



STATE OF DELAWARE

**DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL**

DIVISION OF WATER

RICHARDSON & ROBBINS BUILDING

89 KINGS HIGHWAY

DOVER, DELAWARE 19901

PHONE  
(302) 739-9946

COMMERCIAL &  
GOVERNMENT SERVICES:  
WASTEWATER,  
STORMWATER, &  
BIOSOLIDS  
MANAGEMENT

**TECHNICAL RESPONSE MEMORANDUM**

**TO:** Lisa Vest, Hearing Officer, Office of the Secretary

**THROUGH:** Steven M. Smailer, P.G., Director, Division of Water (DW)  
Jennifer Roushey, Environmental Program Administrator, DW

**FROM:** John Rebar Jr., Environmental Program Manager II, Commercial  
and Government Services Section (CGSS)  
Marlene Baust, P.E., Engineer IV, CGSS *MB 03/26/24*  
Derrick Caruthers, P.E., Engineer IV, CGSS *DC 03/26/24*

**RE:** **Technical Response Memorandum - Response to Comments received during the May 10, 2022, Public Hearing (Docket # 2022-P-W-0008) and associated comment period ending on June 7, 2022, on Sussex County Council's Application for a Phase 2 Upgrade and Expansion Project at the Inland Bays Regional Wastewater Treatment Facility**

**DATE:** March 26, 2024

---

**Introduction**

This Technical Response Memorandum (TRM) was prepared at the request of the presiding hearing officer to assist in the completion of the Hearing Officer's Report to the Secretary of the Delaware Department of Natural Resources and Environmental Control (the Department). This TRM also provides the information necessary to inform the final decision on the issuance of the proposed On-Site Wastewater Treatment and Disposal System (OWTDS) Construction Permit for a proposed upgrade and expansion project at Sussex County Council's (the County's) Inland Bays Regional Wastewater Treatment Facility (IBRWTF or the facility) and the proposed OWTDS Operations Renewal and Modification Permit authorizing the operation of the current and future wastewater treatment and disposal systems.

The County is currently authorized to operate and maintain an OWTDS known as the IBRWTF. The IBRWTF receives and treats municipal wastewater from the County’s service territories and the facility consists of headworks with screening and grit removal systems, two Biolac aeration lagoons for biological nutrient removal (BNR), two clarifiers, biosolids handling, dewatering, and storage facilities, a chlorine contact tank for disinfection, and two treated wastewater (effluent) storage lagoons. Currently, up to 2.65 million gallons per day (MGD) of effluent is discharged to 432.5 acres of agricultural fields via eight center pivot spray irrigation systems. This Phase 1 operation is authorized by the County’s OWTDS Operations Permit No. 359141-05.

The County is applying for an OWTDS Construction Permit for a Phase 2 upgrade and expansion project at the IBRWTF. The Phase 2 project’s scope includes increasing the facility’s wastewater treatment capacity from 2.65 MGD to 4.00 MGD by installing new screening and grit removal systems, constructing two additional Biolac aeration lagoons for BNR, constructing two additional clarifiers, and upgrading/expanding existing pumps, blowers, biosolids, filtration, and irrigation pump systems.

The Phase 2 project will also increase the facility’s disposal capacity from 2.65 MGD to 6.96 MGD on an annual average basis by adding approximately 347.9 wetted acres on County-owned forested land. Treated wastewater will be pumped from the IBRWTF effluent storage lagoons and distributed to spray fields with fixed-head sprinkler systems. The distribution system consists of 17,900-ft of 16” PVC C900 distribution lines which feed 186,960-ft of 4” PVC C900 lateral lines that connect to the sprinkler heads.

The Phase 2 project is located on the north side of County Road 306, between County Road 307 and 303, Sussex County, Delaware, Sussex County Tax Map/Parcel Numbers are as follows:

Facility & Fields	Parcel Number
Treatment Facility	234-22.00-10.00
‘A’ - Proposed	234-21.00-151.00
‘B’ - Proposed	234-21.00-151.03
‘C’ - Proposed	234-22.00-10.00
‘D’ - Proposed	234-22.00-8.00

The Phase 2 upgrade and expansion project will also allow the County to distribute treated wastewater to nearby farmers for the irrigation of agricultural crops in accordance with 3 Del. C. SS 2301 and Section 6.11.8 of 7 Del. Admin. C. § 7101 *Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems*. The County is proposing to distribute treated wastewater to the following parcels:

Owner	Site	Tax Map Number	Zoning
Sussex County	Pelican Point 12.79 Acres	234-16.00-906.00	Open Space Area A1
Hollyville Farms, LLC	Whittington Estates 55.18 Acres	234-21.00-171.00	AR-1-Agricultural / Residential
Avebury LLC Hurdle Property	Avebury Subdivision 25.23 Acres	234-16.00-28.03	SWM Open Areas
Sussex County	14411 Hollyville Rd 209.54	234-16.00-28.00	AR-1-Agricultural / Residential
Sussex County	N/Townsend Rd NE/Harmony Cemetery Rd Parcel A 50.0 Acres	234-16.00-23.00	Exempt
Double H Farm, LLC	24458 Townsend Rd 98.84 Acres	234-16.00-21.01	AR-1-Agricultural / Residential

In addition, the Phase 2 project includes the construction and potential use of a submerged gravel wetland system. The wetland system is a research and demonstration project designed to evaluate the effectiveness of constructed wetlands to serve as an innovative alternative to treated wastewater storage in lagoons, provide an enhanced treated wastewater disposal option, and remediate local groundwater resources. Please note, the discharge of treated wastewater to the wetland system will require separate Department approval. There is no guarantee that the County will be permitted to send effluent to the wetland system or that the wetland system will subsequently be fully permitted for treated wastewater use. The constructed submerged gravel wetland system will be located on North Burton Field, Parcel Number: 234-22.00-10.00.

The distribution of effluent to area farmers and the constructed submerged gravel wetland system does not provide the IBRWTF with additional disposal capacity beyond 6.96 MGD on an annual average basis, but rather provides an additional potential alternative disposal outlet, and lagoon storage alternative. The proposed construction and operational permits only govern the construction of and the potential wastewater discharge to the submerged gravel wetland system.

Along with the Construction Permit, the County is also applying to renew and modify their OWTDS Operations Permit for current (Phase 1) operations and authorize the future use of the new equipment, treatment, and disposal systems installed during the Phase 2 upgrade project. In addition to authorizing increased treatment and disposal capacity, the OWTDS Operations Renewal and Modification Permit will also authorize the discharge of treated wastewater from IBRWTF to rapid infiltration basin systems (RIBs) owned and maintained by Artesian Wastewater Management, Inc., or the County.

The County submitted construction and permit renewal applications in accordance with 7 Del. Admin. C. § 7101 *Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems* (the Regulations). A public hearing notice was issued on April 20, 2022, and a virtual public hearing was held on the applications and proposed draft permits on Tuesday, May 10, 2022, 6:00 PM. To allow the public ample time to review the application, supporting information, draft permits, and provide comment, the Hearing Officer left

the hearing record open until June 7, 2022. The Department received comments and questions from fifty individuals.

To adequately address all comments and questions, the Department requested additional information from the County in a letter dated August 24, 2022 (Appendix I). The County provided the requested additional information in a response letter dated October 21, 2022 (Appendix II).

To prepare the responses to the public comments received, the Division of Water reviewed the transcript, written comments, monitoring data, and the additional information provided by the County. Since many of the comments provided were similar in nature, this Technical Response Memorandum groups and paraphrases similar comments and questions together to address the topics of concern. The public comments and the Division's responses follow. Please note that permit condition citations are based on the finalized revised draft permits based on required permit changes discussed in this TRM and included as Appendix VI and VIII.

Summarized comments and the Division's responses follow.

### **1. Comment: Potential Contamination Impacting Aquifers and Water Supply**

Many public comments expressed concern for the health of the people that live in the area and the potential impact the discharge of treated wastewater (effluent) may have on the local water quality and supply.

#### **Response:**

The State of Delaware is dependent on groundwater for a significant portion of its potable water supply. The Department through its authority under §3.13 of the Regulations requires that all permitted on-site wastewater treatment and disposal systems be "operated and maintained so as not to create a public health hazard or cause water pollution." The Department further requires (in accordance with §3.20 of the Regulations) that a Permittee take "all necessary actions to eliminate and correct any adverse impact on public health or the environment resulting from permit non-compliance." Since, wastewater is composed of a range of physical, chemical, and biological constituents; the intent of wastewater treatment is to remove regulated constituents of concern for the protection of public health and the environment. The primary constituents of concern in municipal wastewater include total suspended solids (TSS), pathogens, biodegradable organics, nutrients (i.e., nitrogen and phosphorus) and other dissolved inorganics, heavy metals, and priority pollutants (i.e., carcinogenic organic and inorganic compounds). Depending on the source of the wastewater (i.e., municipal, industrial, agricultural, etc.) and point of discharge (surface water, groundwater, public or agricultural reuse, etc.); wastewater treatment systems are required to be designed to remove specific levels of applicable constituents to comply with Federal and State water quality standards. Therefore, the Department issues discharge permits with treatment limits designed to protect water quality.

To comply with these regulatory directives, the Department prepared a draft On-Site Wastewater Treatment and Disposal System (OWTDS) Construction Permit for the proposed Phase 2 upgrade and expansion project by Sussex County Council at the Inland Bays Regional Wastewater Treatment Facility (IBRWTF) and a proposed draft On-Site Wastewater Treatment and Disposal System (OWTDS) Operations Renewal and Modification Permit for Sussex County Council to incorporate the future operation of the new Phase 2 treatment and disposal systems. The draft permits include effluent limitations along with operational, monitoring, and reporting conditions devised to protect public health and the environment.

The existing wastewater treatment facility is designed for and is currently required to meet limited public access treatment criteria, which consist of the following:

<b>Parameter</b>	<b>Daily Permissible Average Concentration</b>
BOD5	50 mg/L
Fecal Coliform	200 colonies/100 mL
Total Suspended Solids	90 mg/L

However, the Phase 2 upgraded and expanded wastewater treatment facility is designed to meet the State’s highest wastewater treatment quality criteria: unlimited public access criteria.

The treated wastewater utilized for unlimited public access sites will be required to meet the following daily permissible average concentrations. These limitations are listed in Part I.I.12 of the revised draft Operations Renewal and Modification Permit.

<b>Parameter</b>	<b>Daily Permissible Average Concentration</b>
BOD5	10 mg/L
Fecal Coliform	20 colonies/100 mL
Total Suspended Solids	10 mg/L
Turbidity	5 NTU

Effluent Nitrogen Concentration Limits

Part I.I.2 of the revised draft Operations Renewal and Modification Permit requires the wastewater treatment system to meet a daily average Total Nitrogen (TN) concentration of 10 mg/L in the treated effluent prior to disposal or distribution. This limitation applies to Phase 1 and Phase 2 operations.

The Federal Maximum Contaminant Level (MCL) for Nitrate as Nitrogen in drinking water is 10 mg/L. The IBRWTF application indicates effluent will be treated to a Total Nitrogen (i.e., the sum of all nitrogen forms) concentration of 10 mg/L or less prior to disposal. Therefore, the design effluent concentration meets the MCL for Nitrate as Nitrogen prior to discharge. The wastewater treatment system is therefore designed to ensure that there will be no adverse impact to groundwater resources and local drinking water wells. In addition, during spray irrigation operations, further nutrient reductions can occur via plant uptake.

Part IV.A.2 of the finalized revised draft Operations Renewal and Modification Permit states the requirement that “the operation of the wastewater treatment facility and spray irrigation system shall not cause the quality of Delaware’s groundwater resources to be in violation of applicable Federal or State Drinking Water Standards.” Please note the current system routinely meets a TN of less than 10 mg/L with the 2023 average concentration being 5.9 mg/L (see Table below).

<b>Total Nitrogen Concentration</b>	
<b>Monitoring Period</b>	<b>Result (mg/L)</b>
2019 Average	5.46
2020 Average	4.5
2021 Average	7.96
2022 Average	7.95
2023 Average	5.87

Effluent Total Phosphorous Concentration Limits

To further address public comments regarding water quality discharged from the IBRWTF, the Division has included an additional condition (Part I.I.4 of the revised draft Operations Renewal and Modification Permit) requiring the wastewater treatment system to meet a daily average Total Phosphorous (TP) concentration of 8.0 mg/L prior to disposal or distribution. This limitation is required for both Phase 1 and Phase 2 operations. This requirement is also in accordance with “Performance Standard Phosphorous Level 2 (PSP2) of the Regulations. Please note the current system routinely meets a TP of less than 8.0 mg/L with the 2023 average concentration being 3.1 mg/L (see Table below).

<b>Total Phosphorous Concentration</b>	
<b>Monitoring Period</b>	<b>Result (mg/L)</b>
2019 Average	4.9
2020 Average	4.6
2021 Average	5.1
2022 Average	4.7
2023 Average	3.1

### Off-Spec Effluent Diversion Requirement

In addition to permit limitations addressing treatment criteria aimed at protecting public health and groundwater resources, the Regulations, and revised draft Operations Renewal and Modification Permit also requires diversion capabilities and contingency plans in the event effluent does not meet the specified criteria.

Section 6.3.2.3.2.4 of the Regulations stipulates diversion requirements for wastewater that fails to meet operating specifications: “*Automatic diversion of wastewater that fails to meet the operating criteria must be included in the system design.*”

Section 6.3.2.3.12.3 also stipulates storage requirements for off-spec wastewater: “*A separate off-line system for storage of reject wastewater must be provided at all unlimited access sites unless another permitted reuse system or effluent disposal system [can receive] the reject wastewater. At a minimum, this capacity must be the volume equal to two days flow at the average daily design flow rate of the treatment facility. Provisions for re-circulating the reject wastewater back to the treatment facility for further treatment may be incorporated into the design of the facility.*”

On August 24, 2022, the Division issued a letter seeking clarity regarding the IBRWTF’s diversion capabilities and to ensure that the Phase 2 upgraded wastewater treatment system will meet the regulatory requirements outlined above. In a response dated October 21, 2022, the County provided the following plan:

#### *IBRWTF Diversion Management Plan*

*The IBRWTF will have (2) compliance points for validation of effluent quality prior to discharge from the irrigation pumping stations. The filtration facility effluent will have continuous turbidity monitoring and an automated diversion system to distribute flow based on effluent quality.*

*During normal operation, effluent flow within Compliance Point 1 (CP1) limits will be conveyed to irrigation pump station No. 1 which feeds the unlimited public access irrigation loop. If there is a non-compliance condition at CP1, flow will be automatically diverted to effluent storage lagoon No. 2, which feeds irrigation pump station No. 2.*

*Compliance Point 2 (CP2) will be located at irrigation pump station No. 2 where flow is pumped to the limited access spray fields. If there is a non-compliance condition at CP2, flow will be diverted back to the aeration distribution box to be re-treated. This configuration is shown on the revised M00.02 schematic.*

## Contingency Plan Requirements

The revised draft Operations Renewal and Modification Permit includes Phase 1 and Phase 2 Contingency Plans for exceedances of Fecal Coliform Bacteria, Turbidity, Total Nitrogen, and Total Phosphorous to ensure only high-quality treated wastewater (effluent) is used for irrigation.

Part I.I.13 of the revised draft Operations Renewal and Modification Permit requires the following Phase 2 Fecal Coliform Bacteria and Turbidity Contingency Plan.

### *Phase 2 Fecal coliform bacteria and Turbidity Limitation Contingency Plan*

*If analytical results of a treated wastewater sample indicate an exceedance of the daily permissible average concentration of fecal coliform bacteria or turbidity (Table 7), the Permittee shall collect and analyze a second sample within 24 hours of becoming aware of the original exceedance. If the second sample result indicates that the fecal coliform bacteria concentration is exceeding 20 colonies/100 mL or the turbidity exceeds 5 NTU, the following contingency plan shall be enacted.*

- a) The Permittee shall notify the Department within 24-hours after becoming aware of the second fecal coliform bacteria or turbidity result and submit a copy of the analytical results.*
- b) The Permittee shall cease discharging to the constructed submerged gravel wetland system and the agricultural fields authorized to receive effluent for beneficial reuse in accordance with Section 6.11 of the Regulations. The permittee shall also cease discharging to the spray irrigation fields if limited public access criteria are exceeded (Table 6).*
- c) The Permittee shall increase the frequency of fecal coliform bacteria sampling and submit weekly results to the Department.*
- d) The Permittee shall examine the operation and maintenance log, required to be maintained by this Permit, for any possible improper operational procedures.*
- e) The Permittee shall conduct a physical inspection of the treatment system to detect abnormalities. Any abnormalities discovered shall be corrected. A report detailing the corrections made shall be submitted to the Department within 30 days of correction.*

*When analytical results indicate that the daily average concentration limitations for Fecal coliform bacteria or Turbidity set by this Permit (Table 7) is no longer being exceeded, the Permittee can reduce additional sampling and resume discharge to the constructed submerged gravel wetland system (if authorized to do so), the agricultural fields authorized to receive effluent for beneficial reuse in accordance with Section 6.11 of the Regulations, and the spray fields (if applicable as listed in Table 6).*

*If a facility is required to enact the contingency plan more than four times in a 12-month period, the Permittee shall have the system evaluated to determine the cause of the elevated fecal coliform bacteria and turbidity concentrations and submit a revised Design Engineer Report with proposed corrective actions to achieve a maximum fecal coliform bacteria concentration of 20 col/100 mL and/or turbidity of 5 NTU that bears the seal and signature of a Class C*



*licensed Delaware Professional Engineer to the Department. The report shall be submitted within one year of the fourth notification of the contingency plan being enacted. The Permittee shall initiate implementation of the plan within 90 days following approval by the Department.*

Part I.I.3 of the revised draft Operations Renewal and Modification Permit requires the following Total Nitrogen Contingency Plan.

*Phase 1 and 2*

*If analytical results of a treated wastewater sample indicate an exceedance of the Total Nitrogen limitation of 10 mg/L (during non-construction periods), the Permittee shall collect and analyze a second sample within 24 hours of becoming aware of the original exceedance. If the second sample results indicate that the maximum Total Nitrogen limitation is continuing to be exceeded, the following contingency plan shall be enacted.*

- a) The Permittee shall notify the Department within 24-hours after becoming aware of the second exceedance and submit a copy of the analytical results indicating the exceedances.*
- b) The Permittee shall cease discharging to the constructed submerged gravel wetland system and the agricultural fields authorized to receive effluent for beneficial reuse in accordance with Section 6.11 of the Regulations.*
- c) The Permittee shall increase the frequency of Total Nitrogen treated wastewater sampling to once daily and submit weekly results to the Department.*
- d) The Permittee shall examine the operation and maintenance log, required to be maintained by this Permit, for any possible improper operational procedures.*
- e) The Permittee shall conduct a physical inspection of the treatment system to detect abnormalities. Any abnormalities discovered shall be corrected. A report detailing the corrections made shall be submitted to the Department within 30 days of correction.*
- f) The Permittee shall incorporate the elevated effluent total nitrogen concentrations into design nitrogen balances to calculate reduced loading rates that will not cause the percolate to exceed drinking water standards for Nitrates for the authorized spray fields. Calculations shall be performed and submitted monthly to the Department for each month total nitrogen concentrations exceed 10 mg/L. Volumes irrigated shall not exceed the calculated reduced loading rates for the month.*

*When daily analytical results from three consecutive weeks of wastewater sampling do not exceed the limitation, the Permittee is authorized to return to a bi-weekly monitoring frequency.*

*If the facility is required to enact the contingency plan more than four times in a 12-month period (during non-construction periods), the Permittee shall have the system evaluated to determine the cause of the elevated total nitrogen concentrations and submit a revised Design Engineer Report with proposed corrective actions to achieve a maximum total nitrogen concentration 10 mg/L that bears the seal and signature of a Class C licensed Delaware Professional Engineer to the Department. The report shall be submitted within one year of the*

*fourth notification of the contingency plan being enacted. The Permittee shall initiate implementation of the plan within 90 days following approval by the Department.*

Part I.I.4 of the revised draft Operations Renewal and Modification Permit requires the following Total Phosphorous Contingency Plan. Please note this condition was added to the permit to further address public comments regarding water quality.

*Phase 1 and 2*

*If analytical results of a treated wastewater sample indicate an exceedance of the Total Phosphorous limitation of 8 mg/L set by Part I.I.4 of this Permit, the Permittee shall collect and analyze a second sample within 24 hours of becoming aware of the original exceedance. If the second sample results indicate that the maximum Total Phosphorous limitation is continuing to be exceeded, the following contingency plan shall be enacted.*

- a) The Permittee shall notify the Department within 24-hours after becoming aware of the second exceedance and submit a copy of all analytical results indicating the exceedances.*
- b) The Permittee shall cease discharging to RIBs, the constructed submerged gravel wetland system, and the agricultural fields authorized to receive effluent for beneficial reuse in accordance with Section 6.11 of the Regulations.*
- c) The Permittee shall increase the frequency of Total Phosphorous treated wastewater sampling to twice per week (at a minimum) and submit weekly results to the Department.*
- d) The Permittee shall examine the operation and maintenance log, required to be maintained by this Permit, for any possible improper operational procedures.*
- e) The Permittee shall conduct a physical inspection of the treatment system to detect abnormalities. Any abnormalities discovered shall be corrected. A report detailing the corrections made shall be submitted to the Department within 30 days of correction.*

*When analytical results from three consecutive weeks of wastewater sampling do not exceed the limitation, the Permittee is authorized to return to a once per month monitoring frequency and resume discharge to approved disposal outlets.*

*If the facility is required to enact this contingency plan more than four times in a 12-month period, the Permittee shall have the system evaluated to determine the cause of the elevated total phosphorous concentrations and submit a revised Design Engineer Report with proposed corrective actions to achieve a maximum total phosphorous concentration of 8 mg/L that bears the seal and signature of a Class C licensed Delaware Professional Engineer to the Department. The report shall be submitted within one year of the fourth notification of the contingency plan being enacted. The Permittee shall initiate implementation of the plan within 90 days following approval by the Department.*

### Other Effluent Water Quality Limitations

All OWTDS Operations Permits include effluent limitations for Chloride and Sodium in accordance with Federal water quality guidelines. The Division originally proposed an effluent limitation of 250 mg/L for Chloride and 210 mg/L for Sodium (both on an annual average basis) in the draft Operations Renewal and Modification Permit. To further address public comments regarding concerns for water quality discharged and distributed by the IBRWTF, the Division is revising the Chloride and Sodium effluent limitation conditions from an annual average basis to a rolling 12-month average. The numerical limits of 250 mg/L for Chloride and 210 mg/L for Sodium are not changed.

Part I.I.8 of the revised draft Operations Renewal and Modification Permit now states:

*The Chloride concentration of the effluent shall not exceed 250 mg/L on a rolling 12-month average. The rolling 12-month average shall be calculated by adding the current month's Chloride concentration to the previous eleven (11) month's Chloride concentrations and dividing the sum by the number of samples obtained (i.e., 12 unless sample data was unattainable for any given month). The rolling 12-month average shall be reported to the Department monthly.*

*If the rolling 12-month average exceeds the maximum Chloride concentration of 250 mg/L, the Permittee shall notify the Department in accordance with this Permit, examine the facility's operation and maintenance log for improper operational procedures, conduct a physical inspection of the treatment and disposal system to detect abnormalities, and review monitoring data and other records to determine the cause/source of the Chloride exceedance. The Permittee shall report the finding to the Department with any proposed modifications to operational procedures or other corrective actions. The Permittee shall implement proposed actions upon approval by the Department.*

Part I.I.9 of the revised draft Operations Renewal and Modification Permit now states:

*The Sodium concentration of the effluent shall not exceed 210 mg/L on a on a rolling 12-month average. The rolling 12-month average shall be calculated by adding the current month's Sodium concentration to the previous eleven (11) month's Sodium concentrations and dividing the sum by the number of samples obtained (i.e., 12 unless sample data was unattainable for any given month). The rolling 12-month average shall be reported to the Department monthly.*

*If the rolling 12-month average exceeds the maximum Sodium concentration of 210 mg/L, the Permittee shall notify the Department in accordance with this Permit, examine the facility's operation and maintenance log for improper operational procedures, conduct a physical inspection of the treatment and disposal system to detect abnormalities, and review monitoring data and other records to determine the cause/source of the Sodium exceedance. The Permittee shall report the finding to the Department with any proposed modifications to operational procedures or other corrective actions. The Permittee shall implement proposed actions upon approval by the Department.*

### Groundwater Monitoring Permit Requirements

In addition to the incorporation of protective permit limitations for treatment criteria and requirements for diversion and detailed contingency plans in the event effluent does not meet the design criteria, the proposed draft Operations Renewal and Modification Permit also includes extensive monitoring requirements to ensure the protection of groundwater resources and public health.

To protect the State of Delaware’s potable water supply and aquifer, an extensive groundwater monitoring well network is required to be maintained and monitored to ensure any wastewater-related contaminants are promptly detected and quantified. The network is located and designed to provide sufficient early detection of impacts to potential receptors such as nearby potable wells and surface water bodies.

The existing Operations Permit requires a groundwater monitoring well network of 26 wells to ensure that wastewater-related contaminants are detected, quantified, and analyzed regarding their impact to groundwater quality. The proposed draft Operations Renewal and Modification Permit incorporates an expansion of the groundwater monitoring network to include 21 additional monitoring wells. These wells are listed in Part II.A.3 of the proposed revised draft Operations Renewal and Modification Permit.

The proposed revised draft Operations Renewal and Modification Permit requires the following parameters to be sampled from the monitoring wells.

<b>Parameter</b>	<b>Unit Measurement</b>	<b>Measurement Frequency</b>	<b>Sample Type</b>
Ammonia as Nitrogen	mg/L	Quarterly	Grab
Arsenic	mg/L	Quarterly	Grab
Chloride	mg/L	Quarterly	Grab
Depth to Water	hundredths of a foot	Monthly	Field Test
Dissolved Oxygen	mg/L	Quarterly	Field Test
Fecal Coliform	Col/100mL	Quarterly	Grab
Nitrate + Nitrite as Nitrogen	mg/L	Quarterly	Grab
pH	S.U.	Quarterly	Field Test
Sodium	mg/L	Quarterly	Grab
Specific Conductance	µS/cm	Quarterly	Field Test
Temperature	°C	Quarterly	Field Test
Total Dissolved Solids	mg/L	Quarterly	Grab
Total Nitrogen	mg/L	Quarterly	Grab
Total Phosphorus	mg/L	Quarterly	Grab

Depth to Water (DTW) monitoring is monthly in the existing Operations Permit. The proposed draft Operations Renewal and Modification Permit originally listed DTW as quarterly; this was an error, and the DTW monitoring in the revised draft Operations Renewal and Modification Permit will be increased to Monthly to remain consistent with the existing Operations Permit and to be consistent with the regulatory requirement for monthly groundwater level measurements in observation wells.

And, to further ensure groundwater protection and to address public comments, the Division will be adding the following groundwater monitoring parameters to Table 12 in the revised draft Operations Renewal and Modification Permit:

<b>Parameter</b>	<b>Unit</b>	<b>Measurement</b>	<b>Sample Type</b>
Cadmium	mg/L	Once per 5 years	Grab
Chromium	mg/L	Once per 5 years	Grab
Copper	mg/L	Once per 5 years	Grab
Hardness	mg/L	Once per 5 years	Grab
Iron	mg/L	Once per 5 years	Grab
Lead	mg/L	Once per 5 years	Grab
Manganese	mg/L	Once per 5 years	Grab
Mercury	mg/L	Once per 5 years	Grab
Nickel	mg/L	Once per 5 years	Grab
Selenium	mg/L	Once per 5 years	Grab
Sulfate	mg/L	Once per 5 years	Grab
Zinc	mg/L	Once per 5 years	Grab

Both the existing and proposed Operations Permits state that operation of the wastewater treatment system shall not cause the quality of Delaware’s groundwater resources to be in violation of applicable Federal or State Drinking Water Standards [see Part IV.A.2 of the revised draft Operations Renewal and Modification Permit].

Background Groundwater Quality Analysis

In accordance with Section 6.6.3.16 of the Regulations, prior to Fields A, B, C and D going into operation, “three separate rounds of groundwater samples will be required to be obtained and tested through a certified laboratory to establish background levels for monitored parameters.” Requiring background sampling allows the Division to ascertain any increasing trends of wastewater constituents in groundwater if the proposed Operations Renewal and Modification Permit is approved. Subsequent sampling required to be performed by the Permittee/Applicant via monitoring wells (in-field, up-gradient, and down-gradient), can be compared with the three sets of background data, allowing the Division to assess any impact the spray irrigation activities may have on the groundwater within and adjacent to the spray fields.

The requirement to perform background sampling has been moved from the proposed draft Operations Renewal and Modification Permit to the proposed revised draft Construction Permit to ensure monitoring is performed and submitted with the Construction Completion Package prior to authorization to initiate Phase 2 discharges:

*Groundwater Background Monitoring: The Permittee shall conduct a background groundwater quality sampling program prior to initiation of disposal activities. The sampling program shall be sufficient to establish representative groundwater quality at each well prior to initiation of disposal activities. A minimum of three samples shall be collected at least one month apart and analyzed prior to the initiation of disposal activities. A summary report which includes all analyses must be submitted to the Department with the Construction Completion Package required in Part II.C.3 of this Permit.*

### Background Soils Quality Analysis

The background soil samples obtained and tested during the site investigation portion of the project will be utilized to determine any impacts occurring from the spray irrigation activities. Upon the initiation of irrigation activities, annual soil sampling will be required for pH, Organic Matter, Phosphorus, Potassium and Sodium Adsorption Ratio; and, once every five years, heavy metals (Arsenic, Cadmium, Nickel, Lead, Zinc, and Copper) are required to be sampled in accordance with Part II.A.6 of the revised draft Operations Renewal and Modification Permit.

### Data Assessment and Compliance

The Division's inspection and compliance team, including experts in wastewater treatment operations, soils, and hydrogeology (Delaware-licensed Professional Geologists), will evaluate monitoring data. These data assessments and evaluations are performed during the review of monthly Discharge Monitoring Reports (DMRs) and routine facility inspections. Any violations or other concerns will be addressed through various compliance and enforcement activities, which may include the issuance of Notices of Violation and Administrative Orders, as appropriate.

### Compliance Monitoring Report

In addition to routine compliance evaluations performed by Division staff, Part V.A.3 of the revised draft Operations Renewal and Modification Permit requires the Permittee to prepare a Compliance Monitoring Report (CMR) every five years in accordance with Section 6.5.4.3 of the Regulations. The Permittee will be required to have a Delaware-licensed Professional Geologist prepare a hydrogeologic assessment that includes an evaluation and comparison of temporal trends in both effluent and groundwater quality in comparison to background samples and/or previous sampling results. And, where applicable, the groundwater data will be evaluated with respect to drinking water standards established by the U.S. EPA. Furthermore, the assessment will provide a conclusion of the operating status of the wastewater treatment and disposal system based on the monitoring/performance data and provide any recommendations for future monitoring, system upgrades, or improvements.

## Remedy

If trends of increasing concentrations and/or impacts are observed, the Permittee/Applicant will be required to take all necessary actions to eliminate and correct any adverse impact on public health or the environment resulting from Permit non-compliance in accordance with §3.20 of the Regulations.

## Conclusion

In conclusion, the permitted effluent limitations and monitoring requirements outlined in the revised draft Operations Renewal and Modification Permit for the IBWTF; coupled with the design diversion capabilities, detailed contingency plans, and routine inspections and data assessments is protective of public health and the environment including the protection of the local drinking water supply and aquifer.

## **2. Comment: Nitrogen Loading/TMDLs and the need for an Annual Nitrogen Application Limit**

Public comment expressed concern that the originally proposed draft Operations Renewal and Modification Permit for the IBRWTF should be revised to include a total annual nitrogen application limit for each spray field acre based on the TMDLs (Total Maximum Daily Loads) for the affected waterways. Public comment also expressed concern that the draft permit should be revised to show a reduced application rate for the proposed fields A, B, C, and D. Comment further expressed concern relative to the timing of application based on design calculations.

### **Response:**

7 Del Admin Code §7407 TMDLs for Nutrients for the Indian River, Indian River Bay and the Rehoboth Bay, Section 2.0 Article 8 states *“Implementation of this TMDL Regulation shall be achieved through development and implementation of a Pollution Control Strategy. The strategy will be developed by DNREC in concert with the Department’s ongoing Whole Basin Management Program and the affected public.”*

7 Del Admin Code §7403 *Regulations Governing the Pollution Control Strategy for the Indian River, Indian River Bay, Rehoboth Bay, and Little Assawoman Bay Watersheds* were developed *“In order to achieve the Total Maximum Daily Loads (TMDLs), determined through vigorous research and modeling, the following Pollution Control Strategy regulations must be implemented.”* Section 8 addresses requirements for On-site Wastewater Treatment and Disposal System Performance Standards as follows:

8.2 Requirements for large OWTDSs having flows greater than 20,000 gallons per day (gpd):

8.2.1 All new systems shall meet Performance Standard Nitrogen level 1 (PSN1).

8.2.2 All replacement systems shall meet Performance Standard Nitrogen level 2 (PSN2).

8.2.3 When operations and maintenance permits expire for an existing system, the Department will require the system to meet Performance Standard Nitrogen level 2 (PSN2). If the Department deems that the OWTDS must be redesigned to meet PSN2, the owner or operator of the system will have up to 60 months from the permit expiration date to bring the OWTDS into compliance with the new standard.

These performance standards are incorporated into the 7 Del. Admin. C. § 7101 *Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems* and are summarized in Exhibit-MM. Furthermore, Section 6.3.2.3.4.2 of the Regulations states “Spray irrigation systems must be designed to ensure the performance standards are adhered to as outlined in Exhibit MM.”

Exhibit MM iterates:

2. Requirements for LOWTDS having flows  $\geq 20,000$  gpd:
  - a. All new systems shall meet Performance Standard Nitrogen level 1 (PSN1) and Performance Standard Phosphorus level 1(PSP1).
  - b. All replacement systems within 1000 feet of the Chesapeake Bay tidal waters (as displayed on Exhibit NN) shall meet Performance Standard Nitrogen level 2 (PSN2).
  - c. When the operation permit expires for an existing system, the Department will require the system to meet Performance Standard Nitrogen level 2 (PSN2). If the system must be redesigned to meet PSN2, the owner or operator of the system will have up to 60 months from the permit expiration date to bring the system into compliance with the new standard.  
NOTE: Systems permitted at a higher performance standard will remain at that higher performance standard.

Accordingly, the proposed project would be required to meet PSN2. This project has been designed to meet an effluent of  $<10$ mg/L Total Nitrogen. However, please note that even without the proposed upgrades designed to enhance wastewater treatment the 2023 annual average for TN was 5.87 mg/L at this facility. This level of treatment satisfies the performance standard regulatory requirements and the Safe Drinking Water Act’s (SDWA’s) maximum contaminant level (MCL) thereby protecting public health in accordance with the Regulations. Due to this high level of treatment, percolate concentrations will not exceed 10 mg/L provided no fertilizer is applied.

However, the Department recognizes that the Inland Bays Watershed is of “Exceptional Recreational and Ecological Significance” and therefore, will add a condition (Part II.B.6 of the revised draft Operations Renewal and Modification Permit) requiring an Annual Nutrient Loading Report as a supplement to the facility’s Annual Report. The Annual Nutrient Loading Report will require the Permittee to calculate the monthly and total annual loading and offsets (e.g., septic connections, stormwater BMPs, biosolids removal, etc.) for total nitrogen and total phosphorus for all here-in permitted discharge locations. In addition, the Permit will also require within four (4)



years of the Permit's effective date, that the Permittee submit a 10-year sanitary buildout and loading and offset analysis to characterize the potential nutrient (total nitrogen and total phosphorus) impacts of the Inland Bays Regional Wastewater Treatment Facility on the Inland Bays Watershed (consisting of Indian River, Indian River Bay, Rehoboth Bay, and their tributaries). Loading and offset data can then be assessed at permit renewal to determine if any permit conditions to address nutrient loads are warranted.

#### **4. Comment: Forest Stewardship Plan (FSP) for the proposed wooded irrigation fields.**

Public comment expressed concern that there was not a Forestry Stewardship Plan for the proposed wooded irrigation areas, Fields A, B, C and D.

#### **Response:**

The Department sought additional information from the applicant, Sussex County Council, in a letter dated August 24, 2022, to address this concern. In part, the letter requested a Forest Stewardship Plan for the proposed wooded irrigation fields: Fields A, B, C and D. In a response dated October 21, 2022, Sussex County Council provided a draft Forest Stewardship Plan and noted that it is currently under review by the Department of Agriculture. The draft Forest Stewardship Plan for Fields A, B, C and D is attached as Appendix III.

The originally proposed draft Operations Renewal and Modification Permit was revised to include a requirement for Sussex County Council to provide a modified Forest Stewardship Plan for Fields A, B, C and D that includes information relative to the nutrient uptake. The revised permit condition (Part I.F) will require Sussex County to have the Plan reviewed by the Department of Agriculture and executed by both party's signature. The permit will require Sussex County to maintain a current copy of the Forest Stewardship Plan on file with the Department in the event it is revised; and to operate in accordance with the Forest Stewardship Plan.

#### **5. Comment: Spray Field Maintenance**

Public comment expressed concern with the County's spray field operations and maintenance and stated that the County was spraying effluent wastewater at the IBRWTF on barren fields, fields with weeds and fields with poor crop density. Other comments noted concern regarding extensive erosion, lack of effective vegetative management, wastewater not being applied uniformly, poor crop density and wastewater being sprayed on saturated fields. Concern was expressed that there is not a contingency plan for when multiple spray fields become compromised, saturated, flooded, frozen, or barren. Public comment ultimately expressed concern that spraying wastewater effluent on compromised fields, is strictly prohibited, and doing so fails to protect public health and the environment.

**Response:**

Part IV.A.5.b of the revised draft Operations Renewal and Modification Permit states that *the spray fields shall be maintained in such a manner as to prevent wastewater pooling and/or discharge of wastewater to any surface waters. Should pooled areas become evident, the Permit states that spraying on those areas shall be prohibited until saturated conditions no longer exist.* In addition, Part IV.A.6 of the revised draft permit prohibits spray irrigation when saturated or frozen soil conditions exist.

In effort to address public concern, the Division sought additional information from the applicant, Sussex County Council, in a letter dated August 24, 2022. The Division requested an additional Contingency Plan to address effluent flow management and spray irrigation field maintenance during periods of compromised crop growth/density, flooding, or freezing in accordance with Section 6.3.2.3.13.7 of the Regulations. The request noted the Contingency Plan must demonstrate preparedness in case the wastewater treatment facility experiences a significant natural occurrence. The request noted the contingency plan must address, but must not be limited to, extended periods of excessive precipitation, and extended periods of subfreezing temperatures causing prolonged periods of frozen soil conditions. The request also noted that the contingency plan must delineate the County's available options to reduce, eliminate and/or prevent non-compliant conditions.

In a response dated October 21, 2022, Sussex County Council provided the following plan:

*Contingency Plan*

*Effluent discharge from the IBRWF is mainly impacted by excessive precipitation and sub-freezing temperatures but impact has historically been limited during periods when the fields have low crop density.*

*To address the risk of low crop density (preventing discharge onto barren ground), the County will convert the limited public access spray fields to meadow, which will provide a permanent crop and ground cover. Discharge to the unlimited access wooded spray areas will be always available except during periods of excessive precipitation and sub-freezing temperatures.*

*In addition to these wooded spray areas, the proposed disposal scheme will incorporate connections to RIBs & constructed wetlands. The RIBs and constructed wetlands may remain available even during periods of excessive precipitation and sub-freezing temperatures. The diversified disposal options will enable the County to maintain a seasonally varying reserve storage capacity in the storage lagoons equivalent to the effluent generated during design weather events based on historic maximums.*

*For example, the County will utilize the RIBs, constructed wetland, wooded spray areas, and limited access spray fields in the winter months to maintain a level in the storage lagoons that leaves capacity to store 7 days' flow, the period corresponding to the largest number of*

*consecutive days with sub-freezing maximum temperatures recorded in the last 10 years. Flow that cannot be discharged during a sub-freezing weather event will be stored in the lagoons for discharge when weather conditions permit.*

As the County intends to utilize alternative planting methodologies to address instances of compromised crop growth/density, a condition (Part I.E) will be included in the revised draft Operations Renewal and Modification Permit to allow for alternative vegetative coverage with Division approval. The condition states:

*VEGETATIVE MANAGEMENT PLAN - PHASE 1 FIELDS*

*The spray irrigation fields shall be maintained in accordance with the design Vegetative Management Plan (VMP) and Nitrogen Balances provided in the October 2020 Design Engineer Report; or subsequent Vegetative Management Plans as approved by the Department.*

*Alternative vegetative coverage may be permitted with written Department approval to address instances of compromised crop growth/density or change in vegetation. Requests shall be submitted to the Department for review and approval; and shall include an update to all applicable items of the VMP in accordance with Section 6.5.1.4.1.7.6.8 of the Regulations.*

**6. Comment: Biosolids Management**

Public comment expressed concern relative to the management of biosolids at IBRWTF.

**Response:**

In effort to address public concern, the Department sought additional information from the applicant, Sussex County Council, in a letter dated August 24, 2022. The letter requested that Sussex County Council provide a Biosolids Management Plan, including all applicable permits.

In a response dated October 21, 2022, Sussex County Council provided that:

*The Inland Bays Biosolids PDR [Project Development Report] was submitted to DNREC October 2021 and contains operational information on the existing biosolids facilities. The Inland Bays applicable biosolids permits are as follows:*

- *DNREC Distribution and Marketing, State No. DM 2102-S-03*
- *DNREC Class B Land Application, State No. AGU 2005-S-03*

The Plan indicates that Class B biosolids are not authorized to be land applied onto Phase 1 or Phase 2 permitted spray fields. To memorialize this understanding, sludge handling condition (Part I.K) was revised. Part I.K.2 of the revised draft Operations Renewal and Modification Permit now prohibits the land application of Class B biosolids to the spray disposal fields and agricultural distribution spray fields (unless authorized by the Department). The land application of Class A

biosolids is authorized provided biosolid application it is reported in accordance with the fertilizer requirements of the revised draft permit (Part II.A.8a).

The revised draft Operations Renewal and Modification Permit also states that “*the Department reserves the right to revoke the authorization of fertilizer application if monitoring identifies impacts to groundwater, or the Permittee fails to submit complete and accurate monitoring data.*”

**7. Comment: Tax Map Parcel ID’s**

Public Comment expressed concern with the Permit Application’s parcel IDs to be used for part of the project. The parcels noticed are 2-34-22-14, 234-16.00-906.00, 234-21.00-171.00, 234-16.00-28.03, 234-16.00-28.00, 234-16.00-23.00, 234-16.00-21.01.

Public comment expressed concern that parcel 2-34-22-14 is not a parcel ID; 234-16.00-906.00 is a parcel ID but is not located on the county mapping application; and that the applications note all parcels are on County-owned forested land, however, none of the three remaining parcels are forested. In addition, Parcel 234-21.00-171.00 is owned by Hollyville Farms, Inc., which is private property.

**Response:**

The Permit has been updated. In effort to address this concern, the Division sought additional information from the applicant, Sussex County Council, in a letter dated August 24, 2022. In part, the letter requested a table providing updated tax map parcel numbers and including the name of each site/field, wetted acreage, etc. In a response dated October 21, 2022, Sussex County Council provided the following table:

<b>FIELD AREA</b>	<b>WETTED ACRES</b>	<b>Parcel Number</b>
North Field	103	234-22.00-10.00
South Field	103	234-22.00-16.00
North Burton Field	52	234-22.00-10.00
South Burton Field	41.9	234-22.00-10.00
North Hettie-Lingo Field	47.5	234-22.00-19.00
South Hettie-Lingo Field	30.48	234-22.00-19.00
East Hettie-Lingo Field	34.46	234-22.00-19.00
West Hettie-Lingo Field	20.16	234-22.00-19.00
‘A’ – Proposed	117.7	234-21.00-151.00
‘B’ – Proposed	10.3	234-21.00-151.03
‘C’ – Proposed	70.7	234-22.00-10.00
‘D’ – Proposed	149.2	234-22.00-8.00

The revised information is incorporated into Part I.A of the revised draft permit.

### **8. Comment: Wastewater Treatment Technology**

Public comment expressed concern that the wastewater treatment methods used by the wastewater treatment facility are not capable of treating to the standards that newer methods can achieve. Public comment also noted that the wastewater treatment plant should be able to handle increased capacity from population expansion and treat wastewater from surrounding poultry processing facilities.

#### **Response:**

The wastewater treatment technology proposed for the upgrade is relevant and appropriate technology. The wastewater treatment facility was upgraded in 2010 to a Biological Wastewater Treatment System using Aeration Chains (Biolac) that utilizes the Biological Nutrient Removal (BNR) process system to provide secondary treatment of the effluent. BNR removes total nitrogen (TN) and total phosphorus (TP) from wastewater by utilizing microorganisms under different environmental conditions in the treatment process (Metcalf and Eddy, 2003). A key component to the Biolac process is that it uses a longer retention time with more biomass to handle fluctuating loads and limit operator intervention. The wastewater treatment system also utilizes the Biolac Wave-Ox process where automatic control of the air flow distribution to the moving aeration chains creates oxic and anoxic zones. This repeated cycling of zones nitrifies and denitrifies the wastewater and can typically remove nitrogen to 5 mg/l (“Biolac System Wave-Ox Plus”, <https://www.parkson.com/sites/default/files/documents/document-biolac-wave-ox-plus-1182.pdf>). An additional construction phase of the facility has been proposed that will use the BNR process and an effluent filtration facility to increase the capability to treat additional flow generated by future population growth.

The Design Engineering Report for the Phase 2 expansion used actual flow characteristics for the wastewater from 2012-2020. An influent peak factor was included in the application to reflect the change in the flow during the calendar year. The application projected the flow for 2030 and designed the treatment plant upgrades to process the anticipated increase in volume. Historical concentrations of the wastewater were also presented in the Design Engineer Report and adjusted using a peak factor for the proposed upgrades to the treatment plant. The report also states that the primary source of wastewater the plant receives is domestic (i.e., municipal).

### **9. Comment: Treatment System Capacity**

Public comment expressed concern that the wastewater treatment facility will not be able to treat and dispose of the increased quantity of wastewater the system will receive from the existing and potential increase in population.

**Response:**

The Design Engineering Report for the Phase 2 expansion project used actual flow characteristics for wastewater volume from 2012-2020. An influent peak factor was included in the application to reflect the change in the flow during the calendar year. The application projected the flow for 2030 and designed the treatment system upgrades to process the anticipated increase in volume. Historical concentrations of the wastewater were also presented in the Design Engineer Report and adjusted using a peak factor for the proposed upgrades to the treatment system. The report notes that a future expansion to the treatment facility is planned, and the proposed upgrades facilitate the potential expansion. The future expansion would increase treatment capacity to 6 MGD if permitted and constructed.

Currently, Phase 1 is designed to treat 2.0 MGD of wastewater and to dispose of up to 2.65 MGD of treated effluent. The Phase 2 project’s scope includes increasing the facility’s treatment capacity from 2.0 MGD to 4.0 MGD by the installation of new screening and grit removal systems, constructing two additional biological nutrient removal Biolac aeration lagoons, constructing two new clarifiers, and upgrading/expanding existing pumps, blowers, biosolids, filtration, and irrigation pump systems. The Phase 2 upgrades and expansion will also increase disposal capacity from 2.65 MGD to 6.96 MGD on an annual average basis by adding approximately 347.9 wetted acres on County-owned forested land.

	Treatment Capacity (MGD)	Disposal Capacity (MGD)	Acres
Phase 1	2.0	2.65	432.5
Phase 2	4.0	6.96	780.4
Possible Future Phase	6.0		

In accordance with Section 6.3.1.15 of the Regulations, once wastewater flow reaches 80% of the permitted treatment capacity for the constructed phase, the permittee must submit notification and a work plan for the construction of the next phase to the Department. The Permittee will also be required to submit a Construction Permit Application, a Design Engineer Report, Plans and Specifications for review by the Department for permitting of the next phase. Any flow above the permitted flow shall not be allowed to be discharged to the system until construction is completed on the following phase and an amended operating permit has been issued by the Department for the next phase. Part IV.A.14 of the revised draft Operations Renewal and Modification Permit for the IBRWTF reiterates this requirement.

**10. Comment Constructed Submerged Gravel Wetland System**

Public comment expressed concern that the proposed constructed submerged gravel wetland system research project could negatively impact the groundwater quality in the area.

**Response:**

The Phase 2 project includes the construction and potential use of a submerged gravel wetland system. The wetland system is a research and demonstration project designed to evaluate the effectiveness of constructed wetlands to serve as an innovative alternative to treated wastewater storage in lagoons, provide an enhanced treated wastewater disposal option, and remediate local groundwater resources. Please note, the discharge of treated wastewater to the wetland system will require separate Department approval. Operation of the submerged gravel wetland system will occur as a pilot study, the first phase of which will utilize groundwater within the spray field as the wetland water source to assess nutrient removal/remediation capabilities. The Department will detail the specifics of how the County will be allowed to operate the wetland system and the pilot study will inform if the wetland system will be fully permitted in the future for treated wastewater use.

The proposed constructed submerged gravel wetland system will be located on North Burton Field, Parcel Number: 234-22.00-10.00 and consist of a 300' x 900' rectangular cell that is lined with 1' of engineered soil liner to reduce the infiltration rate of the water and to promote the growth of proposed wetland plants in the cell. In addition, the cell will also contain geotextile lined sections with bio-media where the plants can remove nutrients in the water as it passes through the cell.

The County is proposing this pilot project to address two significant concerns raised by the public: 1) lack of disposal contingencies during times when it is inappropriate to spray irrigate (e.g., heavy precipitation and freezing event) and localized elevated nutrients in groundwater.

The constructed submerged gravel wetland system pilot project will provide the data necessary to make a science-based conclusion to determine if a wetland system can be utilized as an alternative disposal outlet. It is critically important to investigate alternative disposal methods considering increased population growth, limited land availability, and major climate disruptions. In addition, the pilot project will be initiated using groundwater prior to the use of treated wastewater. This will allow the testing of basic biological and hydrological processes in such a manner that public health and the environment is protected.

The groundwater beneath the field proposed to be used for the construction of the wetland system has historically contained elevated nutrients. Using groundwater in the testing process will allow the County and Division to assess if a constructed wetland system can be utilized as a groundwater mitigation system. It is essential for pilot projects such as this wetland project to be operated and studied to allow the State and Permittees to develop new technology and processes to further enhance environmental protection.

To ensure the pilot wetland project will be protective of public health and the environment, the Permittee proposes to use the existing groundwater monitoring network on the North Burton field consisting of four wells (MW2, MW-12, MW-16, and OW-17) and install four (4) additional groundwater monitoring wells concurrently with the construction of the wetland system. The monitoring wells would require the same sampling procedures as the groundwater monitoring wells in the spray fields at the site.

Parameter	Unit Measurement	Measurement Frequency	Sample Type
Ammonia as Nitrogen	mg/L	Quarterly	Grab
Arsenic	mg/L	Quarterly	Grab
Chloride	mg/L	Quarterly	Grab
Depth to Water	hundredths of a foot	Monthly	Field Test
Dissolved Oxygen	mg/L	Quarterly	Field Test
Fecal Coliform	Col/100mL	Quarterly	Grab
Nitrate + Nitrite as Nitrogen	mg/L	Quarterly	Grab
pH	S.U.	Quarterly	Field Test
Sodium	mg/L	Quarterly	Grab
Specific Conductance	µS/cm	Quarterly	Field Test
Temperature	°C	Quarterly	Field Test
Total Dissolved Solids	mg/L	Quarterly	Grab
Total Nitrogen	mg/L	Quarterly	Grab
Total Phosphorus	mg/L	Quarterly	Grab

The wells will be equipped with water level monitoring instruments to provide daily water level measurements. These data, in conjunction with daily loading rates, precipitation data will provide a high-resolution understanding of the mounding effects resulting from the use of the wetland system. This operational testing data will provide the information necessary to calibrate a refined numerical model which could assist with the loading schedules based on seasonal, local environmental patterns as well as month to month operations during the Project.

In conclusion, the design of the proposed pilot constructed submerged gravel wetland system at the IBWTF; coupled with the effluent quality, design diversion capabilities, detailed contingency plans, groundwater monitoring network, and routine data assessments performed by the Division and Permittee is protective of public health and the environment including the protection of the local drinking water supply and aquifer.

## 11. Comment: Site Excavation

Public comment noted that there appeared to be excavation and soil disturbance at IBWRF without obtaining a construction permit for the observed activity.



**Response:**

The Division is aware of activities at the facility which do not require a permit from the Division. For example, the Division is aware of a large stormwater drainage improvement project at the facility, which has an approved NPDES Construction Stormwater permit coverage under the oversight of the Sussex Conservation District.

**12. Comment: Compliance and Enforcement**

Public expressed concerns relative to historical compliance.

**Response:**

The IBRWTF is currently operating under an existing Operations Permit with effluent limitations, operational, monitoring, and reporting requirements. Under this permit, the Division performs annual facility inspections to ensure permit and regulatory compliance. The facility was inspected in 2020, 2021, 2022, and 2023. Inspectors did not observe any significant compliance issues and the Division has not issued any Notices of Violations. In addition, the current system routinely meets a TN of less than 10 mg/L with the 2023 average concentration being 5.9 mg/L (see Table).

<b>Total Nitrogen Concentration</b>	
<b>Monitoring Period</b>	<b>Result (mg/L)</b>
2019 Average	5.46
2020 Average	4.50
2021 Average	7.96
2022 Average	7.95
2023 Average	5.87

It should also be noted that the facility upgrades will improve the system’s already strong operational performance and the expanded disposal options will allow treated effluent to be discharged for beneficial reuse.

Regarding facility operations the existing and proposed permits require the Permittee to *“properly maintain and operate all structures, pipelines, systems and equipment for collection, treatment control and monitoring which are used by the Permittee to achieve compliance with the terms and conditions of the Permit. Proper operation and maintenance may include, but is not limited to, effective performance based on designed facility removals, adequate funding, effective management, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures.”*

In addition, both the existing and proposed permits require the Permittee to report (verbally and in writing) when the Permittee becomes “*aware of any noncompliance that may endanger the public health or the environment.*” This includes written notification that provides the following information: “*a) a description and cause of the non-compliance with any limitation or condition, b) the period of non-compliance including exact dates and times; or, if not yet corrected, the anticipated time the non-compliance is expected to continue, and c) the steps being taken or planned to reduce, eliminate and/or prevent recurrence of the non-compliant condition.*”

The Division is confident that safeguards are in place to ensure the IBRWTF complies with permit effluent limitations, operational, monitoring, and reporting requirements. However, to further address the public comments, the Division is including the following revised language to the standard facilities operation condition.

*The Permittee shall immediately perform clean-up and disinfection actions upon becoming aware of a sanitary sewer overflow (SSO) event. In addition, the Permittee shall notify the Division of Water within 24-hours from the time the Permittee becomes aware of the SSO event and shall submit the following information with 5-days of providing notification.*

- a) The facility name and location of release.*
- b) An estimate of the quantity of sewage released.*
- c) The date, time, and duration of the release.*
- d) The clean-up and disinfection methods utilized.*
- e) The date and time of completed clean-up and disinfection activities.*
- f) Any other information as the Division of Water may require.*

This revision will ensure that any unintended sanitary sewer overflows, a condition in which untreated sewage is discharged from a sanitary sewer into the environment prior to reaching the wastewater treatment system, is reported to the Division and properly cleaned-up and disinfected. The revised language provides the Division with an opportunity to perform follow-up inspections, mandate specific corrective actions, and track short and long-term occurrences indicating if additional upgrades to the wastewater treatment system’s collection system is required.

### **13. Comment: Mountaire**

Public comments expressed concern that Mountaire had applied biosolids on the current spray irrigation fields at IBRWTF causing contamination.

#### **Response:**

Mountaire previously owned the Hettie Lingo field and land applied biosolids on to the Hettie Lingo field in accordance with a division-issued land application permit (last permit issued April 1, 1997, and amended March 14, 2001; Permit Number AGU 001/89B). The Hettie Lingo field was subsequently sold to Sussex County, who had it permitted for spray irrigation for use

under the Inland Bays Wastewater Regional Treatment Facility Spray Irrigation Operations Renewal and Modification Permit.

In accordance with the Delaware Department of Natural Resources and Environmental Control's *Guidance and Regulations Governing the Land Treatment of Wastes*, a site investigation to determine suitability for spray irrigation was performed for the Hettie Lingo fields. Both a Soils and a Hydrogeologic Evaluation were prepared by a State of Delaware Registered Professional Geologist. The field was determined to be suitable for used for spray irrigation. Please note, continued monitoring is required by the revised draft Operations Renewal and Modification Permit for groundwater and soils.

#### **14. Comment: Division of Fish and Wildlife**

The Department's Division of Fish and Wildlife requested an opportunity to conduct biological surveys within the project area to evaluate habitat and determine the potential for species impacts and address conservation concerns.

#### **Response:**

In effort to address this request, the Department's Division of Fish & Wildlife comment letter was forwarded to the applicant, Sussex County Council, as an attachment to Request for Additional Information letter dated August 24, 2022. The letter requested documentation resulting from coordination/correspondence with the Department's Division of Fish and Wildlife regarding their request.

In a response dated October 21, 2022, Sussex County Council noted that the Department's Division of Fish & Wildlife were able to walk the site on September 14, 2022, and provided their findings. The Division of Fish & Wildlife's findings from their September 14, 2022, site survey was summarized in a letter dated October 17, 2022, and addressed to Sussex County. The letter is included as Appendix IV and, in part, provided the following:

*On Wednesday, September 14, 2022, Bill McAvoy, staff biologist from the DNREC Division of Fish and Wildlife, surveyed the above referenced property for evidence of State rare plants and natural communities. The property was surveyed on foot and no State rare or federally listed plants or unique plant communities were found. Furthermore, we foresee no negative impacts to the forested areas of concern.*

*As a result, at present, this project does not lie within a State Natural Heritage Site, nor does it lie within a Delaware National Estuarine Research Reserve which are two criteria used to identify "Designated Critical Resource Waters" in the Army Corps of Engineers (ACOE) Nationwide Permit General Condition No. 22. A copy of this letter shall be included in any permit application or pre-construction notification submitted to the Army Corps of Engineers for activities on this property.*

**Required Permit Changes to Address Comments**

Revisions to the originally proposed draft Construction Permit and draft Operations Renewal and Modification Permit were necessitated to address various public comments, concerns, and questions. Ultimately, these revisions make the permits more stringent and further enhance their ability to protect public health and the environment.

**Required Revisions to the Proposed Draft Construction Permit**

A red-lined revised proposed draft Phase 2 Construction Permit is attached as Appendix V and a clean copy of the finalized draft Phase 2 Construction Permit is attached as Appendix VI.

1. Facility Name

The facility name on the original proposed draft Construction Permit currently reads: Inland Bays Wastewater Treatment Facility (IBWTF). However, the original proposed draft Operations Renewal and Modification Permit states the facility name as: Inland Bays Regional Wastewater Treatment Facility (IBRWTF). To be consistent with the application, the revised draft Construction Permit has been corrected to read Inland Bays Regional Wastewater Treatment Facility (IBRWTF). The facility’s address and physical location was also further clarified.

2. Tax Parcel Numbers

As discussed herein, a public comment noted that the permit application’s tax parcel IDs contained errors. On August 24, 2022, the Division requested that the County verify the facility’s tax parcel IDs. On October 21, 2022, the County provided verified tax parcel IDs and the revised IDs were incorporated into the revised draft Construction Permit (and revised draft Operations Renewal and Modification Permit).

See table below for revised parcel numbers.

<b>FIELD AREA</b>	<b>WETTED ACRES</b>	<b>Parcel Number</b>
North Field	103	234-22.00-10.00
South Field	103	234-22.00-16.00
North Burton Field	Taken offline	234-22.00-10.00
South Burton Field	41.9	234-22.00-10.00
North Hettie-Lingo Field	47.5	234-22.00-19.00
South Hettie-Lingo Field	30.48	234-22.00-19.00
East Hettie-Lingo Field	34.46	234-22.00-19.00

West Hettie-Lingo Field	20.16	234-22.00-19.00
'A' - Proposed	117.7	234-21.00-151.00
'B' - Proposed	10.3	234-21.00-151.03
'C' - Proposed	70.7	234-22.00-10.00
'D' - Proposed	149.2	234-22.00-8.00

3. Facility Maps

For additional clarification, the Division replaced older maps with GIS-created enhanced maps to help elucidate locations of specific discharge points for both the public and to help with future facility inspections by Division staff.

4. Drawings

For additional clarification, the Division replaced the drawings found in the originally proposed draft Construction Permit (and draft Operations Renewal and Modification Permit) with specific references to the drawings in the application materials. Upon review of the original drawings, the Division determined that the sizing of the drawings required for incorporation into the draft permits significantly reduced their legibility and potentially created confusion. In addition, revised and clarifying information was included in the Constructed Submerged Gravel Wetland System Section.

5. Facility Specific Condition - Nitrogen Balance

The original draft Construction Permit required the Permittee to submit a design Nitrogen Balance for Fields C and D. This was an error. The Nitrogen Balances for Fields C and D were provided with the application. Therefore, this requirement has been deleted from the revised draft Construction Permit.

6. Storage Lagoon Reserved-Land Requirements

Added a facility specific condition to the revised draft Construction Permit to require the Permittee to maintain a 17.6-acre reserve area for a future storage lagoon if the Division deems its construction and operation is necessary for the protection of public health and the environment. The reserve area is depicted on the October 2020 Drawing C02.01 by Whitman Requardt & Associates, LLP.

7. Monitoring Requirements

Added a monitoring condition requiring the installation of lysimeters in spray irrigation fields A, B, C, and D to capture and characterize vadose zone percolate. In addition, background groundwater quality sampling is required prior to disposal activities. Added

Table 4 outlining sampling parameters. Added lysimeter installation and monitoring submission requirements.

8. Construction Completion Package Submission Requirement

Added a condition to the revised draft Construction Permit requiring the submission of groundwater monitoring well information, groundwater background sampling results, and lysimeter information.

9. Miscellaneous Revisions

Made minor general clarifying changes and typographic error fixes including updating Section name because of recent Division re-organization and revised overall permit format to account for minor revisions.

Required Revisions to the Proposed Draft Operations Renewal and Modification Permit Renewal and Modification

A red-lined revised proposed draft Operations Renewal and Modification Permit is attached as Appendix VII and a clean copy of the finalized draft Operations Renewal and Modification Permit is attached as Appendix VIII.

1. Facility Information

Revisions to the facility's address, physical location, and tax parcel IDs, mirror corrections and clarifications discussed above. In addition, a listing of authorized discharge types (i.e., spray, RIBs, agricultural distribution, and wetland system) is added for clarity.

2. Facility Maps

For additional clarification, the Division replaced older maps with GIS-created enhanced maps to help elucidate locations of specific discharge points for both the public and to help with future facility inspections by Division staff.

3. Drawings

For additional clarification, the Division replaced the drawings found in the originally proposed draft Operations Renewal and Modification Permit with specific references to the drawings in the application materials. Upon review of the original drawings, the Division determined that the sizing of the drawings required for incorporation into the draft permits significantly reduced their legibility and potentially created confusion. In addition, revised and clarifying information was included in the Constructed Submerged Gravel Wetland System Section.

4. New and Existing Spray Fields

The New and Existing Spray Fields Table, previously found in the original draft Operations Renewal and Modification Permit, has been moved within Part I.A Description of Operations Renewal and Modification and Discharges in the revised draft Operations Renewal and Modification Permit. The table has also been updated to include the Tax Map Parcel Numbers for each field and the table is divided into two separate tables: Phase 1 Spray Fields and Phase 2 Spray Fields.

**Table 1. Phase 1 Spray Fields**

<b>WETTED FIELD AREA</b>	<b>WETTED ACRES</b>	<b>Parcel Number</b>	<b>Rate (inches/week)</b>	<b>Disposal Capacity (MGD)</b>
North Field	103	234-22.00-10.00	1.86	0.73
South Field	103	234-22.00-16.00	1.86	0.73
North Burton Field <sup>1</sup>	52	234-22.00-10.00	1.5	0.3
South Burton Field	41.9	234-22.00-10.00	1.0	0.18
North Hettie-Lingo Field	47.5	234-22.00-19.00	1.0	0.18
South Hettie-Lingo Field	30.48	234-22.00-19.00	2.0	0.24
East Hettie-Lingo Field	34.46	234-22.00-19.00	1.0	0.13
West Hettie-Lingo Field	20.16	234-22.00-19.00	2.0	0.16

**Table 2. Phase 2 Spray Fields**

<b>WETTED FIELD AREA</b>	<b>WETTED ACRES</b>	<b>Parcel Number</b>	<b>Rate (inches/week)</b>	<b>Disposal Capacity (MGD)</b>
Field 'A'	117.7	234-21.00-151.00	2.5	1.45
Field 'B'	10.3	234-21.00-151.03	2.5	0.13
Field 'C'	70.7	234-22.00-10.00	2.5	0.87
Field 'D'	149.2	234-22.00-8.00	2.5	1.84

5. Agricultural Fields Receiving Distributed Treated Wastewater

Table 3. Agricultural Fields Receiving Distributed Treated Wastewater is relocated in the revised draft Operations Renewal and Modification Permit to Part I.A Description of Operations Renewal and Modification and Discharges.

6. Description of Operations Renewal and Modification and Discharges

Part I.A of the revised draft Operations Renewal and Modification Permit, Description of Operations Renewal and Modification and Discharges, is slightly modified and re-organized for clarity.

---

<sup>1</sup> North Burton Field has been taken offline

7. Documentation

The Documentation section of the revised draft Operations Renewal and Modification Permit is updated to include the County's response dated October 21, 2022, to the Division's Request for Additional Information dated August 24, 2022, listed as Part I.B.1.n.

8. Permit Limitations

Added a condition (Part I.D) to the revised draft Operations Renewal and Modification Permit to clarify that, unless specified otherwise, all permit conditions set forth in the Permit apply to both Phase 1 and Phase 2 operations.

9. Vegetative Management Plan for Phase 1 Fields

Added vegetative management plan condition (Part I.E) to the revised draft Operations Renewal and Modification Permit requiring the spray disposal fields be maintained in accordance with the October 2020 DER unless an alternative vegetative management plan is submitted and approved by the Division address instances of compromised crop growth/density or change in vegetation.

10. Forest Stewardship Plan for Phase 2 Fields A, B, C and D

A condition is added to the draft revised Operations Renewal and Modification Permit requiring the Permittee to provide the Department with a finalized Forest Stewardship Plan for Fields A, B, C and D within 60 days of the effective date of the Permit. The Plan is required to be reviewed by the Department of Agriculture and executed by both party's signature. The condition also requires the Permittee to maintain a current copy of the Forest Stewardship Plan on file with the Division and operate in accordance with the Forest Stewardship Plan. See Part I.F of the revised draft Operations Renewal and Modification Permit.

11. Storage Lagoon Reserved-Land Requirements

Added a facility specific condition (Part I.G) to the revised draft Operations Renewal and Modification Permit to require the Permittee to maintain a 17.6-acre reserve area for a future storage lagoon if the Division deems its construction and operation is necessary for the protection of public health and the environment. The reserve area is depicted on the October 2020 Drawing C02.01 by Whitman Requardt & Associates, LLP.



## 12. Effluent Limitations

- a. Revised Table 5 field acreage
- b. Revised Effluent Total Nitrogen Concentration (Condition Part I.2) to acknowledge that construction activities may impact water quality. This is not considered a violation provided the activities are scheduled, the percolate doesn't exceed 10 mg/L at the spray disposal fields, and all other in appropriate discharges cease.
- c. Revised Effluent Total Nitrogen Limitation Contingency Plan (Condition Part I.3) to ensure that the Permittee incorporates the elevated effluent total nitrogen concentrations into design nitrogen balances to calculate reduced loading rates that will not cause the percolate to exceed drinking water standards for Nitrates for the authorized spray fields. Calculations required to be performed and submitted monthly to the Department for each month total nitrogen concentrations exceed 10 mg/L. Volumes irrigated are not allowed to exceed the calculated reduced loading rates for the month.
- d. Added a Total Phosphorous Effluent Concentration of 8.0 mg/L (Condition Part I.4) to address public comments associated with the wastewater treatment system's effluent water quality. The condition includes language that acknowledges that construction activities may impact water quality. This is not considered a violation provided the activities are scheduled and all other in appropriate discharges cease.
- e. Added an Effluent Total Phosphorous Limitation Contingency Plan (Condition Part I.5) that ensure appropriate notification, investigation, and the cessation of all in appropriate discharges.
- f. Revised the Chloride limitation from an annual average basis metric to a rolling 12-month average metric. The numerical limit of 250 mg/L does not change.
- g. Revised the Sodium limitation from an annual average basis metric to a rolling 12-month average metric. The numerical limit of 210 mg/L does not change.

## 13. Buffer Requirements

Added Phase 2 buffer requirements if applicable (Part I.J.2) of the revised draft Operations Renewal and Modification Permit.

## 14. Sludge Handling Requirement

Revised the Sludge Handling Requirements by prohibiting the land application of Class B biosolids in accordance with the facility's current sludge handling plan. Removed land

application language that no longer applies. Also, required the land application of Class A biosolids to be reported to the Department in accordance with fertilizer requirements. See Part I.K and Part II.A.8a of the revised draft Operations Renewal and Modification Permit.

15. Monitoring Requirements

- a. Added Table 10 displaying monitoring wells for the Phase 2 Spray Fields to the revised draft Operations Renewal and Modification Permit.

**Table 10. Monitoring Wells for the Phase 2 Spray Fields**

Spray Site	Local ID	DNREC ID
A	MW-1A	248848
	MW-2A	248849
	MW-3A	248850
	MW-12A	256134
	MW-13A	256135
B	MW-7B	248851
	MW-8B	248847
	MW-9B	248852
C	MW-14C	255715
	MW-15C	255716
	MW-16C	255717
	MW-17C	255718
	MW-18C	255719
D	MW-19D	255720
	MW-20D	255721
	MW-21D	255722
	MW-22D	255723
	MW-23D	255724
	MW-24D	255725

	MW-25D	255726
	MW-26D	255727

- b. Added Table 11 displaying monitoring wells for the constructed wetland system to the revised draft Operations Renewal and Modification Permit.

**Table 11. Monitoring Wells currently associated with the Constructed Submerged Gravel Wetland System**

Local ID	DNREC ID
MW-2	86146
MW-12	208214
MW-16	228543

- c. Added Table 12 (in part) requirement for metals to be tested in groundwater every 5 years.

Parameter	Unit Measurement	Measurement Frequency	Sample Type
Cadmium	mg/L	Once per 5 years	Grab
Chromium	mg/L	Once per 5 years	Grab
Copper	mg/L	Once per 5 years	Grab
Hardness	mg/L	Once per 5 years	Grab
Iron	mg/L	Once per 5 years	Grab
Lead	mg/L	Once per 5 years	Grab
Manganese	mg/L	Once per 5 years	Grab
Mercury	mg/L	Once per 5 years	Grab
Nickel	mg/L	Once per 5 years	Grab
Selenium	mg/L	Once per 5 years	Grab
Sulfate	mg/L	Once per 5 years	Grab
Zinc	mg/L	Once per 5 years	Grab

- d. Added placeholder table for future lysimeters in the revised draft Operations Renewal and Modification Permit.

#### 16. Operational Monitoring Requirements: Fertilizer

To address concerns associated with fertilizer use, a notification condition (Part II.A.8a) was added to the revised draft Operations Renewal and Modification Permit. The condition only authorizes fertilizer use in a manner protective of groundwater and requires notification to the Department within 48 hours of fertilizer application and the submission of fertilizer monitoring data in the appropriate monthly DMRs. The condition also states that the Department reserves the right to revoke the authorization of fertilizer application if monitoring identifies impacts to groundwater, or the Permittee fails to submit complete and accurate monitoring data.

#### 17. Operational Monitoring Requirements: Storage Volume Monitoring

To address concerns associated with lagoon usage, a storage volume monitoring condition (Part II.A.8b) was added to the revised draft Operations Renewal and Modification Permit. Volumes are required to be monitored in both storage lagoons. Each lagoon volume will be reported in depth (ft) and volume (MG) and compared to the total depth available in each lagoon in depth(ft) and volume (MG). The combined volume of storage will also be reported in volume (MG) in comparison to the combined capacity of both storage lagoons in depth(ft) and volume (MG). In addition, the Department is requiring the reporting of available freeboard in the monthly DMRs (See Table 19 of the revised draft Operations Renewal and Modification Permit).

#### 18. Annual Nutrient Loading Report Condition

In recognition that the Inland Bays Watershed is of “Exceptional Recreational and Ecological Significance” a condition (Part II.B.6 of the revised draft permit) was added requiring an Annual Nutrient Loading Report be submitted as a supplement the facility’s Annual Report. The Annual Nutrient Loading Report will require the Permittee to calculate the monthly and total annual loading and offsets (e.g., septic connections, stormwater BMPs, biosolids removal, etc.) for total nitrogen and total phosphorus for all here-in permitted discharge locations. In addition, the Permit will also require the submission within four (4) years of the Permit’s effective, that the Permittee submit a 10-year sanitary buildout and loading and offset analysis to characterize the potential nutrient (total nitrogen and total phosphorus) impacts of the Inland Bays Regional Wastewater Treatment Facility on the Inland Bays Watershed (consisting of Indian River, Indian River Bay, Rehoboth Bay, and their tributaries).

#### 19. Facilities Operation Condition

Added new language (Condition Part IV.A.3) to the revised draft Operations Renewal and Modification Permit requiring the Permittee to immediately perform clean-up and disinfection actions upon becoming aware of a sanitary sewer overflow (SSO) event. In

addition, the Permittee is required to notify the Division of Water within 24-hours from the time the Permittee becomes aware of the SSO, and the condition also requires the Permittee to submit the specific information including: date, time, location, volume, and clean-up documentation.

## 20. Miscellaneous Revisions

Made minor general clarifying changes and typographic error fixes including updating Section name because of recent Division re-organization and revised overall permit format to account for minor revisions.

### **Permit Issuance Recommendation**

Sussex County Council's application submittal for the proposed Phase 2 upgrade and expansion project at the Inland Bays Regional Wastewater Treatment Facility (IBRWTF) and associated proposed draft On-Site Wastewater Treatment and Disposal System (OWTDS) Construction Permit and proposed draft OWTDS Operations Renewal and Modification Permit authorizing (respectively) the construction project and the current and future operation of the IBRWTF is complete and in accordance with the applicable regulatory requirements of 7 Del. Admin. C. § 7101 Regulations *Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal*. All relevant public comments, concerns, and questions submitted on the permit application and proposed draft permits are addressed herein. Please note that to address comments minor revisions to the originally proposed draft permits were required. These revisions are documented in the red-lined revised draft Construction Permit and the red-lined revised draft Operations Renewal and Modification Permit and the respective clean finalized versions.

The proposed OWTDS Construction Permit (as revised) includes a compliance schedule, construction requirements, monitoring equipment installation requirements, and completion reporting requirements designed to ensure proper system construction, reduce treatment system malfunctions, ensure the retention of construction documents, and ultimately result in a wastewater treatment and disposal system that is protective of water quality and the public's health, safety, and welfare.

The OWTDS Operations Renewal and Modification Permit (as revised) includes effluent limitations, operational, monitoring and reporting requirements designed to protect human health and the environment. The most significant permit revision to address public comments regarding the IBRWTF's potential impact to the Inland Bays Watershed, is the addition of a condition requiring the Permittee to submit an Annual Nutrient Loading Report that will calculate the monthly and total annual nutrient loading and offsets (e.g., septic connections, stormwater BMPs, biosolids removal, etc.) for total nitrogen and total phosphorus for all permitted discharge locations. In addition, the condition also requires the submission within four (4) years of a 10-year sanitary buildout and loading and offset analysis to characterize the potential nutrient (total

nitrogen and total phosphorus) impacts of the IBRWTF's operations on the Inland Bays Watershed. This revised condition along with the already extensive water quality monitoring network using lysimeters (in-field), monitoring wells (in-field, up-gradient, and down-gradient), and soils monitoring will allow Division to better assess the potential future impacts the IBRWTF's operations may have on groundwater and surface water resources within and adjacent to the facility. In the event trends of increasing water quality pollutant concentrations and/or other impacts are observed, the Permittee will be required take all necessary actions to eliminate and/or correct any adverse impact on public health or the environment resulting from facility operations.

The proposed upgrade and expansion project at the IBRWTF is a response to Sussex County's changing landscapes, population growth, and climate. The proposed Construction Permit and Operations Renewal and Modification Permit are designed to support these realities while still providing significant protection of public health and the environment. In particular, the Operations Renewal and Modification Permit will significantly increase the disposal options available to the IBRWTF. Currently, IBRWTF is only authorized to utilize specific fields for disposal by spray irrigation. Under the proposed upgrade and expansion project additional spray disposal fields, agricultural fields for distribution of treated wastewater, and interconnections with various rapid infiltration basin (RIB) systems will be available for disposal of wastewater. This dispersal of treated wastewater reduces the potential for excessive nutrient loading from occurring in a single area, provides disposal options during periods when conditions for spray irrigation are unsuitable (i.e., discharge to RIBs during rain events), and reduces the use of potable water for agricultural irrigation.

In addition, the Phase 2 project includes the construction and potential use of a submerged gravel wetland system. The wetland system is a research and demonstration project designed to evaluate the effectiveness of constructed wetlands to serve as an innovative alternative to treated wastewater storage in lagoons, provide an enhanced treated wastewater disposal option, and remediate local groundwater resources. Please note, the discharge of treated wastewater to the wetland system will require separate Department approval. Operation of the submerged gravel wetland system will occur as a pilot study, the first phase of which will utilize groundwater within the spray field as the wetland water source to assess nutrient removal/remediation capabilities. The pilot study will inform whether, or not the County will be permitted to send effluent to the wetland system and/or that the wetland system would be fully permitted for treated wastewater use once the pilot study is complete.

Given the above information, the Division has a high degree of confidence that the OWTDS Construction Permit and OWTDS Operations Renewal and Modification Permit proposed for Sussex County's Inland Bays Regional Wastewater Treatment Facility Phase 2 upgrades and expansion project will be protective of public health and the environment. The Division has addressed the comments and concerns from the public raised during the public comment period and at the public hearing and included revisions to the proposed draft permits to address public comments and concerns, as appropriate. As such, the Division recommends the

issuance of the OWTDS Construction Permit and Operations Renewal and Modification Permit with the revisions referenced herein.

#### Appendices

- Appendix I: Division's Additional Information Letter, dated August 24, 2022
- Appendix II: County's Response to Request for Additional Information, dated October 21, 2022
- Appendix III: Draft Forest Stewardship Plan for Fields A, B, C and D, dated October 2022
- Appendix IV: Delaware Division of Fish and Wildlife's findings from their site inspection on September 14, 2022
- Appendix V: Red-lined revised draft Phase 2 Construction Permit
- Appendix VI: Finalized revised draft Phase 2 Construction Permit
- Appendix VII: Red-lined revised draft Operations Renewal and Modification Permit Renewal and Modification
- Appendix VIII: Finalized revised draft Operations Renewal and Modification Permit Renewal and Modification

Docket # 2022-P-W-0008  
Technical Response Memorandum  
March 26, 2024

Appendix I: Division's Additional Information Letter, dated August 24, 2022



Docket # 2022-P-W-0008  
Technical Response Memorandum  
March 26, 2024

Appendix II: County's Response to Request for Additional Information, dated October 21, 2022

Docket # 2022-P-W-0008  
Technical Response Memorandum  
March 26, 2024

Appendix III: Draft Forest Stewardship Plan for Fields A, B, C and D, dated October 2022

Docket # 2022-P-W-0008  
Technical Response Memorandum  
March 26, 2024

Appendix IV: Delaware Division of Fish and Wildlife's findings from their site inspection on  
September 14, 2022

Docket # 2022-P-W-0008  
Technical Response Memorandum  
March 26, 2024

Appendix V: Red-lined revised draft Phase 2 Construction Permit

Docket # 2022-P-W-0008  
Technical Response Memorandum  
March 26, 2024

Appendix VI: Finalized revised draft Phase 2 Construction Permit

Docket # 2022-P-W-0008  
Technical Response Memorandum  
March 26, 2024

Appendix VII: Red-lined revised draft Operations Renewal and Modification Permit Renewal  
and Modification

Docket # 2022-P-W-0008  
Technical Response Memorandum  
March 26, 2024

Appendix VIII: Finalized revised draft Operations Renewal and Modification Permit Renewal  
and Modification