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ANNUAL STORMWATER PROGRAM SUMMARY

FISCAL YEAR 2025

Submitted to: Bethlehem Township Municipal Authority
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R009170.0446

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EXECUTIVE SUMMARY

The 2025 Stormwater Program Summary reviews the Bethlehem Township Municipal Authority's (Authority) stormwater management operations and makes recommendations for the ensuing year.

In 2025, the Authority completed its assessment and grading of the stormwater system. This information will be used to set priorities for maintenance and rehabilitation, improve planning, and reduce the likelihood of unexpected failures. Additionally, the Authority completed two capital improvement projects, the Walnut Street Drainage Improvements Project (Walnut Street Project) and the Danberry Drive Rehabilitation Project (Danberry Drive Project).

The following table summarizes the progress made by the Authority in 2025, the progress since the program's inception in 2022, and the overall targets:

	2025	Since Program Inception (2022)	Targets
Infrastructure Installed (linear feet)	3,671	3,971	- - -
Infrastructure Rehabbed (linear feet)	405	0	Rehab strategy being discussed end of 2025
Grant Dollars Obtained	\$0.7M	\$4.9M	Pursue for Sculac Stream Restoration, Municipal Park Culvert & Easton Ave Phase 2
Construction Investment in Drainage Improvement and Flood Mitigation	\$3.3M	\$3.5M	Complete Municipal Park Culvert and Easton Ave Phase 1 & 2 in next five years
Construction Investment in Pollution Reduction	\$2.5M	\$2.5M	Complete Sculac Stream Project & Easton/Santee Phase 1A Project in next two years
Construction Investment in Infrastructure Rehabilitation	\$0.2 M	\$0.2 M	Rehab the pipe and inlets in the worst condition in 2025, and those in condition 4 and 3 in coming years

Looking ahead, it is recommended that the Authority commit to the following to further enhance stormwater management and keep the stormwater system in good repair and operating condition:

- Continue implementing and updating the Stormwater Capital Improvement Plan, considering future Municipal Separate Storm Sewer System (MS4) permit requirements as projects are planned.
- Use condition assessment data to guide and prioritize system repair and rehabilitation efforts.
- Evaluate stormwater rates to ensure sufficient funding for ongoing capital improvements and rehabilitation.
- Continue implementing Geographic Information System (GIS) tracking to monitor system conditions and identify areas needing attention.

INTRODUCTION

The 2025 Stormwater Program Summary is prepared in accordance with Section 10.01 of the Agreement of Lease, adopted December 2021.

The purpose of this Stormwater Program Summary is to review the operations of the stormwater management program during the year and set forth recommendations, both technical and financial, for the ensuing year. The Year 2025 is the fourth year in which the Bethlehem Township Municipal Authority operated as a stormwater utility.

GENERAL

The Authority is a body corporate and politic, incorporated under provisions of the Municipal Authorities Act of 1945, approved May 2, 1945, P.L. 382, as amended and supplemented, of the Commonwealth of Pennsylvania, pursuant to an Ordinance of the Board of Commissioners of the Township of Bethlehem, Northampton County, Pennsylvania (the "Township").

The Township is subject to the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System Permit.

The Authority presently consists of the following members:

David Thomsen	- Chairman
Ronald Gori	- Vice-Chairman
Paul Hosking	- Secretary/Treasurer
Robert Szakos	- Assistant Treasurer
Allen Billiard III	- Member

Others associated with the Authority and Township stormwater program are:

Doug Bruce	- Township Manager
Richard Kanaskie	- Public Works Director
Andy Freda	- Finance Director
Steven J. Hunsberger	- Managing Agent for the Authority
John J. Merhottein	- President, Board of Commissioners
John K. Gallagher	- Vice President, Board of Commissioners
Michael D. Hudak	- Commissioner
DeAnn L. Lawrence	- Commissioner
Matthew C. Deckman	- Commissioner
Michael Deschler, Esquire	- Authority Solicitor
Herbert, Rowland & Grubic, Inc. (HRG)	- Stormwater Engineer and Program Management
Campbell, Rappold & Yurasits LLP	- Auditor
Kevin C. Reid, Esquire	- Bond Counsel

STORMWATER MANAGEMENT FACILITIES

Bethlehem Township has a stormwater system consisting of two parts: the stormwater collection and conveyance system and the system of detention and treatment facilities. These systems work together to effectively collect, convey, and manage stormwater runoff. The Township is divided into four watersheds — Monocacy Creek, Nancy Run, Lehigh River, and Lower Bushkill Creek — each serviced by its own stormwater infrastructure. (Refer to Appendix A for the current map of the Stormwater Management Facilities.)

To ensure effective stormwater management, address flooding, and enhance water quality, the Authority is dedicated to continually improving these facilities as part of the Stormwater Program. This includes ongoing modeling and inspection of the stormwater system to identify areas of concern. In 2024, the Authority initiated the inspection and assessment of the stormwater system at its inlets. The Authority finalized the inspections this year. The completion of the stormwater system assessment allows the Authority to understand the extent of the system's needs and effectively plan projects that will provide the most benefit and ensure the stormwater system is in good operating condition.

CONVEYANCE SYSTEM

General Information

The Township stormwater system is designed to collect and convey stormwater to designated detention/treatment facilities or directly to public waterways. The public storm sewer system comprises approximately 65 miles of storm sewer ranging from 4" to 78" pipe, approximately 900 manholes and 2,900 inlets, 160 regulated outfalls, and 10 observation points.

Maintenance

On behalf of the Authority, the Township and its stormwater engineer responds to complaints of localized flooding and investigates the conveyance system in the area for signs of clogged pipes, inlets, or debris blocking swales. The Authority assesses each concern and addresses issues as needed, prioritizing them based on urgency and available resources.

The Authority completed inspection of the stormwater system. This process included inserting a camera into Township owned inlets to obtain a 360-degree view of the pipes and infrastructure. Based on the inspection, an assessment was conducted on the condition of inlets and pipes, focusing on structural defects (cracks, broken pipes, joint offsets) and functional defects (pipe blockages) to prioritize areas for repair.

Deficiencies were scored using a modified alphanumeric system adapted from the industry-standard NASSCO rating scale to reflect conditions observed from pipe-end inspections rather than full-length inspections. Results were reported on a 0–5 scale, where 5 represents the most severe condition in need of rehabilitation.

The locations are mapped in GIS along with the condition report and images. Approximately five miles of pipe were rated between 3 and 5. An infrastructure rehabilitation plan is being developed to address these higher-priority sections first. Recommendations based on this assessment are presented in the Recommendations section of this report. A map of the infrastructure rated between 3 and 5 can be found in Appendix D.

Completed Improvements

The Authority completed two infrastructure projects this year, the Walnut Street Drainage Improvement Project and the Danberry Drive Infrastructure Repair Project related to conveyance.

The Walnut Street Project was identified in the Authority's Capital Improvement Plan (CIP) due to the longstanding flooding issues in the Walnut Street and Willow Park Road drainage area due to the absence of stormwater infrastructure. To address that issue, the Authority installed over 3,500 feet of stormwater piping, 55 inlets, and upgraded existing culverts. The Walnut Street Project will mitigate the amount of runoff in the Walnut Street drainage basin from reaching residential properties during average rain events and reduce flooding of Willow Park Drive.

The Danberry Drive Infrastructure Repair Project was largely completed to address a failing corrugated metal stormwater pipe beneath the roadway that caused a sinkhole to form. The Danberry Drive Project included replacement of the damaged pipe, installation of new stormwater inlets, repair of the surrounding storm sewer system, filling of the sinkhole, and restoration of the roadway surface. While final paving is scheduled for 2026, all of the project work has been completed. These improvements were necessary to stabilize the area, maintain roadway safety, and ensure proper stormwater drainage.

DETENTION/TREATMENT FACILITIES

General Information

The Authority detention and treatment facilities consist of multiple dry-detention and bio-infiltration ponds. These detention ponds are designed to aggregate flows from multiple storm sewer sections and release the combined flow at a controlled rate, alleviating instantaneous flows downstream of the facility. The infiltration ponds serve the same purpose as the detention pond, with the added ability to infiltrate some water into the ground eliminating some volume from the system. They also provide water quality treatment in the form of sediment and nutrient load reduction. The Township operates a total of 33 detention and bio-infiltration ponds. See Appendix B for a summary of these facilities.

Maintenance

Detention and treatment facilities are passive systems and thus have longer maintenance intervals than active systems. Per Ordinance No. 05-23, dated August 21, 2023, Township staff on behalf of the Authority will inspect Township owned Best Management Practice's (BMP's) once every three years and during or immediately after the cessation of a ten-year or greater storm. Sediment accumulation is to be tracked and if excess sediment begins blocking structures or otherwise affects basin functions, it is to be removed and the area restabilized. The dry-detention basins are routinely mowed to allow access for inspections and to ensure no exotic/invasive species are present. Bio-infiltration basins are not mowed regularly to promote nutrient uptake. The basins are routinely inspected for sediment accumulation and debris.

Completed Improvements

No improvements and/or projects were completed at detention or treatment facilities in 2025.

MS4 PERMIT REQUIREMENT ACTIVITIES

During the July 1, 2024 - June 30, 2025 permit year, permit requirements were met and reported in the annual report submitted in September 2025 to the Pennsylvania Department of Environmental Protection (PADEP). All written plans were reviewed and updated as necessary during the permit year.

Additionally, updates were made to the Township website that provided additional information for the public regarding MS4 educational materials and stormwater projects being completed by the Township/Authority. Training for Public Works staff was also completed during the permit year, which focused on the MS4 program requirements and how to report and mitigate any illicit discharges.

All required inspections were completed in 2024. As a result, no inspections were conducted this year. The Authority is revising inspection priority areas and protocols to align with the proposed updated MS4 regulations, and inspections will resume under the next permit cycle.

The current MS4 permit was issued on August 7, 2024 and became effective on September 1, 2024. The current permit is set to expire August 31, 2029. The Authority reviewed the new draft permit requirements with the stormwater engineer and discussed the implications for program implementation going forward.

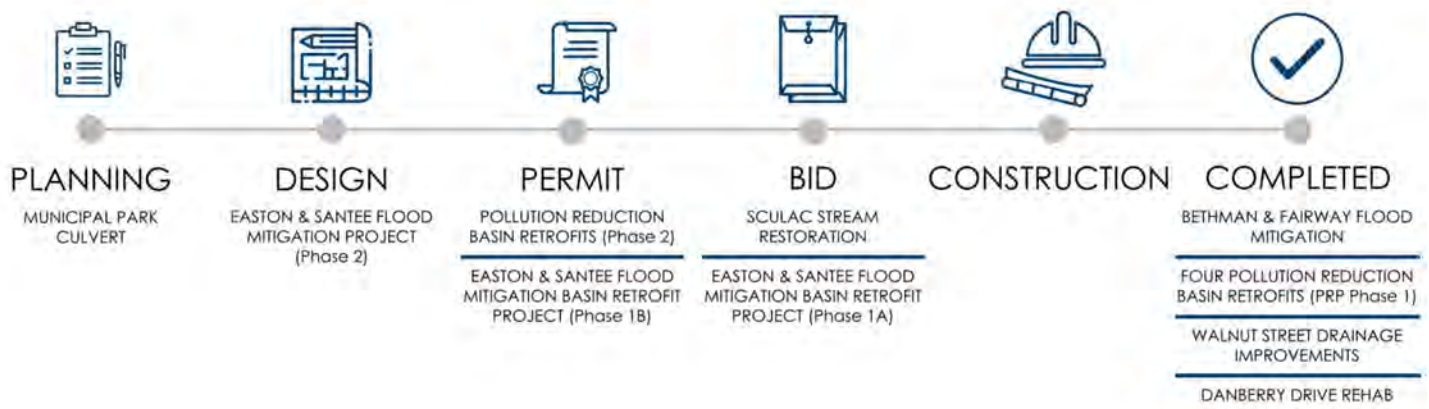
As required by the existing permit, the Annual Report submitted in September 2025 included a Pollutant Reduction Plan (PRP) Final Report. The report included the status of the PRP implementation, including all completed projects and anticipated schedule for the remaining projects. The Sculac Stream Restoration Project and Easton Avenue Phase 1A Project (as defined herein) are being completed to address the Pollution Reduction Plan requirements for the permit that ended in 2024.

PLANNED IMPROVEMENTS

CAPITAL IMPROVEMENT PLAN

Starting in 2022, the Authority established a Capital Improvement Plan to help meet the community's stormwater program needs including mitigation of decades old flooding and water quality permit requirements. Ongoing inspection and modeling of the stormwater system has enabled the Authority to better identify system needs, causing the CIP to be updated periodically. The Authority completed a rapid infrastructure assessment to evaluate the condition of the Township's storm sewer system. The results of this assessment provide a clear picture of system priorities and will allow the Authority to effectively plan future projects. These findings will assist with future updates to the CIP and help identify priority areas for project planning.

The CIP provides a path forward to proceed with engineering, design, funding, and construction of the necessary improvements to address known areas of flooding and major system improvements. The Authority recognizes that there are areas where further study is needed to fully understand the stormwater needs to better identify appropriate solutions. Each of the projects identified in the CIP are summarized below. A map of the CIP project locations can be found in Appendix C.



COMPLETED IMPROVEMENTS IN 2025

In 2025, the Authority completed the Walnut Street Drainage Improvements Project and the Danberry Drive Infrastructure Repair Project, as discussed previously in this report, both of which addressed priority flooding and infrastructure deficiencies identified in the Capital Improvement Plan.

PLANNED IMPROVEMENTS

Sculac Stream Restoration Project

The Sculac Stream Restoration Project (Sculac Stream Project) aims to restore a creek that runs upstream of Sculac Drive. Upstream of the Sculac Drive crossing, the creek has experienced significant erosion, impacting neighboring properties and exposing sanitary sewer infrastructure located near the creek bed. A feasibility study was completed to assess potential improvement options, and design and permitting have been completed. A funding application was submitted to the Pennsylvania Infrastructure Investment Authority (PENNVEST), with a funding offer anticipated in January 2026. These improvements will also contribute to meeting the MS4 PRP requirements for the Township's permit that ended in 2024.

Easton/Santee Flood Mitigation Project - Phase 1

The Easton/Santee Flood Mitigation Project – Phase 1 (Easton/Santee Phase 1 Project) is the first of a two-part project that seeks to mitigate severe flooding along Willow Park Road, Easton Avenue, Santee Road, Sunset Drive, and Clifton Avenue. In recent years, these roads have become impassable at least once per year. The Easton/Santee Phase 1 Project involves improvements to four detention basins to reduce flooding during smaller storms. In addition to mitigating flooding, the improvements will meet some of the Township's MS4 regulatory requirements.

The Easton/Santee Phase 1 Project has locations within Bethlehem Township and the City of Bethlehem (City). Because of this, an agreement has been executed to create a partnership where the PRP credit for both entities can be shared. In addition, one basin located within the Township is on private property, and the Authority is currently in the process of acquiring maintenance and construction easements.

Project design and permitting have been completed. The Easton/Santee Phase 1 Project has been further divided into Phase 1A and Phase 1B to better align with funding and permitting requirements. Phase 1A will focus on the basins located in the City and address permit requirements for the permit that ended in 2024. A funding application was submitted to PENNVEST, with a funding offer anticipated January 2026. The

Authority is also continuing to coordinate with the City for this task order. Phase 1B will focus on the basins located in the Township and will address the next MS4 permit cycle requirements.

Easton/Santee Flood Mitigation Project - Phase 2

The Easton/Santee Flood Mitigation Project – Phase 2 (Easton/Santee Phase 2 Project) builds on the Easton/Santee Phase 2 Project improvements following a Federal Emergency Management Agency (FEMA) Flood Study of the Nancy Run Watershed. Easton/Santee Phase 2 Project involves upsizing and expanding the stormwater pipe along Clifton and Sunset Roads and installing infrastructure from Sunset and Santee Roads that discharges near Nancy Run at Willow Park Road. Together with the Easton/Santee Phase 1 Project basin improvements, these enhancements are expected to significantly reduce flooding in the area. Design was initiated in the fall of 2024.

Pollution Reduction Plan Basin Retrofits Project - Phase 2

During the development of the CIP, proposed PRP projects were separated into two phases. The Pollution Reduction Plan Basin Retrofits Project - Phase 1 (PRP Phase 1 Project) was completed by the Authority in 2024 with four basins being retrofitted. The Pollution Reduction Plan Basin Retrofits Project - Phase 2 (PRP Phase 2 Project) will help meet the pollution reduction requirements under the Township's future MS4 permit. It includes retrofitting existing detention basins into bio-infiltration basins.

The PRP Phase 2 Project will include the Shelton Avenue and Country Top Trail basins. The design and permitting for these basins are complete. The PRP Phase 2 Project is currently on hold until the new MS4 permit pollution reduction requirements are released by PADEP. Because the Sculac Project provides more benefit under the past permit (but would not under the upcoming MS4 permit), the PRP Phase 2 Project was moved out to a future MS4 permit term.

Municipal Park Culvert Project

The Municipal Park Culvert Project will upgrade an existing stormwater culvert in the Nancy Run Watershed to improve streamflow and reduce flooding along Farmersville Road. The existing culvert is undersized, which causes stormwater to back up during significant rain events, creating hazardous conditions for vehicles, pedestrians, and nearby park and trail users.

The Municipal Park Culvert Project will bring the culvert up to current PADEP stormwater design standards to manage a 100-year storm event. Improvements include upsizing the culvert to accommodate increased flow and reduce the risk of overtopping during extreme rainfall events. These upgrades will enhance public safety, protect surrounding neighborhoods, and improve stormwater conveyance within the watershed.

Farmersville Culvert Project

Flooding at Farmersville and Easton had been noted in a previous flood study, but work was not initiated as part of the initial CIP efforts. However, a proposed development led to initial efforts to evaluate the culvert under Farmersville Road south of Easton Avenue. The Farmersville Culvert Project entails either the replacement or enlargement of the culvert. Concept design work has been completed and was considered for incorporation into a street improvement project that has not yet been finalized.

IMPROVEMENT CONSIDERATIONS

As part of the Township and Authority's ongoing commitment to enhance stormwater infrastructure and address needs, they are currently evaluating several projects for inclusion in the CIP.

Nancy Run Floodplain Restoration Project

Potential floodplain reconnection and restoration efforts for Nancy Run have been identified in open space areas adjacent to the stream north of Walnut Street/Middletown Road. A recent study, expanded this year to evaluate concept plans, has identified areas adjacent to the floodway that contain no existing buildings. In these locations, the stream channel profile would be modified to decrease existing streambank heights, reconnect the stream to its historic floodplain, and extend flood relief downstream. These improvements are expected to reduce flooding, provide streambank stabilization, and support volume reduction benefits.

The Nancy Run Floodplain Restoration Project also includes enhancements to recreational opportunities and neighborhood connections, including trail access to link the east and west sides of Nancy Run. In addition, these restoration efforts can help the Township meet future MS4 permit requirements. Concept design work is ongoing, and further evaluations will be conducted to confirm the potential benefits of these improvements.

Sheridan Drive/Chetwin Terrace Drainage Improvements Evaluation.

Flooding issues along Chetwin Terrace and the surrounding neighborhoods, including Embur Terrace and Winfield Terrace, have been identified in previous flood studies. Further assessments conducted in 2024 confirmed that a significant portion of the contributing drainage area originates in Palmer Township. As a result, the Township is coordinating with Palmer Township through an inter-governmental agreement to address the flooding concerns.

Proposed improvements may include the development of upstream stormwater facilities in Palmer Township, the construction of a storm sewer network throughout the Chetwin Terrace neighborhood, and the implementation of downstream stormwater facilities to protect local infrastructure. Coordination with Palmer Township is ongoing regarding future capital improvement planning.

BUDGET

COMING YEAR BUDGET

Budget Model

A budget model was initially created during the implementation of the stormwater utility and has been continuously updated to reflect changes in revenues, expenses and capital improvement projects, among others. The model provides a comprehensive view of the Authority's financial position, both annually and over the long term.

Projected Revenue for Coming Year

Stormwater billing occurs in February with a discount offered for property owners who pay the full annual fee upfront rather than quarterly. To date, approximately \$32,000 of revenue was reduced due to bills being

paid at the discount. However, the discount amount has been offset by late fees for other properties. Owners can also submit for various credits. To date, credits have reduced the revenue by less than 1%.

Projected revenue in 2026 is similar to revenue from 2025 as the stormwater fee developed at the establishment of the program remains unchanged. Current projections estimate about \$2.17M in Stormwater Fee Revenue. Actual revenue may increase slightly due to a larger increase in IA in 2026 but could decrease slightly due to additional credit applications.

Projected Expenditures for Coming Year

In the budget model created during the utility's implementation, inflation was initially projected at 3% annually. However, due to significant inflationary pressures starting in 2023, the model was updated to account for inflation over the past five years. Going forward, expenses will generally be inflated based on a 5-year moving average of inflation, currently around 4%.

During 2026, the Authority's Stormwater Construction Fund is expected to recover design expenses incurred in 2024 for the Easton/Santee Phase 1A Project and the Sculac Project. These costs will be reimbursed by PENNVEST once settlement is completed and the first payment request is submitted for each respective project, with the design expenses rolled into the overall project funding. Additionally, future design costs for planned improvements will continue to be funded through the Stormwater Construction Fund, which supports Pay-Go projects for smaller repairs and replacements, such as the Danberry Drive Project. Rehabilitation of inlets and pipes throughout the system is also expected to be funded via Pay-Go. In accordance with Authority input, the majority of Engineering expenses will be paid through monies within the Construction Fund, rather than the Operating Budget as in years past. Any debt service for projects (such as the PRP Phase 1 Project) is also paid through monies within the Construction Fund based on discussions with the Authority. Between Operating and Non-Operating Expenses and other expenses paid via the Construction Fund, the Construction Fund is projected to have approximately \$1.93M in outgoing transfers cost and \$0.57M in incoming transfers reimbursements in 2026.

The 2025 Operating Budget included funds for the Stormwater System Assessment, which provided essential data on the condition of the system. In the 2026 Operating Budget, the Stormwater System Assessment line item is now used for System Assessment and Maintenance, which entails general maintenance and repairs to the system. As stated earlier, with the inclusion of the majority of Engineering costs, as well as Debt Service, being paid via monies available within the Construction Fund, the 2026 Operating Budget is projected to be approximately \$0.88 M.

FUNDING SOURCES

The following funding sources have been or will be pursued for the following projects:

- Sculac Stream Project
 - A PENNVEST Application was submitted in October 2025. A potential Funding Offer is expected to be received in January of 2026. Construction is expected to begin in July of 2026 and to end in April of 2027.
- Easton Avenue Flood Mitigation Project (Easton Avenue Phase 1)
 - A \$137,054 FEMA Building Resilient Infrastructure and Communities (BRIC) grant was awarded to the Authority for Easton/Santee Flood Mitigation Project scoping. This was

used to define alternatives for flood mitigation improvements in the Nancy Run Watershed using modeling. FEMA reimbursed the Authority this amount in 2024 upon completion of the study.

- A \$3.05M FEMA BRIC grant was awarded in August 2023 for the Easton/Santee Phase 1 Project, but the FEMA BRIC Program was canceled in April 2025. A grant agreement has not yet been received from FEMA and therefore this award cannot be accessed for project funds. The Easton/Santee Phase 1A Project will continue without the FEMA BRIC grant. If the FEMA grant becomes available, it is anticipated to be used for the Easton/Santee Phase 1B Project.
- A \$1M Commonwealth Financing Authority (CFA) grant was awarded for the Easton/Santee Phase 1 Project. The Authority intends to use the grant proceeds for Phase 1A.
- An agreement is in place with the City for sharing the costs of the Easton/Santee Phase 1 Project. Based on the assumption that the FEMA BRIC grant is not available due to the cancellation of the FEMA BRIC Program, the current projected City share is estimated to be approximately \$1.45M.
- A PENNVEST funding offer in the amount of \$5.5M was provided April 2024 for Easton/Santee Phase 1 Project. Due to delays related to the FEMA BRIC Program, the funding offer was declined.
- A new PENNVEST application for Easton/Santee Phase 1A Project was submitted in October 2025. Since the previous application, PENNVEST lowered the county cap rates in Northampton County based on an increased unemployment rate in the county. The updated county cap rates are 1.000% for years 1 to 5 and 1.743% for years 6 to 20.

■ Farmersville Culvert Project

- The Farmersville Culvert is anticipated to be financed by Township developer funds and is not planned for funding by the Authority.

The following funding sources have been pursued for the following completed projects:

■ PRP Phase 1 Project

- PENNVEST and the Authority settled on a \$2.49M loan in June 2023 for the PRP Phase 1 project, of which \$2.48M was used during disbursement. The debt obligation has a 20-year term with PENNVEST county cap rates of 1.743% for years 1 to 5 and 2.179% for years 6 to 20. Debt service payments began in fall 2024 after construction was completed in summer 2024. The monthly debt service payment for the loan is \$12,221.84 (\$146,662 for full-year 2026).

■ Walnut Street Project

- A \$700,000 CFA H2O PA Grant was awarded for partial funding of the Walnut Street Project.
- PENNVEST and the Authority settled on a \$2.71M loan in October 2024 for the Walnut Street Project. The debt obligation has a 20-year term with PENNVEST county cap rates of 1.743% for years 1 to 5 and 2.179% for years 6 to 20. Construction is expected to be substantially complete by fall 2025 with minor PennDOT punch list items for early Spring

2026 with debt service payments expected to begin in May 2026. The monthly debt service payment for the loan is expected to be \$13,382 in 2026 (\$93,674 for full-year 2026).

STORMWATER FEE PROJECTION

Revenues and expenditures have been consistent with the budget model. When the stormwater program was developed, the Township and Authority aimed to have a steady fee for 2022 through 2025. Based upon analysis regarding rate revenue, projected expenses and future projects and timing, among others, a rate increase may be needed for 2027. Actual DEP requirements in the next 5-year permit term are not yet known and may have an impact on the amount of a fee increase.

INSURANCE COVERAGE

An insurance certificate for the Bethlehem Township Municipal Authority is contained in Appendix D.

CONCLUSION

The 2025 Stormwater Program Summary reflects the Township and Authority's proactive approach and dedication to managing stormwater infrastructure and compliance with environmental regulations. Through the successful completion of significant capital improvement projects, ongoing system assessments, and adherence to federal and state requirements, a solid foundation has been laid for sustained progress in reducing flood risks and enhancing water quality.

Looking forward, commitment to updating and implementing the CIP, addressing findings from the stormwater system infrastructure assessments, and expanding GIS capabilities will continue to drive effective stormwater management strategies. By focusing on these initiatives, the program is well-positioned to address future challenges and deliver lasting benefits to Township property owners.

RECOMMENDATIONS

Below are recommendations for continued operation of the stormwater management system:

- Continue to implement and update the Stormwater Capital Improvement Plan
 - Ensure projects are strategically planned to meet future MS4 permit requirements.
- Use condition assessment data to guide system repairs.
 - Prioritize cleaning and repairs for inlets and pipes rated in categories 3, 4, and 5.
 - Begin rehabilitation of the system pipes starting in 2026 with pipes and inlets in category 5.
 - Begin cleaning and rehabilitation of the system inlets. To continue implementing the CIP and the rehabilitation of the existing system, the Authority will likely need to increase stormwater rates.
- Continue implementation of GIS tracking for stormwater concerns.
 - Use the system to monitor conditions and identify areas needing attention throughout the Township.

APPENDIX A



Bethlehem
Stormwater Infrastructure

Bethlehem Township
Northampton County, PA

- Inlet
- Manhole
- Stormwater Gravity Mains
- Stormwater Open Channels
- Stormwater Basin
- Township Owned Basins
- Bethlehem Township

0 0.1 0.2 Miles

Mapping derived from data provided by ESRI, PennDOT, and USGS.

9/9/2025 PM:JP GIS:RBG QA:MSM R009170.0425

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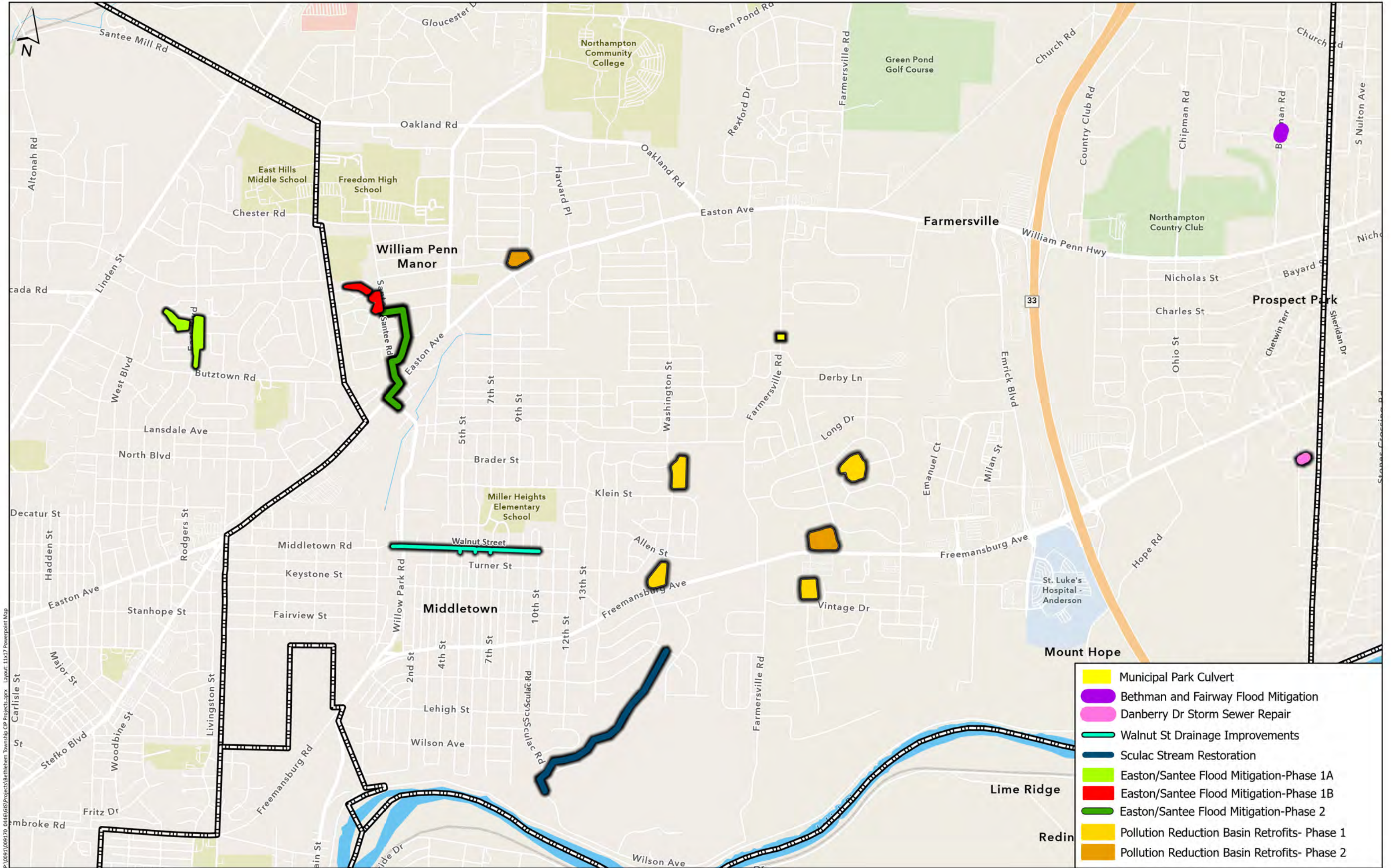
APPENDIX B



BTMA OWNED DETENTION FACILITIES				
Basin ID	Facility Type	Latitude	Longitude	Drainage Area (Acres)
B2	Dry Detention Basin	40.6560	-75.2732	51.2
B3	Dry Detention Basin	40.6567	-75.2723	0
B5	Dry Detention Basin	40.6584	-75.2789	414.4
B12	Dry Detention Basin	40.6586	-75.3245	24.5
B13	Dry Detention Basin	40.6577	-75.3241	76.6
B14	Dry Detention Basin	40.6612	-75.3003	2.5
B16	Wet Detention Basin	40.6624	-75.2996	111
B18	Dry Detention Basin	40.6617	-75.3015	13.7
B21	Dry Detention Basin	40.6604	-75.3019	9.1
B23	Wet Detention Basin	40.6644	-75.3083	3.5
B24	Dry Detention Basin	40.6695	-75.3136	66.8
B25	Dry Detention Basin	40.6729	-75.3095	50.8
B30	Dry Detention Basin	40.6567	-75.3051	14.6
B31	Dry Detention Basin	40.6583	-75.3039	8.9
B32	Dry Detention Basin	40.6578	-75.3079	8.1
B33	Dry Detention Basin	40.6590	-75.3106	12.6
B34	Dry Detention Basin	40.6587	-75.3144	17.8
B35	Dry Detention Basin	40.6590	-75.3191	14.9
B36	Dry Detention Basin	40.6566	-75.3293	1.1
B37	Dry Detention Basin	40.6526	-75.3213	5.5
B39	Infiltration Basin	40.6517	-75.3148	54.8
B40	Dry Detention Basin	40.6495	-75.3192	8.9
B41	Dry Detention Basin	40.6496	-75.3224	16.3
B42	Dry Detention Basin	40.6481	-75.3222	3.9
B45	Infiltration Basin	40.6464	-75.3150	98.4
B46	Infiltration Basin	40.6469	-75.3050	46.5
B52	Infiltration Basin	40.6534	-75.3030	82.9
B57	Dry Detention Basin	40.6597	-75.3217	58.5
B58	Dry Detention Basin	40.6603	-75.3162	35.6
B82	Dry Detention Basin	40.6616	-75.3279	120.1
B89	Dry Detention Basin	40.6675	-75.3324	18.5
B92	Wet Detention Basin	40.6757	-75.3406	0.6
B103	Infiltration Basin	40.6733	-75.3517	3.6

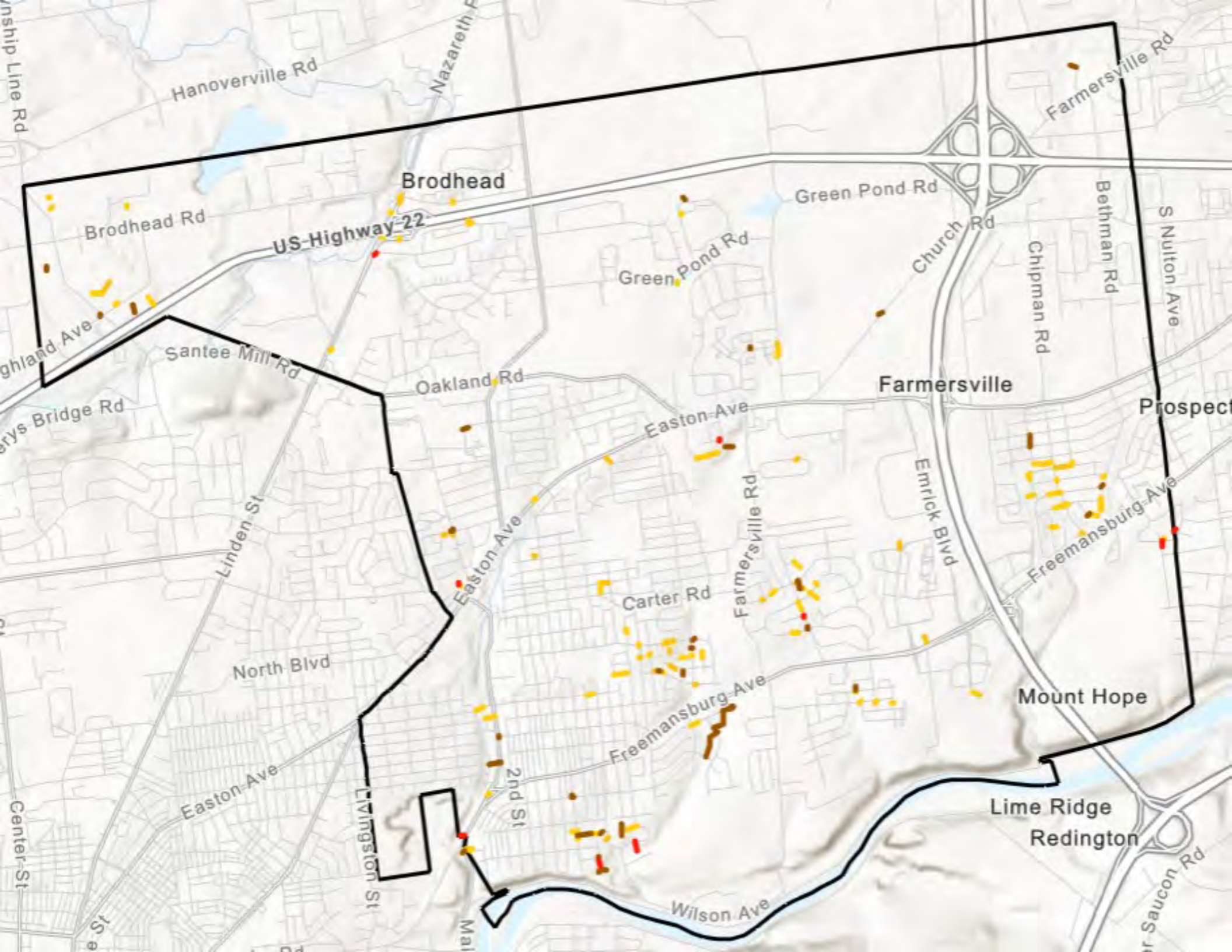
APPENDIX C





APPENDIX D





APPENDIX E



5. There are no physical structures constituting parts of the stormwater system upon which property damage insurance is normally carried, as a trade practice, in the operation of stormwater systems.
6. The insurance now in force is X is not adequate for the ensuing Fiscal Year, subject to the limitations set forth in paragraphs 4 and 5.
7. If the insurance as described above is not adequate, please list below the amounts and types of insurance that should be maintained during the ensuing Fiscal Year and the physical structures to be covered by such insurance.

Types of Insurance and
Structures Covered

Amounts of Insurance

N/A

N/A

8. If the adequacy of the above insurance was determined by a method other than by establishing the amounts and types of insurance adequate to cover the cost of replacing the maximum probable loss to the physical structures of the stormwater system, please list below the method used.

N/A

B. General Liability Insurance (Including Bodily Injury and Property Damage)

1. Policy Number 16N83040
Effective Date 6/1/2025
Expiration Date 6/1/2026

2. Name of Insurance Company The Travelers Indemnity Company
Address One Tower Square
Hartford, CT 06183

3. Description of amounts and types of insurance now in force:

<u>Types of Insurance</u>	<u>Amounts of Insurance</u>
General Liability	\$1,000,000 Each Occurrence \$3,000,000 General Aggregate
Personal & Advertising Injury	\$1,000,000
Damage to Premises Rented	\$50,000
Medical Payments	Excluded

4. The above insurance now in force is X is not _____ adequate for the ensuing Fiscal Year.

5. If the insurance as described above is not adequate, please list below the amounts and types of insurance that should be maintained for the ensuing Fiscal Year.

<u>Types of Insurance</u>	<u>Amounts of Insurance</u>
N/A	

C. Workmen's Compensation and Employer's Liability Insurance

1. Policy Number WWC3789934
Effective Date 6/1/2025
Expiration Date 6/1/2026

2. Name of Insurance Company Wesco Insurance Company/AmTrust Financial
Address P.O. Box 655028
Dallas, TX 75251

3. Description of amounts and types of insurance now in force:

<u>Types of Insurance</u>	<u>Amounts of Insurance</u>
Workers Compensation &	\$1,000,000 Bodily Injury- Each Accident
Employers Liability	\$1,000,000 Bodily Injury by Disease- Each Employee
	\$1,000,000 Bodily Injury by Disease- Policy Limit

4. The above insurance is X is not _____ adequate for the ensuing Fiscal Year.

5. If the insurance as described above is not adequate, please list below the amounts and types of insurance that should be maintained during the ensuing Fiscal Year.

<u>Types of Insurance</u>	<u>Amounts of Insurance</u>
N/A	

D. Other Risks Coverage Insurance Carried by the Authority in Addition to the Fire and Extended Coverage Insurance, General Liability Insurance, and Workmen's Compensation and Employer's Liability Insurance Listed Above

1. Policy Number 71N28111
Effective Date 6/1/2025
Expiration Date 6/1/2026

2. Name of Insurance Company Travelers Property Casualty Co of America
Address One Tower Square
Hartford, CT 06183

3. Description of amounts and types of insurance now in force (if none, write "None"):

Types of Insurance

Umbrella Liability

Amounts of Insurance

\$10,000,000 Each Occurrence

\$10,000,000 General Aggregate

4. The above insurance is X is not _____ adequate for the ensuing Fiscal Year.

5. If the insurance as described above is not adequate, please list below the amounts and types of insurance that should be maintained for the ensuing Fiscal Year.

Types of Insurance

N/A

Amounts of Insurance

E. General Information

All the above insurance companies are responsible insurance companies, qualified to do business in the Commonwealth of Pennsylvania, and satisfactory to the Trustee for the Authority.

All the above insurance policies now in force (a) have been deposited with the said Trustee, (b) are non-assessable, (c) are for the benefit of the Bethlehem Township Municipal Authority and the Trustee for the Bethlehem Township Municipal Authority, according to their respective interests, and (d) provide that all money recovered under such policies shall be payable to and deposited with the Trustee.

The terms, conditions, coverages, and amounts of all the above insurance policies now in force are satisfactory to the Trustee.

The terms and conditions of all the above insurance policies now in force are satisfactory to the undersigned as being those normally provided as an insurance trade practice in adequately insuring stormwater systems and the operation thereof.

Additional information and comments, if any. (If none, please write "None").

None

Signed this 3rd day of December, 2025.

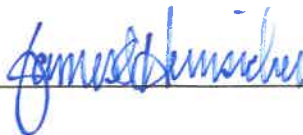
INSURANCE BROKER OF RECORD

Name: James L. Hunsicker, Robertson Insurance Group, LLC_

Address: 925 W. Broad Street, Suite 200_____

Bethlehem, PA 18018_____

Telephone No. 484-214-5314_____



APPENDIX F



CONSULTING ENGINEERS' CERTIFICATE WITH RESPECT TO INSURANCE

In accordance with Section 8.07 within the Stormwater Facilities Lease Agreement (the "Agreement") dated as of December 20, 2021 established between Bethlehem Township, Northampton County, Pennsylvania (the "Township") and Bethlehem Township Municipal Authority ("Authority"), I, Senior Municipal Consulting & Management Strategist of Herbert, Rowland & Grubic, Inc., as the Consulting Engineer (the "Consulting Engineer") for the Authority, hereby provide the Consulting Engineers' Certificate (the "Certificate") with respect to insurance, as required by the Agreement.

This Certificate is submitted in compliance with the terms outlined in the Agreement, which stipulates that the Township shall furnish an annual Certificate to the Authority.

The Certificate includes the following information and accompanying reports:

- I. **Insurable Value of Tangible Property:** The Certificate sets forth the aggregate insurable value of \$189,839,598 for the tangible property comprising the Stormwater System (as defined therein the Agreement), as determined by the Consulting Engineer. This value, outlined in Exhibit A, represents the estimated costs of in-kind replacement of all of the Stormwater System assets, as well as any other assumptions set forth in Exhibit A. Please note that the assumed assets are considered to be self-insured by the insurance broker. The aggregate assets are covered to an extent by the reserve fund established in the Agreement, which serves as a mechanism for addressing emergency events and ensures that funds are available for necessary repairs or replacements of the aggregate Stormwater System assets. It is assumed that the Authority will not need to replace all assets at the same time. The reserve fund currently totals \$250,000. Any costs over and above this would need to be funded through user rates. Monthly user rates for the average single-family residence are currently \$8.60.
- II. **Report of Insurance:** The Certificate includes a Report prepared by a competent insurance broker or agent detailing the amounts and types of insurance currently in

force for the Stormwater System and its operation (the "Report") set forth in Exhibit B. This Report outlines the coverage provided by the existing insurance policies including general liability, personal and advertising injury, damage to premises rented and workers compensation and employers liability. Per Section I of this Certificate, the aggregate Stormwater System assets are self-insured, as is customary in normal trade practice for stormwater systems operations. This self-insurance practice is reiterated within the Report.

- III. Adequacy of Insurance: The Report also includes an opinion, as expressed by the insurance broker or agent, on whether the insurance currently in force is deemed adequate to cover potential risks and liabilities associated with the Stormwater System. This assessment considers the nature and extent of the Stormwater System, as well as relevant industry standards. We have relied on the Report of the insurance broker, in rendering our opinion.
- IV. Recommended Insurance for Ensuing Fiscal Year: Additionally, the Report provides recommendations on the amounts and types of insurance that should be maintained during the ensuing Fiscal Year. These recommendations are based on the expertise of the insurance broker and understanding of the potential risks and exposures associated with the Stormwater System. We have relied on the Report of the insurance broker, in rendering our opinion.

The Consulting Engineer assumes no risk or liability for the adequacy or effectiveness of the insurance coverage provided or that the aggregate assets of the Stormwater System are self-insured by the Authority. The Consulting Engineer solely assessed and provided a professional opinion regarding the insurable value and for aggregate Stormwater System assets based on industry standards.

Pursuant to the Agreement, the Township has covenanted to maintain amounts and types of insurance that are satisfactory to the Consulting Engineer for the Authority.

IN WITNESS WHEREOF, I hereunto set my hand and affix my signature along with the Corporate Seal this 15th day of December 2025.

Herbert, Rowland & Grubic, Inc.

A handwritten signature in black ink, appearing to read "Bruce R. Hulshizer".

By: Bruce Hulshizer, P.E.
Senior Municipal Consulting & Management
Strategist



Corporate Seal

EXHIBIT A

INSURABLE VALUE OF TANGIBLE PROPERTY

Please see the following page(s).

Bethlehem Township Municipal Authority

Stormwater System Valuation

Asset and Replacement Costs	Install Date	SY	LF	Estimated Quantity	LS	2025 Cost/Unit	Total Value
MOBILIZATION	--	--	--	--	1	\$8,101,086	\$8,101,086
MAINTENANCE AND PROTECTION OF TRAFFIC	--	--	--	--	1	\$5,400,726	\$5,400,726
INLET STRUCTURES	--	--	--	2,902	--	\$6,695	\$19,428,999
MANHOLE STRUCTURES	--	--	--	904		\$7,528	\$6,805,283
OUTFALL STRUCTURES	--	--	--	469	--	\$6,144	\$2,881,744
CLEANOUTS	--	--	--	36	--	\$461	\$16,590
OTHER SW ASSETS (OUTLET STRUCTURES)	--	--	--	732	--	\$6,040	\$4,421,519
3" PERFORATED CORRUGATED POLYETHYLENE PIPE	--	--	0	--	--	\$43	\$0
4" PERFORATED CORRUGATED POLYETHYLENE PIPE	--	--	61	--	--	\$58	\$3,561
6" PERFORATED CORRUGATED POLYETHYLENE PIPE	--	--	831	--	--	\$90	\$74,378
8" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	763	--	--	\$92	\$70,323
10" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	0	--	--	\$102	\$0
12" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	4,547	--	--	\$113	\$512,211
14" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	41,751	--	--	\$123	\$5,130,734
15" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	39,111	--	--	\$128	\$5,006,570
16" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	6,537	--	--	\$133	\$870,268
18" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	88,163	--	--	\$143	\$12,639,961
20" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	426	--	--	\$154	\$65,438
24" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	63,086	--	--	\$195	\$12,274,899
30" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	22,738	--	--	\$307	\$6,985,618
36" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	25,102	--	--	\$323	\$8,097,486
40" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	642	--	--	\$328	\$210,386
42" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	2,937	--	--	\$338	\$992,543
48" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	20,721	--	--	\$461	\$9,548,927
60" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	814	--	--	\$768	\$625,197
66" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	0	--	--	\$1,024	\$0
72" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	53	--	--	\$1,280	\$67,845
78" SMOOTH LINED CORRUGATED POLYETHYLENE PIPE	--	--	62	--	--	\$1,639	\$101,588
UNIDENTIFIED PIPE (ASSUMING 18" DIAMETER)	--	--	24,740	--	--	\$143	\$3,546,983
2A SUBBASE, 6" DEPTH	--	235,831	--	--	--	\$21	\$5,042,695
BASE REPAIR SUPERPAVE ASPHALT MIXTURE DESIGN, BASE	--	235,831	--	--	--	\$54	\$12,630,889
SUPERPAVE ASPHALT MIXTURE DESIGN, WEARING COURSE, PG	--	235,831	--	--	--	\$17	\$4,045,266
Aggregate Stormwater System Asset Sub-Total:							\$135,599,713
CONTINGENCY COSTS				20%			\$27,119,943
RELATED PROJECT COSTS				20%			\$27,119,943
Aggregate Stormwater System Asset Total:							\$189,839,598

Notes and Assumptions:

Subject to change.

Assumes replacement of all current assets.

Assumes all current assets are approximately 33 years old, as this is estimated to be the average age of stormwater tangible assets within the Township.

Current costs based on ENR's Construction Cost Index as of November 2025.

EXHIBIT B

REPORT OF INSURANCE

Please see the following page(s).

5. There are no physical structures constituting parts of the stormwater system upon which property damage insurance is normally carried, as a trade practice, in the operation of stormwater systems.
6. The insurance now in force is X is not adequate for the ensuing Fiscal Year, subject to the limitations set forth in paragraphs 4 and 5.
7. If the insurance as described above is not adequate, please list below the amounts and types of insurance that should be maintained during the ensuing Fiscal Year and the physical structures to be covered by such insurance.

Types of Insurance and
Structures Covered

Amounts of Insurance

N/A

N/A

8. If the adequacy of the above insurance was determined by a method other than by establishing the amounts and types of insurance adequate to cover the cost of replacing the maximum probable loss to the physical structures of the stormwater system, please list below the method used.

N/A

B. General Liability Insurance (Including Bodily Injury and Property Damage)

1. Policy Number 16N83040
Effective Date 6/1/2025
Expiration Date 6/1/2026

2. Name of Insurance Company The Travelers Indemnity Company
Address One Tower Square
Hartford, CT 06183

3. Description of amounts and types of insurance now in force:

<u>Types of Insurance</u>	<u>Amounts of Insurance</u>
General Liability	\$1,000,000 Each Occurrence \$3,000,000 General Aggregate
Personal & Advertising Injury	\$1,000,000
Damage to Premises Rented	\$50,000
Medical Payments	Excluded

4. The above insurance now in force is X is not _____ adequate for the ensuing Fiscal Year.

5. If the insurance as described above is not adequate, please list below the amounts and types of insurance that should be maintained for the ensuing Fiscal Year.

<u>Types of Insurance</u>	<u>Amounts of Insurance</u>
N/A	

C. Workmen's Compensation and Employer's Liability Insurance

1. Policy Number WWC3789934
Effective Date 6/1/2025
Expiration Date 6/1/2026

2. Name of Insurance Company Wesco Insurance Company/AmTrust Financial
Address P.O. Box 655028
Dallas, TX 75251

3. Description of amounts and types of insurance now in force:

<u>Types of Insurance</u>	<u>Amounts of Insurance</u>
Workers Compensation &	\$1,000,000 Bodily Injury- Each Accident
Employers Liability	\$1,000,000 Bodily Injury by Disease- Each Employee
	\$1,000,000 Bodily Injury by Disease- Policy Limit

4. The above insurance is X is not _____ adequate for the ensuing Fiscal Year.

5. If the insurance as described above is not adequate, please list below the amounts and types of insurance that should be maintained during the ensuing Fiscal Year.

<u>Types of Insurance</u>	<u>Amounts of Insurance</u>
N/A	

D. Other Risks Coverage Insurance Carried by the Authority in Addition to the Fire and Extended Coverage Insurance, General Liability Insurance, and Workmen's Compensation and Employer's Liability Insurance Listed Above

1. Policy Number 71N28111
Effective Date 6/1/2025
Expiration Date 6/1/2026

2. Name of Insurance Company Travelers Property Casualty Co of America
Address One Tower Square
Hartford, CT 06183

3. Description of amounts and types of insurance now in force (if none, write "None"):

Types of Insurance

Umbrella Liability

Amounts of Insurance

\$10,000,000 Each Occurrence

\$10,000,000 General Aggregate

4. The above insurance is X is not _____ adequate for the ensuing Fiscal Year.

5. If the insurance as described above is not adequate, please list below the amounts and types of insurance that should be maintained for the ensuing Fiscal Year.

Types of Insurance

N/A

Amounts of Insurance

E. General Information

All the above insurance companies are responsible insurance companies, qualified to do business in the Commonwealth of Pennsylvania, and satisfactory to the Trustee for the Authority.

All the above insurance policies now in force (a) have been deposited with the said Trustee, (b) are non-assessable, (c) are for the benefit of the Bethlehem Township Municipal Authority and the Trustee for the Bethlehem Township Municipal Authority, according to their respective interests, and (d) provide that all money recovered under such policies shall be payable to and deposited with the Trustee.

The terms, conditions, coverages, and amounts of all the above insurance policies now in force are satisfactory to the Trustee.

The terms and conditions of all the above insurance policies now in force are satisfactory to the undersigned as being those normally provided as an insurance trade practice in adequately insuring stormwater systems and the operation thereof.

Additional information and comments, if any. (If none, please write "None").

None

Signed this 3rd day of December, 2025.

INSURANCE BROKER OF RECORD

Name: James L. Hunsicker, Robertson Insurance Group, LLC_

Address: 925 W. Broad Street, Suite 200_____

Bethlehem, PA 18018_____

Telephone No. 484-214-5314_____

