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Joy Beach Phase 2 Pump Station - Project Narrative

1. Project Identification

Project Name: Joy Beach Sewer Collection System Phase 2
Location: Cherry Creek Valley, Lewes, Sussex County, Delaware
Applicant/ Owner: Sussex County
Engineer: KCI Technologies, Inc. 614 N Dupont Hwy, Dover, DE 19952
Date: October 27, 2025

2. Purpose

Sussex County proposes construction of a sewer conveyance system as part of the Joy Beach Sewer Collection Project Phase 2. The project will convey sewer from the Cherry Creek Valley development along Yoshino Dr and Lapin Cir, as well as Cherry Walk Dr, and Happy Go Lucky RV park, David Dr, Pierce Ln to the existing sanitary sewer system. The communities in Phase 2 will be served primarily by traditional gravity sewer with two properties served by a low-pressure grinder pump. The sewer gravity flow will drain to a proposed pump station along Cherry Walk Dr.

3. Design and Basis of Design

The Peak Flow was calculated using Sussex County recommended Peaking Factor Equation.

$$PF = (20+2 [EDU/10]^{1/2}) / (5+2 [EDU/10]^{1/2})$$

However, to meet minimum flow velocity requirements in the proposed 4" force main, the peaking factor was increased to 5.25 to achieve a minimum velocity of 2.5 feet per second.

Parameter	Value
Average Daily Flow (ADF)	30,000 GPD
Peak Factor	5.25
Peak Daily Flow	158,400 GPD
Design Pump Capacity	161,280 GPD (112 GPM)

4. Pump Station & Force Main Description

The pump station will be equipped with two (2) non-clog submersible pumps (1 duty, 1 standby) operating at 112 GPM at 66 feet TDH. The pre-cast, six (6) foot diameter wet well will provide a usable volume of approximately 372 gallons. The pump station will be equipped with redundant



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float switches and pressure transducer. The PS will serve approximately 120 homes with capacity for future expansion within the drainage basin.

The flow will be conveyed through approximately 3,267 LF of 4" force main to the existing gravity sewer along Camp Arrowhead Rd approximately 1,000 ft south of the Intersection of Waterview Rd. A portion of the force main was installed in Phase 1. The accompanying drawings, specifications, and supporting calculations provide additional details.

The design is based on Sussex County Sewer Standard Design.

To ensure reliable service, the pump station is designed with a main duty pump and a backup standby pump, it is equipped with a diesel generator to provide backup power supply in the event of main power supply failure and a bypass pumping connection. The site is secured behind a security fence and access for maintenance vehicles provided via a paved access drive.

The Pump Station has been designed in conformance with Recommended Standards for Wastewater Facilities ("Ten State Standards"), 2014 Edition, Sussex County Standard Construction Specifications.

Following construction and testing, the existing septic systems in the service area will be eliminated, eliminating assumed nutrient discharges to the inland bays through failing systems. All wastewater will be conveyed to the Inland Bays Wastewater Facility for reclamation and/or discharge through the ocean outfall.