all three funds in net income and cash flows resulting in favorable variances to the Budget.

MONTHLY SYSTEM OPERATIONS OVERVIEW

Andrew Moore reviewed the April 2024 report and reported that there were four minor injuries and two vehicle incidents. April was a wet month with 5.56 inches of rain. Wastewater flows remain elevated due to high groundwater levels and rain events this month. As a result of the rain events, there were two bypasses: one in Heidelberg Township and the other in Lynn Township. There was also a sanitary sewer overflow on Martin Luther King Jr. Drive at manhole U-4-3. There were permit exceedances at Heidelberg for fecal coliform and at Sand Spring for ammonia and total nitrogen.

There was some additional discussion about the injuries that occurred in April and measures taken to prevent them.

STAFF COMMENTS

Ed Klein announced that a Safety Manager was hired and started today.

Liesel Gross updated the Board on the May 8 stakeholder meeting held with regional representatives to discuss the Authority's Industrial Pretreatment Plan. The meeting was well attended and there was a healthy dialogue regarding the pretreatment plant. The group will meet every three weeks to reach a recommendation for the plant. There will also be one on one meetings with the industries to help develop the recommendation.

SOLICITOR'S COMMENTS

None.

PUBLIC COMMENTS / OTHER COMMENTS

None.

BOARD MEMBER COMMENTS

Norma Cusick asked for a current status of the internship program. Andrew Moore reported that 18 candidates applied and six have been selected and will on-board on June 6th. Liesel Gross added that there is a strong network within the Lehigh Valley and other utilities have stated an interest.

Jeff Morgan asked for an update on the meeting with the County Commissioners. Ms. Gross met with them on April 24th and provided an overview of the Kline's Island Sewer System plan and also the Industrial Pretreatment Plant.

Sean Ziller reported that he attended the general assembly meeting for the Lehigh Valley Planning Commission and a representative from PennVEST was there and was very complimentary of the Authority's leadership and spoke very highly of the Authority.

EXECUTIVE SESSION

There will be an Executive Session after the regular meeting to discuss personnel matters.

ADJOURNMENT

There being no further business, the Chairman adjourned the meeting at 1:36 p.m.

Jeffrey J. Morgan
Secretary



Lehigh County Authority

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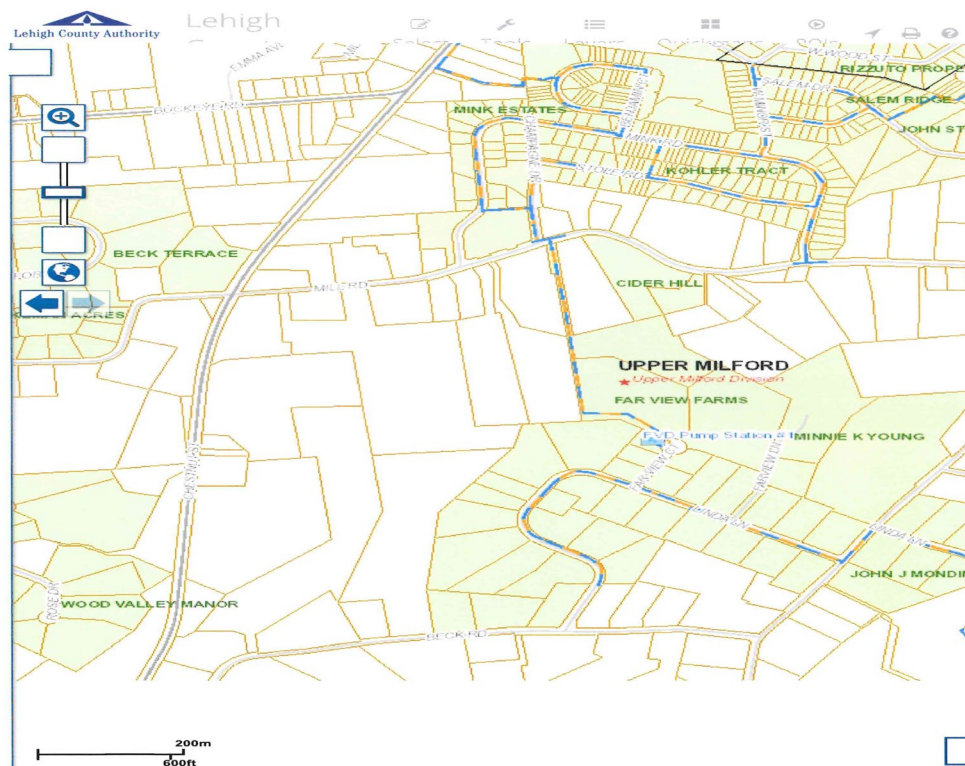
MEMORANDUM

Date: June 10, 2024

To: Lehigh County Authority Board
From: Charles Volk, P.E., CCWO; Edward Klein, CFO
Subject: 4475 Far View Court Sale of Property former Far View Farms (WL-18/WL-19) Well Station Sit3

PROJECT OVERVIEW

In 2022, LCA demolished the Far View Farms Pump Station, located in Upper Milford Township. The pump station and wells (WL-18 and 19) were no longer needed following the interconnection of the development's water distribution system with the Central Lehigh Division in 2021, via the newly constructed Kohler Tract Pump Station. The pump station building, underground storage tanks, and piping were demolished and removed, along with abandonment of the two wells. The site was then restored and is suitable for sale as a potential residential building lot. The tract is located at 4475 Farview Court, Emmaus, and has an area of approximately 0.41 acre. A GIS location map, aerial view, and street view of the former pump station site appear below:



AERIAL VIEW



STREET VIEW



PROJECT STATUS

The former WL-18/19 Far View Farms Pump Station was abandoned in 2021 and demolished in 2022. The property has been restored and is vacant.

THIS APPROVAL

A Motion authorizing the CEO to take all steps necessary and convenient to sell, transfer and dispose of real property owned by LCA located at 4475 Far View Ct., Emmaus, PA 18049, Parcel ID #548396196984-1, including entering a listing agreement with a licensed realtor, entering an Agreement of Sale, and executing a Deed conveying the property.

SCHEDULE

Negotiation for sale of the property is anticipated to occur prior to the end of the year.

FUTURE AUTHORIZATIONS

None

AERIAL VIEW OF PUMP STATION SITE



MEMORANDUM

Date: June 10, 2024

To: LCA Board of Directors
Liesel Gross, CEO

From: Phil DePoe, Senior Planning Engineer

Subject: Allentown Division – City of Allentown: 2024 Interceptor Inspections

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Capital Project Authorization: Allentown Division – City of Allentown: 2024 Interceptor Inspections	\$615,400
1A*	Professional Services Authorization: AECOM – 2024 Interceptor Inspections	\$535,400

**Included in the Capital Project Authorization*

1. Allentown Division – City of Allentown: 2024 Interceptor Inspections

AUTHORIZATION OVERVIEW:

As the region continues to finalize the Act 537 Plan through the long term planning year of 2050, the next major data collection effort revolves around the continuing assessment of the condition of the City’s existing interceptors.

The previous inspection effort (early 2023) focused on ten of the City’s main sewer interceptors, with access occurring via approximately 80 different manholes. Information obtained from the inspection included physical observations of flow velocity, debris depth, evidence of surcharge, photographs, and pipe joint condition at select locations. No evidence of pipe breakage was found during this “pop and peek” inspections; however, evidence of high surcharge levels was discovered throughout. Very few structural pipe defects were found within the ~40’ of each “manhole access” direction, yet roots and leakage were also found at a high frequency.

The proposed 2024 inspection will focus on four of the City’s main sewer interceptors, for a total of approximately 32,000 feet. The inspections will be achieved by the proposed use of multi-sensor inspection (MSI) platforms, which combines closed-circuit television (CCTV), sound navigation and ranging (SONAR), and light detection and ranging (LiDAR) technologies. CCTV will record images of the pipe crown above the waterline, the SONAR will detect any anomalies below the waterline (debris, pipe breaks, etc.) while LiDAR will provide laser profiling to detect interceptor size, geometry, and defects. A report of the interceptor condition assessment will be provided using various post-processing data techniques.

As LCA’s asset management program continues to develop, it is necessary to determine the condition of these pipes so their ability to serve through the 2050 planning horizon is known. Structural Performance Grades (SPG) will be assigned to each pipe segment to reflect the likelihood of pipe failure as well as the potential for further deterioration accelerating based on the driver defects present. LCA field staff will assist the consultant as needed (clearing access, opening manholes, etc.).

The four proposed interceptors to be inspected in 2024 were selected by LCA. All four are on the eastern side of the Allentown sewer system.

FINANCIAL:

These interceptor inspections will be funded by the LCA Allentown Division.

CURRENT STATUS:

Pending Board approval of these 2024 interceptor inspections.

THIS APPROVAL – 2024 INTERCEPTOR INSPECTIONS:

Lehigh County Authority (LCA) intends to retain the services of an engineering consulting firm to provide these inspection services. These services include, but are not limited to, the following:

Professional Services
<ul style="list-style-type: none"> • Task 1 – Pre-Inspection Activities (Review of As-Builts, GIS Data, Known I&I, Surcharging, and SSO Problems, Past Conditions Assessments)
<ul style="list-style-type: none"> • Task 2 – Interceptor Inspections & Engineering Oversight (Kickoff Meeting with Subconsultant / Review Inspection Plan, Traffic Control Engineering and Permitting, Full-Time Resident Oversight of MSI Activities, Daily Uploads to Cloud for Initial Screenings of CCTV)
<ul style="list-style-type: none"> • Task 3 – Evaluations Reporting (Audit MSI Video and Data, Assessment SPG Scoring, Post-Processing of Audited Defect Data, Technical Memorandum)

CONSULTANT SELECTION PROCESS:

Two proposals were received for these 2024 inspections. A comparison of the two proposals received is presented in the table below:

Criteria Summary	Proposal 1 – Arcadis, Inc.	Proposal 2 – AECOM, Inc.
Inspection Methods:	CCTV of representative pipe segments, air testing joints, grouting joints where air tests fail	Multi-Sensor Inspection (MSI) platform consisting of CCTV, SONAR, and LiDAR
Total Pipe Length 2024:	7,623 feet	31,680 feet
Total Price 2024:	\$703,000	\$535,400
Price per Foot of Pipe:	\$92.20 / foot	\$16.90 / foot
Schedule:	6 months	7 months*

**Proposal indicates total duration of 7 months for full 68,640 feet of inspections, and that phasing of the work will reduce the schedule for the segments prioritized for 2024*

Approval of the AECOM proposal is recommended for the following reasons:

- More feet of interceptors assessed
- Lower cost per foot
- Industry standard technology usage
- No bidding issues (subcontractor is a professional service)

The proposed services are segmented into the following tasks:

- *Pre-Inspection Activities (Task 1)*
 - Gather information (as-builts, GIS layer data, locations of known I/I problems, amount/frequency of SSOs and surcharging, past condition assessment data)
 - Obtain background information from KISS hydraulic model
 - Overlay relevant layers of the USDA Soils mapping
- *Interceptor Inspections & Engineering Oversight (Task 2)*
 - Employ subconsultant to perform tethered, float-based multi-sensor inspection (MSI) platform inspections (HD CCTV, SONAR, LiDAR)
 - CCTV (will record images of pipe crown above waterline)

- SONAR (will detect any anomalies below waterline)
 - LiDAR (will provide laser profiling to detect interceptor size, geometry, defects)
 - Provide engineering oversight during remote robotic MSI inspection work (by subconsultant)
- *Evaluations Reporting (Task 3)*
 - Audit MSI Inspection Videos and Data
 - Employ an Automated Defect Recognition (ADR) pipeline condition assessment tool
 - “Fully audited” program of structural and O&M condition
 - Prepare and Submit Technical Memorandum
 - All results and recommendations consolidated into a Technical Memorandum

See proposal for detailed scope of services.

AECOM has served LCA in various sewer planning efforts since the early 2010s. During the elevated groundwater levels of 2018-2019 and subsequent Chapter 94 violation, they were re-engaged to provide Act 537 support. See below for a brief review of authorizations related to AECOM’s role as Act 537 Program Manager (since August 2019) to date:

- Western Lehigh Interceptor Capacity Planning – Phase 1 Report (March 2020)
- DRBC Regulatory Assessment – LCA Direct Discharge to the Lehigh River (August 2020)
- Revenue Planning Tool Phase 1 Memo (November 2020)
- Act 537 Plan Report: Lehigh River PTP Direct Discharge Force Main (June 2021)
- BioActiflo Treatability Study (KIWWTP and PTP) (July 2021)
- Revenue Planning Tool, Phase 2, and User’s Manual (July 2021)
- CEPT Bench Study at PTP (September 2021)
- Act 537 Plan – AECOM Report 2021 (October 2021)
- BioActiflo Additional Study (January 2022)
- Miscellaneous workshops (risk registry, tunneling, cost estimating, innovative PTP technology, GIS analyses of peak contribution by catchment/capita)
- Act 537 Plan – Miscellaneous 2023 and 2024 Technical Memos
- Numerous other miscellaneous items

SCHEDULE:

These inspections will start in late June 2024 and will conclude by December 2024.

FUTURE AUTHORIZATIONS:

Additional interceptor inspections (in 2025 and 2026 as described in the proposal) may be requested in the future.

May 8, 2024

Albert J. Capuzzi, P.E.
 Director of Engineering & Asset Management
 Lehigh County Authority
 1053 Spruce Road
 PO Box 3348
 Allentown, PA 18106

RE: Allentown Sanitary Interceptors – Inspection & Condition Assessment Evaluations

Dear Mr. Capuzzi:

AECOM Technical Services, Inc. (AECOM) is pleased to provide this proposal to assist the Lehigh County Authority (LCA) in the performance of remote robotic inspection and condition assessment (CA) evaluation of the following sanitary interceptors in Allentown.

Interceptor	Size	Material	Length	Feet (LF)
Hanover Trunk Line	21"-36"	RCP	2.5 miles	13,200
Eastside Interceptor	24"	VCP	2 miles	10,560
Hanover Avenue Trunk Line	15"	RCP	1 mile	5,280
Lehigh Interceptor	20"-24"	VCP	1 mile	5,280
Trout Creek Interceptor	18"-24"	VCP	6 miles	31,680
Albert Street Trunk Line	24"	VCP	0.5 mile	2,640

AECOM understands that performing the inspection and evaluation of its condition assessment data is critical to achieving the LCA's technical and capital planning objectives of preserving the long-term integrity of the Interceptors. Based on our discussions, LCA was considering an alternate approach to conventional CA programs for their Interceptor network that were focused on the use of "find and fix" techniques such as grouting joints with test and seal packer technology on the presumption that potential infiltration was high irrespective of whether active infiltration was present in the Closed-Circuit Television (CCTV) inspection. While this technique has been previously employed in local collection systems where infiltration potential has been accurately quantified by flow monitoring, it has an increased risk in applying the technique to interceptor networks as the net data capture can compromise one's ability to recognize true structural deficiencies at an early stage of development. Further, the groundwater regime associated with deeper pipes is often markedly different than in shallower local systems. Both are important factors to consider in developing the most effective program for LCA's interceptor network. In larger programs, AECOM have demonstrated that \$15 million of CA done correctly in a mature system can inform the Owner of over \$0.5 billion of potential long-term savings¹ in terms of timely and intelligent use of the correct rehabilitation technology.

Identifying structural deficiencies at early stages of development is the key to minimizing the cost of rehabilitation of critical pipes in both the short and long term by fixing the right pipe, in the right manner, at the right time. As well, the incorporation of basic hydrogeological data into the overall assessment process has been demonstrated to address infiltration transference effects more effectively at an early stage which

¹ Macey et al, "The Big Remaining Useful Life (RUL) Picture - Modeling Deterioration with a PACP Database to Better Understand Short and Long Term Funding Ramifications" presented at NASSCO's RUL Sessions at UCT in Fort Worth, TX in January 2022.

is essential to more fully understand how to provide system-wide infiltration reduction in the most cost-effective manner possible.

Beyond conventional CCTV, AECOM's approach to Interceptor Assessments employs a variety of Advanced Analytical Techniques, ranging from selective use of advanced inspection technologies (e.g. Light Detection and Ranging [LiDAR] and Sound Navigation and Ranging [SONAR]) to supplement conventional High-Definition (HD) imagery to the intelligent use of Automated Defect Recognition (ADR) technology, defect cluster analysis tools and other data sources in the post-processing and assessment phase. As an additional data source AECOM has reviewed the base hydrogeological data available for LCA and believe it will add considerable value in supplementing the base of CCTV information that will be acquired through reliable PACP™ observations in terms of assessing the benefits of site-specific intervention and remaining useful life of the sewers on a “stick-by-stick” basis.

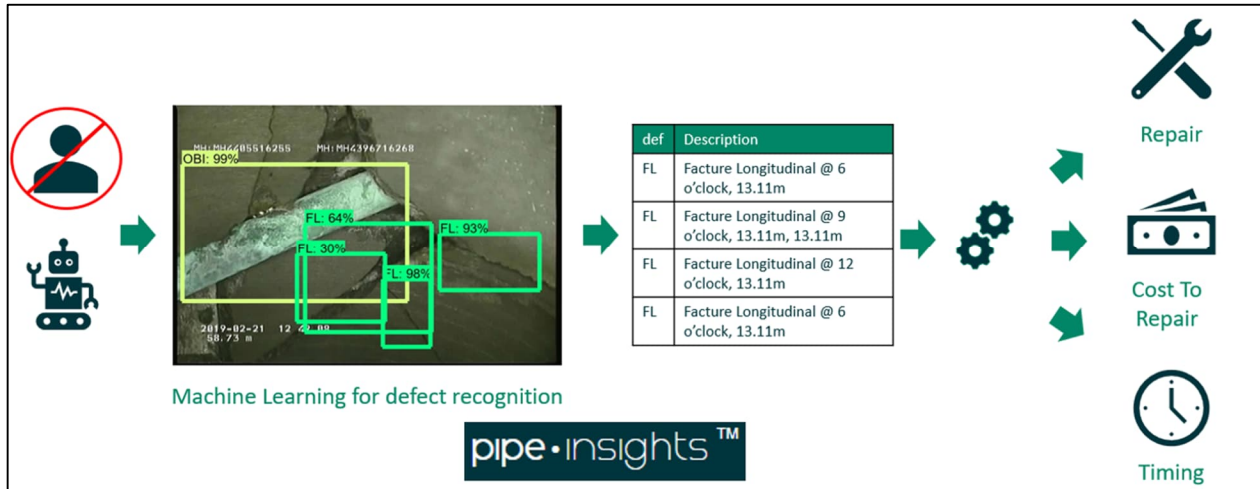
The addition of “time of flight” LIDAR and SONAR to most of the CCTV inspection data capture offers the following advantages:

- Properly post-processed "time-of-flight" SONAR can greatly enhance the data capture of many areas of inspection at very little increased cost while dramatically reducing the amount of inspection work that requires full by-pass to facilitate conventional CCTV data capture. This results in a much more informed data capture for less cost.
- Selective post-processing of LIDAR adds considerable value to assess H₂S related defects in concrete pipe and overall stability in pipe such as VCP and longitudinal fractured concrete. Understanding stability of these pipe structures can greatly reduce unnecessary rehabilitation and provides considerable insight into the timing required for rehabilitation. As the data is captured in a “time of flight” mode, the post-processing (which costs more than the data capture) only needs to be done for select portions where the cost-benefit in doing so, is clear. Again, the net benefit of the approach has been previously demonstrated to more than pay for a relatively small increase in inspection cost.

AECOM are also leaders in the development and deployment of ADR technology and other tools such as Defect Cluster Analysis and Deterioration Modeling to reduce the cost of the CA at the same time as increasing the accuracy of assessment, reducing the time associated with the overall assessment process, and when Deterioration Modeling is carried out, the timing required for overall program implementation.

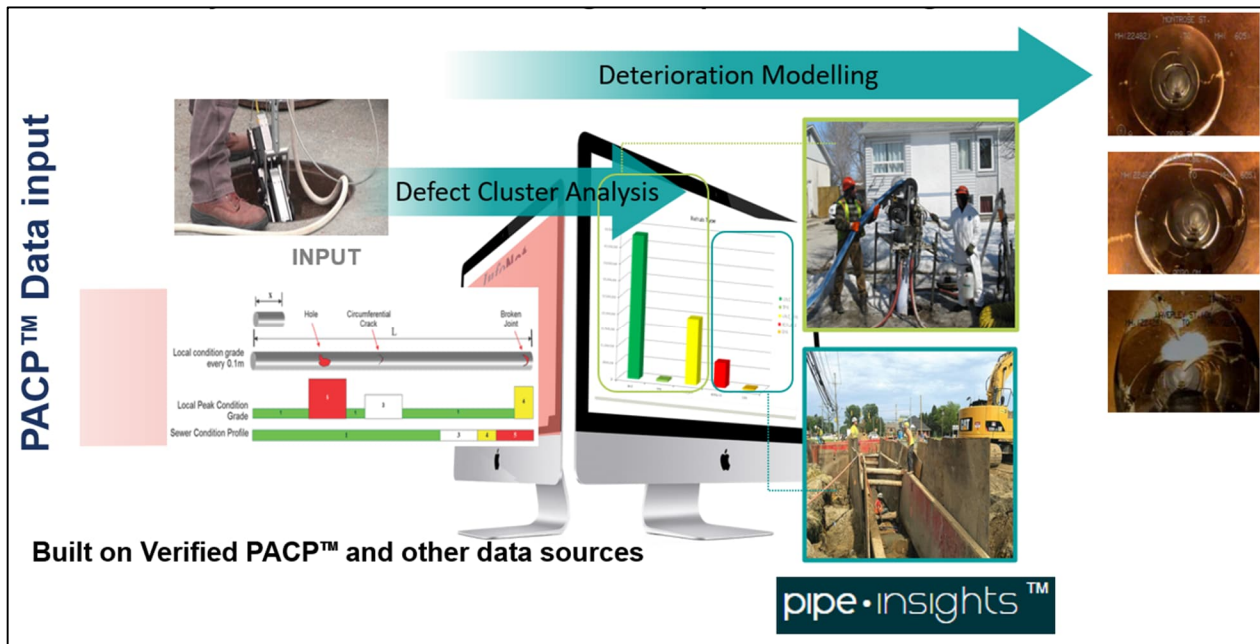
As noted in Figure 1 below, AECOM utilizes an in-house developed tool to expedite, enhance the accuracy and reduce the cost of the assessment process. PipeInsights™ is an AECOM developed tool that uses both ADR and Defect Cluster Analysis to facilitate post-processing of conventional CCTV data into actionable items aligned with a utilities overall condition and level of service goals.

Figure 1: ADR Role in the Overall Condition Assessment Process



When combined with other data sources such as hydrogeological data, the core PACP™ output and cost models can provide immediate insight into short and longer-term program requirements in terms of technology selection, cost, and time available for implementation. These tools are built into the work scope proposed for this assignment. Based on the data trends, AECOM also has an Advanced Analytical tool to facilitate longer term deterioration modeling but would only recommend its use if the core data collected was statistically valid for longer-term projections. While we have found most systems eventually generate sufficient data to warrant its use, it is difficult to assess whether this initial data capture will produce enough observations to benefit from the additional assessment. We will, however, carry out an initial review of the data capture to evaluate its effectiveness at longer term projections for both the inspected and uninspected inventory moving forward. The Overall Framework for Advanced Tools is depicted in Figure 2.

Figure 2: Overall CA Framework with Advanced Tools



Based on this overall approach framework, the project's Scope of Work will encompass the following:

1. Review of all relevant background studies on the network

2. Conducting advanced robotic inspections (multi-sensor inspections where noted) of the selected portions of the Interceptor noted herein.
3. Post-processing of the data using a balance of ADR technology and human verification of same using PACP™ protocol.
4. Overlaying geospatial layers of relevant hydrogeological data to enhance the PACP™ data capture.
5. Post-processing of all SONAR data and selected portions of the LIDAR capture to supplement the PACP™ core data where warranted based on pipe condition.
6. Assessment of the short and long-term rehabilitation requirements to meet LCA's stated upgrading and pipe integrity goals and recommended time frame for same.
7. Review of the core data to assess its statistical validity for eventual input into a more robust sustainability modeling platform for the entire Interceptor Network.

Scope of Work

AECOM has developed a scope of work to provide direct procurement, coordination, and performance of remote robotic inspection for condition assessment (inspection and assessment) of the interceptors listed above.

AECOM will obtain services from qualified subconsultants to complete the scope of work. These services will include traffic control and an MSI platform condition inspection sub-consultant.

Assistance required from LCA, as well as various assumptions and exclusions are detailed at the end of this section.

Task 1 – Pre-Inspection Activities

AECOM will work with LCA to gather information about the interceptors to better understand the system specifics, including as-built drawings, LCA's GIS layer data, locations of known I/I problems, amount and frequency of SSOs and surcharging, and past condition assessment data. Background information from LCA's hydraulic model will also be requested to observe results of past flow monitoring to determine overall flow quantities and infiltration trends for the purposes of verifying the ability to inspect each interceptor. AECOM will also overlay relevant layers of the USDA Soils mapping relevant to this portion of the Interceptor networks to aid in understanding the hydrogeologic impact of rehabilitation treatment selection and timing associated with deterioration processes.



Task 2 - Interceptor Inspections & Engineering Oversight

As part of Task 2, AECOM will employ a sewer inspection subconsultant to perform tethered, float-based multi-sensor inspection (MSI) platform inspections for the interceptors above the hydraulic grade line of the system. The MSI platforms will consist of HD CCTV, SONAR and LiDAR. The CCTV will record images of the pipe crown above the waterline, the sonar will detect any anomalies below the waterline (debris, pipe breaks, etc.) while LiDAR will provide laser profiling to detect interceptor size, geometry, and defects.

AECOM will provide engineering oversight during remote robotic MSI inspection work by our subconsultant to include the following:

- a. Coordinate and attend a Kickoff Meeting with LCA's Operations staff and subconsultant representatives to review project requirements and schedule.
- b. Review inspection plan and health and safety plan developed by subconsultant to confirm compliance with the concept of the Project.
- c. Provide traffic control permitting, and traffic control as required by roadway level of service.
- d. Perform full-time resident oversight of MSI inspection activities. We will advise LCA if pipelines are observed to need emergency repairs and will coordinate with LCA on a representative repair solution.
- e. Provide daily uploads to the Cloud to facilitate near real time initial screening of the CCTV using AECOM's ADR platform.

Task 3 – Evaluations Reporting

AECOM will develop a technical memorandum under this task that summarizes the activities from the previous tasks and reviews data reports from the MSI subconsultant, clarifies interceptor pipeline conditions, levels of I/I observed at specific locations, and provides recommendations for rehabilitation to observed pipeline defects and/or I/I.

AECOM is proposing the following main components to this Task:

- a. Audit MSI Inspection Videos and Data

The raw data provided as part of MSI subconsultants' inspection deliverables will be reviewed and audited for correctness and completeness in terms of defect coding over the length of the inspection related to NASSCO PACP™ condition rating protocols.

AECOM will employ an ADR pipeline condition assessment tool known as PipeInsights™. PipeInsights™ will be utilized as a screening tool for the auditing of the MSI data to prioritize the auditing upon pipeline segments of which are in need of an engineering-based review.

Our process for condition assessment involves the assignment of an overall Structural Performance Grade (SPG) that supplements the PACP™ quick score by assessing additional potential impacts to the pipes' environment, the positioning of defect clock referencing and the use of other supplemental data to determine the final SPG value that could be greater, equal to or less than the computed quick score. Based on agreed upon drivers for treatment selection, AECOM will also post-process the audited defect data with PipeInsights™ Defect Cluster Analysis Initial Rehabilitation selection tool.

In short, the review will modify the severity of the rating based on supplementary data that could impact either the collapse risk associated with the defect, its impact on the rate of future deterioration, and/or its potential impact on direct infiltration on segment-by-segment basis. The SPG is assigned to each segment asset on an individual basis. Based on the worst section of pipe, values range from 1 (good condition) to 5 (collapsed or collapse imminent) and are meant to reflect the likelihood of pipe failure as well as the potential for further deterioration accelerating based on the driver defects present. Separate ratings are provided/calculated for Structural and O&M related defects. The calculated quick scores of 1 or 2 would receive a cursory review to verify the absence of defects with a significant impact on structural performance. Grade 5's will be reviewed to assess the need for immediate attention and are typically reported in case of any emergency repair work that is required. Those not requiring immediate attention will be assessed individually to "fine-tune" the initial treatment selection and suggested timing. The Final Deliverable would be a "fully audited" program of structural and O&M condition, associated treatments recommended for same and associated time frame for implementation.



b. Prepare and Submit a Technical Memorandum

Upon completion of auditing the provided PACP™ data, inspection reports, observed instances of inflow and infiltration, the results and recommendations of the audit will be consolidated into a Technical Memorandum with all analytical output.

Highlights of the audit with a discussion into the level of deterioration noted, and recommended actions, if any, will be provided within the Technical Memorandum including an assessment of whether the raw structural condition state data observations are statistically adequate for more detailed assessment in a deterioration model.

Assumptions and Exclusions

- a. LCA will be able to provide AECOM with sufficient as-built documentation for interceptor inspection mapping development and can rely on the information contained in the drawings provided of the existing facilities.
- b. LCA operations staff will provide access into manholes.
- c. Manholes along the various interceptor alignments are reachable by wheeled vehicles.
- d. Cleaning of the piping is not required for the purposes of these proposed interceptor inspections.
- e. Siphons are excluded from these inspections.
- f. Flow in the interceptors will be low enough to permit equipment entry. By-pass pumping for the proposed CCTV work with the Hanover Trunk Line has been excluded.
- g. Daily progress was estimated at 2,000 feet per day minimum. Any reduction in this anticipated daily progress due to unknown site or interceptor constraints could extend our schedule and may require an increase in budget for field oversight.
- h. Traffic control allowances were approximated for each interceptor based on amount of traffic witnessed during our recent site visit and estimated daily progress.

- i. Budgets are based on 2024 labor rates and current subcontracting costs so phasing of work would impact future year budgets accordingly.
- j. An allowance of \$25,000 was included for fees associated with access to the railroad right-of-way.
- k. AECOM inspection oversight personnel will come from our Newark and Chelmsford offices and will remain in Allentown while the work is progress. Travel expenses were approximated based on the daily production rate and will be in billed accordance with published GSA per diem reimbursement rates.

Schedule

The expected duration of this assignment is approximately twenty-eight (28) weeks from issuance of Notice to Proceed as per the task schedule provided below. This schedule would include all six interceptors. Phasing of the work will reduce the schedule for individual segments depending on the interceptors prioritized for 2024.

Task Name	Duration
Pre-Inspection Activities	8 Weeks
Interceptor Inspections & Engineering Oversight	8 Weeks
Evaluations Reporting	12 Weeks

Proposed Fee

Completion of the proposed work is envisioned to take place under a phased approach with a 2024 budget of \$535,400 and the balance to be completed in subsequent years at LCA's discretion. The budget for this phased approach is summarized in the table below:

Interceptor	Inspection Method	Subconsultant Budget	Traffic Control Allowance	Railroad Flagger Allowance	Engineering Oversight and Analysis	Total	Inspection Year
Hanover Trunk Line	MSI	\$143,000	\$2,500	\$0	\$55,800	\$201,300	2024
Eastside Interceptor	MSI	\$126,500	\$12,500	\$0	\$44,600	\$183,600	
Albert Street Trunk Line	MSI	\$55,000	\$2,500	\$0	\$11,200	\$68,700	
Hanover Avenue Trunk Line	CCTV	\$49,500	\$10,000	\$0	\$22,300	\$81,800	
Trout Creek Interceptor	MSI	\$319,000	\$32,500	\$25,000	\$133,700	\$510,200	2025
Lehigh Interceptor	MSI	\$77,000	\$15,000	\$0	\$22,300	\$114,300	2026



If you have any questions or require any additional information, please do not hesitate to contact Chris Curran at 302.379.0267.

Sincerely,

AECOM Technical Services, Inc.

A handwritten signature in blue ink, appearing to read "Chris Curran", with a long horizontal flourish extending to the right.

Christopher Curran, P.E.
Vice President, Water

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.:	AD-S-12	BUDGET FUND:	Allentown Div\Wastewater\Capital
PROJECT TITLE:	Allentown Division – City of Allentown: 2024 Interceptor Inspections	PROJECT TYPE:	<input checked="" type="checkbox"/> Construction <input type="checkbox"/> Engineering Study <input type="checkbox"/> Equipment Purchase <input checked="" type="checkbox"/> Amendment
THIS AUTHORIZATION:	\$615,400		
TO DATE (W/ ABOVE)	\$703,400		

DESCRIPTION AND BENEFITS:

The previous inspection effort (first half of 2023) focused on a “pop and peek” inspection of ten of the City’s main sewer interceptors. This included physical observations of flow velocity, debris depth, evidence of surcharge, photographs, and pipe joint condition at select locations. The proposed 2024 inspections will be more detailed and will focus on four of the City’s main sewer interceptors for a total of approximately 32,000 feet. Inspections will be achieved by the proposed use of multi-sensor inspection (MSI) platforms, which combines closed-circuit television (CCTV), sound navigation and ranging (SONAR), and light detection and ranging (LiDAR) technologies. CCTV will record images of the pipe crown above the waterline, the SONAR will detect any anomalies below the waterline (debris, pipe breaks, etc.), while LiDAR will provide laser profiling to detect interceptor size, geometry, and defects.

Prior Authorization: 2023 Interceptor Inspections (\$88,000)

This Authorization: 2024 Interceptor Inspections (\$615,400)

Authorization for additional inspections beyond 2024 will be requested as needed. See attached Board Memo for further project details.

Authorization Status:

Requested This Authorization (2024 Interceptor Inspections)	
<i>Planning Phase</i>	
Staff	\$30,000
Contractor	\$0
Engineering Consultant	\$535,400
Contingency	\$50,000
Total This Authorization	\$615,400
Prior Authorizations	\$88,000
Subtotal	\$703,400
<i>Future Authorizations</i>	<i>N/A</i>

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: AECOM
248 Chapman Road, Suite 101
Newark, DE 19702

Date: June 10, 2024
Requested By: Phil DePoe
Approvals
Department Head: _____
Chief Executive Officer: _____

Allentown Division – City of Allentown: 2024 Interceptor Inspections

As the Region continue to develop the Act 537 Plan, the next major data collection effort revolves around the condition of the City’s existing interceptors. This proposed 2024 inspection will focus on four of the City’s main sewer interceptors - for a total of approximately 32,000 feet. The inspections will be achieved by the proposed use of multi-sensor inspection (MSI) platforms, which combines closed-circuit television (CCTV), sound navigation and ranging (SONAR), and light detection and ranging (LiDAR) technologies. CCTV will record images of the pipe crown above the waterline, the SONAR will detect any anomalies below the waterline (debris, pipe breaks, etc.) while LiDAR will provide laser profiling to detect interceptor size, geometry, and defects. Structural Performance Grades (SPG) will be assigned to each pipe segment to reflect the likelihood of pipe failure as well as the potential for further deterioration accelerating based on the driver defects present.

The scope of the work includes, but is not limited to, the following:

Professional Services ⁽¹⁾
1. Pre-Inspection Activities
2. Interceptor Inspections & Engineering Oversight
3. Evaluations Reporting

(1) Please reference the Board Memo for additional information.

Prior Approval:

None

This Approval:

Amount: \$535,400

New Amended Amount (not to be exceeded without further authorization): \$535,400

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:** _____

MEMORANDUM

Date: June 3, 2024

To: LCA Board of Directors

From: Liesel Gross, CEO

Subject: KISS Act 537 Planning – Financial & Institutional Evaluation, Phase 3

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Capital Project Authorization – KISS Act 537 Plan Financial & Institutional Evaluation – Phase 3 Consultant Services	\$238,000
1A*	Professional Services Authorization: Financial & Institutional Evaluation Services – Raftelis*	\$193,000

** Included in the Capital Project Authorization*

PROGRAM OVERVIEW & BACKGROUND:

There are 15 individual municipalities and two municipal authorities that make up the Kline’s Island Sewer System (KISS) in Allentown, PA, all working to meet the Pa. Department of Environmental Protection (DEP) requirement to prepare a regional Act 537 Plan by 2025. The Plan will be comprehensive, covering future service needs for all municipalities, municipal sewer system rehab programs, regional facility rehabilitation and expansion, wet-weather treatment facilities, treatment facility upgrades and potential expansion, industrial pre- treatment facility upgrades, and much more.

At this time, the KISS Act 537 Plan engineering evaluation has progressed into the Selection of Solutions (SOS) phase. Through the remainder of 2024, efforts will be focused on preparing final plan documentation for public roll-out and approvals. The work completed to date has indicated that significant investment will be needed over the next 10-15 years to address the regional sewer service needs of the KISS municipalities. This investment will represent the largest capital program LCA will have undertaken in its history.

One of the Act 537 Plan requirements is to complete a financial evaluation of the selected alternative, including rate impacts, cost-sharing, and financing approach. Another requirement is to evaluate the institutional / governance approach to completing the projects, operating and maintaining the facilities, and monitoring performance. It is noteworthy that DEP has expressed a strong preference to see the KISS municipalities adopt a more simplified and/or regional approach as part of this Act 537 Plan development process. Achieving these non-technical goals of the program will be challenging due to the complexity of existing intermunicipal agreements and wide spectrum of political views and personal opinions among the municipal leaders involved in the process.

A phased approach to addressing the financial and institutional components of the Act 537 Plan development was developed in late 2022. Phase 1 was authorized in December 2022 to include the following tasks:

- Compile and collate financial information from each KISS municipality
- Document data sources, municipal financial processes that may impact the analysis, etc.
- Conducting a broad rate study to determine range of rates that KISS customers

- currently pay and applying broad assumptions to project future rates
- Determining overall cost to operate the KISS system today
- High-level affordability analysis to determine capacity for rate increases that may be needed to finance the Act 537 projects

Phase 2 work was authorized in July 2023, including the following tasks:

- Evaluate existing cost-sharing arrangements,
- Conduct various signatory engagement work sessions to review current status and desired future cost-sharing approaches
- Complete financial modeling of selected cost-sharing approaches, with additional presentation to the signatory municipalities
- Prepare an alternatives report documenting processes completed to date

Both phases of work have been completed, with Phase 2 concluding in January 2024. At that time, the KISS municipalities had not reached agreement on the future cost-sharing approach that would be acceptable to all parties. Therefore, the financial analysis work was paused to allow for additional discussion and exploration. Specific additional financial evaluations completed since January 2024 focused on reviewing alternative cost-sharing approaches related to the LCA Industrial Pretreatment Plant, along with providing support for discussions with key stakeholders, including large industrial users.

In addition, the KISS municipalities have agreed to retain legal services from Salzmann Hughes, as authorized by the LCA Board of Directors in February 2024, to assist with an evaluation of the intermunicipal agreements needed to support the Act 537 Plan. This work is ongoing and will be an important component of the discussion around cost-sharing approaches to be included in the plan.

THIS APPROVAL – PHASE 3 FINANCIAL & INSTITUTIONAL EVALUATION SERVICES:

As a result of Phase 1 and Phase 2 work completed to date, a preliminary financial model has been developed that can be used for deeper analysis of the Act 537 Plan project costs, how they will be financed, how the KISS municipalities will share the costs, and the rate impact to customers. As the legal review continues, the next phase of financial analysis may begin and will be supportive of intermunicipal agreement negotiations that may be required.

To complete this third (and final) phase of financial analysis work, it will be important to include updated financial data from each municipality and to develop rate projections in a format that can be presented to each municipality's elected officials.

In parallel, the project will also dive more deeply into LCA's existing financing capacity from both a financial and organizational standpoint, reviewing constraints on bonding capacity and developing strategies for consideration. These analyses will be applied to the final scope and sequence of projects being developed by the engineering team in their SOS work.

The attached proposal provides details of the following tasks to be completed in Phase 3:

- Task 0 – Refresh Financial Model with Most Current Data
- Task 1 – Update Cost Allocation Alternatives Results with a Revised Capital Plan
- Task 2 – Additional Analysis to Support Negotiations of the Cost Sharing Approach
- Task 3 – Develop Act 537 Long-term Financial and Financing Plan
- Task 4 – Develop Annual KISS System Revenue Requirements for KISS Municipalities
- Task 5 – Other Implementation Considerations and Analysis
- Task 6 – Prepare Financial Section of Act 537 Plan

FINANCIAL:

The project will be funded by the City of Allentown as an Administrative Order (AO) project.

CURRENT STATUS:

Phase 3 work as described in this memo will commence immediately upon approval by the LCA Board of Directors.

CONSULTANT SELECTION PROCESS:

Raftelis was selected from a field of three firms in December 2022 to complete Phase 1 financial data collection and analysis. Their work has been satisfactory, and the preliminary financial model Raftelis has developed was used extensively in their Phase 2 work to display results of various cost-sharing approaches. Raftelis has also been effective in their efforts to develop good rapport with the KISS municipal managers and finance staff, which is critical for the success of this project. Raftelis has provided the attached proposal, which is responsive to LCA's and the City's requests. Their cost proposal of \$193,000 is in line with LCA's budget for this work in 2024.

SCHEDULE:

The Phase 3 Financial & Institutional Evaluation will kick off immediately following LCA Board authorization, and is expected to be completed in parallel with the final preparation of the KISS Act 537 Plan, by September 2024.

FUTURE AUTHORIZATIONS:

None anticipated at this time.

May 22, 2024

Liesel M. Gross
Chief Executive Officer
Lehigh County Authority
1053 Spruce Road, P.O. Box 3348
Allentown, PA 18106

Subject: Financial & Institutional Evaluation Proposal (Phase 3) to support a Regional Act 537 Plan

Dear Liesel,

Raftelis is pleased to provide our proposal for Phase 3 of the Kline's Island Sewer System ("KISS") financial and institutional evaluation. This Phase 3 scope of work is intended to further the efforts that have been completed in Phases 1 and 2 to identify and evaluate regional approaches to cost sharing and to develop a viable financial plan for Lehigh County Authority's ("LCA's") Act 537 Plan. This engagement letter provides the details of our proposed scope of work for this phase of the work.

Scope of Work

Task 0 – Refresh Financial Model with Most Current Data

Task 0 Activities include:

- 1) Request and receive updated capital spending plan and incorporate it into the financial model.
- 2) Request and receive updated audited or unaudited financial information for fiscal year 2023 from the city and suburban signatories and incorporate it into the financial model.
- 3) Request and receive updated sewer demand data for each signatory and incorporate it into the financial model.
- 4) Review and modify model assumptions in light of 2024 current economic conditions.

Task 1 – Update Cost Allocation Alternatives Results with a Revised Capital Plan

Task 1 Activities include:

- 1) Identify additional cost allocation alternative(s) for consideration based on feedback received from the KISS municipalities and complete an evaluation of the alternative.
- 2) Discuss results with LCA and the City and incorporate any necessary modifications.
- 3) Finalize analysis of cost allocation alternatives, subject to additional revision to be completed in Task 2.

Task 2 – Support LCA with Additional Analysis to Support Negotiations of the Cost Sharing Approach

Task 2 Activities include:

- 1) Support selected legal team during negotiations.
- 2) Run cost sharing scenario and sensitivity analysis in support of cost sharing negotiations, as requested and as budget allows.
- 3) Participate in meetings with LCA and the City virtually, as needed.
- 4) Revise the cost allocation alternatives analysis incorporating changes from continued discussions with LCA, the City, and the KISS municipalities.

For budgeting purposes, we have limited this task to a level of effort of 90 consulting hours. If additional consulting hours are necessary to complete requests under this task by LCA, then additional budget may be requested by Raftelis, if needed.

Task 3 – Develop Act 537 Long-term Financial and Financing Plan

Task 3 Activities include:

- 1) Develop and refine a long-term financial plan for the KISS system for the Act 537 Plan that provides a year-by-year forecast of the projected annual revenue requirements of the KISS system.
 - a) Discuss capital funding and financing options for the Act 537 Plan with LCA and work with LCA to select financing assumptions to include in the financial plan. The long-term financial plan will incorporate a scenario selected by LCA and Raftelis that reflects our best estimate of debt and cash funding expectations from various sources.
- 2) Review the financial plan with LCA and the City. This includes one in-person, full day work session.
- 3) Incorporate any necessary modifications based on review.
- 4) Deliver a final financial plan to LCA to be included as part of the Act 537 Plan.

Task 4 – Develop Annual KISS System Revenue Requirements for KISS Municipalities

Task 4 Activities include:

- 1) Using the Long-Term Financial Plan and the Selected Cost Sharing Approach, estimate the annual KISS system revenue requirements applicable to the KISS municipalities.
- 2) Applying the estimated KISS municipalities' local collection costs (from work completed in Phase 1), provide a future estimate of typical or average municipalities' residential sewer bills (combining KISS costs with local collection costs).

- 3) Develop and refine the financial model to display financial modeling results for each municipality.
- 4) Provide tables that summarize the analysis and financial projections for the KISS system in total and for each municipality.
- 5) Meet with individual KISS municipal managers as needed to review individual results. Upon request by the KISS municipal managers, prepare supporting documentation and public-facing materials to share with municipal officials. For budgeting purposes, we have limited the public materials to up to 10 PowerPoint slides that document the results for presentation to the public and municipal officials.

Task 5 – Other Implementation Considerations and Analysis

Task 5 Activities include:

- 1) Provide LCA with additional analysis and support for developing implementation details associated with financial aspects of the Act 537 Plan, such as
 - a) Evaluate potential alternative program approaches to assisting with customer affordability for low-income customers, as requested.
 - b) Assist LCA in the development of policies, processes, and surcharge rate calculations for a regional surcharge program.
 - c) Provide technical support to LCA staff for public outreach efforts.
 - d) Support LCA with other activities, as requested.
 - e) Participate in one onsite work session.

For budgeting purposes, we have limited this task to a level of effort of 60 consulting hours. If additional consulting hours or onsite meetings are necessary to complete requests under this task by LCA, then additional budget may be requested by Raftelis, if needed.

Task 6 – Prepare Financial Section of Act 537 Plan

Task 6 Activities include:

- 1) Support and assist in the development of the relevant sections of the draft Act 537 plan.
- 2) Participate in full draft review sessions with LCA, the City, the engineering team, and the municipalities.
- 3) Identify and include the necessary and relevant technical backup, including financial schedules.
- 4) Assist LCA in finalizing the draft financial sections of the Act 537 Plan for submittal.

Schedule

Raftelis will complete the scope of services within approximately a four to five (4-5) month period assuming a notice to proceed on this phase of the work by the beginning of June 2024.

Budget

Raftelis proposes to complete Phase 3 of the KISS Financial Evaluation project on a time-and-expense basis for a not-to-exceed amount of \$193,000. The following table provides a breakdown of our proposed fee and number of in-person meetings for this phase of the project. This table includes the estimated level of effort required for completing each task described above and the hourly billing rates for our project team members. Expenses include anticipated travel expenses and a \$10 per hour technology charge covering computers, networks, telephones, postage, etc. If additional meetings or tasks are requested, then additional budget may be requested by Raftelis.

Our proposed project team is the same team that completed the Phases 1 and 2 work and will include John Mastracchio as Project Director, Rocky Craley as Project Manager, Zachary Green as Lead Analyst, and supporting analyst, as needed.

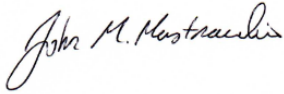
Proposed Fee:

Tasks	Web Meetings	In-person Meetings	Hours					Total Fees & Expenses
			JM	RC	ZG	CG	Total	
0. Refresh Financial Model with Most Current Data	1	0	2	4	14	30	50	\$12,100
1. Update Cost Allocation Alternatives Results with a Revised Capital Plan	2	0	6	8	14	2	30	\$9,700
2. Support LCA with Additional Analysis to Support Negotiations of the Cost Sharing Approach	7	0	22	22	40	6	90	\$29,400
3. Develop Act 537 Long-term Financial and Financing Plan	3	1	22	26	64	6	118	\$39,200
4. Develop Annual KISS System Revenue Requirements for KISS Municipalities	14	0	10	28	74	42	154	\$43,500
5. Other Implementation Considerations and Analysis	3	1	8	16	26	10	60	\$19,900
6. Prepare Financial Section of Act 537 Plan	4	0	18	28	60	24	130	\$39,200
Total Meetings / Hours	34	2	88	132	292	120	632	
Hourly Billing Rate			\$390	\$355	\$275	\$185		
Total Professional Fees			\$34,320	\$46,860	\$80,300	\$22,200	\$183,680	
							Total Fees	\$183,680
							Total Expenses	\$9,320
							Total Fees & Expenses	\$193,000

JM - John Mastracchio
 RC - Rocky Craley
 ZG - Zach Green
 CG - Casey Goodwin

Thank you for the opportunity to be one of your trusted advisors on this important project for LCA. If you have any questions or need any additional information, please do not hesitate to contact John Mastracchio at 518.391.8944 or jmastracchio@raftelis.com or Rocky Craley at 704.771.3998 or rcraley@raftelis.com.

Sincerely,



John Mastracchio, ASA, CFA, PE
Executive Vice President and Project Director



Rocky Craley
Vice President and Project Manager

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.:	AD-S-27	BUDGET FUND:	Allentown Division - Sewer
PROJECT TITLE:	KISS Act 537 Plan Financial Evaluations	PROJECT TYPE:	
THIS AUTHORIZATION:	\$238,000	<input type="checkbox"/> Construction	
TO DATE (W/ ABOVE):	\$538,367	<input type="checkbox"/> Engineering Study	
		<input type="checkbox"/> Equipment Purchase	
		<input checked="" type="checkbox"/> Amendment	
		<input checked="" type="checkbox"/> Other	

DESCRIPTION AND BENEFITS:

One of the Act 537 Plan requirements is to complete a financial evaluation of the selected alternative, including rate impacts, cost-sharing, and financing approach. Another requirement is to evaluate the institutional / governance approach to completing the projects, operating and maintaining the facilities, and monitoring performance. A phased approach to addressing these requirements, including:

- Phase 1 (complete) – Financial Data Collection & Broad Analysis (2022-2023)
- Phase 2 (complete) – Facilitated Signatory Engagement & Alternatives Review (2023)
- Phase 3 (NOW) – Final Alternatives Review & Facilitated Decision-Making (2024)

Prior Related Work: Phase 1 was authorized in December 2022 and completed in July 2023. Phase 2 work was authorized in July 2023 and completed in January 2024.

This Authorization: During Phase 3, deeper analysis will be conducted. Updated financial data from the municipalities will be collected and incorporated into the financial model, and a series of additional alternatives will be evaluated to support legal negotiations and other requests from the municipalities. A deeper review of financing alternatives will be conducted, and a refined scope and sequence of capital projects will be modeled to support regional decision-making.

Future Authorization: None anticipated at this time.

Requested This Authorization	
<i>Design Phase</i>	
Staff	\$35,000
Contractor	\$0
Consultant Services	\$193,000
Contingency	\$10,000
Total This Authorization	\$238,000
<i>Prior Authorizations</i>	
	\$300,367
<i>Future Authorizations</i>	
	To be determined

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: Raftelis
227 W. Trade Street, Suite 1400
Charlotte, NC 28202

Date: June 10, 2024
Requested By: Liesel Gross

Approvals
Department Head: _____
Chief Executive Officer: _____

KISS Act 537 Planning – Financial & Institutional Evaluation, Phase 2

One of the Act 537 Plan requirements is to complete a financial evaluation of the selected alternative, including rate impacts, cost-sharing, and financing approach. Another requirement is to evaluate the institutional / governance approach to completing the projects, operating and maintaining the facilities, and monitoring performance.

A initial phase of the financial evaluation to gather baseline financial data from all Kline’s Island Sewer System (KISS) municipalities and authorities was completed in Phase 1. During Phase 2, deeper analysis was conducted, along with a series of signatory engagement workshops to analyze the existing intermunicipal agreements, their benefits and constraints. In Phase 3, a deeper review of financing alternatives will be conducted, and a refined scope and sequence of capital projects will be modeled to support regional decision-making. Raftelis will provide support for this project including the following services:

- | Professional Services |
|--|
| <ul style="list-style-type: none"> • Task 0 – Refresh Financial Model with Most Current Data • Task 1 – Update Cost Allocation Alternatives Results with a Revised Capital Plan • Task 2 – Additional Analysis to Support Negotiations of the Cost Sharing Approach • Task 3 – Develop Act 537 Long-term Financial and Financing Plan • Task 4 – Develop Annual KISS System Revenue Requirements for KISS Municipalities • Task 5 – Other Implementation Considerations and Analysis • Task 6 – Prepare Financial Section of Act 537 Plan |

(1) Please reference the cover Memo for additional information.

Prior Approvals:

Amount: \$254,807

This Approval:

Amount: \$193,000

Time Table and Completion Deadline: Expected completion in September 2024.

(For Authority Use Only)

Authorization Completion:

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

MEMORANDUM

Date: June 10, 2024

To: Authority Board
From: Amy Kunkel, Chuck Volk
Subject: Suburban Division – Upper Western Lehigh Pump Station and Force Main – Pump Station Construction Phase

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Capital Project Authorization – Construction Phase	\$2,429,212
2	Construction Contract 1 – General/Process Mechanical*: Blooming Glen Contractors Inc.	\$1,953,607
3	Construction Contract 2 – Electrical*: Ace Electric, Inc.	\$169,400
4	Construction Contract 3 – Mechanical/HVAC*: Johnston Construction Company	\$38,655
5	Professional Services Authorization*: Construction Phase Engineering – Entech Engineering	\$109,000
6	Professional Services Authorization*: Construction Phase Inspection – Cowan Associates, Inc.	\$38,550

**Included in the Capital Project Authorization.*

PROJECT BACKGROUND:

The Kline’s Island Sewer System Interim Act 537 Plan was approved by DEP in June 2021 and included construction of interim improvements in the Trexlertown area until a long-term solution is developed as part of completion and submission of a regional Act 537 Plan in March 2025. The Trexlertown Special Study (TSS) was prepared in late 2021 to evaluate improvement alternatives to temporarily resolve the capacity deficiencies. The alternative recommended in the study consisted of a 2.5 million gallons per day (MGD) capacity pump station located near LCA’s Industrial Pre-Treatment Plant (PTP) and 1.52 miles of 18” diameter force main connecting to the Upper Macungie Trunk Line (UMTL) at MH PH3034A, located north of Rt 222 and west of Grange Rd. in the Township park area.

PROJECT OBJECTIVE:

The purpose of the pump station and force main is to divert dry day flow from the Western Lehigh Interceptor (downstream of the LCA PTP) to a sanitary trunk line owned by Upper Macungie Township. The existing Township trunk line runs south from Grange Road under Rt 222 and ties into the Western Lehigh Interceptor (WLI) just upstream of the Spring Creek Pump Station. The proposed pump station, to be located adjacent to the LCA PTP, will convey up to 2.5 MGD of

treated effluent from the plant via force main to the Upper Macungie Trunk Line manhole, thereby bypassing the Trexlertown and Ancient Oaks areas of the Western Lehigh Interceptor that have capacity limitations (the “bottleneck” sections). The force main will partially utilize the route of the previously designed Iron Run Force Main. Level sensors in the Township’s downstream meter station manholes (MM3 and MM7) will be used to shut the proposed pump station down during high flow events to avoid surcharging and SSOs in the Township line.

FUNDING:

This Project will be funded by the LCA Suburban Division

PROJECT STATUS:

Construction Phase of the pump station will begin upon Board approval. Outstanding permitting and access easement acquisitions have been finalized. Construction phase of the force main is approximately 60% complete. In order to keep the project on schedule, the decision was to proceed with bidding the force main while remaining items associated with the pump station site were being finalized.

THIS APPROVAL-CONSTRUCTION PHASE

BIDDING SUMMARY

The project consists of three contracts. The project was advertised for bid on May 2, 2024. A pre-bid meeting was held on May 15, 2024. Bids were received via PennBid on May 29, 2024, the results of which are as follows:

Contract 1 – General/Process Mechanical	
Bidder	Bid Amount
Blooming Glen Contractors, Inc.	\$ 1,953,607.00
JEV Construction LLC	\$ 2,134,800.00
Mohawk Contracting and Development	\$ 2,614,150.00
PACT Two LLC	\$ 2,638,000.00
Johnston Construction Company	\$ 2,984,571.00

Contract 2 – Electrical	
Bidder	Bid Amount
Ace Electric Inc.	\$ 169,400.00
Diefenderfer	\$ 185,700.00
North End Electric	\$ 238,000.00
B & R Electrical Contractors Inc.	\$ 375,367.00
Contract 3 – Mechanical/HVAC	
Bidder	Bid Amount
Johnston Construction Company	\$ 38,655.00

Blooming Glen Contractors has successfully completed numerous General/Mechanical projects for LCA at the Kline's Island Wastewater Treatment Plant and in Suburban Division water and wastewater facilities.

Ace Electric Inc. has not done any projects for LCA, but they recently completed a pump station project with Keystone Engineering Group which is the engineering firm that performs integration services for LCA as well as other pump stations in Lehigh County. Responses to reference inquiries were favorable.

Johnston Construction Company has not done any projects for LCA, but their experience list had many relevant projects, including work completed for American Water and Aqua PA.

The bid documents for each contractor are in order and the firms appear qualified to perform the work.

The total construction cost for the project is \$2,161,662 and the Engineer's construction cost estimate was \$2,074,115.

PROFESSIONAL SERVICES:

Construction engineering is to be performed by Entech Engineering, the design engineer for the project. Part time inspection services are to be performed by Cowan Associates.

PROJECT SCHEDULE:

Assuming approval at the June 10, 2024 Board meeting, it is anticipated that the project will be completed in the summer of 2025.

FUTURE AUTHORIZATIONS:

None anticipated.

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.:	SD-S-23-1	BUDGET FUND:	Suburban Div\Wastewater\Capital
PROJECT TITLE:	Upper Western Lehigh Pump Station and Force Main	PROJECT TYPE:	<input checked="" type="checkbox"/> Construction <input type="checkbox"/> Engineering Design <input type="checkbox"/> Equipment Purchase <input type="checkbox"/> Amendment
THIS AUTHORIZATION:	\$ 2,429,212		
TO DATE (W/ ABOVE)	\$ 5,169,147		

DESCRIPTION AND BENEFITS:

Upper Western Lehigh Pump Station and Force Main - Construction Phase:

This Capital Project Authorization is for construction phase of the Upper Western Lehigh Pump Station Project. This project consists of the construction of a 2.5 MG pump station to convey sewage from the effluent line leaving the Pre-Treatment Plant to a discharge manhole in the Upper Macungie Township interceptor located in Grange Park. The force main portion of the project is in construction under a separate contract. The objective of the project is to provide an interim solution to dry day overflows in the Trexlertown area of the Western Lehigh Interceptor. This Authorization includes only the Pump Station Contracts (see Board Memo for details).

Previous Authorizations	
Design Phase	\$522,108
Construction Phase (Force Main)	\$2,217,827

REQUESTED THIS AUTHORIZATION	
Construction Phase	
Contract 1 – General/Process Mechanical– Blooming Glen Contractors Inc.	\$1,953,607
Contract 2 – Electrical – Ace Electric, Inc.	\$169,400
Contract 3 – Mechanical/HVAC – Johnston Construction Company	\$38,655
Professional Services:	
Construction Engineering - Entech Engineering	\$109,000
Construction Inspection – Cowan Associates, Inc.	\$38,550
Staff	\$20,000
Contingency	\$100,000
Total This Authorization	\$2,429,212

Total Estimated Project	\$5,169,147
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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 Road * P.O. Box 3348 * Allentown, PA 18106-0348
(610)398-2503 * FAX (610)398-8413

PROFESSIONAL SERVICES AUTHORIZATION
Construction Phase

Professional: Entech Engineering, Inc.
201 Penn Street
PO Box 32
Reading, PA 19603

Date: June 10, 2024

Requested By: Amy Kunkel

Approvals

Department Head: _____

Chief Executive

Officer: _____

Suburban Division- Upper Western Lehigh Pump Station

Previous Authorizations- Pump Station and Force Main Design, and Force Main Construction: \$387,108

This Authorization –Phase 2 – Pump Station Construction: \$109,000

Entech Engineering, Inc. will provide construction engineering related services for the aforementioned project.

Professional Services
1. Attend Pre-construction and Progress meetings and prepare/distribute minutes.
2. Respond to design related requests for information (RFIs).
3. Log, review, and process shop drawing submittals.
4. Review and approve monthly payment applications.
5. Attend Substantial and Final Completion Inspections and prepare punch lists.
6. Perform site visits as required.
7. Prepare project record drawings.

Cost Estimate (not to be exceeded without further authorization): **\$ 496,108**

Time Table and Completion Deadline: As required to meet design timeline requirements

(For Authority Use Only)

Authorization Completion:

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



Lehigh County Authority

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

PROFESSIONAL SERVICES AUTHORIZATION
Construction Phase

Professional: Cowan Associates, Inc.
120 Penn-Am Drive
Quakertown, PA 18951

Date: June 10, 2024

Requested By: Amy Kunkel

Approvals

Department Head: _____

Chief Executive

Officer: _____

Suburban Division- Upper Western Lehigh Pump Station

This Authorization- Construction Phase: \$38,550

Cowan Associates, Inc. will provide part-time construction inspection related services for the aforementioned project

Professional Services
1. Attend Pre-Construction Meeting
2. Attend Progress Meeting
3. Provide Part-Time Inspection Services, including inspection reports.
4. Review contractor applications for payment; recommend applications for payment.
5. Review proposed changes to the plans with Engineer and LCA.
6. Compile and review as-built drawings from Contractors

Cost Estimate (not to be exceeded without further authorization): **\$38,550**

Time Table and Completion Deadline: As required to meet construction timeline requirements.

(For Authority Use Only)

Authorization Completion:

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

MEMORANDUM

Date: June 10, 2024

To: Lehigh County Authority Board of Directors
From: Amy Rohrbach, Project Manager
Subject: Allentown Division – KIWWTP Wet Weather Treatment Projects Final Design and Bidding Phase Services

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Capital Project Authorization – Final Design and Bidding Phase	\$1,181,575
2	Professional Services Authorization – Kleinfelder, Inc. (1), (2)	\$994,450
3	Professional Services Authorization – Current Solutions (1)	\$97,125

(1) Included in the Capital Project Authorization

(2) Does not include construction phase 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 three areas of the plant. These projects include (1) improvements to the Main and Auxiliary pump stations, (2) improvements to the primary effluent pumping system located in the Intermediate Pump Station (IPS) and (3) implementation of tertiary bypass capacity improvements. These upgrades will increase wet weather capacity from approximately 87 million gallons per day (mgd) to 100 mgd, thereby reducing the frequency of Outfall 003 activations during extreme wet-weather events. While these three project areas had separate preliminary engineering design PSAs, LCA staff recommended consolidating them into one wet-weather project. This will leverage economy of scale rather than remaining as three separate projects.

Improvements to the Main Pump Station (MPS) include four new 250 hp vertical turbine pumps, wet well hydraulic improvements, replacement of station valves, replacement of 20-inch suction and 20-inch discharge piping; installation of VFDs for two of the new pumps (two will remain constant speed); modifications to existing MCCs; Structural and building modifications including concrete platform for Main Pump Station pumps, discharge piping, and VFDs; New overhead crane; and Electrical and HVAC upgrades.

Improvements in the Auxiliary Pump Station (APS) will include two new 450 hp pumps; replacement of VFDs; replacement of obsolete MCCs with current generation MCC equipment within a separate modular power zone building; Electrical and HVAC upgrades; and a new 8-ton monorail for new larger size pumps and motors. Physical modeling will also be completed to evaluate the impacts to the APS wet well due to the flow from the future

KISS Relief Interceptor. Any necessary hydraulic improvements identified from this modeling will be included in the design of the APS improvements.

Improvements in the Intermediate Pump Station include new primary effluent pumps with larger impellers and larger motors with increased design capacity of 15,000 gpm, new VFDs on three of the five pumps (two will remain constant speed), upgrades to the MCC and feeders, and HVAC upgrades.

Improvements for the tertiary bypass to increase peak flow capacity include installation of a new 48" butterfly valve and approximately 300 feet of 48" pipe, new ultrasonic flow meters at each IST influent weir, new actuator and valve in valve pit for existing knife gate valve near the rock media trickling filters, connection to the existing flange tee connections, miscellaneous fittings, and SCADA integration. These modifications will enable temporary diversion of biologically treated flow around the KIWWTP's tertiary treatment system during severe wet weather events.

Minor modifications at the aerated grit chambers and primary sludge distribution chamber are also proposed to prevent splashing that is created from the higher peak flows during wet weather events. The City of Allentown has determined that these specific improvements do not meet the Major Capital Improvement project definition and will be estimated separately from the remaining work to ensure these charges are kept separate from the Capital Cost Recovery Charge calculations for the remainder of the project.

PROJECT STATUS

Preliminary design was completed on these three projects and preliminary design report submissions were made to the City of Allentown on March 4, 2024. The City provided initial comments and a review meeting was held on April 18, 2024. An additional meeting to review the impacts of the KISS Relief Interceptor project to the Auxiliary Pump Station was held on April 29, 2024 with a follow-up meeting on May 9, 2024. Following these discussions, on May 9, 2024, the City of Allentown issued conceptual design approval for all three components of the Wet Weather Improvements, and they were in support of consolidating all three projects into one KIWWTP Wet Weather Major Capital Improvement Project.

CONSULTANT SELECTION

Kleinfelder, Inc. was retained to perform the preliminary engineering reports for these three projects, and they have proven experience and familiarity with the KIWWTP so it is recommended they also perform the final design. Kleinfelder, Inc. is proposing to use Keystone Engineering Group for the electrical design and D'Huy Engineering for the structural and HVAC designs. Kleinfelder will also utilize Verdantas Flow Labs for the additional modeling. All three firms have extensive knowledge of the KIWWTP and participated in the preliminary design phases of the project. Due to the complexity of the design and critical nature of the pump stations, it is recommended that a QA/QC review be performed along with an electrical evaluation and harmonics study, which is recommended prior to construction. Current Solutions has performed similar reviews for LCA, most recently for the Switchgear and Substation 1 project, and they have knowledge of KIWWTP. Therefore, it is recommended they perform this work.

FINANCIAL

This Project will be funded by the LCA Allentown Division and has received conceptual design approval from the City and is considered a Major Capital Improvement project. Therefore, costs will be recovered in Capital Cost Recovery Charges (CCRC). A small component of the project, related to splash protection, is not eligible for Capital Cost Recovery and will be funded through the KIWWTP capital budget.

THIS APPROVAL – FINAL DESIGN AND BIDDING PHASE SERVICES

Lehigh County Authority (LCA) intends to retain the services of Kleinfelder, Inc. to provide the final design and bidding services. Due to the criticality and complexity of the design, a QA/QC review of the electrical design is recommended to be performed. LCA has selected Current Solutions P.C to perform this electrical QA/QC review. The following table summarizes all professional services to be performed under this approval:

Professional Services – Final Design & Bidding Phase
1. 60% Design
2. 90% Design
3. 100% Design
4. Bid-Ready Documents
5. Permitting Assistance
6. APS Physical Modeling
7. Deliverables Review & Design Progress meetings
8. Design Team Coordination meetings and Site Visits
9. Bidding Assistance
10. QA/QC review and Project Administration

Professional Services – Electrical Design QA/QC and Survey & Analysis
1. QA/QC Electrical Design Review
2. Facility & Equipment Survey & Single Line Diagram
3. Preliminary Power System Analysis During Design phase

PROJECT SCHEDULE

Assuming approval of the Detailed Design and Bidding Services Phase at the June 10, 2024 Board meeting, it is anticipated that the design and bidding phase services will be completed by October 31, 2025.

FUTURE AUTHORIZATIONS – CONSTRUCTION PHASE

Following Detailed Design and Bidding services, Capital Project Authorization will be requested from the Board for a construction contract and construction administration services PSA.



May 29, 2024

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 FINAL DESIGN, PERMITTING, BIDDING ASSISTANCE, AND PHYSICAL
MODELING FOR THE 100 MGD WET-WEATHER PROJECT**

Dear Ms. Rohrbach:

Kleinfelder, Inc. (Kleinfelder) is pleased to present this proposal to perform Final Design, Permitting, Bidding Assistance and additional Physical Modeling Services for the KIWWTP 100 mgd Wet-Weather Project, which will enable the KIWWTP to increase its wet-weather treatment capacity from approximately 87 mgd to 100 mgd thereby reducing Sanitary Sewer Overflows and the frequency of Outfall 003 activations while also enhancing the reliability of peak flow pumping and achieving the fundamental Master Plan objective of replacing essential equipment that is approaching the end of its service life before equipment reliability is compromised.

Background information related to this proposal is presented below followed by the proposed scope of services, schedule, and cost proposal.

BACKGROUND

In February 2024, Kleinfelder submitted final Preliminary Design Memoranda to LCA for the three (3) separate projects that collectively comprise the KIWWTP 100 mgd Wet-Weather Project. The three (3) separate projects are: (1) Main and Auxiliary Pumping Station Improvements, (2) Intermediate Pumping Station Improvements and (3) KIWWTP Wet-Weather Capacity Enhancement, consisting of modifications to enable temporary diversion of biologically treated flow around the KIWWTP's tertiary treatment system during severe wet weather events. The combined Level 4 capital cost estimates for the three (3) projects in February 2024 dollars, including the Value engineering recommendation to provide VFDs for two (2) of the main influent pumps rather than for all four (4) of the main influent pumps, is approximately \$27.4 Million. The corresponding Level 4 construction cost estimate in February 2024 dollars is approximately \$24.5 million.

The Kleinfelder Team will include D'HUY Engineering, Inc. (DEI) as a subconsultant for structural and HVAC design services, Keystone Engineering (Keystone) as a subconsultant for electrical and instrumentation & control design services, and Verdantas Flow Labs (formerly Clemson Engineering Hydraulics) as a subconsultant for additional physical modeling of the Auxiliary Pump

Station Wet Well. These firms have significant relevant knowledge of the KIWWTP and are well known to LCA. Kleinfelder has worked successfully with these firms on other projects. Kleinfelder will coordinate with these firms to efficiently execute the Scope of Services presented below.

SCOPE OF SERVICES

The proposed Scope of Services consists of the following tasks.

Task 1 – 60% Design

Task 2 – 90% Design

Task 3 – 100% Design

Task 4 – Bid-Ready Documents

Task 5 – Permitting Assistance

Task 6 – al APS Physical Modeling

Task 7 – Deliverable Review and Progress Meetings with LCA

Task 8 – Design Team Internal Coordination Meetings and Site Visits

Task 9 – Bidding Assistance

Task 10 – QA/QC Reviews and Project Administration

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

Task 1 – 60% Design

Utilizing the basis for design established through the three (3) separate preliminary design memoranda, the Kleinfelder Team will advance the preliminary drawings for the KIWWTP 100 mgd wet-weather project to the 60% completion point. The anticipated drawing list for the KIWWTP 100 mgd wet-weather project is attached to this proposal. A summary of the number of drawings by category is presented in the table below. As indicated, the total number of anticipated drawings is 105.

Category	Number of Drawings
General	4
Civil	14
Mechanical Demolition	10
Mechanical Process	29
Structural	13
HVAC	10
Electrical	25
TOTAL	105

Kleinfelder Team will also initiate development of the technical specifications with focus on preparing initial draft technical specifications for the major mechanical, electrical and HVAC

equipment. The Kleinfelder Team will also initiate development of the general specifications.

The drawings and specifications will be organized as required to comply with the Pennsylvania Separations Act.

Also in this task, Keystone will evaluate the sizing of a small backup generator for the Main Pump Station influent gates considering diesel and natural gas options.

Regarding control and monitoring, all new control and monitoring signals will be tied into a new SCADA panel. The SCADA panel will tie into the existing SCADA system via cellular or radio communication as preferred by LCA.

Following completion of the 60% design, Kleinfelder will submit electronic copies of the 60% drawings and specifications to LCA and its QA/QC consultants for review. Kleinfelder will also provide two (2) half size sets of the 60% drawings in paper format. Following completion of LCA's review and completion of LCA's QA/QC consultants review, a meeting will be held as part of Task 7 to discuss the review comments. Following the Task 7 60% review meeting, the Kleinfelder Team will proceed with Task 2.

To the extent possible, based on the Verdantas Flow Labs schedule backlog, Task 6 physical modeling will be performed concurrent with the 60% design.

Task 2 – 90% Design

In this task, the Kleinfelder Team will advance the development of design drawings to the 90% completion point while concurrently addressing review comments received during the 60% review meeting.

The Kleinfelder Team will also advance the development of project specifications to the point of producing a draft set of front-end specifications, general specifications, and technical specifications. The front-end specifications will be based on LCA's standard front-end specifications modified as appropriate for this specific project and to comply with the Pennsylvania Separations Act.

The Kleinfelder Team will also prepare a Level 3 construction cost estimate for the KIWWTP 100 mgd wet-weather project.

Following completion of the 90% design, Kleinfelder will submit electronic copies of the 90% drawings and specifications to LCA and its QA/QC consultants for review. Kleinfelder will also provide two (2) half size sets of the 90% drawings in paper format. Following completion of LCA's review and completion of LCA's QA/QC consultants review, a meeting will be held as part of Task 7 to discuss the review comments. Following the Task 7 90% review meeting, the Kleinfelder Team will proceed with Task 3.

Task 3 – 100% Design

In Task 3, the Kleinfelder Team will advance the development of design drawings to the 100% completion point while concurrently addressing review comments received during the 90% review meeting.

The Kleinfelder Team will also advance the development of project specifications to the 100% completion point while concurrently addressing comments on the 90% front-end specifications, general specifications, and technical specifications.

The Kleinfelder Team will also prepare a Level 2 final construction cost estimate for the KIWWTP 100 mgd wet-weather project.

Following completion of the 100% design, Kleinfelder will submit electronic copies of the 100% drawings and specifications to LCA and its QA/QC consultants for review. Kleinfelder will also provide two (2) half size sets of drawings and specifications in paper format. Following completion of LCA's review and completion of LCA's QA/QC consultants review a meeting will be held as part of Task 7 to discuss the review comments. Following the Task 7 100% review meeting, the Kleinfelder Team will proceed with Task 4.

Task 4 – Bid-Ready Documents

In this task, the Kleinfelder Team will prepare the bid-ready contract documents for the KIWWTP 100 mgd wet-weather project by addressing any comments on the 100% documents received from LCA or from LCA's QA/QC consultants. Kleinfelder will submit electronic copies of the bid-ready 100% drawings and specifications and will also provide one (1) full size set of drawings and specifications in paper format.

Task 5 – Permitting Assistance

In this task, Kleinfelder will prepare the Part 2 permit application and will submit the application to LCA for review. Task 7 meeting will be held to discuss the application and to address any comments that LCA may have. Following the task 7 review meeting, Kleinfelder will finalize the Part 2 permit application and will submit the application to PADEP. Kleinfelder will then maintain communication with PADEP regarding review status and to address any questions that PADEP may have. It is recommended that a virtual pre-application meeting be held with PADEP prior to submitting the PART 2 application to PADEP. Kleinfelder will prepare a PowerPoint presentation to facilitate the pre-application meeting with PADEP.

Because less than 5,000 SF of soil Disturbance is anticipated, Kleinfelder anticipates that a soil conservation district permit will not be required. However best management practices will be specified for the limited soil disturbances that will occur during construction of the KIWWTP 100 mgd wet-weather project.

Kleinfelder also anticipates that a DRBC docket modification will not be required for the KIWWTP 100 mgd wet-weather project.

Task 6 – APS Physical Modeling

In this task, Verdantas Flow Labs will perform physical modeling of the Auxiliary Pump Station Wet Well under the future condition of flow from the Kline's Island Relief Interceptor (KRI) being routed directly to the APS wet well after first being screened.

To assist Verdantas Flow Labs in performing the physical modeling, Kleinfelder will prepare a conceptual plan for the screening of flow from the KRI and routing of the screened flow into the APS wet well. Kleinfelder will also need to coordinate with Verdantas Flow Labs on the range of flows that would enter the APS wet well from the KRI and the range of flow that will continue to enter the APS from the Main Pump Station.

Kleinfelder will also review the draft physical modeling report prepared by Verdantas Flow Labs and will advise LCA of any questions or comments that it has regarding the draft physical modeling report. Kleinfelder will also arrange a Task 7 meeting for Verdantas to describe the physical modeling results and to address any comments or questions that LCA may have.

Task 7 – Deliverables Review and Progress Meetings with LCA

Virtual Meetings will be held to discuss the following draft deliverables: 60% design documents, 90% design documents, 100% design documents, the draft Part 2 permit application, and the draft physical modeling report. Virtual progress meetings will be held at the approximate mid-point of the 60% design and the approximate mid-point of the 90% design, to discuss progress and any issues or options that develop during design. A virtual kick-off meeting will be held at the start of the project.

In summary, a total of eight (8) meetings are anticipated.

For each meeting, the Kleinfelder Team will prepare a meeting agenda and a PowerPoint presentation to facilitate the meeting and will document key feedback and decisions in meeting summary memorandum.

It is understood that comments from LCA's QA/QC consultants will be submitted in writing and that the Kleinfelder Team will provide written responses to the comments. Preparation of the written responses to comments from LCA's QA/QC consultants will be prepared as part of Task 10.

Task 8 – Design Team Internal Coordination Meetings and Site Visits

The design team will hold internal coordination meetings every two (2) weeks throughout the 12-week 60% design period and every three (3) weeks during the 12-week 90% design period and every three (3) weeks during the 6-week 100% design period resulting in a total of 12 virtual coordination meetings.

The design team will conduct site visits as necessary to confirm design conditions. A total of three (3) site visits are anticipated.

Task 9 – Bidding Assistance

Kleinfelder's bidding assistance activities will consist of the following:

1. Provide one (1) electronic set of contract documents for distribution to prospective bidders via Penn Bib and reproduce five paper sets of contract documents for use by the design team. One (1) paper set of contract documents will be provided to LCA as part of Task 4.
2. Participate in the pre-bid meeting and site visit for prospective bidders.
3. Address questions from prospective bidders and prepare addenda for distribution via Penn Bid. It is anticipated that three (3) addenda will be issued. Prio to issuing the addenda, Kleinfelder will submit the draft addenda to LCA for review.
4. Evaluate the bid results and provide an award recommendation to LCA.

Task 10 – QA/QC Reviews and Project Administration

In this Task, the Kleinfelder Team will perform the following activities.

1. Perform internal QA/QC reviews of draft deliverables.
2. Review written comments from LCA's QA/QC consultants and respond to the comments in writing, Kleinfelder will track all comments and responses in a QA/QC register. It is

understood that LCA's QA/QC consultants will be reviewing the previously submitted preliminary design memoranda and the 60%, 90% and 100% design submissions.

3. Maintain ongoing communication with LCA throughout the design permitting and bidding process
4. Perform internal activities needed to achieve the project schedule and budget.

SCHEDULE

Kleinfelder will execute the scope of services to achieve the following schedule milestones:

1. Submit the 60% design to LCA for review within 12 weeks following execution of a Professional Services Agreement.
2. Submit the 90% design within 12 weeks following the 60% deliverable review meeting.
3. Submit the 100% design within six (6) weeks following the 90% deliverable review meeting.
4. Submit the bid-ready documents within 3 weeks following the 100% review meeting.
5. Submit the draft Part 2 permit application for review within two (2) weeks following the 100% review meeting.
6. Finalize the Part 2 permit application within two (2) weeks following a meeting to discuss the draft Part 2 permit application.
7. Initiate bidding assistance upon PADEP issuance of the Part 2 Permit.

COST PROPOSAL

Kleinfelder's estimated cost to execute the scope of services described above is summarized in the table below. A detailed cost breakdown by labor category, hourly rate, hours and reimbursable expenses is attached to this proposal.

TASK	DESCRIPTION	COST
1	60% Design	\$267,680
2	90% Design	\$249,110
3	100% Design	\$144,940
4	Bid-Ready Documents	\$41,230
5	Permitting Assistance	\$9,660
6	APS Physical Modeling	\$30,160
7	Deliverables Review and Progress Meetings with LCA	\$40,180
8	Design Team Internal Coordination Meetings and Site Visits	\$55,500
9	Bidding Assistance	\$37,410
10	QA/QC Reviews and Project Administration	\$118,580
	TOTAL	\$994,450

The total fee of \$994,450 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,

A handwritten signature in blue ink, appearing to read 'T. Bradley', with a stylized flourish at the end.

Timothy D. Bradley, P.E.
Vice President

cc: Charles E. Volk, P.E.

Attachments

1. Anticipated Drawing List
2. Kleinfelder Cost Breakdown Spreadsheet
3. DEI Cost Breakdown Spreadsheet
4. Keystone Cost Breakdown Spreadsheet

KIWWTP 100 MGD PROJECT ANTICIPATED DRAWING LIST

GENERAL

- G-1 Cover Sheet with Location Map
- G-2 Index of Drawings
- G-3 Construction Staging Areas – 1
- G-4 Construction Staging Areas – 2

CIVIL

- C-1 Civil Legend, Abbreviations and Notes
- C-2 Overall /existing /site conditions plan
- C-3 Existing Site Conditions – Partial Plan 1
- C-4 Existing Site Conditions – Partial Plan 2
- C-5 Partial Site Plan – 1
- C-6 Partial Site Plan – 2
- C-7 Yard Piping Plan – 1
- C-8 Yard Piping Plan – 2
- C-9 Yard Piping Profiles – 1
- C-10 Yard Piping Profiles – 2
- C-11 Erosion and Sediment Control Plan
- C-12 Erosion and sediment control Details
- C-13 Civil Details – 1
- C-14 Civil Details – 2

MECHANICAL DEMOLITION

- D-1 MPH Demolition Plan – 1
- D-2 MPH Demolition Plan – 2
- D-3 MPH Demolition Sections – 1
- D-4 MPH Demolition Sections – 2
- D-5 APH Demolition Plan
- D-6 APH Demolition Section
- D-7 APH Demolition Miscellaneous
- D-8 IPS Demolition Plan
- D-9 IPS Demolition Sections
- D-10 Miscellaneous Demolition

MECHANICAL PROCESS

- M-1 Legend and, Symbols and General Notes
- M-2 Wastewater Flow Schematic – Dry Weather Flow
- M-3 Wastewater Flow Schematic – Storm Flow Mode
- M-4 Hydraulic Profile – I
- M-5 Hydraulic Profile – II
- M-6 Piping Schedule
- M-7 Equipment Schedules
- M-8 MPH – Wetwell Level Plan
- M-9 MPH – Operating Level Plan
- M-10 MPH – Wetwell Level Elevation
- M-11 MPH – Operating Level Elevation
- M-12 MPH – Bridge Crane Details
- M-13 MPH Wetwell Hydraulic Improvement Details
- M-14 APH Pump Floor Plan
- M-15 APH Pump Floor Elevation
- M-16 APH Pump Suction Pipe Improvement Details
- M-17 APH Monorail Details
- M-18 IPS – Primary Effluent Pump Plan
- M-19 IPS – Primary Effluent Pump Elevation
- M-20 IPS – Primary Effluent Pump Miscellaneous Details
- M-21 Grit Chamber Influent Cover – Plan
- M-22 Grit Chamber Influent Cover – Elevation
- M-23 Primary Distribution Chamber Cover – Plan
- M-24 Primary Distribution Chamber Cover – Elevation

KIWWTP 100 MGD PROJECT ANTICIPATED DRAWING LIST

- M-25 IST Influent Weir Gate Modifications – Plan
- M-26 IST Influent Weir Gate Modifications – Elevations
- M-27 Miscellaneous Details – 1
- M-28 Miscellaneous Details – 2
- M-29 Miscellaneous Details – 3

STRUCTURAL

- D-1 MPS Demolition Plan
- D-2 APS Demolition Plan
- S-1 Special Inspections, Notes and Abbreviations
- S-2 MPS Plan
- S-3 MPS Sections
- S-4 MPS Details
- S-5 APS Plan
- S-6 APS Sections and Details
- S-7 Aerated Grit Chambers Cover Plan
- S-8 Aerated Grit Chambers Cover Sections and Details
- S-9 Primary Distribution Chamber Cover Plan and Sections
- S-10 Power Zone Slab Plan
- S-11 Details

HVAC

- H-1 Symbols, Notes and Abbreviations
- H-2 MPS Demolition Plan
- H-3 MPS Plan and Sections
- H-4 APS Demolition Plan
- H-5 APS First Floor Plan and Sections
- H-6 APS Motor Room Plan and Sections
- H-7 IPS Plan and Sections
- H-8 Details I
- H-9 Details II
- H-10 Schedules

ELECTRICAL

- E-1 Electrical Legend Sheet
- E-2 Electrical Site Plan
- E-3 Aux PS Single Line Diagram
- E-4 Main PS Single Line Diagram
- E-5 Intermediate PS Single Line Diagram
- E-6 Aux PS Power Plan
- E-7 Aux PS Power House Plan
- E-8 Main PS Power Plan
- E-9 Intermediate PS Power Plan
- E-10 Aux PS Lighting Plan
- E-11 Aux PS Lighting House Plan
- E-12 Main PS Lighting Plan
- E-13 Intermediate PS Lighting Plan
- E-14 Aux PS Demo Plan
- E-15 Main PS Demo Plan
- E-16 Intermediate PS Demo Plan
- E-17 Aux PS Interconnection Diagram
- E-18 Main PS Interconnection Diagram
- E-19 Intermediate PS Interconnection Diagram
- E-20 System Architecture Diagram
- E-21 Electrical Details 1 of 2
- E-22 Electrical Details 2 of 2
- E-23 Electrical Schedules
- E-24 Electrical Control Diagrams 1 of 2
- E-25 Electrical Control Diagrams 2 of 2

KIWWTP 100 mgd project - Final Design Permitting, Physical Modeling and Bidding

TASKS	Rate, \$/hour	\$295	\$245	\$250	\$231	\$150	\$130	\$120	\$120	\$110									
		Project Director (Bradley)	Principal Engineer (Tushar)	Tech Review Cost Engineer Nexon	Sr. Project Engineer Ferguson	Sr Staff Civil Engineer Strang	Staff Engineer Madrigal	Staff Engineer Nettuno	Tech Assistant Jenkins	Administrative Assistant (Taylor)	Total Hours	Labor Fee	Expenses	Verdantas Physical Modeling	Keystone Electrical I&C	DEI Structural HVAC	Sub Markup 0.10	Total Fee	Rounded Fee
Task 1 - 60% Design	48	144	24	60	120	120	240	120	0		876	\$146,100	\$400	\$0	\$30,030	\$80,133	\$11,016	\$267,679	\$267,680
Task 2 - 90% Design	52	192	32	60	80	120	120	40	0		696	\$131,040	\$500	\$0	\$33,150	\$73,736	\$10,689	\$249,115	\$249,110
Task 3 - 100% Design	16	120	28	40	40	40	80	12	0		376	\$72,600	\$500	\$0	\$26,605	\$38,700	\$6,531	\$144,936	\$144,940
Task 4 - Bid-Ready Documents	8	16	0	8	8	8	8	8	0		64	\$12,288	\$250	\$0	\$8,610	\$17,470	\$2,608	\$41,226	\$41,230
Task 5 - Permitting Assistance	16	8	0	0	0	8	8	8	0		48	\$9,640	\$20	\$0	\$0	\$0	\$0	\$9,660	\$9,660
Task 6 - APS Physical Modeling	8	24	0	0	0	0	0	0	0		32	\$8,240	\$0	\$15,000	\$0	\$4,925	\$1,993	\$30,158	\$30,160
Task 7 - Deliverables Review and Progress Meetings	32	32	0	0	0	0	0	0	0		64	\$17,280	\$0	\$0	\$11,060	\$9,762	\$2,082	\$40,184	\$40,180
Task 8 - Design Team Coordination Meetings and Site Visits	24	24	12	0	8	8	12	0	0		88	\$19,640	\$300	\$0	\$13,100	\$19,227	\$3,233	\$55,500	\$55,500
Task 9 - Bidding Assistance	24	32	16	8	4	8	8	0	0		100	\$23,368	\$500	\$0	\$7,210	\$5,102	\$1,231	\$37,411	\$37,410
Task 10 - QA/QC Reviews and Project Administration	112	80	0	0	0	0	0	0	32		224	\$56,160	\$0	\$0	\$9,100	\$47,645	\$5,675	\$118,580	\$118,580
TOTAL	340	672	112	176	260	312	476	188	32	0	2,568	496,356	2,470	15,000	138,865	296,700	45,058	994,448	994,450

**LCA KIIWWTP 100 MGD WET WEATHER UPGRADES FINAL DESIGN
D'HUY ENGINEERING FEE BREAKDOWN**

TOTAL PROJECT HOURS AND FEE													
Task	Principal	Sr. Project Manager	Structural PE	Tech. Specialist	Structural EIT	CAD Operator	Senior CAD Operator	HVAC Designer	Senior HVAC PE	Admin	Total Labor Hours	Total Task Labor Fee	
1.0	60% Design Documents	4	10	52	40	115	160	20	155	64	20	640	\$ 80,133
2.0	90% Design Documents	4	10	40	40	88	160	20	148	60	20	590	\$ 73,736
3.0	100% Design Documents	4	6	16	16	24	120	12	64	40	20	322	\$ 38,700
4.0	Bid-Ready Design Documents	4	6	6	6	12	40	12	30	16	8	140	\$ 17,470
5.0	Permitting Assistance											0	\$ -
6.0	Additional APS Physical Modeling			5		20		20				45	\$ 4,925
7.0	Deliverable Review and Progress Meetings		13	13	13					13		52	\$ 8,762
8.0	Design Team Coordination Meetings and Site Visits		30	30	15	6			6	30		117	\$ 19,227
9.0	Bidding Assistance	2	10	2		10			4	2	10	40	\$ 5,102
10.0	Project Admin. and QA/QC Reviews	30	78								10	118	\$ 20,836
10A	Third Party QA/QC Reviews	6	32	48						48	24	158	\$ 24,638
TOTAL HOURS		54	195	212	130	275	480	84	407	273	112	2222	293,529
Hourly Rate		\$ 225	\$ 172	\$ 165	\$ 165	\$ 100	\$ 85	\$ 105	\$ 147	\$ 172	\$ 67	-	-
Total Labor Category Fee		\$ 12,150	\$ 33,540	\$ 34,980	\$ 21,450	\$ 27,500	\$ 40,800	\$ 8,820	\$ 59,829	\$ 46,956	\$ 7,504	-	\$ 293,529
Reimbursible Expenses												\$ 3,098	
TOTAL PROJECT FEE												\$ 296,700	

5.0 BUSINESS TERMS

5.1 Compensation

We propose to provide the services indicated above for the following T&M Not to Exceed amounts:

Task 1 – 60% Design	\$30,030.00
Task 2 – 90% Design	\$33,150.00
Task 3 – 100% Design	\$26,605.00
Task 4 – Bid Ready Documents	\$8,610.00
Task 5 – Permitting Assistance	\$0.00
Task 6 – Additional APS Physical Modeling	\$0.00
Task 7 – Deliverable Review and Progress Meetings with LCA	\$11,060.00
Task 8 – Design Team Internal Coordination Meetings and Site Visits	\$13,100.00
Task 9 – Bidding Assistance	\$7,210.00
Task 10 – QA/QC Reviews and Project Administration	\$9,100.00
Overall Total	\$138,865.00

Labor Breakdown

Labor Category	Manager	Engineer	Designer	Assistant	Reimbursables	Total
Bill Rate	\$175	\$155	\$140	\$105	LS	
Task 1	18	84	84	20	0	\$30,030
Task 2	18	96	96	16	0	\$33,150
Task 3	16	75	75	16	0	\$26,605
Task 4	16	16	16	8	250	\$8,610
Task 5	0	0	0	0	0	\$0
Task 6	0	0	0	0	0	\$0
Task 7	32	32	0	0	500	\$11,060
Task 8	20	40	20	0	600	\$13,100
Task 9	16	16	0	16	250	\$7,210
Task 10	40	0	0	20	0	\$9,100
Hours sub total	176	359	291	96	Grand Total	\$138,865

We propose to provide the services indicated above on a T&M NTE basis. These fees are firm and cannot be changed unless both parties agree to changes in the scope. Invoicing will be done on a monthly T&M basis.

Additional services beyond the scope of this proposal can be provided based on negotiated lump sum amounts or on a per diem basis.

May 15, 2024

Ms. Amy Rohrbach
Project Manager
Lehigh County Authority
1053 Spruce Road
Allentown, PA 18106
amyrohrbach@lehighcountyauthority.org

Facility: Kline Island Wastewater Treatment Plant
Project: Main, Auxiliary & Intermediate Pump Stations Improvement
Various Electrical Consulting Services
Revised Proposal

Dear Ms. Rohrbach:

On behalf of Current Solutions, P.C. we would like to thank you for the opportunity to submit our attached revised proposal based on our phone discussion last week to conduct various electrical consulting services associated with the Main, Auxiliary & Intermediate Pump Stations Improvement project and facility at Lehigh County Authority's Kline Island Wastewater Treatment Plant in Allentown, PA.

Organizationally, we all truly understand the importance of our client's needs, and we strive to provide quality services to each and every project, and hope we have the opportunity to work with LCA and your team again. We are confident that you will find our specialty electrical engineering services, valuable and professional.

Approximately 85% of our business has been obtained through word of mouth and referrals and we provide our engineering and consulting services to all types of facilities across the U.S. For more company information, you can also visit our web site www.currentsolutionspc.com.

After your receipt of this proposal if you would like to review it in greater detail or would like additional information, please contact me directly. Thank you for your consideration.

Very truly yours,

Mark B. Cavallaro, P.E.
Principal

Enclosure

May 15, 2024

Lehigh County Authority - Kline Island Wastewater Treatment Plant
Main, Auxiliary & Intermediate Pump Stations Improvement Project

Various Electrical Consulting Services

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SCOPE OF SERVICES

I. QA/QC Electrical Design Review

1. Current Solutions, P.C. proposes to provide and perform the following services associated with the Main, Auxiliary & Intermediate Pump Stations Improvement project at Lehigh County Authority's (LCA) Kline Island Wastewater Treatment Plant in Allentown, PA.
2. Perform a QA/QC review of the electrical design drawings and electrical technical specifications developed by Kleinfelder Engineering Group for the following design submissions.
 - A. 30% Drawings
 - B. 60% Drawings and Technical Specifications
 - C. 90% Drawings and Technical Specifications
 - D. 100% Drawings and Technical Specifications
3. The QA/QC review and comments will be based on standard industry practices and the standard of care that is expected for a project with the equipment specified and material specified.
4. Develop a QA/QC review report with comments to the design, drawing quality, technical content, electrical specifications, staging and phasing criteria and temporary equipment and connections to maintain plant operations.
5. The review and report will identify potential missing information and details as well as identify conflicts between the design drawings and between the drawings and electrical specifications.
6. Participate in four (4) virtual online meeting with LCA to review the design, drawings, specifications and Current Solutions, P.C. review comments.

Services Not Included: The following is excluded.

1. Review and comment on the Division 1 or General Conditions specifications.
2. Review and comment to other design discipline drawings and specifications.
3. Electrical cost estimating services or determining the estimated probable cost of construction.

Deliverables

1. Submission of an electronic file in pdf format of the QA/QC Review Report.
2. Participation in a virtual online meeting with LCA to review the QA/QC Review Report.

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Lehigh County Authority - Kline Island Wastewater Treatment Plant
Main, Auxiliary & Intermediate Pump Stations Improvement Project
Various Electrical Consulting Services
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II. Facility & Equipment Survey & Single Line Diagram

1. The facility and equipment survey and the single line diagram are necessary to perform the preliminary power system analysis.
2. Facility and Equipment Assessment Survey
 - A. Current Solutions, P.C. shall visit the plant to assess the overall power distribution system and survey the existing equipment for fact-finding, information gathering and collect information to develop the preliminary power system analysis.
 - B. The equipment survey will be a non-invasive survey of the existing electrical equipment and not include equipment enclosure or cover removal.
 - C. Current Solutions, P.C. shall coordinate with the facility an acceptable and practicable access schedule for the survey and will need the assistance of a maintenance staff member familiar with the plant and existing electrical equipment.
 - D. Lehigh County Authority shall provide personnel to escort our engineers and field technicians to the equipment location and to open all electrical room doors, locks, and assist in identifying equipment locations.
 - E. During the survey, Current Solutions, P.C. shall review and coordinate with plant staff to learn system and equipment changes from what is shown in the original design drawings.
3. Power System Single Line Diagram: In order to communicate the overall power system and equipment, and perform the power system analysis Current Solutions, P.C. will develop power system single line diagrams representing the interconnection of the existing electrical distribution system and equipment.
 - A. The initial power system single line diagram shall be based on the survey without opening equipment enclosures, covers or doors.
 - B. Current Solutions, P.C. shall review the details with Lehigh County Authority to ensure the accuracy of the power system, equipment and connections.
 - C. The single line diagrams will also be a useful tool for plant operations and maintenance.

Services Not Included: The following is excluded.

1. Single phase equipment is not included in the survey or single line diagram.
2. Detailed equipment and device survey to collect nameplate data and device settings.

Deliverables

1. Submission of an electronic file in pdf format of the preliminary power system single line diagram.

May 15, 2024

Lehigh County Authority - Kline Island Wastewater Treatment Plant
Main, Auxiliary & Intermediate Pump Stations Improvement Project
Various Electrical Consulting Services
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III. Preliminary Power System Analysis During Design Phase

1. Perform a preliminary power system analysis of the existing and modified power system based on the design drawings and basis of design equipment manufacturer during the design phase of the Main, Auxiliary and Intermediate Pump Stations project.
2. General Engineering associated with the analysis.
 - A. Current Solutions, P.C. will perform a power system analysis of the existing electrical distribution system and associated electrical equipment as outlined in this proposal. The analysis will be computer-generated report developed specifically for the Lehigh County Authority Kline Island Wastewater Treatment Plant.
 - B. The preliminary analysis will include the following;
 - i. Short Circuit Study
 - ii. Equipment and Device Evaluation Study
 - iii. Protective Device Coordination Study
 - iv. Harmonic Study
 - C. This scope of engineering services is based on the availability of facility personnel and the design engineer to answer questions provided either verbally or in writing related to the power distribution system arrangement and operation in the development of the analysis.
 - D. Current Solutions, P.C. shall contact and coordinate with the serving electric utility company and obtain the utility company available short circuit contribution and protective device settings for all service entrance overcurrent devices immediately upstream of the electrical services. However, the settings for these devices will be the responsibility of the utility company. Current Solutions, P.C. will need the contact at the serving electric utility company to communicate with them.
 - E. The scope of the analysis will be limited to 3-phase, 60 Hz, AC electrical power system and related equipment as outlined in this proposal. The analysis will include the following existing and new equipment.
 - i. Medium Voltage Switchgear
 - ii. Substation Switches
 - iii. Substation Transformers
 - iv. Low Voltage Switchgear
 - v. Motor Control Centers
 - vi. Distribution Panels, Panelboards and Building Transformers
 - vii. 480 Volt Disconnect Switches and Enclosed Starters

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Lehigh County Authority - Kline Island Wastewater Treatment Plant
Main, Auxiliary & Intermediate Pump Stations Improvement Project
Various Electrical Consulting Services

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viii. VFDs and Control Panels with Starters

- F. Coordination Meetings and Conference Calls: Current Solutions, P.C. principal shall arrange and participate in monthly conference calls to review the progress of the analysis and development of the analysis report.
3. Data: Data for this preliminary analysis will be based on the facility and equipment survey.
4. Short Circuit Study: A Short Circuit Study will be performed that models the current that flows in the power system under abnormal conditions and determines the prospective fault currents at electrical equipment and compares those calculated values with the actual equipment ratings to determine if the equipment is properly rated.
5. Equipment and Device Evaluation Study: After the short circuit calculations are completed, an Equipment and Device Evaluation Study will be performed to evaluate the rating of equipment and devices for electrical faults at each piece of equipment included in the analysis model to verify the equipment ratings are adequate.
6. Protective Device Coordination Study: A Protective Device Coordination Study shall be performed to review and evaluate protective device settings to determine the adequacy of the equipment protection and minimize hazards to personnel while assuring the minimum portion of the power system is affected by a fault. This permits and maintains continuity of service to as large a portion of the system as possible.
7. Harmonic Study: A harmonic study shall be performed to determine the percent voltage Total Harmonic Distortion (VTHD) and the percent current Total Harmonic Analysis (ITHD), and identify any existing problems or areas of concern, and make engineering recommendations, if needed. The results of the harmonic study can be used to determine if and where mitigation equipment (chokes, specialty transformers, etc.) can be added to comply with IEEE standards criteria at the following locations;
- A. Point of Common Coupling (PCC)
 - B. Main Switchgear
 - C. Each medium voltage to 480 Volt Substation
 - D. Each Motor Control Center
8. Power Analysis Report: Current Solutions, P.C. shall develop and submit a written power analysis draft report and final report specific to the facility electrical power distribution system that will include sections and results associated with the short circuit study, equipment / device evaluation study, protective device coordination study, and harmonic study.

May 15, 2024

Lehigh County Authority - Kline Island Wastewater Treatment Plant
Main, Auxiliary & Intermediate Pump Stations Improvement Project

Various Electrical Consulting Services

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9. Report Presentation: Current Solutions, P.C. shall conduct an online virtual meeting and presentation with Lehigh County Authority to review the Draft Report after submission. The presentation typically occurs two to four weeks after submission of the Draft Report.
10. Clarifications:
 - A. Analysis methods shall conform to current NFPA 70E standards and IEEE guidelines. Where exact data cannot be obtained industry accepted assumptions will be made and documented in the analysis report.
 - B. All parts of the power system analysis performed will be submitted as a single power system analysis report with necessary drawings and data. Separation of any equipment, portions of the power system and/or electric services from the power system analysis report will be subject to additional engineering fees.
 - C. The Protective Device Coordination Study will be based on a single equipment / device manufacturer determined by the design engineer that is the basis of project design, drawings and specifications.
 - D. The preliminary power system analysis will be submitted to LCA for their review and comment. Comments from the design engineer will be reviewed, however will be up to Current Solutions, P.C.'s discretion if the comments will be incorporated into the final analysis and analysis report.

Information Needed: Current Solutions, P.C. requires the following information to start the proposed engineering services.

1. Facility lock-out / tag-out procedure and policy manual.
2. Contact name and phone number of the representative at the utility company to confirm short circuit contribution from the utility company and over-current characteristics of the upstream over-current protective device.
3. Plant power system single line diagram and equipment schedules for all existing distribution equipment.
4. Provide a summary of any and all induction motor HP and motor-based equipment / machines connected to the distribution equipment. Include the designation of the equipment that each of the motors is fed from.
5. Listing of all non-motor loads connected to the distribution equipment. Include the designation of the equipment that each load is fed from.
6. Main, Auxiliary and Intermediate Pump Stations Improvement project electrical design drawings that must include a single line diagram with equipment and device ratings, feeder sizes and load data

May 15, 2024

Lehigh County Authority - Kline Island Wastewater Treatment Plant
Main, Auxiliary & Intermediate Pump Stations Improvement Project
Various Electrical Consulting Services

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related to the project. The single line diagram is to clearly represent the existing equipment to remain, existing equipment to be removed and new electrical equipment with connections to the existing power system.

7. Electric utility bills showing plant load usage for the last two (2) years.

Services Not Included: The following is excluded.

1. Single phase equipment or systems.
2. DC system or equipment
3. Arc flash incident energy analysis.
4. Design or specification of harmonic mitigation equipment.
5. Field service for start-up, testing, training or performing the actual protective device settings, adjustments, and minor modifications for conformance with the results of the study.
6. Testing, calibrating, adjusting and setting of electrical equipment and/or protective devices.
7. Certification that the protective devices have been adjusted and set in accordance with the study.
8. Engineering design and system modifications to determine alternate approaches to effectively protect any under-rated equipment or any corrective modification that may be required.
9. Printed hard copies of the Analysis Report.

Deliverables

1. Submission of an electronic file in pdf format of the draft preliminary power analysis report.
2. Submission of an electronic file in pdf format of the final preliminary power analysis report.

PROPOSED FEES

Current Solutions, P.C. proposes to perform the above outlined Scope of Services as follows;

Proposed Fees						
Task	Activity	Hours	Rate per Hour (\$)	Expenses (\$)	Engineering Fee (\$)	Sub-Total (\$)
QA/QC Electrical Design Review	30% Design Review	20	\$225	\$0	\$4,500	\$4,500
	60% Design Review	24	\$225	\$0	\$5,400	\$5,400
	90% Design Review	24	\$225	\$0	\$5,400	\$5,400
	100% Design Review	16	\$225	\$0	\$3,600	\$3,600
	QA/QC Review Report	12	\$225	\$0	\$2,700	\$2,700
	QA/QC Review Meetings (4) with LCA	8	\$225	\$0	\$1,800	\$1,800
	Sub-Totals	104	---	\$0	\$23,400	\$23,400
Facility & Equipment Survey & Single Line Diagram	Survey	64	\$225	\$4,200	\$14,400	\$18,600
	Preliminary Power System Single Line Diagram	40	\$225	\$0	\$9,000	\$9,000
	Final Power System Single Line Diagram	25	\$225	\$0	\$5,625	\$5,625
	Sub-Totals	129	---	\$4,200	\$29,025	\$33,225
Preliminary Power System Analysis During Design Phase	Data Organization & Engineering Analysis	120	\$225	\$0	\$27,000	\$27,000
	Draft Report	40	\$225	\$0	\$9,000	\$9,000
	Draft Report Review Meeting with LCA	4	\$225	\$0	\$900	\$900
	Final Report	16	\$225	\$0	\$3,600	\$3,600
	Sub-Totals	180	---	\$0	\$40,500	\$40,500
Totals	413	---	\$4,200	\$92,925	\$97,125	

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.: AD-S-19, AD-S-20 & AD-S-28 **BUDGET FUND:** Allentown Div\WW\Capital

PROJECT TITLE: Allentown Division – KIWWTP Wet Weather Treatment Projects – Final Design and Bidding Phase **PROJECT TYPE:**

- Construction
- Engineering Design
- Equipment Purchase
- Amendment No. 1

THIS AUTHORIZATION: \$1,181,575
TO DATE (W/ ABOVE) \$1,628,485

DESCRIPTION AND BENEFITS:

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 three areas of the plant. These projects include (1) improvements to the Main and Auxiliary pump stations, (2) improvements to the primary effluent pumping system located in the Intermediate Pump Station (IPS) and (3) implementation of tertiary bypass capacity improvements. These upgrades will increase wet weather capacity from approximately 87 mgd to 100 mgd, thus reducing the frequency of Outfall 003 activations during extreme wet-weather events.

AUTHORIZATION STATUS:

Prior Authorizations	
Conceptual Design Phase	\$446,910
Requested This Authorization – Detailed Design & Bidding Phase	
Detailed Design & Bidding Phase: Kleinfelder, Inc.	\$994,450
Electrical Design QA/QC review	\$97,125
Staff	\$50,000
Contingencies	\$40,000
Total This Authorization	\$1,181,575

Future Authorizations	
Construction Phase	

Total Estimated Project	\$27,400,000
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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 ROAD WEST
SUITE 100
PRINCETON, NJ 08540

Date: June 10, 2024
Requested By: Amy Rohrbach

Approvals
Department Head: _____
Chief Executive Officer: _____

Allentown Division – KIWWTP Wet Weather Treatment Projects Final Design & Bidding Phase Services

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 three areas of the plant. These projects include (1) improvements to the Main and Auxiliary pump stations, (2) improvements to the primary effluent pumping system located in the Intermediate Pump Station (IPS) and (3) implementation of tertiary bypass capacity improvements. These upgrades will increase wet weather capacity from approximately 87 mgd to 100 mgd, thus reducing the frequency of Outfall 003 activations during extreme wet-weather events.

The following professional services are included:

Professional Services ⁽¹⁾
1. 60% Design
2. 90% Design
3. 100% Design
4. Bid-Ready Documents
5. Permitting Assistance
6. APS Physical Modeling
7. Deliverables Review & Progress Meetings with LCA
8. Design Team Internal Coordination Meetings & Site Visits
9. Bidding Assistance
10. QA/QC Reviews and Project Administration

(1) Per attached 5/29/2024 Kleinfelder, Inc. proposal letter

Design and Bidding Phase Services:

This Authorizations: \$994,450

Time Table and Completion Deadline: As outlined in the proposal by Kleinfelder, Inc. All work anticipated to be completed by October 31, 2025.

MUNIS Account: 50629

(For Authority Use Only)

Authorization Completion:
Approval: _____ **Actual Cost:** _____ **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: CURRENT SOLUTIONS P.C.
636 NORTH BROADWAY
WHITE PLAINS, NY 10603

Date: June 10, 2024

Requested By: Amy Rohrbach

Approvals

Department Head: _____

Chief Executive

Officer: _____

Allentown Division – KIWWTP Wet Weather Treatment Projects Final Design & Bidding Phase Services – Electrical Design QA/QC and Assistance

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 three areas of the plant. These projects include (1) improvements to the Main and Auxiliary pump stations, (2) improvements to the primary effluent pumping system located in the Intermediate Pump Station (IPS) and (3) implementation of tertiary bypass capacity improvements. These upgrades will increase wet weather capacity from approximately 87 mgd to 100 mgd thus the frequency of Outfall 003 activations during extreme wet-weather events. Due to the criticality and complexity of the design, a QA/QC review of the electrical design is recommended to be performed for the Main, Auxiliary and Intermediate Pump Station components of the project. Additional equipment survey and analysis will also be completed as necessary in preparation for future construction activities.

The following professional services are included:

Professional Services ⁽¹⁾
1. QA/QC Electrical Design Reveiw
2. Facility & Equipment Survey
3. Preliminary Power System Analysis

(1) Per attached 5/15/2024 Current Solutions, P.C.. proposal letter

Design and Bidding Phase – QA/QC and Assistance:

This Authorizations: \$97,125

Time Table and Completion Deadline: As outlined in the proposal to satisfactorily complete the QA/QC review and electrical survey and analysis assistance. Schedule will align with the design schedule proposed by Kleinfelder, Inc.

MUNIS Account: 50629

(For Authority Use Only)

Authorization Completion:

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

Lehigh County Authority – Monthly Report to Board of Directors

Upcoming Board Agenda Items & Project Updates – June 2024

Published: June 3, 2024

PART 1 – Upcoming Agenda Items – Action & Discussion Items

FINANCE & ADMINISTRATION

Project Title: Disposition of Real Property

Division / Funding: Suburban Division

Status or Action Desired: Approval

Board Action Date: 6/10/2024

Project Phase: n/a

Project Notes: In 2022, LCA demolished the Far View Farms Pump Station, located in Upper Milford Township. The pump station and wells (well nos 18 and 19) were no longer needed following the development's water system interconnection with the Central Lehigh Division, via the newly constructed Kohler Tract Pump Station. The pump station building, tanks, and underground piping were removed, the wells were properly abandoned per DEP requirements, and site was restored following demolition. The tract is located at 4475 Farview Court, Emmaus, and has an area of approximately 0.41 acre. A request will be made to the Board at the 6/10/24 meeting to proceed with marketing and selling the vacant property. Staff Responsibility: Chuck Volk

Project Title: 2024 Budget Amendment & Staffing Additions

Division / Funding: All Divisions

Status or Action Desired: Approval

Board Action Date: 6/24/2024

Project Phase: n/a

Project Notes: At the June 24, 2024 meeting, a review of additional staffing requirements will be presented for Board consideration, along with financial analysis of budget impacts for 2024 and 2025. These requested staff additions are focused on building LCA's internal capacity to addressing rapidly expanding system requirements and regulatory mandates such as removal of lead service lines and major capital improvements to address aging infrastructure. If needed, a 2024 Budget Amendment will be presented for Board approval to support these requested staff additions. Staff Responsibility: Liesel Gross

Project Title: Resolution 6-2024-1: Approval of Suburban Water Division & Suburban Wastewater Division Tapping Fees

Division / Funding: Suburban Division

Status or Action Desired: Approval

Board Action Date: 6/24/2024

Project Phase: n/a

Project Notes: Staff will present updated Suburban Water Division and Suburban Wastewater Division Tapping Fees to the Board for approval by Resolution, effective July 1, 2024. Staff Responsibility: Ed Klein

Project Title: Monthly Financial Review

Division / Funding: n/a

Status or Action Desired: Information

Board Action Date: 6/24/2024

Project Phase: n/a

Project Notes: The May 2024 monthly financial report will be presented. Staff Responsibility: Ed Klein

SYSTEM OPERATIONS

Project Title: Monthly Operations Report

Division / Funding: n/a

Board Action Date: 6/24/2024

Status or Action Desired: Information

Project Phase: n/a

Project Notes: The May 2024 monthly operations report will be presented. Staff Responsibility: Andrew Moore & Chris Moughan

WATER PROJECTS – ALLENTOWN DIVISION

Project Title: Water Filtration Plant: HVAC Upgrades

Division / Funding: Allentown Division

Board Action Date: 6/24/2024

Status or Action Desired: Approval

Project Phase: Construction Phase

Project Notes: The existing HVAC system at the WFP is past its useful life and in need of replacement. The areas in need of replacing include the offices, operation control room, laboratory, locker room and conference room spaces. A PSA was issued to D'Huy Engineering in April 2023 to assist with the design and bidding services for upgrades to the existing HVAC system. The Bid packages was advertised and posted to PennBID on 5/7/24 and a pre-bid meeting was held on 5/15/24 with bids being due 6/6/24. A Capital Project Authorization is being requested for the HVAC and electrical construction contracts as well as a PSA for engineering services during construction by D'Huy Engineering. Construction is anticipated to be completed in Spring 2025. Staff Responsibility: Amy Rohrbach

WASTEWATER PROJECTS – KISS ACT 537

Project Title: Sanitary Sewer Collection System: City of Allentown Interceptor Inspections

Division / Funding: Allentown Division

Board Action Date: 6/10/2024

Status or Action Desired: Approval

Project Phase: Planning Phase

Project Notes: As part of the Act 537 planning process, the condition and rehabilitation needs for each major interceptor in the system needs to be detailed for inclusion in the plan. In the City of Allentown, the condition of each interceptor is not currently known. Since all sewage generated by the Kline's Island Sewer System flows through one or more of the City's main interceptors, the condition of each interceptor must be determined and a rehabilitation plan developed if needed. This interceptor inspection work will identify any needed rehabilitation, repairs, or modifications needed to suit the regional sewer needs that will be determined by the Act 537 Plan. Board authorization for this interceptor inspection work was granted at the December 12, 2022 meeting. The majority of the inspections occurred in the second quarter of 2023. Follow-up work is recommended on key sections of the inspected interceptors. These recommendations have been evaluated and authorization to proceed with this follow-up work is requested at the June 10, 2024 Board Meeting. Staff Responsibility: Phil DePoe

Project Title: KISS Act 537 Planning - Financial & Institutional Evaluation, Phase 3

Division / Funding: City of Allentown (AO)

Board Action Date: 6/10/2024

Status or Action Desired: Approval

Project Phase: Planning Phase

Project Notes: One of the Act 537 Plan requirements is to complete a financial evaluation of the selected alternative, including rate impacts, cost-sharing, and financing approach. Another key requirement is to evaluate the institutional / governance approach to completing the projects, operating and maintaining the facilities, and monitoring performance. In December 2022, authorization was granted to retain a professional consultant (Raftelis) to conduct phase 1 of this work, which included a preliminary financial evaluation focused on gathering data from all municipalities and conducting preliminary analyses on system costs and user rates. Phase 2 work was authorized in July 2023 and included more detailed analysis of existing agreements and cost-sharing mechanisms, and workshops with the municipalities to develop updated cost-sharing methods and alternatives. The results of Phases 1 and 2 will be incorporated into a financial model for further analysis of rate impacts and system capacity to fund the projects included in the Act 537 Plan. Phase 3 work will be focused on finalizing the analysis and preparation of financial and institutional sections of the Act 537 Plan. At the June 10, 2024 meeting, the LCA Board will be asked to consider approval of the Phase 3 scope of work. Staff Responsibility: Liesel Gross

Project Title: Upper Western Lehigh Pump Station & Force Main

Division / Funding: Suburban Division

Board Action Date: 6/10/2024

Status or Action Desired: Approval

Project Phase: Construction Phase

Project Notes: Per the DEP-approved Interim 537 Plan, action is required to alleviate the current sanitary sewer interceptor system hydraulic bottleneck in the Trexlertown area. The Upper Western Lehigh Pump Station and Force Main is the recommended alternative identified in the Special Act 537 Study prepared as part of the Trexlertown Area Capacity Solution Alternatives project, and is supported by both Upper and Lower Macungie townships. Project implementation is required in order to meet the compliance timeline in the Interim Act 537 Plan. Design phase authorization was granted at the February 14, 2022 LCA Board meeting. Permit applications have been submitted to various regulatory agencies, including the DEP for a Part II Water Quality Management Permit. The force main contract was advertised for bid on October 16 with a bid opening date of November 17, 2023. Construction mobilized in April 2024 and is approximately 40% complete. The pump station contract was advertised for bid on May 2, 2024 and bids were opened on May 29, 2024. Capital Project Authorization is being requested at the June 10, 2024 Board meeting to award the construction contract as well as Professional Services Authorizations for construction engineering and inspection services. Staff Responsibility: Amy Kunkel

WASTEWATER PROJECTS – SUBURBAN DIVISION

Project Title: Spring Creek Pump Station Upgrades

Division / Funding: Suburban Division

Board Action Date: 6/24/2024

Status or Action Desired: Approval

Project Phase: Construction Phase

Project Notes: The Spring Creek Pump Station is an integral component of the Western Lehigh Sewerage service area. The station was constructed in 1996 and an upgrade project was completed in 2018. Equipment continues to age and become obsolete and this project is intended to address operational concerns, most notably the replacement of the pump variable frequency drives (VFDs). An electrical condition evaluation was performed by Keystone Consulting Group to determine the extent of electrical improvements that are needed, and the recommendations of the evaluation were incorporated into an RFP for design phase services, which was issued early May 2023. Authorization for design phase was approved at the 6/26/23 LCA Board meeting. The project was advertised for bid on May 13, 2024 and bids will be opened on June 11, 2024. Capital Project Authorization is being requested at the June 24, 2024 Board meeting to Award the construction contract as well as Professional Service Authorizations for construction engineering and inspection services. Staff Responsibility: Amy Kunkel

WASTEWATER PROJECTS – ALLENTOWN DIVISION

Project Title: Kline's Island WWTP - Wet Weather Improvements - Phase 1

Division / Funding: Allentown Division

Board Action Date: 6/10/2024

Status or Action Desired: Approval

Project Phase: Design Phase

Project Notes: This project is to advance the preliminary design to final design for the three wet weather flow capacity projects at the Kline's Island Wastewater Treatment Plant (KIWWTP): Main and Auxiliary Pump Station Improvements, Intermediate Pump Station Improvements, and Tertiary Bypass. Preliminary design was submitted to the City of Allentown for Major Capital Improvement (MCI) approval on 3/4/2024. Comments were provided by the City and a review meeting has been scheduled, and MCI approval is anticipated to be granted. These projects will increase wet-weather treatment capacity at the KIWWTP from approximately 87 million gallons per day (mgd) to more than 100 mgd. The three projects are being combined into one multi-contract project in order to leverage economy of scale and reduce the number of contractors working at the plant simultaneously. Professional Services Authorization for final design and bid phase services is being requested for approval at the 6/10/2024 Board meeting. Staff Responsibility: Amy Rohrbach

PART 2 – Project Updates – Information Items

WATER PROJECTS – SUBURBAN DIVISION

Project Title: Central Lehigh and North Whitehall Systems – Water Supply Study

Division / Funding: Suburban Division

Board Action Date: 7/8/2024

Status or Action Desired: Updated

Project Phase: Planning Phase

Project Notes: This project involves the preparation of a water supply study (the “Study”) to identify and evaluate feasible means to address current and long-term water supply needs in the Central Lehigh Division (CLD) and North Whitehall Division (NWD). Recently completed planning studies have identified the need for additional supply in these two systems. Authorization was granted at the February 14, 2022 Board meeting and the draft Study will be completed in the second quarter of 2023. From this study, additional engineering work will be initiated to develop water supply projects that enhance the region's water system resiliency and redundancy. This water supply study will serve as the backbone for the future development of a comprehensive Master Plan update for the entire LCA Suburban Division Water System. A presentation on the study's findings to date was given at the May 22, 2023 Board Meeting. A draft report was delivered in mid-January 2024 and is currently under review. A presentation from Gannett Fleming is tentatively scheduled for the July 8, 2024 Board Meeting. Staff Responsibility: Phil DePoe

WASTEWATER PROJECTS – KISS ACT 537

Project Title: Sanitary Sewer Collection System: City of Allentown Manhole Inspection/Rehabilitation

Division / Funding: Allentown Division

Board Action Date: 7/8/2024

Status or Action Desired: Updated

Project Phase: Planning Phase

Project Notes: As part of the Act 537 planning process, a rainfall derived inflow and infiltration (RDII) analysis was performed in the first quarter of 2022 for the City of Allentown system. This analysis shows the overall system suffers from inflow problems. Some of the existing manholes in the City system have inflow dishes and some have been previously inspected. However, due to the critical nature of Act 537 planning, all the manholes need to be inspected. The inspections and subsequent rehabilitation work will be phased over the next 10 years. The Phase 1 inspection commenced in the second quarter of 2023 and the Phase 2 inspections (and Phase 1 rehab work) will be completed in 2024. The Program will continue until all manholes in the City system have been inspected and rehabilitated as necessary. Board authorization for the Phase 1 inspection work was granted at the December 12, 2022 meeting. As 537 planning progressed in the first half of 2023, the City's Trout Creek Interceptor Basin was identified as being undersized for future peak flow events. In order to expedite the elimination of inflow in this area, an amendment to the December 2022 manhole inspection authorization was granted at the August 14, 2023 Board meeting. The design for the 2024 manhole rehabilitations are currently underway (approximately 1450 manholes have been inspected to date). This first rehab package is tentatively scheduled to bid in June with a Board authorization request in July. Staff Responsibility: Phil DePoe

WASTEWATER PROJECTS – ALLENTOWN DIVISION

Project Title: Sanitary Sewer Collection System: I&I Source Reduction Program (LCA Year 2)

Division / Funding: Allentown Division

Board Action Date: 7/8/2024

Status or Action Desired: Updated

Project Phase: Design Phase

Project Notes: In 2023, LCA and the City of Allentown collaborated to prepare a 10 Year inflow & infiltration (I&I) source reduction plan, and the first year of construction was authorized in 2024. The plan, along with the I&I reduction plans developed by the other municipalities in the Kline's Island Sewer System, is required for the regional Act 537 Plan currently under development. LCA Board authorized the year 2 design and bid phases at the May 20, 2024 meeting. LCA anticipates seeking Board authorization of the source identification, reduction and performance monitoring at the first meeting in July 2024. Construction phase to follow in 4th quarter 2024. Staff Responsibility: Jason Peters

PART 3 – Open Project List – No Updates

Project Category	Project Title	Division / Funding	Project Phase	Staff Responsibility
Finance & Administration	LCA Strategic Plan - Quarterly Progress Reporting	All Divisions	n/a	Liesel Gross
Finance & Administration	Project Management / Construction Management Software Installation & Setup	All Divisions	Planning Phase	Jason Peters
Finance & Administration	Capital Works Planning Room Organizing, Secure Storage and Digitizing - Phase 2	All Divisions	Planning Phase	Matt Dorner
Finance & Administration	LCA Munis ERP System Planning & Re-Implementation	All Divisions	Planning Phase	Chris Moughan & Brooke Neve
Finance & Administration	Asset Management Roadmap & Strategic Asset Management Plan (SAMP)	All Divisions	Planning Phase	Albert Capuzzi
System Operations	Suburban Water Facilities - SCADA System Upgrade	Suburban Division	Construction Phase	Chris Moughan
System Operations	Watershed Monitoring Program	Suburban Division	Planning Phase	Andrew Moore
Water - Suburban	Water Main Replacement Program Cycle 7	Suburban Division	Construction Phase	Jason Peters
Water - Suburban	Fixed Base Meter Reading Stations	Suburban Division	Planning Phase	Amy Kunkel
Water - Suburban	Upper System Pump Station and Main Extension	Suburban Division	Design Phase	Amy Kunkel
Water - Suburban	North Whitehall Meter Replacement	Suburban Division	Construction Phase	Amy Kunkel
Water - Suburban	Suburban Division Lead Service Line Inventory Program & Compliance Planning	Suburban Division	Planning Phase	Matt Dorner
Water - Suburban	Water Main Replacement Program Cycle 7 & 8	Suburban Division	Design Phase	Jason Peters
Water - Allentown	Allentown Division Lead Service Line Inventory Program & Compliance Planning	Allentown Division	Planning Phase	Matt Dorner
Water - Allentown	Water Main Replacement Program Cycles 7 & 8	Allentown Division	Construction	Jason Peters

Project Category	Project Title	Division / Funding	Project Phase	Staff Responsibility
Water - Allentown	Lehigh River Pump Station Upgrades	Allentown Division	Planning Phase	Amy Rohrbach
Water - Allentown	Water Main Replacement Program Cycles 9 - 11	Allentown Division	Design Phase	Jason Peters
Water - Allentown	Lead Service Line Replacement Project Cycle 2	Allentown Division	Design Phase	Albert Capuzzi
Water - Allentown	Water Filtration Plant: Emergency Power Design	Allentown Division	Design Phase	Amy Rohrbach
Water - Allentown	Water Filtration Plant: Filter Upgrade Project	Allentown Division	Construction Phase	Amy Rohrbach
Water - Allentown	Lead Service Line Replacement Project Cycle 1	Allentown Division	Design Phase	Jason Peters
Water - Allentown	30" & 36" East Side Transmission Main Repair Project	Allentown Division	Design Phase	Jason Peters
Water - Allentown	Water Filtration Plant: PFAS Compliance Study	Allentown Division	Planning Phase	Albert Capuzzi
Water - Allentown	Large Diameter Valve Rehabilitation & Replacement Program	Allentown Division	Design Phase	Matt Dorner
Water - Allentown	Lead Service Line Replacement Program Planning	Allentown Division	Planning Phase	Andrew Moore
Water - Allentown	Water Filtration Plant: 2022-2023 Indenture Upgrades	Allentown Division	Construction Phase	Chuck Volk
Sewer - Act 537	Kline's Island WWTP - High-Rate Wet-Weather Treatment Pilot Study	Allentown Division	Planning Phase	Phil DePoe
Sewer - Act 537	Regional Sewer Capacity & Wet-Weather Planning - Regional Act 537 Plan Preparation	City of Allentown (AO)	Planning Phase	Phil DePoe
Sewer - Act 537	Legal Services: Development of New Intermunicipal Agreement(s)	City of Allentown (AO)	Planning Phase	Liesel Gross
Sewer - Act 537	KISS Act 537 Planning - Financial & Institutional Evaluation, Phase 2	City of Allentown (AO)	Project Closeout	Liesel Gross
Sewer - Act 537	KISS System Modeling - Sewage Billing Meter QA/QC Data Analytics and 2021 Flow Metering Preparation	City of Allentown (AO)	Planning Phase	Phil DePoe

Project Category	Project Title	Division / Funding	Project Phase	Staff Responsibility
Sewer - Act 537	KISS Act 537 Planning - Selection of Solution (SOS) Phase	City of Allentown (AO)	Planning Phase	Phil DePoe
Sewer - Act 537	Industrial Pretreatment Plant Master Plan	Suburban Division	Planning Phase	Phil DePoe
Sewer - Act 537	Regional Sewer Capacity & Wet-Weather Planning: Engineering & Program Support	Suburban Division	Planning Phase	Phil DePoe
Sewer - Act 537	KISS Relief Interceptor Pre-Design Study	Suburban Division	Planning Phase	Phil DePoe
Sewer - Act 537	Western Lehigh Interceptor Municipalities Test & Seal Lateral Grouting Project	Suburban Division	Construction Phase	Jason Peters
Sewer - Act 537	Western Lehigh Service Area - Engineering & Program Support	Suburban Division	Planning Phase	Phil DePoe
Sewer-Suburban	Pretreatment Plant - Critical Upgrades	Suburban Division	Design Phase	Chuck Volk
Sewer - Suburban	Park Pump Station Phase 2 Upgrade	Suburban Division	Construction Phase	Amy Kunkel
Sewer - Suburban	Heidelberg Heights Sanitary Sewer Consent Order & Agreement	Suburban Division	Construction Phase	Matt Dorner
Sewer - Suburban	Arcadia WWTP Screening System Project	Suburban Division	Design Phase	Matt Dorner
Sewer - Suburban	Lynn Township WWTP Final Clarifier Project	Suburban Division	Design Phase	Matt Dorner
Sewer - Suburban	Pretreatment Plant (PTP) Near-Term Facility Improvements	Suburban Division	Preliminary Design Phase	Albert Capuzzi
Sewer - Suburban	Western Lehigh Manhole Rehabilitation Project - Phase 4	Suburban Division	Construction Phase	Jason Peters
Sewer - Suburban	North Whitehall Township Act 537 Plan	Suburban Division	Planning Phase	Phil DePoe
Sewer - Suburban	Pretreatment Plant (PTP) Electrical Study	Suburban Division	Planning Phase	Albert Capuzzi
Sewer - Suburban	Heidelberg Heights Wastewater Treatment Plant - Mechanical Screen Project	Suburban Division	Construction Phase	Chuck Volk

Project Category	Project Title	Division / Funding	Project Phase	Staff Responsibility
Sewer - Suburban	Spring Creek Force Main Relocation - PA Turnpike Commission	Suburban Division	Design Phase	Amy Kunkel
Sewer - Suburban	Lynn Township Corrective Action Plan	Suburban Division	Planning Phase	Jason Peters
Sewer - Suburban	Sand Spring WWTP: Treatment Process Modification	Suburban Division	Design Phase	Chuck Volk
Sewer - Suburban	LCA Meter Stations 1 and 2 Upgrades	Suburban Division	Design Phase	Phil DePoe
Sewer - Allentown	Kline's Island WWTP - Final Settling Tanks 1-4 Upgrades	Allentown Division	Design Phase	Amy Rohrbach
Sewer - Allentown	Kline's Island WWTP: Master Plan	Allentown Division	Planning Phase	Chuck Volk & Amy Rohrbach
Sewer - Allentown	Kline's Island WWTP - Primary Sludge System Upgrades	Allentown Division	Design Phase	Amy Rohrbach
Sewer - Allentown	Kline's Island WWTP - Septage Receiving and Vacuum Truck Unloading Modifications	Allentown Division	Construction Phase	Amy Rohrbach
Sewer - Allentown	Kline's Island WWTP: Substation No. 1 and Switchgear Replacement	Allentown Division	Construction Phase	Amy Rohrbach
Sewer - Allentown	Kline's Island WWTP: 2023-2024 Architectural and Structural Upgrades	Allentown Division	Construction Phase	Amy Rohrbach
Sewer - Allentown	Kline's Island WWTP: Solids Process Boiler and HVAC System Upgrade Project	Allentown Division	Construction Phase	Chuck Volk
Sewer - Allentown	Lehigh Street (Rte. 145) Water and Sewer Main Relocation Project	Allentown Division	Construction Phase	Jason Peters
Sewer - Allentown	Kline's Island WWTP: Secondary Digester Cleaning	Allentown Division	Construction Phase	Amy Rohrbach
Sewer - Allentown	Sanitary Sewer Collection System: I&I Source Reduction Program (LCA Year 1)	Allentown Division	Construction Phase	Jason Peters