

3087/24



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SALISBURY
BALTIMORE
SEAFORD
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OCEAN VIEW

www.gmbnet.com

DATE: October 16, 2024 GMB NO: R220042
TO: DE DNREC RE: Seaford WWTF -
Division of Water Partial Upgrade &
Commercial & Government Services Section Expansion
89 Kings Highway
Dover, DE 19901

ATTN: Mr. Kevin Bronson

COPIES:	DESCRIPTION:
1	Permit Application
1	Project Narrative
1	Influent Pump Station Calculations
1	Contract Drawings & Project Manual (Paper Copy)
1	Flash Drive – Electronic Files of Contract Drawings
1	Check #4088 – Public Notice Fee (\$300.00)
1	Check #4089– Permit Review Fee (\$825.00)

REMARKS: For review and approval.

COPIES TO:

City of Seaford:
Attn: Berley Mears (w/o encl.)
Attn: Bryant Tiff (w/o encl.)

Chris Derbyshire, P.E.
Project Director

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Project Narrative

GMB was hired by the City of Seaford to design an upgrade and expansion of the existing Seaford Wastewater Treatment Facility. The proposed upgrades focus on the front end of the treatment process, including screening, grit removal, influent pumping, primary clarification and addition of a septage acceptance and transfer facility.

The existing headworks structure operates with the grit removal system upstream of the mechanical screen. This upgrade consists of removing the outdated grit removal equipment and rehabbing the existing channels. This upgrade also includes the upgrade of the existing mechanical screen to a new one with 6mm spacing to handle the increased flow capacity of the facility.

The existing Influent Pumping Station is of the wet-pit/dry-pit configuration and uses three (3) line shaft and one (1) dry pit submersible pump. The station lifts flow exiting the existing headworks structure to the primary treatment process. The upgrade consists of replacing all of the existing pumping equipment and installing five (5) dry-pit submersible pumps, with up to four (4) operating in parallel and one (1) stand-by. As the Influent Pumping Station will be located upstream of grit removal under these upgrades, the new pumps will include hardened impellers which are able to withstand abrasion from grit in the wastewater. The pump station is capable of transmitting a peak flow of 5,830 gpm. The pump room will house the flow meters and gate valves. Influent will be pumped to the new Grit Removal Structure via an 18" PVC force main with piping increasing to 24" prior to structure to reduce influent velocities. Other improvements include influent channel modifications to improve flow distribution in the wet well and construction of a new doorway and lifting equipment to facilitate pumping equipment removal. A wet well bubbler and associated equipment including a bubbler compressor, mixing compressor, and a control system will also be installed. In order to protect against sea level rise, a concrete curb wall around the entire perimeter of the structure will be built to prevent flood waters from entering through the doorways or migrating through the building's masonry walls.

In order to continue to implement grit removal, the WWTF will be expanded by including a new grit removal structure and grit processing building. The simplex unit grit removal structure will utilize induced vortex principles to settle out grit from the waste stream. The structure will include two (2) discharge channels which will house secondary fine screening equipment which will be installed under a future WWTF project. Following the discharge channels is a splitter box structure to direct flow to the primary clarifiers or partially bypassing them during high flow events and sending flow to downstream flow equalization tankage. The grit processing building will house a single grit

washing/classifying unit. The grit removal structure is elevated to fit within the hydraulic profile and discharge to the existing primary clarifiers.

There are two (2) existing Primary Clarifiers, both of which are approximately 40-ft in diameter. The upgrade and expansion consist of replacing all internal mechanisms in the clarifiers. Additional upgrades include concrete rehabilitation, corrosion control coating, and surge pumps replacement at one of the clarifiers. Under current operating practices, the City routinely sends a flow of 3.0 MGD to the single operating clarifier, once both units are operational, they will be able to treat twice that flow to the same standards.

The project includes construction of a septage acceptance and transfer facility. The acceptance unit will be located along Nanticoke Avenue and be accessible to contract haulers 24/7 and will provide screening of septage offloaded as well as recording to invoice the contract haulers accordingly. Following screening, septage will flow to an open top concrete holding tank to provide temporary holding of the septage which arrives in slug loads. This tank will include bubble aeration via positive displacement blowers located in an adjacent building. The aeration will ensure a complete mix of the tank contents and to prevent the waste from becoming anaerobic in condition. Two (2) submersible pumps (duty and standby) are located in the holding tank to transfer the pretreated septage to a sewer main which discharges upstream of the WWTF headworks, here septage will blend with incoming sewage and be treated accordingly. Transfer of septage will be under control of the operators, with the intention of transferring septage during off-peak hours of the domestic sewage inflow to the facility.

-End of Project Narrative-



Department of Natural Resources
and Environmental Control

89 Kings Hwy
Dover, DE 19901
dnrec.delaware.gov

Division of Water
Commercial and Government Services Section

Phone: (302) 739-9946
Fax: (302) 739-2296

INSTRUCTIONS FOR COMPLETING THE PERMIT APPLICATION FOR THE CONSTRUCTION OF WASTEWATER COLLECTION AND CONVEYANCE SYSTEMS

The following items must accompany the application. **Please note that incomplete application packages will be returned in their entirety and not reviewed until such time as all required information is received.**

- 1. A narrative summary of the intended purpose and design of the proposed facilities.
- 2. One (1) set of final construction plans and specifications (paper copy), if applicable, signed and sealed by a Delaware-registered Professional Engineer, or a Delaware-registered Professional Land Surveyor for gravity systems only.
- 3. One (1) electronic copy of final Plans.
- 4. The final plans must be drawn to scale showing slopes, inverts, pipe types and sizes, existing and proposed ground surfaces, tops of manholes, water lines, stormwater and stream crossings, encasements shown in plan and profile, and other information if pertinent or requested. **Calcs attached to application, curves in Plans.**
- 5. For pump/lift stations and force mains, include all calculations and pump/performance curves.
- 6. A check made payable to the State of Delaware for eight hundred twenty-five dollars (\$825.00), the non-refundable permit review fee. This fee covers the initial review and one follow-up review of any corrections or changes made to address the Division's comments. An additional eight hundred twenty-five dollars (\$825.00) non-refundable review fee must be submitted for resubmission of the plans if changes are made to the project which trigger a complete review of the permit application.
- 7. Your permit will have a public notice requirement if your system includes force mains or pump/lift stations. Include a check made payable to the State of Delaware for three hundred dollars (\$300.00) for the reimbursement of legal notices if the system has a force main connection or a pump/lift station.
- Please submit the completed application package, as outlined above, to DE DNREC, Division of Water, Commercial and Government Services Section, 89 Kings Highway, Dover, DE 19901. Please note, a new application, including the review fee, must be submitted if the Division's comments are not addressed or if requested supplemental information is not provided within one (1) year of the comment or request date.
- The following items must be submitted prior to permit issuance:
 - 8. Verification from the appropriate county or municipal planning authority that the project has the proper zoning approval. **N/A as this is a City of Seaford project.**
 - 9. A letter from the owner/operator of the wastewater facilities to which the proposed collection and conveyance facilities connect. The letter must include confirmation that the owner/operator has approved the project, that the owner/operator will take responsibility for treating and disposing of the wastewater to be conveyed and that the downstream facilities have the capacity to manage the additional flows without causing or contributing to violations of Delaware's Environmental Protection Act (7 Del. C., Chapter 60) and the regulations promulgated thereafter. This includes, but is not limited to, unauthorized discharges such as overflows at manholes and violations of the treatment system's operating permit (for example, the National Pollutant Discharge Elimination System (NPDES) permit). **N/A as this is a City of Seaford project.**
 - Visit us on the web at: <https://dnrec.delaware.gov/water/commercial-government/>

**APPLICATION FOR THE CONSTRUCTION OF
WASTEWATER COLLECTION AND CONVEYANCE SYSTEMS**

Application must be complete, typewritten or clearly printed

Date Application Submitted 10/16/2024

PROJECT INFORMATION			
Project Name and Location/ Address Seaford WWTF Partial Upgrade & Expansion 403 Nanticoke Ave, Seaford, DE 19973			
Tax Parcel Number(s) 531-13.00-36.00			
County <input type="checkbox"/> Kent <input type="checkbox"/> New Castle <input checked="" type="checkbox"/> Sussex		Watershed (www.dnrec.delaware.gov/swc/wa/Pages/WatershedAssessment.aspx) <input checked="" type="checkbox"/> Chesapeake Bay <input type="checkbox"/> DE Bay/Estuary <input type="checkbox"/> Inland Bays/Atl Ocean <input type="checkbox"/> Piedmont	
Sewer District or Interceptor City of Seaford		Wastewater Treatment/Disposal Facility Name Seaford Wastewater Treatment Facility	
Anticipated Construction Start Date June 2025		Treatment/Disposal Facility Owner and Operating Permit Number City of Seaford DE0020265	
Please note, construction permits expire three (3) years from the date of permit issuance.			
Are you requesting plan review and comment or CPCC Construction Permit issuance (circle one)			
Design Flow (gallons/day) Average 3.0 MGD	Peak 8.4 MGD (hourly) 6.0 MGD (day)	Peak Factor 2.8 (hourly) 2.0 (day)	Basis of Design DNREC Approved Prelim. Eng Report
Description Expansion and upgrade of influent pump station and primary treatment works. Addition of Septage acceptance and transfer facility.			
OWNER/DEVELOPER			
Company Name City of Seaford			
Mailing Address 414 High Street			
City Seaford	State DE	Zip 19973	
Contact Name Berley Mears			
E-Mail Address BMears@seafordde.com			
Telephone 302-629-8307	Cell 302-381-4580	Fax	

ENGINEER					
Company Name George, Miles & Buhr, LLC					
Mailing Address 206 West Main Street					
City Salisbury		State MD		Zip 21801	
Contact Name Chris Derbyshire, P.E.					
E-Mail Address cderbyshire@gmbnet.com					
Telephone 410-742-3115		Cell 443-614-8950		Fax	
GRAVITY SEWER INFORMATION					
Ownership <input type="checkbox"/> Public <input type="checkbox"/> Private	Type of Sewer System <input type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Other?			If Other, list below	
Type of Pipe	Length (ft)	Diameter (in)	Joint Specification	Min. Slope (ft/ft)	Min. Velocity (ft/sec)
Minimum Pipe Cover (ft)	Number of Manholes	Drop manholes provided? <input type="checkbox"/> Yes <input type="checkbox"/> No		Maximum Distance Between Manholes (ft)	
Minimum ten foot (10') horizontal & eighteen inch (18") vertical separation from water lines maintained? <input type="checkbox"/> Yes <input type="checkbox"/> No			If not, explain provisions to prevent cross-contamination:		
Explain any special challenges (for example, stream, highway and/or railroad crossings, directional drilling, elevated sewers, etc.)					
Comments No gravity sewer (collection system) is to be installed as part of project.					

PUMP/LIFT STATION INFORMATION				
Ownership <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private	Type of Wastewater <input checked="" type="checkbox"/> Residential <input checked="" type="checkbox"/> Commercial <input checked="" type="checkbox"/> Industrial <input type="checkbox"/> Other?		If Other, list below	
Pump Station Flows (gallons/day) Design 8.4 MGD	Average 3.0 MGD	Peak 5,830 gpm 8.4 MGD	Peak Factor 2.8	
Basis of Design Ten States Standards		Pump Type Dry-Pit Submersible		
Will peak flows be accommodated if largest unit fails? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Pump calc's and pump curves attached? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Cycle Time (minutes) 6.9 minutes, simplex pump operation at 60Hz ~1,700 gpm	Wet Well Detention Time (minutes) 2 minutes at ADF	
Check valves provided on discharge line? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Gate valves provided on discharge line? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
If not, explain alternate procedure:				
Ventilation provided in wet well? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Dry Well? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is an alarm system included? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Alternate source of power? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
What other provisions for emergency operations? In addition to backup diesel generator, facility has dual electric feed via City's system.				
Height of Influent Above Pump (suction head) (ft) +3.4, varies but always flooded.	Height of Effluent Above Pump (discharge head) (ft) 30.05 (based on grit structure at HWL)	Friction Loss (ft) 11.1		
Pump Design Point 5,830 gpm	Pump Operating Point 5,830 gpm Quadplex Arrangement	Static Head (ft) 26.65	Total Head (ft) 38.1	Required Motor Horsepower (hp) 20
FORCE MAIN INFORMATION				
Type of Pipe Ductile Iron Pipe	Length (ft) 65	Diameter (in) 18 & 24		
Hazen-Williams "C" Design Factor 130	Type of Joints Flanged and Restrained	Velocity Under Design Conditions (ft/sec) 7.3 and 4.1 fps	Minimum Pipe Cover (ft) Varies	
Air relief valves specified? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Clean-outs provided? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Maximum distance between clean-outs (ft) N/A		
Minimum ten foot (10') horizontal & eighteen inch (18") vertical separation from water lines maintained? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If not, explain provisions to prevent cross-contamination:			
Comments Force Main discharges from the Influent Pump Station to the Grit Removal Structure, both features are located at the WWTF site. VFD operation of Influent PS will allow station to operate under a "maintain level" strategy where pumping rate increases a decreases to match incoming flow rate. Cycle time design practice is only applicable to ensure that simplex pump operation doesn't short cycle during low influent flow periods.				

RECEIPT

	October 18th, 2024				120	
<i>RCVD FROM</i>	George, Miles & Buhr, LLC				\$300.00	
	Three Hundred Dollars and 00/100				<i>DOLLARS</i>	
<i>FOR</i>	WPCC Public Notice Reimbursement 3087/24					
<i>ACCT</i>	\$	300.00		x	<i>CHECK #</i>	4088
<i>PAYMENT</i>	\$	300.00			<i>CASH</i>	
	\$	-			<i>OTHER</i>	BY <i>Kevin Bronson</i>

DNREC, Commercial & Government Services Section, 89 Kings Hwy, Dover, DE 19901

RECEIPT

	October 18th, 2024				121	
<i>RCVD FROM</i>	George, Miles & Buhr, LLC				\$825.00	
	Eight Hundred twenty-five dollars and 00/100				<i>DOLLARS</i>	
<i>FOR</i>	Plan review fee WPCC 3087/24 Seaford WWTF Partial Upgrade and Expansion					
<i>ACCT</i>	\$	825.00		x	<i>CHECK #</i>	4089
<i>PAYMENT</i>	\$	825.00			<i>CASH</i>	
	\$	-			<i>OTHER</i>	BY <i>Kevin Bronson</i>

DNREC, Commercial & Government Services Section, 89 Kings Hwy, Dover, DE 19901