



May 8, 2024
Via Electronic Mail

3036/24



Department of Natural Resources
and Environmental Control
Division of Water, SWDS
89 Kings Highway
Dover, DE 19901

Re: Project No. 10259.BH
Cavaliers Country Club Sewage Pumping Stations and Force Mains

Dear DNREC Representative:

On behalf of the Carlino Redevelopment, LP, we are submitting an Application for the Construction of Wastewater Collection and Conveyance Systems for the referenced project.

This project was previously reviewed by the Department of Natural Resources and Environmental Control and received a Construction Permit dated April 30, 2019. The extension period has passed, and the permit has expired. In conformance with the terms of the previously issued permit, a new application is being submitted.

This package includes the following items:

1. Completed Application for the Construction of Wastewater Collection and Conveyance Systems
2. Narrative summary
3. One set of final construction plans and technical specifications signed and sealed by a Delaware Registered Professional Engineer.
4. Calculations and pump/performance curves for the proposed pumping station.
5. A check made payable to the State of Delaware for \$825.00 for the permit review fee.
6. A check made payable to the State of Delaware for \$300.00 for the permit review fee for a pump/lift station.
7. Zoning Ordinance Approval
8. Letter of Plan Approval from the New Castle County Department of Public Works
9. Issued Construction Permit (from previous submission)

We trust this information is sufficient for your review of the project application. If we may answer any questions, please do not hesitate to call.

Sincerely,
VERDANTAS, LLC

Carly Peck, E.I.T.
Project Engineer

CP:mjr
Projects\10000\10259\BH\Correspondence\Exports\2024-04 to DNREC\Letter.docx



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, if applicable, signed and sealed by a Delaware-registered Professional Engineer, or a Delaware-registered Professional Land Surveyor for gravity systems only. One (1) electronic copy of final Plans.
- 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.
- 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.
- 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).

- Visit us on the web at: <https://dnrec.alpha.delaware.gov/water/surface-water/>

**APPLICATION FOR THE CONSTRUCTION OF
WASTEWATER COLLECTION AND CONVEYANCE SYSTEMS**
Application must be complete, typewritten or clearly printed

Date Application Submitted 05/08/2024

PROJECT INFORMATION			
Project Name and Location/ Address Cavaliers Country Club - Wastewater Pumping and Conveyance System 100 Addison Drive Newark, DE 19702			
Tax Parcel Number(s) 09-024.00-013 and 10-017.30-001			
County <input type="checkbox"/> Kent <input checked="" type="checkbox"/> New Castle <input type="checkbox"/> Sussex		Watershed (www.dnrec.delaware.gov/swc/wa/Pages/WatershedAssessment.aspx) <input type="checkbox"/> Chesapeake Bay <input type="checkbox"/> DE Bay/Estuary <input type="checkbox"/> Inland Bays/Atl Ocean <input checked="" type="checkbox"/> Piedmont	
Sewer District or Interceptor South Christina		Wastewater Treatment/Disposal Facility Name City of Wilmington WWTP	
Anticipated Construction Start Date 07/01/2024		Treatment/Disposal Facility Owner and Operating Permit Number City of Wilmington, DE0020320	
Please note, construction permits expire three (3) years from the date of permit issuance.			
Are you requesting plan review and comment of <u>WPCC Construction Permit issuance? (circle one)</u>			
Design Flow (gallons/day) Average 199,100		Peak 796,400	Peak Factor 4.0
Basis of Design NCCDSS And 10 State Standards			
Description Wastewater pumping and conveyance system for proposed mixed use residential development			
OWNER/DEVELOPER			
Company Name Cavaliers Redevelopment, LP			
Mailing Address Carlino Commercial Development 875 Berkshire Blvd. Suite 102			
City Wyomissing		State PA	Zip 19610
Contact Name Peter S. Miller			
E-Mail Address pmiller@carlinodevelopment.com			
Telephone (610) 376-4807		Cell N/A	Fax (610) 288-8650

ENGINEER						
Company Name Verdantas, LLC						
Mailing Address 1060 S Governors Ave. Suite 101						
City Dover		State DE		Zip 19904		
Contact Name Carly Peck						
E-Mail Address cpeck@verdantas.com						
Telephone (302) 415-3782		Cell N/A		Fax N/A		
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 vertical separation from water lines <input type="checkbox"/> Yes <input type="checkbox"/> No		THIS APPLICATION APPLIES TO PUMPING STATIONS AND FORCE MAINS ONLY; GRAVITY SEWER IS THE SUBJECT OF A SEPARATE APPLICATION			Contamination:	
Explain any special challenges (for elevated sewers, etc.)						
Comments						

Pump Station West (A)

PUMP/LIFT STATION INFORMATION				
Ownership <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private	Type of Wastewater <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Other?		If Other, list below	
Pump Station Flows (gallons/day) Design 432,000		Average 105,000	Peak 420,000	Peak Factor 4.0
Basis of Design NCCDSS And 10 State Standards			Pump Type 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	Wet Well Detention Time (minutes) Approx. 1.4 minutes @ PF	
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 type="checkbox"/> Yes <input checked="" 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? Emergency bypass connection				
Height of Influent Above Pump (suction head) (ft) N/A	Height of Effluent Above Pump (discharge head) (ft) Approx. 33.0		Friction Loss (ft) 11.8	
Pump Design Point 300 gpm	Pump Operating Point 326 gpm	Static Head (ft) 29.0	Total Head (ft) 40.8	Required Motor Horsepower (hp) 5
FORCE MAIN INFORMATION				
Type of Pipe Ductile Iron, PVC		Length (ft) Approx 1,241	Diameter (in) 6	
Hazen-Williams "C" Design Factor C = 100, 140	Type of Joints Flanged, Mechanical Joint, Bell Spigot	Velocity Under Design Conditions (ft/sec) >2.5	Minimum Pipe Cover (ft) 3.5	
Air relief valves specified? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Clean-outs provided? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Maximum distance between clean-outs (ft) 400		
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				

Pump Station East (B)

PUMP/LIFT STATION INFORMATION				
Ownership <input checked="" type="checkbox"/> Public <input type="checkbox"/> Private		Type of Wastewater <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Other?		If Other, list below
Pump Station Flows (gallons/day) Design 796,400		Average 199,100	Peak 796,400	Peak Factor 4.0
Basis of Design NCCDSS And 10 State Standards			Pump Type Suction Lift	
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) 15	Wet Well Detention Time (minutes) 15
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 type="checkbox"/> Yes <input checked="" 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? Emergency bypass connection				
Height of Influent Above Pump (suction head) (ft) -18.11 static suction lift		Height of Effluent Above Pump (discharge head) (ft) 6.22	Friction Loss (ft) 28.15	
Pump Design Point 555 gpm	Pump Operating Point 700 gpm	Static Head (ft) see attached	Total Head (ft) 52.3	Required Motor Horsepower (hp) 20
FORCE MAIN INFORMATION				
Type of Pipe Ductile Iron, PVC and HDPE		Length (ft) Approx 2,178	Diameter (in) 8	
Hazen-Williams "C" Design Factor C = 110, 140	Type of Joints Flanged Mechanical Joint, Bell Spigot, and Butt Fused	Velocity Under Design Conditions (ft/sec) >2.5	Minimum Pipe Cover (ft) 3.5	
Air relief valves specified? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Clean-outs provided? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Maximum distance between clean-outs (ft) 400		
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				

APPLICATION FOR THE CONSTRUCTION OF WASTEWATER COLLECTION AND CONVEYANCE SYSTEMS

CAVALIERS COUNTRY CLUB PUMPING STATIONS AND FORCE MAINS

TABLE OF CONTENTS

- 1. A narrative summary of the intended purpose and design of the proposed facilities.
- 2. One (1) set of final construction plans and specifications, if applicable, signed and sealed by a Delaware-registered Professional Engineer, or a Delaware-registered Professional Land Surveyor for gravity systems only.
- 3. 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.
- 4. For pump/lift stations and force mains, include all calculations and pump/performance curves.
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CAVALIERS COUNTRY CLUB PUMPING STATIONS AND FORCE MAINS NARRATIVE SUMMARY OF PROPOSED FACILITIES

This narrative outlines the basis of design for the wastewater pumping and conveyance system to serve the proposed Cavaliers Country Club development. The wastewater pumping and conveyance system is generally described below and in more detail in the following sections:

1. Pumping Station A serves the western portion of the development and will discharge through a force main to Sanitary Manhole 31 of the on-site sanitary sewer system, which flows to Pumping Station B (East).
2. Pumping Station B receives wastewater flows from the eastern portion of the development as well as the pumped flows from Pumping Station A. Pumping Station B will deliver all wastewater flows from the development through a directionally drilled force main across the Christina River to the off-site public sewer system (South Christina Interceptor) located at the James T. Corcoran Jr. Park.

The wastewater pumping and conveyance system will be turned over to New Castle County Department of Special Services (NCCDSS) for ownership and maintenance upon final completion and acceptance.

I. DESIGN STANDARDS

The wastewater pumping and conveyance system is designed in conformance with the following standards, with NCCDSS standards taking precedence:

- A. NCCDSS Sewer Design Policy No. SS 7, May 1, 2012.
- B. NCCDSS Sewer Use Design Flows, July 31, 2000 and last revised July 1, 2007.
- C. Recommended Standards for Wastewater Facilities ("Ten State Standards"), 2014 edition.

II. DEVELOPMENT DESIGN FLOWS

Tables 1 and 2 show the breakdown of average daily wastewater flows for each side of the development, based upon correspondence with ARNA Engineering, the most recent Exploratory Plan submission, dated May 19, 2017, and unit flows from NCCDSS Sewer Use Design Flows guideline. At the time of this writing, the total proposed average daily wastewater flow from the entire development is 199,100 gpd. In a letter dated March 22, 2016, NCCDSS stated that the regional South Christina Interceptor has capacity to accept 200,000 gpd average daily flow from the development.

Table 1: Sewer Tabulation – West Side

Description	Unit	Quantity	Unit Flow (gpd/Unit)	Total Flow (gpd)
Single Family	Each	158	300	47,400
Apartment	Each	288	200	57,600
Total West Side Development Flows				105,000

Table 2: Sewer Tabulation – East Side

Description	Unit	Quantity	Unit Flow (gpd/Unit)	Total Flow (gpd)
Single Family	Each	42	300	12,600
Twin	Each	100	250	25,000
Townhome	Each	68	250	17,000
Carriage Home	Each	62	250	15,500
Banquet Facility	Seat	560	25	14,000
Existing Club House	Member	200	50	10,000
Total East Side Development Flows				94,100

III. PUMPING STATION DESIGN FLOWS

The pumping stations are required to handle peak wastewater flows from the development. Peak flows are determined by multiplying the average flows by a peaking factor of 4.0 per NCCDSS Sewer Design Policy No. SS 7.

$$\text{West Side Peak Flow} = 105,000 \text{ gpd} \times 4.0 = 420,000 \text{ gpd (292 gpm)}$$

$$\text{East Side Peak Flow} = 94,100 \text{ gpd} \times 4.0 + 420,000 \text{ gpd} = 796,400 \text{ gpd (553 gpm)}$$

The design pump flow rate for Pumping Station A will be 300 gpm. The design pump flow rate for Pumping Station B will be 555 gpm, accounting for the peak flow from the East Side development in addition to the pumped flow rate from Pumping Station A.

The pumping stations will be equipped with duplex pumping units providing 100% redundancy for peak flow capacity at each station. The duplex pumping units will normally operate automatically on an alternating basis to distribute runtimes between the equipment. Pumping units will be designed for raw wastewater service.

RECEIPT

May 8, 2024

52

RCVD FROM

Cavaliers Redevelopments, LP

\$825.00

Eight Hundred twenty-five dollars and 00/100

DOLLARS

FOR

Plan review fee WPC 3036/24 Cavaliers Country Club Pumpi

ACCT	\$	825.00
PAYMENT	\$	825.00
	\$	-

<input checked="" type="checkbox"/>	CHECK #	172
<input type="checkbox"/>	CASH	
<input type="checkbox"/>	OTHER	BY

Kevin Bronson

DNREC, Surface Water Discharges Section, 89 Kings Hwy, Dover, DE 19901

RECEIPT

May 8, 2024

53

RCVD FROM

Cavaliers Redevelopments, LP

\$300.00

Three Hundred Dollars and 00/100

DOLLARS

FOR

WPC Legal Notice Reimbursement 3036/24

ACCT	\$	300.00
PAYMENT	\$	300.00
	\$	-

<input checked="" type="checkbox"/>	CHECK #	176
<input type="checkbox"/>	CASH	
<input type="checkbox"/>	OTHER	BY

Kevin Bronson

DNREC, Surface Water Discharges Section, 89 Kings Hwy, Dover, DE 19901