

**LEHIGH COUNTY AUTHORITY**

April 27, 2015

**BOARD MEETING AGENDA**

1. Call to Order
2. Review of Agenda
  - *Review Board Discussion items, April 2015 – June 2015*
  - *Public Participation Sign-In Request*
3. Executive Sessions
4. Approval of Minutes
  - *March 23, 2015 Regular Meeting Minutes*
  - *April 13, 2015 Workshop Meeting Minutes*
5. Public Comments
6. Election of Chairman
7. Action / Discussion Items

**FINANCE AND ADMINISTRATION**

**WATER**

- *Allentown Division – Water System Hydraulic Model Approval*
- *Allentown Division – Water Main Replacement Program- Cycle 2 Approval (will be sent under separate cover)*

**WASTEWATER**

- *Western Lehigh Sewerage Partnership (WLSP) Alternatives Evaluation Approval*
  - *Lowhill Township Sewer System Acquisition Approval*
8. System Operations Overview
  9. Staff Comments
  10. Solicitor's Comments
  11. Other Comments
  12. Adjournment

<b>MAY MEETINGS</b>	
Workshop Meeting	May 11 – 12:00 p.m.
Board Meeting	May 26 – 12:00 p.m.

**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. 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.

**BOARD ACTION/DISCUSSION ITEMS  
APRIL 2015 – JUNE 2015**

<b>PRIORITY*</b>	<b>PROJECT/ISSUE</b>	<b>TYPE OF ACTION</b>	<b>TIMING**</b>
<i>AS NEEDED</i>			
<b>H</b>	Acquisition/Growth Strategy Activities	Status Report	As needed
<b>L</b>	Jordan Creek Wastewater Plant	Status Report	As needed
<b>M</b>	Strawberry Acres – AARC - Sewer System	Status Report	As needed
<b>H</b>	Strategic Plan Update	Status Report	As needed
<b>H</b>	Wastewater Capacity Program Update	Status Report	As needed
<i>WITHIN 45 DAYS</i>			
<b>M</b>	Hydro-Pneumatic Pump Station Upgrade (Pine Lakes of Lynn) Design Phase	Approval	May (B)
<b>M</b>	Conversion of Telog satellite locations to full SCADA control	Approval	May (B)

*WITHIN 75 DAYS*

\* **H – High**  
**M – Medium**  
**L – Low**

\*\* **(W) – Workshop**  
**(B) – Board**  
**(W/B) - Either**

**REGULAR MEETING MINUTES**  
**March 23, 2015**

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The Regular Meeting of the Lehigh County Authority was called to order at 12:15 p.m., on Monday, March 23, 2015, Vice Chairman Tom Muller presiding. Other Members present at the commencement of the meeting were: Richard Bohner, Brian Nagle, Ted Lyons, Norma Cusick, Scott Bieber and Linda Rosenfeld. Authority Staff present were Aurel Arndt, Liesel Adam, Bradford Landon, Frank Leist, Robert Kerchusky, Pat Mandes, Kevin German, Pete Burkhardt, John Parsons, Jason Gruber and Lisa Miller.

Tom Muller commented that regrettably, Asa Hughes was not reappointed to the Board by the County Commissioners.

**REVIEW OF AGENDA**

**EXECUTIVE SESSION**

Mr. Arndt stated there would be an Executive Session at the end of the regular meeting to discuss a personnel issue; one action item under Staff Comments to discuss Boston Beer service rates and one informational item as well under Staff Comments.

**APPROVAL OF MINUTES**

**January 26, 2015 Regular Meeting Minutes**

On a motion by Richard Bohner, seconded by Norma Cusick, the Board unanimously approved the Minutes of the January 26, 2015 Regular Meeting (7-0). Linda Rosenfeld abstained.

**February 23, 2015 Regular Meeting Minutes**

Richard Bohner noted that on the second page under Staff Comments, the first sentence in the fifth paragraph, the word "which" needs to be deleted. Mr. Bieber also noted that it must be noted that he arrived at 1:00 PM to the meeting. In consideration of all the changes, Richard Bohner recommends approving the Minutes.

On a motion by Richard Bohner, seconded by Norma Cusick, the Board unanimously approved the Minutes of the February 23, 2015 Workshop Meeting (7-0).

**PUBLIC COMMENTS**

None.

**ACTION AND DISCUSSION ITEMS**

**2014 Risk Management Report**

Kevin German presented the 2014 Annual Risk Management Report along with a PowerPoint presentation. The program is designed to maintain a high safety awareness level throughout the workplace. The Risk Management Team will be investigating the market for better pricing on Workers Compensation and General Liability insurances. Security issues were discussed.

On a motion made by Brian Nagle, seconded by Norma Cusick, the Board unanimously approved the 2014 Risk Management Annual Report (7-0).

**Knowledge Management Update & SharePoint Program Implementation**

Liesel Adam reviewed the background of the project along with a PowerPoint presentation. Ms. Adam is asking for approval of the Capital Project Authorization Amendment No. 2 in the amount of \$66,900 and the Professional Services Authorization Amendment No. 2 in the amount of \$31,900 to GHD to provide management consulting services and IT services to design and implement a SharePoint program for LCA. SharePoint is a software tool that will allow all LCA employees greater access to information while providing document control. Discussion followed.

Ted Lyons left the meeting at 1:20 p.m.

On a motion by Richard Bohner, seconded by Norma Cusick, the Board unanimously approved the Capital Project Authorization Amendment No. 2 for the SharePoint Program Implementation in the amount of \$66,900 and the Professional Services Authorization to GHD in the amount of \$31,900 (6-0).

**Presentation of 2014 D & C Concession Work**

Along with a PowerPoint presentation, Jason Gruber presented the 2014 Workload Reports regarding the construction, maintenance, and repair items performed by personnel in the Sewer Line Maintenance and Water Distribution Departments. The Board thanked him for his informative presentation.

**SYSTEM OPERATIONS OVERVIEW**

Robert Kerchusky noted that flows are up due to the snow melt and increase in rain. The flow has also increased at Kline's Island. Arcadia is still struggling with the ammonia issue.

**STAFF COMMENTS**

Pat Mandes presented the Board with a memorandum regarding the Boston Beer 2015 Wastewater Rates. She provided a brief background of the Boston Beer Agreement. She is requesting approval of the 2015 Wastewater Rates listed on the table presented to the Board.

On motion by Richard Bohner, seconded by Norma Cusick, the Board unanimously approved the 2015 Wastewater Rates for Boston Beer as presented (6-0).

**SOLICITOR'S COMMENTS**

None.

**OTHER COMMENTS**

None.

**EXECUTIVE SESSION**

The Vice Chairman called for an Executive Session at 2:10 p.m. to discuss a personnel issue. Tom Muller left the Executive Session at 2:20 p.m. The session ended at 2:48 p.m.

**ADJOURNMENT**

There being no further business, the Vice Chairman adjourned the meeting at 2:48 p.m.

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Richard H. Bohner  
Secretary

**WORKSHOP MEETING MINUTES**  
**April 13, 2015**

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The Workshop Meeting of the Lehigh County Authority was called to order at 12:07 p.m., on Monday, April 13, 2015, Vice Chairman Tom Muller presiding. Other Members present at the commencement of the meeting were: Linda Rosenfeld. Since this was a Conference Call meeting, the following members were on the phone for the conference call: Richard Bohner, Brian Nagle, Emrich Stellar, Norma Cusick and Ted Lyons. Authority Staff present were Aurel Arndt, Bradford Landon, Ed Bielarski, Frank Leist and Lisa Miller.

Also present was Kevin Reid from King, Spry, Herman, Freund & Faul, LLC ("KingSpry").

**ACTION AND DISCUSSION ITEMS**

**Resolution 4-2015-1, Proposal for Water Revenue Bond (Approval)**

Ed Bielarski gave an overview of the Proposal for the Series 2015 Water Revenue Bond. He is seeking authorization for the purpose of refunding on the Authority's 2010AA Water Revenue Bonds. With the assistance of Concord Financial, LCA solicited 28 local banks regarding lower interest rates. ESSA bank was chosen because of its lower rates. Mr. Reed addressed questions and explained fees. Some discussion followed. Mr. Reed summarized the structure of the Resolution.

On a motion made by Emrich Stellar, seconded by Norma Cusick, the Board unanimously approved Resolution 4-2015-1. Roll call vote was taken:

Mr. Muller – yes  
Ms. Rosenfeld – yes  
Mr. Bohner – yes  
Mr. Stellar – yes  
Ms. Cusick – yes  
Mr. Lyons – yes  
Mr. Nagle - yes

**OTHER COMMENTS**

*None.*

**ADJOURNMENT**

There being no further business, the Vice Chairman adjourned the meeting at 12:22 p.m.

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Richard H. Bohner, Secretary

**FINANCE & ADMINISTRATION**

**ACTION ITEMS**

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1. *None.*

**DISCUSSION ITEMS**

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**INFORMATION ITEMS**

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**1. CMMS Upgrade and Expansion Project**

Pilot Configuration of the CityWorks application is complete. Pilot phase training for plant personnel was completed the week of November 17th and December 8th. Android and iOS tablets are being evaluated by plant and field personnel. 'Go Live' was completed on schedule during the week of March 9, 2015 with follow up training conducted April 14-16.

**2. WEB Map Upgrade Project**

CDM has delivered the updated web map for LCA testing and evaluation. Refinements suggested during the testing phase are being completed. The map will be rolled out to all employees in May.

**3. Recently Purchased Investments – Certificates of Deposit (CDs)**

Fund	Bank	Location	Gross Amount	Date of Purchase	Date Due	Net Rate %
LLRI CR	PSDLAF Collateralized CD		400,000.00	3/24/15	6/23/15	0.10
Cons Wtr (2)	PSDLAF Collateralized CD		155,000.00	3/24/15	6/23/15	0.10
Cons LL2 (314)	PSDLAF Collateralized CD		245,000.00	3/24/15	6/23/15	0.10
WW Capac	PSDLAF Collateralized CD		600,000.00	3/24/15	6/23/15	0.10
2010 Wtr Cons A	PSDLAF Flex Pool		2,500,000.00	3/24/15	6/23/15	0.10
Wtr R&R	PSDLAF Collateralized CD		1,000,000.00	3/24/15	6/23/15	0.10
Cons Wtr (2)	BMW Bank of North America	Salt Lake City, Ut	249,000.00	3/27/15	2/27/17	0.80

**Fund Descriptions for Investments:**

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

**WATER**

**ACTION ITEMS**

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**1. Allentown Division – Water System Hydraulic Model**

The project will develop a fully calibrated, all-pipe, hydraulic model of the Allentown Division (AD) water system that will be integrated with LCA's GIS and MUNIS systems, and the Central Lehigh Division model that Gannett Fleming had developed in 2011. This project will be funded by LCA. A memo, Capital Project Authorization and Professional Services Authorization with Gannett Fleming to develop the hydraulic model are attached for Board approval (**green**).

**2. Allentown Division – Water Main Replacement Program- Cycle 2**

The project will replace the required two-miles of main for the second year “cycle 2”. An additional 48 LF of water main will be installed outside of this requirement due to installations mainly occurring from intersection to intersection, thus allowing future replacements to be easily extended without interruptions in service to customers in the area. The project was advertised for bid on March 20, 2015. A mandatory pre-bid meeting was held on March 31, 2015 and representatives of 14 contracting firms attended. Bids were received on April 17, 2015. Approval of the Construction Phase is requested at the Board meeting (**goldenrod**)

**DISCUSSION ITEMS**

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**INFORMATION ITEMS**

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**1. Arcadia West Pumping Station Modifications**

The Substantial Completion punch list was given to the general and electrical contractors to complete. SCADA system punch list items are also being addressed. **No current activity.**

**2. Pine Lakes of Lynn Township Pump Station Upgrade**

Currently this pump station is a hydro-pneumatic system that has proven to be problematic over time. This project will convert the hydro-pneumatic operated equipment to a variable frequency drive controlled double pumping system (along with other miscellaneous improvements). A request for Board approval of the design phase is anticipated at the May Board meeting.

**3. Allentown Division- Schantz Spring Chlorination Issue**

The project is to design and construct a facility or improvements that assure continuous chlorination of the Schantz Spring water supply. Barry Isett Inc. has completed an engineering study of chlorination options. A conceptual design was submitted to the City and it was approved. PADEP permit applications are being prepared and all materials have been ordered so installations may begin. This Project is identified as Un-Completed Work and will be funded by the City.

5. **Suburban Division - Water Main Replacement Program Cycle 1**

The project consists of the replacement of 1-mile of aged and/or failing Cast Iron water main. Design is currently under way.

6. **Allentown Division – Prelease Valve Replacements**

The project is the replacement of approximately 55 inoperable valves in multiple locations throughout the City that existed prior to the lease settlement. . Design is currently under way. This project is identified as Un-Completed Work and will be funded by the City.

7. **Developments**

Water system construction is occurring in the following developments:

- Estates at Mill Race, 26 residential lots (sfd), LMT
- Parkland Fields, Phase 3, 37 residential lots (sfd), UMT
- Valley West Estates, Phases 4, 5 & 6, 46 residential lots (sfd), UMT (currently on hold)

Water system plans are being reviewed for the following developments:

- Above & Beyond (personal care facility), 2 commercial lots, UMT
- Diocesan Pastoral Center, 2 commercial lots, 3 additional lots and residual lot for existing cemetery, LMT
- Fields at Indian Creek, 218 residential lots (sfd) & community center, LMT/UMiIT/Emmaus, water and sewer
- Grandview, 6 commercial units and 204 apartment units, LMT
- Grant Street Townes, 18 residential lots (sfa), WashT
- Hickory Park Estates, 3 residential lots (sfd), UMT
- Hillview Farms, 31 residential lots (sfd), LMT/SWT
- Indian Creek Industrial Park, 6 commercial lots, UMiIT, water and sewer
- Lehigh Hills, 247 residential lots (sfa/sfd), UMT
- Liberty at Mill Creek, 2 industrial lots, UMT
- Morgan Hills, 40 residential lots (sfd), WeisT, water and sewer
- North Whitehall Commercial Center (Walmart), 5 commercial lots, NWT, water and sewer
- Shepherd's Corner, 1 commercial lot, LMT
- Trexler Business Center, Lot 1, 1 commercial building, LMT
- Weilers Road Twins, 82 residential lots (sfa), UMT
- Woodmere Estates, 60 residential units (sfd), UMT



## WASTEWATER

### ACTION ITEMS

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1. **Western Lehigh Sewerage Partnership (WLSP) Alternatives Evaluation**

We recommend approval of the Arcadis Scope of Work for WLSP Alternatives Evaluation. The attached memo, Professional Services Authorization Amendment, and Capital Improvements Authorization Amendment will be presented to the Board for consideration. Refer to the memo and Professional Services Authorization (*salmon*)

2. **Lowhill Township Sewer System (System) Acquisition**

A report summarizing the transfers of the Lowhill Township Sewer System to LCA is attached. The Township has requested that LCA consider taking over service in the Township and has approved the attached Service Agreement. We recommend approval of the Agreement and authorization for CEO to execute the Agreement and other documents related to the transfer of the System (*blue*)

### DISCUSSION ITEMS

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1. *None.*

### INFORMATION ITEMS

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1. **Wastewater Treatment Capacity**

A Public Outreach event has been scheduled for April 29<sup>th</sup> to bring the stakeholders up to date on the evaluation of alternatives.

2. **Wynnewood Terrace Pump Station and Force Main Replacement**

Work started on April 13, 2015, and is expected to be complete by the end of August.

3. **Park Pump Station Fuel Tank Replacement**

The installation of a new 8,000 gallon fuel tank began November 10, 2014. Most of the work is complete, except for final restoration. Completion is expected by the end of May 2015.

4. **Lynn Township – WWTP Improvements, Phases 1 & 2**

The project will upgrade the WWTP head works. Gannett Fleming is finalizing the bid package. *No current activity.*

5. **Condition Assessments for Suburban Division Package Wastewater Treatment Plants**

Capital Works staff will be soliciting proposals to conduct condition assessments of the Wynnewood Terrace and Sand Spring Wastewater Treatment Plants. A Condition Assessment is a review/evaluation of all physical components of a facility, utilizing industry accepted asset management protocols to determine its current condition; and provide recommendations and estimated costs for rehabilitation/improvements. A Request for Proposals (RFP) will be released in April, with due date later that month.

6. **Allentown Division – Sanitary Sewer Manhole Lining, Cycle -2**

This annual project will install a lining system (to eliminate infiltration) in approximately 85 aged brick manholes identified by LCA staff. The project is identified as Administrative Order Work and will be funded by the City. The design phase has been administratively approved. A request for Board approval of the construction phase is anticipated in June.

7. **Allentown Division – Manhole Collars with Water Tight Frame and Covers – Cycle -2**

This three year project will permanently secure the frame and cover of approximately 76 aged brick manholes identified by current LCA staff. This work will eliminate inflow from entering these manholes and eliminate the potential for sanitary sewer overflows (SSO's) from these manholes. The project is identified as Administrative Order will be funded by the City. The design phase has been administratively approved. A request for Board approval of the construction phase is anticipated in June.

8. **Allentown Division - WWTP-Replacement of Motor Control Centers**

This Project will replace five aged motor control centers that provide power on a 24/7 basis to various parts of the WWTP. The Construction Phase of the project has been approved by the Board. Notice to Proceed has been sent to both contractors and a pre-construction meeting was held on 2/13/15. Various submittals are currently in the approval process. This Project is identified as Schedule 7 project and will be funded by LCA.

9. **Allentown Division – Roof Rehabilitation and Replacements**

The Project consists of replacing 26 facility roofs that were identified as in need of immediate replacement in the Roof Evaluation report performed by D'Huy Engineering. The design of these replacements are proceeding. The project was presented to the City for review/approval as a Major Capital Project, but the city rejected it as such. Bid specifications are being finalized for all 26 roofs. A PLA study is underway to determine applicability to this project. The project will be funded by LCA.

10. **SCADA System Installation – Kline's Island Wastewater Treatment Plant**

All documents have been signed and the Kickoff Meeting was on Tuesday, March 17. This project is identified Un-Completed Work and will be funded by the City.

11. **Allentown Division – WWTP: Digester Cover Replacements**

This project involves the cover replacement of both the Primary Digester No. 1 and the Secondary Digester (the cover for Primary Digester No. 2 was previously replaced in 2010). This Project is identified as Schedule 7 project and will be funded by LCA. The Design Phase has been approved and a kick-off meeting was held in February 2015. A request for Board approval of the construction phase is anticipated in October 2015.

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## MEMORANDUM

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**Date:** April 14, 2015

**To:** Authority Board  
**From:** Edward Hoyle, Frank Leist  
**Subject:** Allentown Division  
Water System Hydraulic Model

**MOTIONS / APPROVALS REQUESTED:**

No.	Item	Amount
1	Capital Project Authorization	\$381,300
2	Professional Services Authorization – Gannett Fleming, Inc. (1)	\$234,800

*(1) Included in the Capital Project Authorization.*

**PROJECT OVERVIEW:**

Because there is no hydraulic model of the Allentown Division (AD) water system, Lehigh County Authority (LCA) intends to retain the services of Gannett Fleming, Inc. to develop a fully calibrated, all-pipe, hydraulic model of the Allentown Division water system that will be integrated with its GIS and MUNIS systems. The new AD water model will be fully integrated with the Central Lehigh Division (CLD) model that Gannett Fleming had developed in 2011. The two systems are currently interconnected by a 24" main approximately 2.5 miles in length. The model will be able to analyze the carrying capacity of older pipes in the city, as well as perform other applications such as those mentioned below under the consultant selection process. It will also be a key tool in the water optimization study that will evaluate ways to optimize the use of the combined water capacities of both the CLD and Allentown Division for cost effective utilization in both divisions.

The project will provide appropriate documentation and training so that LCA personnel will have the ability to maintain, update, and when applicable, perform system analyses. The Bentley hydraulic modeling software license will be upgraded from the current 10,000-pipe version to the unlimited pipe version.

**FINANCIAL:**

The project will be funded by LCA.

**CONSULTANT SELECTION PROCESS:**

Gannett Fleming's prior role in developing the CLD model makes it the best choice to develop the water model for the AD to assure seamless integration. Gannett was selected over three other engineering firms to develop the CLD model. The CLD model, which utilizes Bentley hydraulic modeling software, was nominated as one of three world finalists for how innovative data integration processes are being applied to improve water utility planning. Participants from Gannett and an LCA employee attended the Bentley *Be Inspired* conference that was held in Amsterdam. The Allentown model will utilize the techniques developed for the earlier model to integrate the GIS and MUNIS systems with the model.

Gannett is also familiar with the AD water system through their on-going work with LCA with the main replacements and coagulation study at the water filtration plant. In addition they also worked with the City to prepare some technical portions of the Concession Agreement.

The following table summarizes the professional services to be performed:

<b>Professional Services</b>	
1.	Kickoff Meeting
2.	GIS & MUNIS-Model Integration
3.	Model Development: Steady State & Extended Period Simulations
4.	Field Testing
5.	Calibration
6.	Model Analyses: <ul style="list-style-type: none"> <li>• Water Age Analysis</li> <li>• Fire Flow Analysis</li> <li>• Huckleberry Ridge Tank Analysis</li> <li>• Schantz Spring Pump Station Increased Supply Analysis</li> <li>• Western End of System Low Pressure Analysis</li> </ul>
7.	Training

While only the analyses listed above are included in the project, the model provided to LCA will be calibrated to be capable of performing other applications such as deficiency analysis, growth and extension evaluations, operational analysis, emergency response, capital improvement planning and basic energy analyses.

**PROJECT SCHEDULE:** Gannett Fleming, Inc. has estimated that the project will take approximately 14 months to complete, therefore extending into the 2016 budget year. A project kick-off meeting will be scheduled upon Board authorization of the project.

## CAPITAL PROJECT AUTHORIZATION

<b>PROJECT NO.:</b>	AD-W-15-3	<b>BUDGET FUND:</b>	Allentown Div\Water\Capital
<b>PROJECT TITLE:</b>	Allentown Division Water System Hydraulic Model	<b>PROJECT TYPE:</b>	<input checked="" type="checkbox"/> Construction <input type="checkbox"/> Engineering Study <input type="checkbox"/> Equipment Purchase <input type="checkbox"/> Amendment
<b>THIS AUTHORIZATION:</b>	\$381,300		

**DESCRIPTION AND BENEFITS:**

Gannett Fleming, Inc. will be retained to provide a fully calibrated, all-pipe, hydraulic model of the Allentown Division water system. The model will be integrated with LCA's GIS and MUNIS systems. The model will analyze water age and fire flow capabilities in the system as well as several areas of reduced storage and pressure. The model will be calibrated to be capable of performing other applications such as deficiency analysis, growth and extension evaluations, operational analysis, emergency response, capital improvement planning and basic energy analyses. The Bentley hydraulic modeling software license will be upgraded from the current 10,000-pipe version to the unlimited pipe version. The project is estimated to take 14 months to complete.

Please reference the cover Memo for additional information.

**Authorization Status:**

<b>REQUESTED THIS AUTHORIZATION</b>	
<b>All Phases</b>	
<b>Staff</b>	\$ 70,000
<b>Engineering Consultant</b>	234,800
<b>Software Upgrade</b>	5,500
<b>Miscellaneous</b>	35,000
<b>Contingencies</b>	36,000
<b>Total This Authorization</b>	\$ 381,300

**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:** Gannett Fleming, Inc.  
PO Box 67100  
Harrisburg, PA 17106

**Date:** April 14, 2015  
**Requested By:** Edward Hoyle

**Approvals**  
**Department Head:** \_\_\_\_\_  
**Chief Executive Officer:** \_\_\_\_\_

**Description of Services** (*Work Scope, Steps, Check Points, etc.*):

Gannett Fleming, Inc. will perform the professional services outlined below to develop a fully calibrated hydraulic model of the Allentown Division water system and run authorized analyses, all as identified in the attached Proposal submitted on March 30, 2015.

Professional Services	
1.	Kickoff Meeting
2.	GIS & MUNIS-Model Integration
3.	Model Development: Steady State & Extended Period Simulations
4.	Field Testing
5.	Calibration
6.	Model Analyses:
	a. Water Age Analysis
	b. Fire Flow Analysis
	c. Huckleberry Ridge Tank Analysis
	d. Schantz Spring Pump Station Increased Supply Analysis
	e. Western End of System Low Pressure Analysis
7.	Training

*Please reference the cover Memo for additional information.*

**Cost Estimate** (*not to be exceeded without further authorization*):

The various tasks to be performed are detailed in the Gannett Fleming proposal. The tasks shall be performed for a total not-to-exceed fee of \$234,800.

**Time Table and Completion Deadline** (*either party may terminate upon thirty days written notice*):

The work shall be completed by Gannett Fleming within 14 months after receiving the notice to proceed.

**(For Authority Use Only)**

**Authorization Completion:**

**Approval:** \_\_\_\_\_ **Actual Cost:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**PROFESSIONAL SERVICES AUTHORIZATION  
INDEMNIFICATION  
Allentown Division  
Water System Hydraulic Model**

(To be signed by Professional and returned to Lehigh County Authority)

I am or represent the Professional indicated above, and as such I am authorized to:

- Accept the terms of the professional services authorization dated April 14, 2015 attached; and
- Agree to indemnify and hold harmless Lehigh County Authority (LCA), the City of Allentown, their employees, agents, officials, representatives, attorneys, and assigns from any and all liability, arising out of all activities conducted by the Consultant in connection with this contract and/or the Consultant's performance hereof, including but not limited to payment of all fees for its/their attorneys and all incidental litigation expenses in the event LCA or any of its employees, agents, officials, representatives, attorneys, and assigns are sued upon a claim emanating from the Consultant's performance thereof. Professional shall not, however, be liable for any portion of a judgment nor associated litigation expenses, including attorney's fees, ultimately determined to be the result of the negligence of LCA.

\_\_\_\_\_  
Name (signature):

\_\_\_\_\_  
Name (printed)

Title: \_\_\_\_\_



## Lehigh County Authority

1053 Spruce Street \* P.O. Box 3348 \*  
(610)398-2503 \* FAX (610)398-8413 \* Email: ser

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### MEMORANDUM

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**Date:** April 20, 2015

**To:** Board of Directors & Management Staff  
**From:** Pat Mandes  
**RE:** WLSP Alternatives Analysis

#### Approvals Requested

Approvals Requested	Brief Description	Amount
Capital Project Authorization Amendment (21) Professional Services Authorization (21)	Consulting Services Arcadis	\$249,000

#### Background

In 2008, the Department of Environmental Protection (DEP) required LCA and the Signatories to generate a Corrective Action Plan for the areas identified as having significant infiltration and inflow (I&I) conditions. In addition, the Environmental Protection Agency (EPA) has issued a Compliance Order to the City of Allentown, LCA and all municipalities tributary to the City WWTP to eliminate all SSOs within a five year period (2014). In late 2014, LCA representing the Western Lehigh Sewerage Partners (WLSP), the City, and several City Signatories requested an extension from EPA.

The LCA 2009-2017 Signatory I&I Investigation & Remediation Project Capital Plan was developed so that LCA could take the lead in working with the Signatories to address the overload and SSO issues. A Sewer Capacity Assurance & Rehabilitation Program (SCARP) Outline was drafted by Arcadis that provides a formalized and planned method of evaluating the LCA and Signatory systems, prioritizing and conducting sewer rehabilitation by all the LCA Signatory Partners.

#### Project Scope

**WLSP Alternatives Analysis** – Arcadis will utilize the Klines Island Sewer System (KISS) model to identify the best solutions for conveying future dry and wet weather flows through the year 2040. The ultimate rehabilitation of the system to comply with the EPA Order and DEP Corrective Action Plan and to meet the desired level of service goals will be a combination of several rehabilitation solutions including storage within the system (such as the flow equalization basin (FEB)), I & I removal, and conveyance expansion.

The preliminary alternatives analysis previously performed narrowed down the many different combinations of the above methods of rehabilitation to address the current and future peak and dry weather flows.

Based on the results of the preliminary alternatives analysis, the final alternatives analysis will utilize the KISS model to evaluate up to 15 general alternative descriptions. The alternatives will be located and sized to eliminate the sanitary sewer overflows (SSOs) and meet operating goals.



The alternative scenarios will be costed for both capital and operating costs to determine the cost effectiveness of each of the alternatives. The alternatives will be ranked based on effectiveness, constructability, timeliness, capital cost, and lifecycle cost. For the three most preferred alternatives, an estimate of total life-cycle costs will be prepared.

**CAPITAL PROJECT AUTHORIZATION  
AMENDMENT NUMBER 21**

**PROJECT No.:** S-08-5 **BUDGET FUND:** WLI Sewer Capital

**PROJECT TITLE:** Signatory I & I Investigation/Remediation Program **PROJECT TYPE:**

**TOTAL PROJECT THIS AUTHORIZATION** **Prior:** \$3,866,831 **Current:** \$249,000

Construction  
 Engineering Study  
 Equipment Purchase  
 Amendment

**DESCRIPTION AND BENEFITS:**

**Full Project Overview:**

Based on the EPA Compliance Order and the PADEP Chapter 94 requirements, LCA and the LCA Signatories are required to reduce infiltration and inflow from the system and eliminate SSOs from the LCA and Signatory sewer systems within a five year period (2014). The SCARP Program has been developed to investigate the sources of I & I and to remediate areas identified as having excessive I & I. The SCARP Program consists of engineering tasks necessary to define and quantify the problems, to evaluate methods of redress and to determine the corrective actions required to meet the regulatory requirements.

**WLSP Alternatives Analysis**

Arcadis will utilize the Klines Island Sewer System (KISS) model to identify the best solutions for conveying future dry and wet weather flows through the year 2040. The preliminary alternatives analysis previously performed narrowed down the many different combinations of the above methods of rehabilitation to address the current and future peak and dry weather flows. Based on the results of the preliminary alternatives analysis, the final alternatives analysis will utilize the KISS model to evaluate up to 15 general alternative descriptions. The alternatives will be located and sized to eliminate the sanitary sewer overflows (SSOs) and meet operating goals.

The alternative scenarios will be costed for both capital and operating costs to determine the cost effectiveness of each of the alternatives. The alternatives will be ranked based on effectiveness, constructability, timeliness, capital cost, and lifecycle cost. For the three most preferred alternatives, an estimate of total life-cycle costs will be prepared.

Previously Approved		This Amendment	Total Approval
Flow Monitoring ADS (thru 2014)	\$1,775,031		\$ 1,775,031
Flow Monitoring TFE			
Engineering Consulting	\$1,781,800	\$249,000	\$2,030,800
Rehabilitation			
Staff	\$300,000		\$300,000
Contingencies	\$10,000		\$10,000
<b>Totals</b>	<b>\$ 3,866,831</b>	<b>\$249,000</b>	<b>\$4,115,831</b>

**REVIEW AND APPROVALS:**

Pat Mandes 03/19/2015 \_\_\_\_\_  
 Project Manager Date Chief Executive Officer Date

\_\_\_\_\_  
 Capital Works Manager Date Chairman Date



Lehigh County Authority

1053 Spruce Street \* P.O. Box 3348 \* Allentown, PA 18106-0348  
(610)398-2503 \* FAX (610)398-8413

**PROFESSIONAL SERVICES AUTHORIZATION**

**AMENDMENT NUMBER 21**

**Professional:**

Arcadis  
Jim Shelton  
640 Freedom Business Center  
King of Prussia, PA 19406

**Date:** 03/19/2015

**Requested By:** Pat Mandes

**Approvals**  
**Department Head:** \_\_\_\_\_

**Chief Executive Officer:** \_\_\_\_\_

**Description of Services (Work Scope, Steps, Check Points, etc.):**

This is an amendment to the current Arcadis authorization for the WLI Infiltration and Inflow Project: The work covered by this amendment includes WLSP Alternative Analysis.

Alternative Analysis includes alternative evaluation planning and COA coordination. The work will include optimization of KISS model run times, determination of common design storm and level of service, planning workshops, alternative evaluation and cost estimates.

The scope of work is described in more detail in the proposal dated March 2, 2015.

**Cost Estimate (not to be exceeded without further authorization):** This amendment is not to exceed \$249,000 for WLI Alternative Analysis. With this amendment the total authorization for the I&I Program consulting will be \$1,954,000.

**Time Table and Completion Deadline:**

January 2015 through December 2015.

**(For Authority Use Only)**

**Authorization Completion:**

**Approval:** \_\_\_\_\_ **Actual Cost:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Capital Project S-08-05, Signatory I & I Investigation/Remediation Program



Ms. Pat Mandes  
Wastewater Services Director  
Lehigh County Authority  
P.O. Box 3348  
Allentown, PA 18106

ARCADIS U.S., Inc.  
640 Freedom Business Center  
Suite 310  
King of Prussia  
Pennsylvania 19406  
Tel 610.768.5813  
Fax 610.768.5817  
[www.arcadis-us.com](http://www.arcadis-us.com)

Subject:  
Western Lehigh Sewer Partnership (WLSP) Alternatives Analysis

Dear Ms. Mandes:

ARCADIS is pleased to provide Lehigh County Authority (LCA) with this scope and budget for WLSP Alternatives Analysis to reduce sanitary sewer overflows in the WLSP sewer systems and to help evaluate the impact of wet weather flows on City of Allentown (COA) interceptor systems and treatment capacity. This work is being done as the next step of the Sewer Capacity Assurance and Rehabilitation Program (SCARP) alternatives evaluation. It will provide the definition of capital improvements to meet wet weather conveyance needs through 2040. This work is being conducted in concert with engineering teams from the COA and other non-WLSP signatories, with the goal of presenting an aligned, mutually synergistic, and rational plan of action for addressing wet weather issues being regulated by PADEP as part of the required response to the LCA Chapter 94 actions and by USEPA as part of the required response to the Administrative Order. This work will be completed in accordance with Section 3.8.1 of the SCARP Program Approach Outline and the current Path Forward prepared in Fall 2014 in concert with the COA.

Date:  
March 2, 2015

Contact:  
Tony Dill

Phone:  
484.688.0380

Email:  
[Anthony.Dill@arcadis-us.com](mailto:Anthony.Dill@arcadis-us.com)

Our ref:  
0247

## **OBJECTIVES**

The goal of this work is to identify the best solutions for conveying future dry and wet weather flows through 2040 while maintaining previously established level of service operating goals. This work will primarily consider the interests of the members of the WLSP, but will also consider flow, operating, and cost impacts on COA and other Klines Island signatories. A plan of analysis has been established between LCA and COA whereby an iterative style of alternative analyses will be conducted first by LCA, with the results of that work feeding into and informing COA analysis, then back again to the LCA team to start another round of refining evaluations. This work builds on the preliminary work conducted by ARCADIS in 2014.

## **SCOPE OF WORK**

### **Task 1 – Alternatives evaluation planning and COA coordination**

This task includes several sub-tasks related to preparation for initiating the alternatives evaluations.

#### **Optimization of KISS model run times**

The 2014 Klines Island Sewer System (KISS) model, which combines both the 2009 WLSP model and the 2008 COA model with 2014 calibrating flow and rain data, is very large and requires considerable computer time to run each iteration. Efforts will be made to adjust the model or revise the run schemes in order to provide reasonable run times for alternative analysis.

#### **Determination of common design storm and level of service**

The peak flow recurrence methods used to identify the LCA historical storm utilized for compliance evaluations as well as the current LCA level of service will be presented to COA during a workshop. These criteria will be compared to the current COA design storm and level of service. The workshop's primary goal will be to determine what storm conditions should be used to model wet weather flows in the various portions of the entire KISS model.

#### **Initial planning workshops**

Prepare for and attend two initial planning workshops with the COA representatives to discuss and plan the approach to executing the alternatives evaluations and associated modeling work.

### **Task 2 – KISS alternative evaluation for 2040 planning horizon**

Working with LCA, ARCADIS will define up to 15 general alternative descriptions to manage wet weather flows in 2040 using various combinations of conveyance, storage, and rainfall derived inflow and infiltration (RDII) reduction improvements.

Then, using the 2014 KISS model, these alternatives will be iteratively located and sized to so as to eliminate overflows and meet operating goals. Work will focus on components through the Park Pump Station (PPS), though impact on the Little Lehigh Interceptor (LLI) and the Klines Island WWTP (KIWWTP) headworks influent will also be evaluated. No effort will be given to analyzing changes to wet weather management practices of COA or of non-WLSP signatories, as the COA engineering team is charged with that work.

For each alternative, pipe lengths, diameters and depths; storage tank sizes and pumping needs; pump station capacities; force main diameters, lengths, and general routing; and locations and miles of pipe, laterals, and manholes rehabilitated will be determined. Flow hydrographs at Keck's Bridge, Spring Creek Road Pump Station (SCRPS) force main discharge, the Little Lehigh Relief Interceptor (LLRI) and Allentown-Emmaus Interceptor (AEI) just upstream of the Park Pump Station (PPS), LLI between confluence with Cedar Creek Interceptor (CCI) and KIWWTP, and the discharge from the PPS force main will be provided to the COA modeling team to support their evaluations.

Alternative analyses will be conducted in three Rounds. Round 1 will consist of a WLSP cycle using the 2014 KISS model without extended groundwater pre-storm modeling and conducted by ARCADIS followed by a COA cycle (using the COA model with 2040 flows and I&I creep added and conducted by Whitman Requardt), with flow data from the WLSP cycle being used as input data for the COA cycle. Round 2 will serve to refine the Round 1 alternatives and be similarly conducted using two cycles. Round 3 will be a single cycle of a short list of complete alternatives (i.e., upgrades for all portions of the KISS) using the 2014 model with full groundwater modeling and conducted by ARCADIS.

This task includes a long-term simulation to determine annual average and typical dry day flow in 2040.

Multiple workshops to collaborate ideas, share results, and seek direction will be conducted.

### **Task 3 – Cost Estimates**

A cost estimating spreadsheet tool scalable to all aspects of the alternative analysis will be prepared.

After defining the components of each alternative, a preliminary opinion of probable capital and operating costs will be developed (+/- 30%). For the three most preferred alternatives, an estimate of total life-cycle costs will be prepared. Treatment plant costs related to the Industrial Pre-treatment Plant (IPP) and the KIWWTP will be taken directly from the Act 537 Plan Report draft.

## **DELIVERABLES AND WORKSHOP**

No reports will be developed during this work. All work products will be presented in workshops in the form of PowerPoint presentations, tables, graphs, model runs, and cost estimates.

For the purposes of this scope and budget, we have assumed the following workshops as part of Task 2 (except where noted):

1. Workshop 1 – Will be a half day meeting with LCA and COA to discuss and plan our collective approach to executing the alternatives evaluation and associated modeling work. (Task 1)
2. Workshop 2 – Will be a half day engineering meeting with LCA and COA engineering teams to refine the iterative alternative evaluation process, conduct discussions regarding design storm and level of service to be used in each portion of the model, and determine initial alternatives to be evaluated under the COA model updated for future flows. (Task 1)
3. Workshop 3 – Will be a half day engineering meeting with LCA, COA engineering team, the WLSP engineering team, and the 537 Plan engineering team to define the first round of 8-12 WLSP alternatives (WLSP Round 1 FAA), review design storm and level of service goals for various portions of the non-WLSP systems, collaborate and gather treatment plant costs and feasibility information, and establish cost estimating methods.
4. Workshop 4 – Will be a half day engineering meeting to review the results and cost estimates of the WLSP Round 1 FAA with WLSP engineering team and share flow data from these alternatives with COA.
5. Workshop 5 – Will be a half day engineering workshop with COA to receive the results of COA Round 1 alternative analyses.
6. Workshop 6 – Will be a half day engineering workshop with the WLSP engineering team to review the COA Round 1 analyses and to define the WLSP Round 2 FAA.
7. Workshop 7 – Will be a half day engineering meeting to review the results and cost estimates of the WLSP Round 2 FAA with WLSP engineering team and share flow data from these alternatives with COA.
8. Workshop 8 – Will be a half day engineering workshop with COA to receive the results of the COA Round 2 FAA.
9. Workshop 9 – Will be a half day engineering meeting to preliminarily select 2-4 complete alternatives (i.e., upgrades for all portions of the KISS) to run using the 2014 model with full groundwater modeling.

10. Workshop 10 – Will be a half day signatory meeting to review the Round 1 and Round 2 results and to select 2-4 complete alternatives (i.e., upgrades for all portions of the KISS) to run using the 2014 model with full groundwater modeling.
11. Workshop 11 – Will be a half day signatory meeting to review the results and cost estimates of the Round 3 FAA.

**BUDGET ESTIMATE**

We estimate that the cost of these services will be \$249,000. We propose to complete these services on a time and materials basis in accordance with the Agreement between LCA and Malcolm Pirnie, Inc. and the current Summary of Standard Charges for Lehigh County Authority. We will not exceed this budget without prior authorization from LCA. Payment for services will be based upon the actual labor and expenses incurred.

Please contact me with your authorization to proceed if this scope and budget are acceptable to you. If you have any questions please do not hesitate to call me at 484-688-0380 or 610-761-3253 (mobile).

Sincerely,

ARCADIS U.S., Inc.

A handwritten signature in blue ink that reads "Tony Dill". The signature is written in a cursive, flowing style.

Tony Dill, PE, BCEE  
Program Manager – Buried Infrastructure Team

C: Jim Shelton, ARCADIS  
Tanya McCoy-Caretti, ARCADIS



## Lowhill Township Wastewater System Acquisition Overview

### Executive Summary

Lowhill Township proposes to transfer its wastewater collection system (system) and its customer base as well as \$50,000 in system revenue to Lehigh County Authority. The system discharges successively into the Weisenberg Township System, the Upper Macungie System and the Western Lehigh Interceptor before final treatment at the Allentown Wastewater Treatment Plant.

### System Description

The System serves 43 customers in the Pointe West Development in the vicinity of Rt. 100 north of Fogelsville (A map showing the system is attached). The System was built between 1988 and 1994 and is comprised of 3850 feet of plastic sewer lines, 43 PVC laterals and 18 manholes. Wastewater flows by gravity to the Weisenberg System then to the Upper Macungie System, where it's then pumped to the LCA's Western Lehigh Interceptor.

### System Revenues and Expenses

System Revenues are derived from user charges and total approximately \$15,200/year based upon average customer discharge of 69,000 gallons per year (17,250 gpg). The rate schedule is a combination of a flat fee which includes allowable consumption up to 22,500 gpg plus a volume charge for discharges above the allowance.

#### Lowhill Rate Schedule Per Quarter

Fixed Fee - \$85.00

Includes up to 22,500 gallons per quarter

Volume Charge - \$2.61/1000 gal above 22,500 gallons per quarter

### System Expenses

Actual/Budgeted 2014/2015 Expenses total approximately \$ \_\_\_\_\_, leaving net revenue of about \$ \_\_\_\_\_ per year.

Major expenses include Treatment and Transportation (Western Lehigh Interceptor charges) of approximately \$8000 and payments to Upper Macungie Township Authority for transmitting flow through that system \$ \_\_\_\_\_.

### Acquisition Agreement

The acquisition agreement, also known as the Wastewater Service Agreement (WWSA) is similar to past agreements for small system acquisition. In addition to standard provisions in such agreements, the WWSA provides the following:

- Conveyance of the System plus \$50,000 in cash to LCA. The system is transferred "As Is".

- LCA commitment to serve properties in the System service are in accordance with LCA Rules & Regulations and maintain the System.
- LCA will set rates that are “reasonable and uniform” which may be set for a combination of LCA Systems.
- For future addition, Lowhill will grant, at no cost, easement in its roads and other property, and access to current easements for maintenance and repair of existing lines.
- Lowhill must approve and/or request future extension in the Township which can be accomplished by approval of development plans.
- Lowhill may acquire the System if it pays all costs and liabilities related to it. If so, it must maintain ownership for at least 10 years.

The proposed WWSA, which has been approved by Lowhill, is attached.

#### Future Operation and Management

Suburban LCA personnel will operate the system and provide all support services.

Current rates applicable to the “Common Rate Systems” (Upper Milford, Weisenberg Townships) will be applicable to the Lowhill customers.

Fixed Rate - \$21.00/quarter  
(No usage allowance)  
Volume Charge \$4.53/1000 gal

Given the differences between the rate components, approximately 42% of the customers will see reduced rates and 58% will see increased rates. The rate variation will run from -52% to +54%. Total Revenues will increase by about \$1800/year (total \$17000/yr).

# **WASTEWATER SERVICE AGREEMENT**

## **LOWHILL TOWNSHIP**

THIS AGREEMENT, dated for convenience this \_\_\_\_\_ day of \_\_\_\_\_ 2015,  
by and between

**LOWHILL TOWNSHIP** (hereinafter the "Township"), a township of the second class organized and existing under the laws of the Commonwealth of Pennsylvania with its principal office located at 700 Herber Road, New Tripoli, Pennsylvania

and

**LEHIGH COUNTY AUTHORITY** (hereinafter the "Authority"), a Pennsylvania municipal authority organized and existing under the Pennsylvania Municipality Authorities Act located at 1053 Spruce Street, Wescosville, Pennsylvania

WITNESSETH:

WHEREAS, the Authority is and has been developing regional wastewater and water systems in the Lehigh Valley; and

WHEREAS, the Authority and the Township are negotiating the conveyance of all the assets of the wastewater system in Lowhill Township necessary for the provision of wastewater service within the Township (hereinafter "Service Area" and shown on a plan attached hereto as Appendix A) to the Authority; and

WHEREAS, the Township Supervisors have acted in their official capacity to request the Authority to provide wastewater service to properties within the Service Area (hereinafter the wastewater facilities within that Service Area referred to as the "Wastewater System") pursuant to the terms of this Agreement; and

WHEREAS, the parties hereto desire to set forth the terms and conditions which shall be applicable to the Authority acquisition of the Wastewater System as well as the collection, transmission and treatment of wastewater by the Authority from the Wastewater System after such acquisition.

NOW THEREFORE, the Authority and the Township for and in consideration of covenants, promises and agreements herein contained, to be kept and observed, each intending to be legally bound hereby, covenants and agrees as follows:

1. The Township shall convey to the Authority, and the Authority agrees to accept, the Wastewater System, which Service Area at the time of this Agreement is shown on a plan attached hereto as Appendix A. The Township conveys the Wastewater System "as is" to the Authority with no warranties. Even after acquisition of the Wastewater System, the Township shall retain its responsibilities in §1 to maintain a current "State of the Art" plumbing code, including provisions similar to and in compliance with those of Upper Macungie Township through which sewage flows from the

Wastewater System, and to enforce the requirements of such plumbing code.

On the settlement date, the Township shall deliver to the Authority the following:

A. Deeds, agreements or assignments, as applicable depending on the title being conveyed, whereby title to all real property interests are conveyed by the Township to the Authority free and clear of all liens and encumbrances, including an Assignment of Easements, Rights and Interests conveying all present wastewater easements, rights and interests held by the Township, substantially in the form attached hereto as Appendix B; and

B. A Bill of Sale whereby any and all of the personalty comprising the Wastewater System owned by the Township, as listed therein, are transferred to the Authority free and clear of all liens and encumbrances; and

C. Appropriate certified resolution(s) of the Township authorizing the performance of the terms of this Agreement; and

D. Assignment of all Township accounts receivable in regard to the Wastewater System and all of its rights to collect such accounts including assignment of any municipal liens the Township may have filed in this regard; and

E. Assignment to the Authority of such manufacturer, contractor, service, or other warranties as the Township may have, applicable to the assets to be transferred, as well as all records, plans, sketches, customer lists, sewer quality analyses, etc., relating to the Wastewater System; and

F. Copies of any necessary third party approvals, if any, including the agreement and addenda with Upper Macungie Township Authority for use of its pump station and transmission system (attached hereto as Appendix D).

2. The Township shall, with the conveyance of the Wastewater System, pay to the Authority, the sum of fifty-thousand (\$50,000) dollars, from the Township Sewer Fund. Said sum shall be separately accounted for within the assets of the Authority to provide for ongoing expenses associated with the Wastewater System for the Service Area which, but for the availability of these funds, would cause the rates to the customers within the Service Area to be increased.

3. The Township represents and warrants to the Authority that:

A. There are no legal proceedings pending or threatened against the Township in any court or jurisdiction involving the Wastewater System.

B. The Township has not defaulted under any agreement or any other instrument to which the Township is a party or by which the Township is bound, which default could result in a lien, attachment or encumbrance upon the property herein conveyed.

C. The Wastewater System facilities herein conveyed were constructed in good workmanlike manner and as of the date of Settlement those facilities are properly and efficiently operating.

4. The Authority covenants and agrees, where feasible, to furnish wastewater collection, transportation and treatment service in perpetuity, unless the provisions of §§9 and 10 transpire, to properties within the Wastewater System. Service shall be in accordance with the Authority's Rules and Regulations and at "reasonable and uniform" rates which the Authority may adopt from time to time. In establishing such rates, the Authority may combine the costs of any or all areas within its entire system where it provides wastewater service and establish a single rate schedule for such combination of

service areas. The Township shall be supplied with the Authority's rate schedules for wastewater service which shall be kept current and shall also be notified by the Authority in advance of any proposed rate changes to such schedules.

The Authority also agrees to develop and maintain general specifications for construction of wastewater systems for use in its systems, including in the Township, and the Township agrees to require that all central wastewater systems constructed within the Township be constructed in compliance with those general specifications. To implement these provisions, the Township shall require that all subdivision plans in areas the Township has determined are to be served by central wastewater service be submitted to the Authority for review and comment prior to any preliminary approvals or disapprovals. The Authority shall review these subdivision plans to ascertain if central wastewater service is feasible and to determine if design is in compliance with the general specifications for construction of wastewater systems developed by the Authority. Determinations of feasibility for purposes of this review shall be made solely by the Authority.

The Authority covenants to require construction of all of its wastewater facilities in compliance with the Township's Official Sewage Facilities Plan, as amended from time to time.

5. The Authority covenants and agrees to maintain the Wastewater System in good repair and operating condition; to operate the same continuously in an economical and efficient manner; and to make all repairs, renewals, replacements and improvements thereto as required to maintain adequate wastewater service in the Township. The Township agrees to timely pass all ordinances necessary for proper operation and maintenance of the Wastewater System, including those required for the Authority to be able to comply with state and federal laws and regulations in the operation of the Wastewater System.

6. In regard to any future additions to the Wastewater System, as well as those conveyed pursuant to this Agreement, the Township agrees to grant and convey to the Authority at no cost any and all easements in public roads and in other properties owned by the Township which are necessary for the construction of wastewater facilities, provided that the Authority shall, after construction, return the surface of such easements as nearly as possible to their preconstruction condition. The Township agrees to permit the Authority without further authorization, payment of fees or security to excavate in easements in public roads and in other properties owned by the Township for the purpose of maintaining, improving, expanding, extending and repairing said wastewater mains and facilities provided the Authority promptly notifies the Township of such excavation and, after such work is completed, restores the surface of said easements as nearly as possible to its preconstruction condition. Township further agrees to cooperate with the Authority in obtaining other easements necessary for the Authority to provide the wastewater services, including but not limited to the exercise of eminent domain.

7. Upon request by the Township, the Authority shall provide professional advice on wastewater-related matters identified by the Township. The costs of such services, including overhead costs, shall be reimbursed to the Authority by the Township, unless the Authority agrees otherwise.

8. The parties understand and agree that the Authority will make no extensions of or connections to the Wastewater System to serve properties beyond the Service Area unless the Township requests or consents in writing to such an extension. Township approval of land development plans that provide for public wastewater service

shall be considered Township consent. Any extensions and connections to the Wastewater System shall be in accordance with all of the Authority's then-current applicable rules, regulations and policies. If a Wastewater System extension is requested by the Township to provide wastewater service which benefits existing residential, commercial or industrial buildings, the Township covenants and agrees to adopt appropriate ordinances whereby properties in proximity to the extension will be required to connect to the Wastewater System and pay assessments and charges levied by the Authority.

9. The Township shall have the right to acquire ownership of the Wastewater System in the Township. This acquisition is conditioned upon the payment of all costs of the Authority associated with the Township's acquisition; the assumption of any outstanding Authority indebtedness financing the purchase of, capital improvements to, or operation of such wastewater facilities; and the conditions of any orders and/or agreements between the Authority and other governmental entities, which may include assumption of Authority liabilities under such orders and/or agreements. Furthermore, any such acquisition is conditioned upon ownership and operation of the Wastewater System by the Township, a Township municipal authority or another municipal entity for a period of at least ten years after acquisition; and if such not be the case, it shall be the Authority's option to reacquire all these wastewater facilities under the same conditions as set out above. Six months' notice of intent must be given to the Authority prior to any acquisition under the terms of this section of the Agreement. Should such an acquisition transpire, title to all easements, rights-of-ways, pipes, mains, fittings, manholes, pumping stations and other appurtenances constituting parts of the Wastewater System within the Township shall be conveyed by the appropriate party.

10. If any successor of the Authority or any trustee, receiver, officer, board, commission, agency, instrumentality or other person to whom or which any right, power or duty of the Authority may be transferred, voluntarily or involuntarily, shall come into possession of the Wastewater System then all covenants herein by, on behalf of or for the benefit of the Authority, as well as all obligations, liabilities and responsibilities of the Authority pertaining to the Wastewater System, to the extent permitted by law, shall bind or inure to the benefit of such successor in possession of the Wastewater System.

11. The Authority hereby agrees to indemnify and hold the Township harmless from any and all liability arising out of the Authority's performance and obligations under the terms of this Agreement. The Authority shall not, however, be liable for any portion of a judgment nor associated litigation expenses, including attorney's fees, ultimately determined to be the result of the negligence or willful misconduct of the Township, or any of its employees, agents and officials.

12. The Authority and Township mutually agree that this Agreement replaces all previous agreements between the parties in regard to wastewater service in Lowhill Township, other than agreements to which the Township is a signatory as a result of use of the Western Lehigh Interceptor, and sets forth the guidelines by which wastewater service will be provided by the Authority in the Township.

13. If any provision hereof shall be held to be invalid, such invalidity shall not affect any other provision hereof, and the remaining provisions hereof shall be construed and enforced as if such provision had not been contained herein.

14. The Laws of the Commonwealth of Pennsylvania shall govern interpretation hereof.

15. The parties agree that the terms and conditions of this Agreement are the result

of negotiations between the Parties and that this Agreement shall not be construed in favor of or against any Party by reason of the extent to which any Party or its professional advisors participated in the preparation of this Agreement.

16. If any term or other provision of this Agreement is invalid, illegal or incapable of being enforced by any rule of law or public policy, all other conditions and provisions of this Agreement shall nevertheless remain in full force and effect so long as the economic or legal substance of the transactions contemplated hereby is not affected in any manner adverse to any party. Upon such determination that any term or other provision is invalid, illegal or incapable of being enforced, the parties hereto shall negotiate in good faith to modify this Agreement so as to effect the original intent of the parties as closely as possible in an acceptable manner to the end that the transactions contemplated hereby are fulfilled to the greatest extent possible.

17. This Agreement may be executed in multiple counterparts, each of which shall be regarded for all purposes as an original, and such counterparts shall constitute but one and the same instrument.

18. This Agreement shall be binding upon the parties and their respective successors and assigns.

IN WITNESS WHEREOF, the Lowhill Township and Lehigh County Authority each has caused this Agreement to be duly executed and attested by its proper officers, pursuant to proper action of its governing body, all as of the day and year first above written.

*Attest:*

**LOWHILL TOWNSHIP**

\_\_\_\_\_  
Jill Seymour  
Secretary

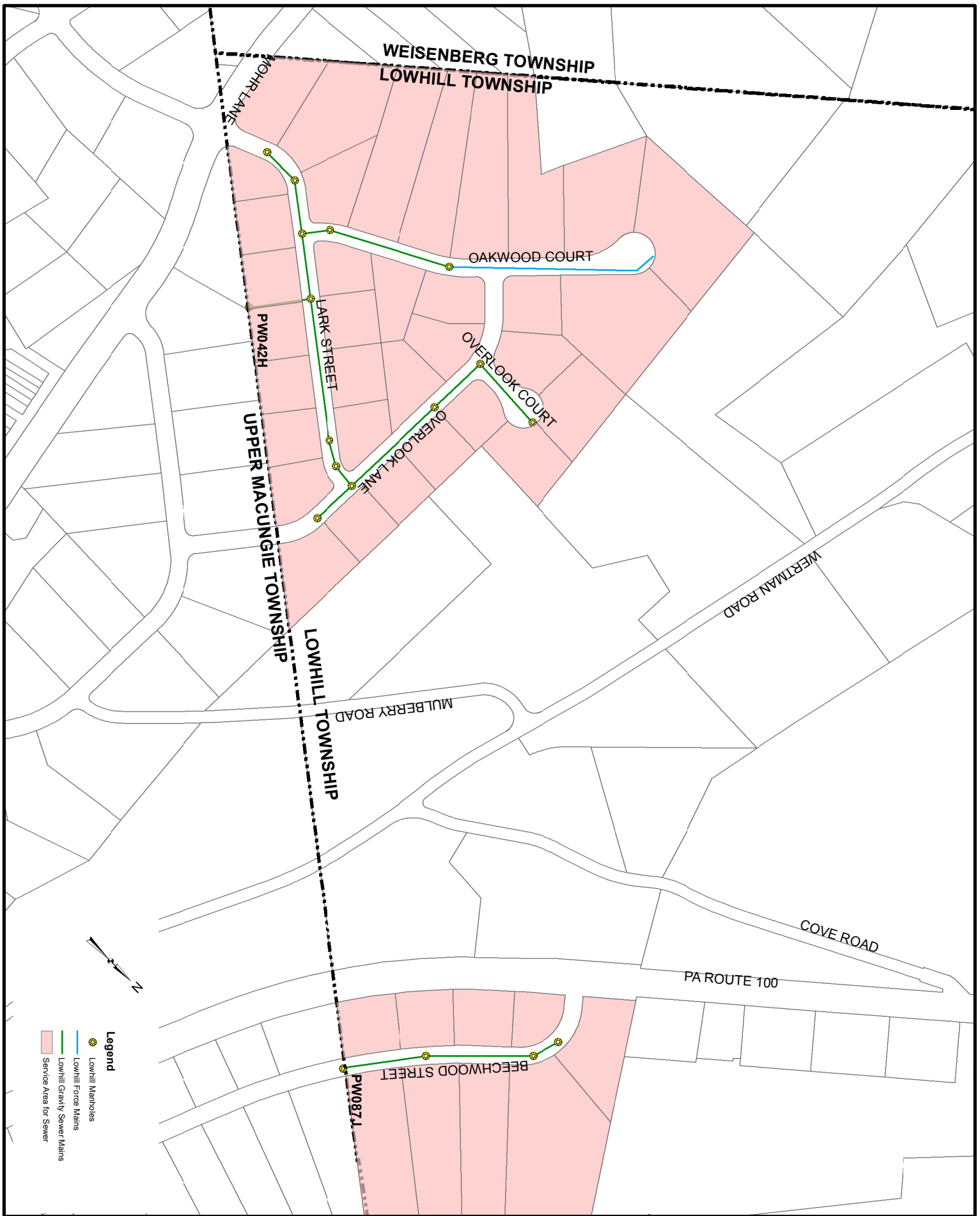
By: \_\_\_\_\_  
Richard B. Hughes  
Chairman

*Attest:*

**LEHIGH COUNTY AUTHORITY**

\_\_\_\_\_  
Bradford E. Landon  
Solicitor

By: \_\_\_\_\_  
Aurel M. Arndt  
Chief Executive Officer



- Legend**
- Lowhill Manholes
  - Lowhill Force Mains
  - Lowhill Gravity Sewer Mains
  - Service Area for Sewer

DESIGN: JLK  
 DRAWN: JLK  
 CHECKED BY: TAM  
 DATE: 2015  
 JOB NUMBER: LOW15-007  
 SHEET: 1 OF 1

REVISIONS	
DRAWN	DESCRIPTION

**OVERALL SANITARY SEWER MAP**  
**LOWHILL TOWNSHIP**  
 7000 HERBER ROAD  
 NEW TRIPOLI PA., 18066  
 LEHIGH COUNTY, PENNSYLVANIA

SCALE:  
 1" = 350'

**KCE**  
 KEYSTONE  
 CONSULTING  
 ENGINEERS INC.

**KEYSTONE CONSULTING ENGINEERS, Inc.**  
 ENGINEERING FIRM OF CHOICE SINCE 1972  
 6235 HAMILTON BOULEVARD, WESCOVILLE, PA 18106 - 610-395-0971  
 EAST OFFICE: BETHELEM, WEST OFFICE: WESCOVILLE, NORTH OFFICE: KRISGEVILLE  
 WWW.KEYSTONECONSULTINGENGINEERS.COM

Appendix A