Wastewater Treatment Facility Long-Range Planning Workshop Minutes
January 23, 2023
Margaret Rollins Community Center
6:00pm

1. Welcome, call the meeting to order

The meeting started late due to technical difficulties. President Panetta called the workshop to order at 6:13pm.

2. Roll Call

Board Members

Thomas Panetta
Earl Webb
D. Preston Lee
Richard Nichols
A. Thomas Owen

Ex-Officio Members

Austin Calaman, BPW General Manager
Michael Hoffman, Legal Counsel

Others

Tom Biagioli, GHD
Jeff Sturdevant, GHD
Hans Medlarz, Sussex County
Todd Lawson, Sussex County

There were 42 other attendees present in person and 56 attendees online.

3. Discussion of the GHD Report for the long-range planning of the Lewes BPW wastewater treatment facility. (Thomas Panetta, Tom Biagioli, Jeff Sturdevant) INFORMATION/DISCUSSION

President Panetta welcomes the public and stakeholders. The last workshop was held in March 2022. The BPW hired GHD to look into the cost and environmental aspects of the long-range WWTF project. Sussex County is present because one of the options has to do with Sussex County. BPW will make the final decision. The stakeholders will have time to voice their opinion. The engineering report is lengthy and very dense. There is a splash page on the BPW website, with all documentation regarding the WWTF planning project and space to submit comments.

The current WWTF is located on American Legion Road at low flood elevation. It is out of harms way now but given climate change and sea level rise, the BPW is looking to build resiliency. Due to the sensitive nature of the WWTF, BPW is using conservative numbers: high end curve and 3-foot freeboard. BPW has an existing relationship with Sussex County. In the winter, the BPW receives up to 5,000 gallons from Sussex County system. This is a mutually beneficial relationship.

Tom Biagioli, GHD, presented:

Agenda

1. Introduction
2. Study Scope and Key Criteria
3. Concept Development
4. Concept Evaluation
5. Estimated Ratepayer Impact
6. Questions
7. Next Stages Appendix A – Water Quality Criteria

Introduction

- This workshop is a follow-up to the presentation on March 31, 2022, where the BPW introduced unexplored concepts to increase wastewater treatment resilience in Lewes.
- The Lewes BPW Wastewater Treatment Facility (WWTF) is located at a low elevation site and is vulnerable to sea level rise and flood damage. The BPW has evaluated multiple options to mitigate flood risk and/ or relocate the facility.
- Sussex County has an existing agreement in place with the BPW to transfer wastewater flows from the County to the Lewes WWTF when demand is lower in Lewes during the winter months. The County has indicated that they may be interested in working with the BPW to establish additional shared facilities for wastewater treatment.
- GHD was appointed to develop and evaluate upgrade options that will provide increased resilience for wastewater treatment within the BPW's service area up to the Year 2050, including options for further collaboration with Sussex County.
- GHD's analysis has been summarized in the Lewes WWTF Long Range Planning Study Conceptual Evaluation Report, which has been presented to the BPW Board
- The BPW Board will identify a preferred Option to be developed further, following consideration of GHD's analysis and feedback/ comments provided by community stakeholders.
    - Note: a preferred option has not yet been identified by the BPW Board

Study Scope

There are six options that were evaluated:

1. Existing WWTF Hardening
2. a. Relocation & Spray Irrigation and/or RIBS
   b. Relocation & Utilization of Existing WWTF Outfall
   c. Relocation & New Ocean Outfall
3. a. Partnership with Sussex County & Utilization of Existing WWTF Outfall
   b. Partnership with Sussex County & Constructed Wetland

Study Criteria: Flood Elevation

- Base Flood Elevation
    - The elevation of surface water resulting from a flood has a 1% chance of equaling or exceeding that level in any given year (FEMA; March 2020). Also referred to as the "100-yr Flood Elevation".
    - The graphic shows the most recent flood map, and the red outline is the current site of the WWTF. Most of the site is seven feet on the 100-year flood elevation.
- GHD reviewed the latest modeling projections for the Lewes area to come up with a conservative, high-level estimate of the relative sea level rise in the year 2050.
- Sea level rise has two components:
    - Eustatic seal level rise- an increase in the elevation of the oceans globally.
        - High level curve in 2050 is 2.13 feet.
    - Coastal Subsidence-as Sea level rises, land masses, particularly on coastal areas, are sinking.
        - High level curve in 2050 is 0.26 feet.
- Estimated 2050 110-year Design Flood Elevation:

100-year Site Flood elevation (7ft) + Eustatic Sea level rise (2.13ft) + Coastal Subsidence (0.26ft) = 9.39 ft

- Recommended Freeboard
    - The recommended vertical offset from the Flood Elevation to building thresholds, equipment elevations and other critical components for treatment capacity.
    - Freeboard is not added to, or included in, the Flood Elevation; it is used to compare building and equipment elevations with projected water surface elevations.
    - The minimum elevation for structural slabs and building thresholds is 2 feet. American Society of Civil Engineers recommends that all wastewater treatment facilities should be provided with a 2-foot freeboard from the base flood elevation. This was used throughout the concept development.
    - Recommend 3-feet freeboard for critical equipment.

Study Criteria: Wastewater Flow Rates

- The existing Lewes WWTF is rated for an Average Day Flow (ADF) of 1.5 mgd.
    - The current observed ADF is approx. 0.9 mgd, 60% of the rated capacity.
- BPW conservatively estimates that, on the assumption that all available lots are developed per the current zoning designations, the 2050 ADF will increase to 1.75 mgd.
    - Concept arrangements for all upgrade Options have been developed assuming an ADF from the Lewes collection network of 1.75 mgd.
- Option 3 scenarios (Partnership with Sussex County) have been developed assuming Sussex County will contribute an equal proportion of the treated flow rate to the new facility, i.e., ADF of 1.75 mgd.
    - The Option 3 facility will therefore be designed to treat a total 2050 ADF of 3.5 mgd.

Study Criteria: Water Quality

- The Design Criteria for all the upgrade concepts with regards to treated effluent water quality is:
  - The future WWTF will meet all the conditions of the existing NPDES permit.
- Option 1 concept (improve existing WWTF) would maintain the existing Membrane Bioreactor (MBR) treatment process.
- All Option 2 and Option 3 concepts would include a new Activated Sludge Treatment facility with Tertiary Effluent Filtration
- Existing WWTF maintains Total Nitrogen (Total N) and Total Phosphorus (Total P) concentrations within the Permit Limit
  - Ex. WWTF currently operates at 60% capacity, when flows increase the nutrient concentrations will trend towards the permit limits. When a treatment facility operates under these conditions there is a much longer retention time in aeration basins and key treatment equipment is loaded at a rate that is significantly below its upper limits.
  - GHD and the BPW project that at some point between today and 2050, the ADF observed at the facility will trend toward the design capacity of 1.5 mgd.
  - In order to increase flow capacity, the future WWTF (for all Options) will maintain lower Total N and Total P concentrations than the existing permit limits. Referred to Appendix A.

Concept Development: Option 1- Hardening of the Existing Plant

- Reviewed the schematics provided on page 8. Lift Station (LS) 4 is located on Gills Neck Road and LS-8 is on American Legion Road. Both lift stations transfer flow into the existing WWTF.
- The key upgrades associated with Option 1: hardening of the facility with a perimeter barrier and a storm water pump station to clear runoff from within the site.
- Upgrades to the following treatment facilities to enable the existing Lewes WWTF to meet the Basis of Design Criteria up to 2050:
  - New Headworks facilities (screening and grit)
  - Demolish the existing Flow EQ tank and install a new 3.03 MG tank.
  - Expand Aeration Basins to provide 12-hrs storage at average daily flow.
  - Install a fourth MBR cassette to increase the treatment capacity to 2.16 mgd.
  - Replace the existing UV reactors (2) like-for-like.
- The treatment facility will be protected from flood events and will be operable. However, additional arrangements would still be required and would need to be developed to enable personnel, equipment, and materials to get to the site during a flood event.
- Residual risk with Option 1.
- Referred to page 9 schematics. Shows a compacted dill flood barrier with a polyethylene with a plastic liner on the external side. There will be a trench that extends into the ground to prevent flood waters passing beneath the barrier. There will be a drain on the inside. The barrier will be about 30 feet wide. Some locations of the site it is not possible

to install a barrier this wide and, in those locations, there will be a sheet pile barrier. The sheet pile is not as cost effective. More detail is available in the report.

Conceptual Development: Option 2a-Relocate the plant with Spray Irrigation

- Capital works included in Option 2a:
    - Reconfiguration of LS4 and LS8 to consolidate all Lewes wastewater collection.
    - LS 8 modifications to create a new raw wastewater pump station. Lift station is more out of the way on American Legion Road.
    - New tertiary treatment WWTF, at a high elevation, discharges via spray irrigation.
    - Total site area 250 acres, spray irrigation land does not have to be contiguous. There is not a specified site for this concept.
    - Mr. Biagioli referred to graphic of the treatment facilities for all option 2 concepts. The top left corner is common to all option 2 concepts.

Concept Development: Option 2b- Relocated Plant with Canal Outfall

- Capital Works required for Option 2b:
    - Reconfiguration of LS4 and LS8 to consolidate all Lewes wastewater collection.
    - LS 8 modifications to create a new raw wastewater pump station. Lift station is more out of the way on American Legion Road. The new pump station could be constructed offline and connected to piping at the last minute.
    - New tertiary treatment WWTF, at a high elevation, discharging to existing (relocated outfall) at Lewes and Rehoboth Canal.
    - Total site area 20 acres.

Concept Development: Option 2c- Relocated Plant with Ocean Outfall

    - Reconfiguration of LS4 and LS8 to consolidate all Lewes wastewater collection.
    - LS 8 modifications to create a new raw wastewater pump station. Lift station is more out of the way on American Legion Road.
    - New tertiary treatment WWTF, at a high elevation, discharging via new ocean outfall. The section in yellow will be installed through Cape Henlopen State Park. The red section will need to be 6,000 feet offshore.
    - Total site area 20 acres.

Concept Development: Option 3a- Sussex County Partnership with Canal Outfall

- Lewes BPW Responsibility:
    - Raw wastewater pump station
    - Raw wastewater force main from the pumping station to the scope boundary
- Sussex County Responsibility
    - Raw wastewater force main from the scope boundary to the Wolfe Neck site.
    - New wastewater treatment facilities at the Wolfe Neck site- **owned and operated by Sussex County**
    - Treated effluent pump station- **will discharge only on the outgoing tide**
    - Treated effluent force main from Wolfe Neck to relocated Outfall Location

    - Relocated Outfall
- 1.75 mgd from BPW and 1.75 mgd from Sussex County capacity

Concept Development: Option 3b- Sussex County Partnership. With Constructed Wetlands

- Lewes BPW Responsibility:
    - Raw wastewater pump station
    - Raw wastewater force main from the pumping station to the scope boundary
- Sussex County Responsibility
    - Raw wastewater force main from the scope boundary to the Wolfe Neck site.
    - New combined wastewater treatment facilities at the Wolfe Neck site, including a constructed wetland with vertical discharge- **owned and operated by Sussex County and will discharge only on the outgoing tide.**

Concept Evaluation: Multi Criteria Analysis

- A multi-criteria analysis (MCA) was performed to evaluate the concept options based on a series of non-cost criteria.
- Criteria was assigned a weighting to reflect the relative critically of each item.
    - Longer term impacts, water quality issues, and treatment facility resilience were generally assigned a higher weighting.
    - Short term impacts were assigned a lower weighting.
    - Referred evaluation criteria, performance measures, rating scale, and weighting factor tables (page 16, 17, and 18 of presentation).
- A higher rating is better.
- The weighting times the rating gives the total score.

Key findings:

- Option 3a and 3b have the joint-highest MCA scores.
- Option 3a scores higher for the Permitting & Scheduling category, due to the relative uncertainty associated with the constructed wetland discharge arrangement under option 3b.
- Option 3b scores higher for the Community & Environmental Impacts. No requirement to pump treated effluent back to Lewes.
- The Option 1 and Option 2 concepts have very similar overall MCA scores.
    - Option 1 scores lower for community & Environmental Impacts due to the residual flood risk at the existing site.
    - Option 2 concepts score lower for Permitting & Schedule due to land acquisition and significant lengths of transfer once mains in public roads.
    - Option 2c scores low in Permitting & Schedules due to the permitting complexities assorted with constructing a new ocean outfall.
    - Option 2c scores higher in the Community& Environmental Impacts category as treated effluent no longer charged to the canal.

Concept Evaluation: Cost

- Costs presented are costs that would be incurred by the BPW only.
- Referred to capital cost estimate table on page 20 of the presentation.
- Total Capital costs:
    - Option 1: $22,800,000
    - Option 2a: $155,600,000
    - Option 2b: $114,000,000
    - Option 2c: $186,500,000
    - Option 3a: $19,600,000
    - Option 3b: $19,600,000
- Referred to the Operation and Maintenance (O&M) cost table (Page 21 of presentation)
- Total O&M. Costs:
    - Option 1: $2,020,000
    - Option 2a: $1,080,000
    - Option 2b: $1,090,000
    - Option 2c: $1,100,000
    - Option 3a: $980,000
    - Option 3b: $980,000
- Option 3 concepts- Per the existing BPW/ Sussex Count agreement, BPW will pay a proportion of the running costs for the County's new facility, equal to the proportion of the flow contributed by BPW (assumed 50%)

Concept Evaluation: Summary

- Preliminary Capital Cost +2050 NPV O&M Cost = Project Life cycle cost
- The Project Lifecycle is divided by MCA score to get the cost per MCA Scoring Point
- Cost per MCA Scoring Point:
    - Option 1: $1,510,000
    - Option 2a: $2,960,000
    - Option 2b: $2,330,000
    - Option 2c: $3,490,000
    - Option 3a: $590,000,000
    - Option 3b: $ 590,000

Mr. Calaman reviewed the estimated ratepayer impact. An estimated percentage impact range was presented. The percentages should be added to the sewer portion of customers' bills only to calculate the impact.

- Option 1: + 40%-55%
- Option 2a: + 140%-155%
- Option2b: + 230%-245%
- Option 2c: + 405%-420%
- Option 3a: + 0%-15%
- Option 3b: + 0%-15%

President Panetta stated that the three options being considered all have pros and cons. Option 1 is on the lower cost side but does not eliminate the risk of being in a susceptible area. Option 1 uses the the existing facility and is already licensed. There is potential for construction interference on the existing site because of the construction of berms, driving piles, etc. Not prohibitive but not a green field site. Option 1 has the highest ongoing maintenance cost. Option 2 is more remote from the ocean and at higher elevations and is at less fish risk from sea level rise, hurricanes, etc. Option 2 can be built offline. Option 2 does have the highest capital cost due to land acquisition and running the piping to and from the facility. Option 3 has the benefit of the discharge going out on the outing tide. The lagoons would hold the treated effluent and would be flushed through canal out to the ocean. Currently the plant operates by discharging 24/7 whether an ingoing or outgoing tide. Option 3 is a lower cost for O&M.

BPW will take public comment until February 6, 2023 at the close of business. Comments can be submitted online through the webpage, email, or in person.

Questions:

Mike Taylor, Cape Port Lewes, questioned what the impact of hurricane Sandy was on the current facility. President Panetta stated that the impact was not significant, because it hit 30 miles north and east winds blew offshore. Mr. Taylor stated that Lewes was lucky, but Lewes will eventually get hit by a storm that will have a great impact. Mr. Webb stated that sea level rose when Sandy hit New York, it was at 13.8 feet. New Jersey was at 14 feet.

Roy Fitzgerald, Massachusetts Avenue, questioned if the Board is considering solar energy or other sustainable energy. Mr. Fitzgerald questioned the climate effects for Option 3. Is the Board concerned about shifting control of the entire treatment system to the county. President Panetta stated the the BPW has a mitigation committee and is reviewing all utilities. The Board has looked into solar and battery storage. This is unrelated to tonight's agenda. Hans Medlarz stated that the minimum elevation of the county facility would be over 13 feet. Sea level rise is not a concern for the facility. President Panetta stated that if Option 2 was chosen, the facility would also be constructed so that sea level rise was not a concern. President Panetta stated that the Lewes BPW will be the owner and operator of the sewer collection system under any of the options. Under Option 3, the BPW would be transferring wastewater at a connection point to the county for treatment. BPW will still operate pump stations and sewer network. Customers would still be billed by BPW.

Terry Poirey, lives near the canal, questioned if there will be additional cost that will be absorbed by Sussex County and if this could potentially come back to BPW customers in the form of county taxes. Mr. Poirey questioned if the current facility footprint will be smaller under Option 2 or 3 and land be restored for other uses? President Panetta stated that that for option 2 and option 3, the current BPW site land would be returned for other uses. The plant would be demolished. Todd Lawson stated that the county sewer system is holistically separate from the tax system. The cost is absorbed by the county sewer customers, spread throughout the county. Mr. Webb stated that he compared the county budget to BPW budget 2020-2025. The county budget is $211 million and the BPW is $6 million.

Alan Roth, Kings Highway, referred to Option 3 and the cost of the of the Wolfe Neck plant. Tom Biagioli confirmed that the new plant in Option 3 will be built by Sussex County. Mr. Roth is concerned that the cost of the plant will be financed and how the debt will be paid for.Mr. Medlarz stated that Sussex County already has various existing functions for plant upgrades and and plan to only finance a small

portion of the capital costs. Mr. Roth questioned if any of the costs will be charged back to the BPW.Mr. Medlarz stated that there is no debt component to the BPW. BPW will pay for 50% of the O&M.

A rate payer online questioned if the county will be reducing capacity by switching to tertiary treatment. Mr. Medlarz stated that the current capacity is well above 1.75mgd and the permit application for the renewal of Wolfe Neck site is to limit the spray site to 1.75mgd. The flexibility option is the best of both worlds.

Kevin McGuiness, Bay Avenue, questioned the 30 foot wide, 12 foot high berm in Option 1 and if it will encircle the entire facility? President Panetta stated that the berm will in encircle 60% of the facility and the rest would be sheet pile. Mr. Biagioli stated that there will be a perimeter and a vehicle access ramp tied to the existing roads. Mr. McGuiness questioned if the side that faces Savannah Road would be the berm. Mr. Biagioli confirmed that it will face Savannah Road and American Legion Road. Plastic will not be visible, and the berm would be seeded and have a grass finish. The access ramp will be 1 and 20 slope. Mr. McGuiness stated that this will be a sizable ramp given the weight of the trucks that would need to use the ramp. Mr. Biagioli stated that the ramp would be approximately 300 feet. Mr. McGuiness stated that the the new upgrades will be much more visible than what is currently on site.

Barbara Curtis, Carpenter Square, stated that the MCA gave no consideration to a higher flow rate discharging to the canal and out to the bay and the lower quality than what is currently achieved with the membrane technology. What will happen to canal front properties, wetlands, etc? Ms. Curtis suggested that other treatment technology be considered for comparison. There are new technologies that take up less space, are easy to operate, more environmentally friendly, and are less costly to build and operate. Ms. Curtis stated that she believes that the numbers for Option 2a and 2b are much higher than they need to be. Mr. Biagioli stated that in terms of the MCA, there is a criterion that addresses the impacts on the canal, one the most critical criteria with the highest weighting. For the quality of effluent being discharged, there will actually be a lower nutrient concentration going into the canal. There is an acknowledgement of uncertainty in terms of additional flow. This will be addressed in the next stages with modeling of the canal to get an understanding of the impacts. President Panetta stated that there is a first of a kind plant in Phoenixville, that uses composting. This has not been licensed in Delaware and is a concern when going to a first of its kind plant. Ms. Curtis referred to another technology, Nereda, and there are 70 plants in operation or under construction. Nereda uses 75% land use, 30% energy use, and fully automated. This is activated sludge and is granule. There are many advantages to this technology. President Panetta stated that the Board will take the suggestion under advisement. Mr. Biagioli stated that during the design stage, there would be a task to look at alternative technologies.

Dave Ennis, Harborview, stated that Lewes is surrounded by county property and referred to an issue at Harborview Point. Sussex County approved eight or twelve feet of fill on the property adjoining the Great Marsh. Mr. Ennis encourages forming a committee for the soft issues discussing the structure of county plans that will be different than the BPW so that explosive growth on the borders does not continue. Mr. Ennis is concerned that the “marriage” to Sussex County may not be a “marriage” of like philosophy. Mr. Ennis stated that another concern is contaminated waters that Lewes residents swim in. Putting more dirty water into the bay is destroying the community. President Panetta stated that concerns relative to growth is outside the purview of the BPW. President Panetta stated that the runoff

that caused past contaminations have been traced back genetically to livestock. Mr. Ennis suggested a committee with the BPW, the city, and Sussex County.

Chip Davis, East third street, agrees with Mr. Ennis and has concern about entering into an agreement with Sussex County. Mr. Davis stated that what is happening outside the city limits is a travesty and does not see a end to the growth. Mr. Davis feels that the county has come to BPW for a reason. Rehoboth Beach turned Sussex County down and there is a reason. Mr. Davis questioned the study criteria under wastewater flow rates. Does the zoning designations refer to the city or Sussex County. President Panetta stated that the zoning designations refers to the build out calculations for the BPW jurisdiction.

Barbara Warnell, Port Lewes, is concerned that the calculations are only 25 years out. The current plant was upgraded in 2007 and originally built in the 1950s. Ms. Warnell would like to see a longer-range plan. Ms. Warnell is concerned with discharge into the bay and the wetlands. Humans make educated decisions at the time seem appropriate and years later land and resources are overused. Ms. Warnell is also concerned with the ramifications of joining Sussex County. Ms. Warnell agrees with more progressive solutions suggested by Ms. Curtis.

Mr. Calaman stated that in September 2021, the BPW held a workshop discussing bi-directional flow with Sussex County. Mr. Medlarz referred to the "marriage" analogy and that the BPW and Sussex County have been engaged since 2016. There is an agreement already in place that is mutually beneficial. Ms. Warnell stated that the county makes more money and when one party in a partnership makes more money, it is not good.

An attendee questioned the land use and the reference of the north and south collection areas and if there are maps available. President Panetta stated that by the BPW charter, the BPW can serve up to two miles outside of the city limits if a CPCN has not been issued to another utility. Mr. Medlarz stated that there is a map on Sussex County's website that shows the BPW service territory.

Donnell White, Marina Drive, questioned operating the current site 60% capacity. For Option 3a and 3b the BPW and the county will share 50/50 capacity with the county. Sussex County is bigger and will use more capacity. President Panetta stated that Sussex County has more facilities and the flow would only be the Wolfe Neck area for the county. Mr. Medlarz stated that the assumption of the O&M cost was based on 50/50, but the O& M is flow based. The current arrangement is set now based on flow based.

Ms. Curtis stated that timing is being dictated by the county because Sussex County has to make plans, and this is a concern. Ms. Curtis suggested operating the current plant with minor upgrades and allowing for more time for a more logical, rational solution for the BPW to retain control. Ms. Curtis has a concern about the existing site and its future use. Suggested using the land for renewable energy, such as wind farm, battery storage, solar farm, etc.

Dave Ennis suggested looking to for-profit wastewater system entities. President Panetta stated that there are contract operators for smaller areas. Mr. Lee stated that Artesian is a larger for-profit entity but does not serve the Lewes area.

Bob Heffernan, Railroad Avenue, questioned what the approval process is and if the Mayor and city council gets a vote. President Panetta stated that this a BPW decision.

Aaron Mushrush, Cape Gazette, questioned what the Board thinks is the best option. President Panetta stated the there are technical, political, and environmental solutions the Board would like to take the public comments and weigh in on each option. There are pros and cons to each option. Mr. Mushrush questioned if there was FEMA money available? President Panetta stated that the Board is always looking for funding sources.

President Panetta stated that the Board is taking the public input seriously. At the next regular BPW Board meeting a date for a workshop will be set for the Board to discuss public comments received. Public comments should be submitted by the close of February 6, 2023. At the workshop, the next steps will be discussed. The Board is trying to balance proactive versus reactive. The BPW decision will be done in the best interest of customers and the stakeholders (environment). Mr. Webb stated that the current plant is where it is because of the logic of that time.

4.ADJOURNMENT

President Panetta adjourned the meeting at 8:05 pm.

Respectfully Submitted
Sharon Sexton
Executive Assistant