



Analysis of CTDEEP Initial Discharge Criteria Response Town of Cornwall WWTF

Town of Cornwall WWTF
Sharon-Goshen Turnpike, Route 128
West Cornwall, CT 06796

Prepared by:
Natural Systems Utilities
21 Father Devalles Blvd.
Fall River, MA 02723

Date: July 16, 2026

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1.0 INTRODUCTION

Natural System Utilities (NSU) has been retained by the Town of Cornwall (Town), Connecticut for the design, permitting, and construction of a new wastewater treatment facility (WWTF) based on Membrane Bioreactor (MBR) technology for the treatment of wastewater collected from the Village of West Cornwall, in Connecticut. The design and construction of the facility is strictly dependent on final water quality discharge criteria requirements (Effluent Limits), established by the Connecticut Department of Energy & Environmental Protection (CTDEEP). To limit the Town's risk of potential future redesign work that could affect system size and function, NSU has informed the Town that final Effluent Limits from CTDEEP are required for design work to proceed through to completion. An initial introductory meeting was held on December 4, 2025, to present the project scope to the CTDEEP and initialize engineering efforts for future more detail discussions with other agencies that require involvement in the overall permitting process. A follow-up meeting followed shortly after the initial meeting where the CTDEEP stressed requirements for an outfall location and plans, before the establishment of any effluent limits could be considered.. The Town's Civil Engineer, Wengell, McDonnell & Costello, Inc (WMC), was also present and lead efforts to complete a conceptual outfall design and location after various meetings with CTDEEP Fisheries Division and others. A recent meeting with the CTDEEP Water Quality Division was held on May 26, 2026, where NSU presented a completed detailed design flow analysis based on the Town's potential use breakdowns, and WMC presented an outfall concept, in an effort to further request Effluent Limits. During this meeting, CTDEEP indicated they would review the request and follow up with further information. On July 2, 2026, an email from Carlos Esguerra from CTDEEP (Water Planning and Management Division) was received, outlining some initial feedback. The email indicates CTDEEP's preliminary guidance for proposed Effluent Limits, which will require further refinement as the vacation season eases and a new supervisor joins the CTDEEP water quality team in the month of July. The purpose of this document is to summarize this correspondence, indicate impacts to NSU design and project scope, and update the anticipated design timeline. NSU will also attempt to outline potential risks for the Town if they decide to proceed with WWTF design work under CTDEEP latest preliminary guidelines . A copy of the CTDEEP email response is provided in **Appendix A.** with an attachment to the email included under **Appendix B.**

The following report sections show specific text taken directly from the recent July 2, 2026, CTDEEP email, followed by NSU's interpretation and/or comment(s).

2.0 SUMMARY OF EMAIL

Item 1:

Excerpt from CTDEEP July 2, 2026 Email

"As we might have mentioned in a recent meeting, please make sure the treatment and collection systems are designed following TR-16 design guidelines from the New England Interstate Water Pollution Control Commission (NEIWPCC). We will request a certification signed by a P.E. licensed in CT documenting full conformance with this document. Eventually, a NPDES permit application ([Permit Application for Wastewater Discharges from Domestic Sewage Treatment Works](#)) will need to be submitted to secure a discharge permit. However please hold off for the time being on submitting this application until further notice."

Item 1 NSU Comment

NSU's typical design practice for the New England Region always incorporates NEIWPCC TR-16 guidelines and a P.E. certification.

Item 2:

Excerpt from CTDEEP July 2, 2026 Email

"Effluent quality limits applicable to the proposed discharge:

- ***Secondary treatment standards*** are provided by Regulations of CT state agencies section 22a-430-4(r)
 - o *Biochemical oxygen demand (BOD-5) and Total Suspended Solids (TSS):*
 - *Average Monthly limit (AML) = 30 mg/L*
 - *Maximum Daily Limit (MDL) = 50 mg/L*
 - *Average weekly limit (AWL) = 45 mg/L*
 - o *pH*

- 6.0 to 9.0 standard units
 - No inorganic chemicals”
- “Antidegradation policies apply to this proposal in accordance with Water Quality Regulations i.e., RCSA 22a-426-8. DEEP will evaluate whether lower limits for secondary treatment standards, especially for BOD and TSS may be warranted for this proposal. Once we perform this evaluation we will communicate the final limit concentrations to the design engineer.”***

Item 2 NSU Comment

MBR technology proposed for the Town’s WWTF will meet BOD, TSS, and pH limits referenced in this section of CTDEEP’s email. For domestic wastewater, typical pH discharged from an MBR System is expected to be within the 6 to 9 standard units listed. The reference to “no inorganic chemicals” pertains to the understanding no industrial sources will be permitted or conveyed to the WWTF for treatment, only domestic sanitary wastewater. If this changes, it is expected the permitting process, and effluent limits would also change. Either way, further clarification with CTDEEP to confirm the compounds they are regulating is warranted here.

Antidegradation Policies:

CTDEEP’s evaluation for lower limits for BOD and TSS appears to occur at a later date and is not complete or included in this letter. Internal evaluation of their Antidegradation policies could result in future changes or stricter limits here. Meaning a potential risk that CTDEEP could adjust BOD and TSS limits noted above to a lower threshold. Fortunately, the proposed MBR configuration can produce effluent with BOD/TSS levels less than 10 mg/L. If limits for BOD or TSS change to values lower than <10 mg/l, after CTDEEP’s evaluation of Antidegradation Policies, NSU would need to evaluate further any effect it may have on the proposed design approach.

Item 3:

Excerpt from CTDEEP July 2, 2026 Email

- ***“Bacterial limits (Table 2A of WQS) for recreation and designated swimming***

The waters of the Housatonic river in the area of the proposed discharge are classified as B.

- o *The bacterial indicator of sanitary quality for this area is Escherichia Coli with the following limits per the WQ regulations.*
 - *Monthly limit: Geometric mean less than 126/100 colonies/100 mls*
 - *Single sample maximum not exceeding 235/100 cols/100 mls. **For designated swimming areas***
 - *Single sample maximum not exceeding 410/100 cols/100 mls. **For Non-designated swimming areas***

The town is proposing a UV disinfection system for bacterial control.”

Item 3 NSU Comment

The Ultraviolet (UV) technology proposed for the Town’s WWTF disinfection system will meet E Coli limits referenced in this section of CTDEEP’s email. These limits will be coordinated with the UV manufacturer during design to ensure the discharge limits are met.

Item 4:

Excerpt from CTDEEP July 2, 2026 Email

- ***“Nutrient limits:***
 - o *Phosphorus and Nitrogen: [20260519_N and P PermitConsiderations Hous at Cornwall.docx](#)*
 - *Please note that the nutrient limit guidance was estimated using a design flow rate of 15,000 GPD (0.015MGD) but during the last meeting we understand that the design flow rate may be increased to 0.023MGD (23,000GPD) thus the load limits recommended in this .word document would have to be updated.*
 - *Because of its small size, the facility would not be eligible to participate in the Nitrogen trading program so the limits for Nitrogen would need to be included in the NPDES permit as a load and concentration limit.”*

Item 4 NSU Comment

The document (docx file) referenced above was downloaded and reviewed by NSU and is included in **Appendix B**. The total Nitrogen and phosphorus limits are the two effluent parameters that have the largest potential for major impacts to the design and construction of the WWTF. This document does provide some clarity that there will be a Total Nitrogen (TN) Effluent Limit for the proposed Cornwall WWTF. The proposed facility was based on an assumed Ammonia Nitrogen limit only, of 1 mg/L, which is typically accomplished with use of an aerobic reactor to drive the nitrification process (conversion of Ammonia Nitrogen to Nitrates and Nitrites). By inclusion of a TN limit, an additional process step to “denitrify” (reduce Nitrates and Nitrites to Nitrogen Gas) the wastewater is required that includes the need for additional process tankage. MBR technology proposed for the Town’s WWTF will meet TN limit of 10 mg/L referenced in this section’s attachment of CTDEEP’s email. The proposed WWTF site location should also be able to accommodate the additional process tanks required to meet a Total Nitrogen limit of 10 mg/L. However, any requirements or future revisions to reach Effluent TN values lower than 10 mg/L, may require additional tanks and equipment and could require additional WWTF site area, beyond what is currently allocated, altering the current design approach. This consideration also applies to any potential stringent Total Phosphorus limit imposed (as discussed further below).

It should also be noted that the CTDEEP Nitrogen Limit document references the lower 15,000 gallon per day (GPD) WWTF design flow (which CTDEEP acknowledged) along with a mathematical error in determining the calculated nitrogen mass load limit leaving the plant (at 10 mg/L TN). Their calculation appears to be off by a factor of 10 and should be listed as 1.254 lbs/day instead of 12.54 lbs/day (NSU will request a correction to the math error as well as the flow update in any response provided to CTDEEP).

Accounting for the updated design flow of 23,150 GPD and correct math calculation, based on this document, NSU expects the WWTF nitrogen load limit at 10 mg/l TN, to be 1.93 lbs/day. In follow-up discussions with CTDEEP, this will be confirmed and clarified.

The second component of CTDEEP Nitrogen Limit document references a potential Total Phosphorus (TP) effluent limit of an average of 1 mg/L concentration and daily load of 0.13 lbs/day. Again, the 0.13 lbs/day appears to be calculated from the 15,000 GPD flow and not the actual 23,150 GPD design flow.

Like TN load above, NSU would expect this to be changed to 1 mg/l at 23,150 GPD or 0.19 lbs/day. Another point of confirmation and clarification to be requested from the CTDEEP by NSU.

The current proposed MBR design approach does not include phosphorus removal, however, adding a chemical addition component should increase the capability of the proposed system to meet the 1 mg/L limit without other significant process changes. Incorporating chemical addition for TP removal could increase the sludge generation potential and result in more frequent sludge removal activity at the WWTF during normal operation. Should CTDEEP require Effluent Limits for TP lower than 1 mg/L, this would need to be closely evaluated further by NSU on a case-by-case basis as this could result in the addition of more process tanks (in addition to the tankage discussed above for TN to 10mg/l) and a potential reconfiguration of process flow components. Additional tanks and process equipment would increase the size and cost of the WWTF. If NSU were to proceed with the WWTF design based on the interim TP limit of 1 mg/L, and this is changed to something considerably lower as CTDEEP completes their limit evaluations, the Town risks a potential total redesign and layout of the WWTF, results of which may not fit within the current allocated site space. As noted prior, both the Total Nitrogen and Total Phosphorus Effluent Limits, when low, can be major constituent contributors that affect designs and layouts of any WWTF. Incidentally, the CTDEEP documents do provide clarity that there will be limits for both TN and TP and thus should be considered for the WWTF design moving forward.

Item 5:

Excerpt from CTDEEP July 2, 2026 Email

- ***“Water quality-based (WQB) limits***

Once the plant is online, the Town will need to collect effluent quality data (list of parameters available in Acute Toxicity Monitoring report) with a minimum monitoring frequency established in the NDPES permit. At this juncture and once a NPDES permit is issued, we would need to have the Town collect samples at least once a month to have a sufficient amount of data to run the Reasonable Potential Analysis calculator and evaluate the need for WQB-based limits in the first permit renewal.”

Item 5 NSU Comment

The requirement to collect effluent samples at monthly intervals is expected. Sampling for Acute Toxicity Monitoring parameters is common and a typical requirement when discharging to a surface water under an NDPES Permit. However, the sentence that mentions the data will be used to run Reasonable Potential Analysis to evaluate the need for WQB limits during the first permit renewal provides CTDEEP the ability to change effluent limits at a later date. As unlikely as this is, the risk here is that future effluent requirements could be lowered during the first permit renewal cycle resulting in the need for additional design, treatment equipment, and space at a later date. Fortunately, the MBR technology proposed for the WWTF, already provides extremely high-quality effluent, so any additional future adjusted limits would need to be considerable to dramatically affect any future MBR upgrades.

Item 6:

Excerpt from CTDEEP July 2, 2026 Email

- ***“Additional considerations:***
In order to evaluate the need for WQB limits, we need to have the applicant provide this additional information, including but not limited to:
 - *Have applicant document and demonstrate to us that the area where the proposed outfall will be located will provide maximum discharge assimilation capacity.*
 - *Applicant should evaluate any nearby areas where the public may come into direct contact with final effluent (outfall currently proposed to be located immediately downstream of the covered bridge).*
- *Is the immediate area wadable or fishermen access the river in waders? Any whitewater rafting?*
- *The minimum required disinfection season goes from May 1st through September 30th but DEEP can extend it if deemed warranted based on recreational uses outside this time window.”*

Item 6 NSU Comment

The first section of CTDEEP's additional considerations noted above appears to be a request to the Town to review, document and demonstrate the area of the discharge outfall location will provide maximum discharge assimilation for treated effluent and locations where contact with the public is possible. The result of the analysis could be used by CTDEEP to increase their minimum disinfection season. The proposed MBR UV disinfection is anticipated to be sized to run continuously, so any extension of time for disinfection by CTDEEP should have minimal design impacts. NSU recommends the Town and WMC take the lead on documenting and evaluating the potential contact areas and determine if additional adjustments to the discharge location should be considered or if a more optimal location is required, along with providing the results of this analysis to the CTDEEP. Item 7 that follows, should also be addressed in a similar manner by the Town and WMC in conjunction with Item 6.

Item 7:

Excerpt from CTDEEP July 2, 2026 Email

- "To be able to use the RPA calculator, a zone of influence (ZOI) needs to be established to determine an instream waste concentration (IWC). We request that the applicant performs a dye study to help identify the optimal location for the outfall pipe.
- The dye study would aim to assess the concentration of the discharge which is anticipated to occur in the river following dilution and mixing of the discharge during 7Q10 river flow conditions.
- Applicant should prepare and submit a scope of work for DEEP's review and approval describing in detail how they plan to perform this dye study mimicking the expected dispersal characteristics from the proposed submerged diffuser during 7Q10 flow conditions.
- Applicant should retain the services of an engineering company that specializes in these types of hydraulic studies. They need to model this type of mixing zone using a model such as Cormix or a similar type of appropriate software.
- Applicant should provide the bathymetry of the area where the outfall is proposed to be located to ensure that even during low

flow/critical conditions such as 7Q10 flows, the outfall does not become exposed.”

Item 7 NSU Comment

The additional considerations listed in this section confirms CTDEEP’s prior requests for a dye study to be performed in the Housatonic River to confirm a zone of influence (ZOI) at the outfall. While the requirements above could suggest the larger impacts are to the potential outfall location and configuration, there is a potential risk that CTDEEP uses the information to impose additional or lower discharge limits that could impact the design of the WWTF. The Town risk for this item is similar to the Total Nitrogen and Total Phosphorus impacts with regards to potential effluent limit changes if (ZOI) is not satisfactory. NSU does not perform Dye Studies, and recommends this work be completed by a firm that specializes in this area of testing and modeling. If the Town or WMC does not have this expertise in house, then NSU’s sub consultant Langan may, or could further assist the Town in finding an appropriate alternative. Providing bathymetry of the outfall area should also be included as noted with the Dye Study.

Item 8:

Excerpt from CTDEEP July 2, 2026 Email

- *“For awareness, the DEEP’s Municipal Wastewater Program is currently developing a new General Permit for monitoring PFAS compounds in influent, final effluent and sludge stipulated in EPA method 1633A from POTW facilities regulated by our program. Once this GP is issued, the Town will be required to collect PFAS samples and report those results to DEEP.”*

Item 8 NSU Comment

Per- and polyfluoroalkyl (PFAS) compounds are emerging pollutants that regulators appear to be more concerned with lately. States across the country are starting to adopt requirements for testing and treatment of the various compounds that make up PFAS. All current wastewater technologies, including

MBR do not typically provide adequate treatment for PFAS and as such additional equipment and area would be needed to remove these compounds should a limit be imposed. Depending on limits and equipment, area required could be substantial. NSU does have experience with technologies required to remove and destroy PFAS but as the technology is still in its infancy, further testing and design considerations can be difficult to determine at these early stages. The majority of PFAS that gets introduced into domestic sanitary wastewater could originate from the city or well drinking water utilized at residences and uses. It may benefit the Town to consider collecting local potable water samples and/or any existing water quality data to determine baseline levels of PFAS that may reside in the water supplies in the area.

Item 9:

Excerpt from CTDEEP July 2, 2026 Email

- *“The Town will need to adopt a sewer use ordinance and user charge system prior to commissioning to ensure that adequate funding levels are available to properly maintain and operate the new system.”*

Item 9 NSU Comment

The Town has discussed this on some prior calls and meetings and development of these sewer use plans should continue as they will be needed for the NPDES permit applications. This item should not directly impact the design of the WWTF during the design phase of the system.

3.0 TIMELINE IMPACTS

As previously presented by NSU, the following timelines are still applicable from NSU email dated June 8, 2026.

Previous Timeline

- Receive water quality discharge criteria – Based on CTDEEP meeting, could receive this week or next.
- Treatment system design – 101 days from date of final Water Quality confirmation of discharge criteria.

Important to Note: Another consideration for this schedule is if CTDEEP requires a Dye Study, which they have stated several times as most likely being required – this is not currently in NSU’s scope, and is typically handled by project Civil Engineer.

- Prepare water quality application – 3 to 4 months (allow a few additional weeks for Town review and comment).

Important Note: Some of this time may overlap with 101-day design timeline and interface and information from Town and Civil Eng will be required.

- Respond to Comments and prepare final CTDEEP water quality application package – 10 days
- CTDEEP administrative and technical review – 180 days
- Public Review and Comment – 30 days

Please note the schedule above does not account for additional approvals listed below and CTDEEP is not bound by the 180 days for administrative and technical review, meaning they could take longer if they require it (and typically do). Some additional items that impact the schedule above (most notably- time frame for preparing the water quality application) that are outside of NSU’s scope and control are:

- Town establishment and CTDEEP approval of sewer use rules/ordinance or Water Pollution Control Authority (WPCA)
- Collection system approval (416 review)
- Outfall structure design approval (404/401 WQ Certs)
- Army Corps permitting

NSU Comment

The first bullet provided a starting point for the beginning of the detailed design of the treatment system. This item was to be covered by the CTDEEP email that is the subject of this document. As noted above many questions were provided answers, but CTDEEP’s email makes clear they are subject to change as they return

from summer breaks and further information is reviewed and so proceeding forward has some potential risk. The email does allow for some initial assumptions to be made and would allow for design to proceed forward with the understanding that there are still some risks associated with the potential of lower discharge limits.

Another major item that impacts the potential risk of moving forward with design relates to the completion of the dye study. The main risk is that proceeding prior to the dye study completion could result in some redesign of the system should additional requirements be needed as a result of the dye study. It is possible the dye study has a larger impact on the outfall location versus the treatment system design so risk to the treatment system is anticipated to be lower.

The last major impact to the proposed schedule and timeline submission for the permit application are related to the additional approvals that are needed that are beyond NSU scope of service or control. While many of these additional approvals appear more related to the collection and discharge location, the risk to the treatment system design should be minimal when compared to the impacts that CTDEEP is proposing. Most likely for some of these additional approvals (e.g., Army Core of Engineers) some level of design will be needed for which NSU will play a supporting role.

4.0 CONCLUSION

The CTDEEP email for potential discharge limitations does provide some direction for proceeding with detailed design elements for the WWTF, but not without some risks for the Town that have been mentioned prior. The majority of risk relates to additional fees should Effluent Limits change that trigger a redesign.

Important items for further consideration are as follows:

- One item of clarity is there will be a limit for Total Nitrogen and Total Phosphorus. The letter states 10mg/l and 1mg/l, respectively. If these can be the assumed final limits for TN and TP, then the system design can proceed based on them, with the understanding any changes would need to be

evaluated and result in additional costs. Other than costs, the most impactful risk relates to the Total Phosphorus limit going lower than 1 mg/L, more specifically if it is changed to < 0.6 mg/l. This could result in a total redesign of the system that could require more site area.

- CTDEEP has requested a dye study. The dye study could potentially have a larger impact on the final discharge location but still could impact (at a lower risk) treatment system design.
- To continue with detailed design, final selection of the membrane technology should be made as it will slightly impact potential equipment layouts. NSU and Town can further discuss the prior Membrane report previously issued to the Town.
- With the emergence of future PFAS requirements being a potential, the Town could consider some initial testing of local potable water to ascertain baseline PFAS levels that could be introduced to the WWTF. This does not eliminate the risk going forward but would provide a better understanding of potential impacts to future design requirements and allow for some planning.

If the Town decides to proceed forward with the WWTF design work required for NPDES permit application development, NSU is ready to proceed within one to two weeks after notification. NSU would assume the following New Effluent Discharge Limits as the basis of design for the system based on the preliminary guidance provided by the CTDEEP in the email and attachment link discussed in this report and attached as **Appendices A & B**. All potential risks discussed or included in this report would be valid and active and any changes in limits received from the CTDEEP during the design process will need to be addressed on a case-by-case basis with impacts (if any) accessed and managed as a collaborative effort between NSU, the Town of Cornwall and WMC.

Table 1 – Proposed Discharge Parameters and Limits

Parameter	Original Proposed Limits	New Discharge Limits
Influent Flow	15,000 gpd	23,150 gpd
BOD ₅	<10 mg/L	<10 mg/l
TSS	<10 mg/L	<10 mg/l
Ammonia	<1 mg/L	<1 mg/l
Nitrate Nitrogen	No Limit	<10 mg/L
Total Nitrogen	No Limit	<10 mg/L
Total Phosphorus	No Limit	<1 mg/L
Ecoli	No Limit	<126 org/100 ml/l
pH	6.5– 8.5 S.U.	6– 9 S.U.
Oil and Grease	No Limit	<15 mg/L

The proposed New Discharge Limits above are assumptions based on latest CTDEEP correspondence and their use does not eliminate the risk of any potential future redesign should CTDEEP require changes during or after the design process commences.

Appendix A:

CTDEEP Email Dated July 2, 2026

Appendix B:
CTDEEP Proposed Cornwall WWTF Determining
Nitrogen Limit dated May 19, 2026.

Andrew Lombard

From: Esguerra, Carlos <Carlos.Esguerra@ct.gov>
Sent: Thursday, July 2, 2026 11:45 AM
To: Andrew Lombard
Cc: Darrell Molloy; Wright, Darren; Bellucci, Christopher; Hall, Ivonne; Falk, Christopher; Shytko, Jueda; Straut, Ann; Pappano, Stacy; Dias, Jackie S; Cassone, Joe
Subject: RE: Town of Cornwall Sewage Treatment Plant, Water Quality Follow-up

Caution: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. If you are unsure, please contact IT.

Hi Andrew,

We are providing this preliminary guidance relative to the proposed new discharge and treatment system. Due to vacation schedules ramping up and also due to the fact that we have a new supervisor joining the water quality team this month, I would like to caution that some of these recommendations will need further refinement, however we are providing so that you can get started on some of the preliminary design work related to this proposal.

As we might have mentioned in a recent meeting, please make sure the treatment and collection systems are designed following TR-16 design guidelines from the New England Interstate Water Pollution Control Commission (NEIWPCC). We will request a certification signed by a P.E. licensed in CT documenting full conformance with this document. Eventually, a NPDES permit application ([Permit Application for Wastewater Discharges from Domestic Sewage Treatment Works](#)) will need to be submitted to secure a discharge permit. However please hold off for the time being on submitting this application until further notice.

Effluent quality limits applicable to the proposed discharge:

- **Secondary treatment standards** are provided by Regulations of CT state agencies section 22a-430-4(r)
 - o Biochemical oxygen demand (BOD-5) and Total Suspended Solids (TSS):
 - Average Monthly limit (AML) = 30 mg/L
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 - o pH
 - 6.0 to 9.0 standard units
 - o No inorganic chemicals

Antidegradation policies apply to this proposal in accordance with Water Quality Regulations i.e., RCSA 22a-426-8. DEEP will evaluate whether lower limits for secondary treatment standards, especially for BOD and TSS may be warranted for this proposal. Once we perform this evaluation we will communicate the final limit concentrations to the design engineer.

- **Bacterial limits** (Table 2A of WQS) for recreation and designated swimming

The waters of the Housatonic river in the area of the proposed discharge are classified as B.

- o The bacterial indicator of sanitary quality for this area is Escherichia Coli with the following limits per the WQ regulations.

- Monthly limit: Geometric mean less than 126/100 colonies/100 mls
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- Single sample maximum not exceeding 410/100 cols/100 mls. **For Non-designated swimming areas**

The town is proposing a UV disinfection system for bacterial control.

- **Nutrient limits:**

- o Phosphorus and Nitrogen: [20260519_N and P PermitConsiderations Hous at Cornwall.docx](#)
 - Please note that the nutrient limit guidance was estimated using a design flow rate of 15,000 GPD (0.015MGD) but during the last meeting we understand that the design flow rate may be increased to 0.023MGD (23,000GPD) thus the load limits recommended in this .word document would have to be updated.
 - Because of its small size, the facility would not be eligible to participate in the Nitrogen trading program so the limits for Nitrogen would need to be included in the NPDES permit as a load and concentration limit.

- **Water quality-based (WQB) limits**

Once the plant is online, the Town will need to collect effluent quality data (list of parameters available in Acute Toxicity Monitoring report) with a minimum monitoring frequency established in the NPDES permit. At this juncture and once a NPDES permit is issued, we would need to have the Town collect samples at least once a month to have a sufficient amount of data to run the Reasonable Potential Analysis calculator and evaluate the need for WQB-based limits in the first permit renewal.

- **Additional considerations:**

In order to evaluate the need for WQB limits, we need to have the applicant provide this additional information, including but not limited to:

- o Have applicant document and demonstrate to us that the area where the proposed outfall will be located will provide maximum discharge assimilation capacity.
 - Applicant should evaluate any nearby areas where the public may come into direct contact with final effluent (outfall currently proposed to be located immediately downstream of the covered bridge).
 - Is the immediate area wadable or fishermen access the river in waders? Any whitewater rafting?
 - The minimum required disinfection season goes from May 1st through September 30th but DEEP can extend it if deemed warranted based on recreational uses outside this time window.
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 - The dye study would aim to assess the concentration of the discharge which is anticipated to occur in the river following dilution and mixing of the discharge during 7Q10 river flow conditions.
 - Applicant should prepare and submit a scope of work for DEEP's review and approval describing in detail how they plan to perform this dye study mimicking the expected dispersal characteristics from the proposed submerged diffuser during 7Q10 flow conditions.

- Applicant should retain the services of an engineering company that specializes in these type of hydraulic studies. They need to model this type of mixing zone using a model such as Cormix or a similar type of appropriate software.
- Applicant should provide the bathymetry of the area where the outfall is proposed to be located to ensure that even during low flow/critical conditions such as 7Q10 flows, the outfall does not become exposed.
- For awareness, the DEEP's Municipal Wastewater Program is currently developing a new General Permit for monitoring PFAS compounds in influent, final effluent and sludge stipulated in EPA method 1633A from POTW facilities regulated by our program. Once this GP is issued, the Town will be required to collect PFAS samples and report those results to DEEP.
- The Town will need to adopt a sewer use ordinance and user charge system prior to commissioning to ensure that adequate funding levels are available to properly maintain and operate the new system.

Thank you for your attention this matter. We can coordinate a follow up meeting in August to go over the status of this project and discuss any questions that you may have and develop a scope for the requested dye study

Carlos

Carlos A. Esguerra

Supervising Environmental Engineer
Bureau of Water Protection and Land Reuse
Water Planning and Management Division
Connecticut Department of Energy & Environmental Protection
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p:860.424.3756 | carlos.esguerra@ct.gov

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| portal.ct.gov/DEEP

[Municipal Wastewater \(ct.gov\)](http://portal.ct.gov/DEEP)

From: Andrew Lombard <alombard@NSUWater.com>

Sent: Monday, June 29, 2026 6:58 AM

To: Bellucci, Christopher <Christopher.Bellucci@ct.gov>

Cc: Darrell Molloy <dmolloy@NSUWater.com>; Wright, Darren <Darren.Wright@ct.gov>; Esguerra, Carlos <Carlos.Esguerra@ct.gov>

Subject: RE: Town of Cornwall Sewage Treatment Plant, Water Quality Follow-up

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Chris,

Thank you for getting back to me. Is it possible to get a timeline for determining the guidelines.

Thank you.



Andrew Lombard, PE (RI)

Managing Engineer I, NE

Natural Systems Utilities

M: +1.508.365.7288 | **F:** +1.508.675.5599

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From: Bellucci, Christopher <Christopher.Bellucci@ct.gov>

Sent: Wednesday, June 17, 2026 5:39 PM

To: Andrew Lombard <alombard@NSUWater.com>

Cc: Darrell Molloy <dmolloy@NSUWater.com>; Wright, Darren <Darren.Wright@ct.gov>; Esguerra, Carlos <Carlos.Esguerra@ct.gov>

Subject: Re: Town of Cornwall Sewage Treatment Plant, Water Quality Follow-up

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Thank you Andrew. Carlos and I just discussed and will follow up as soon as we can with some guidelines.
Thank you for your patience.

Christopher J. Bellucci

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From: Andrew Lombard <alombard@NSUWater.com>

Sent: Tuesday, June 16, 2026 8:13 AM

To: Bellucci, Christopher <Christopher.Bellucci@ct.gov>

Cc: Darrell Molloy <dmolloy@NSUWater.com>; Wright, Darren <Darren.Wright@ct.gov>

Subject: Town of Cornwall Sewage Treatment Plant, Water Quality Follow-up

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Chris,

Hope my email finds you well and thank you for the discuss back in May on the Town of Cornwall Wastewater Treatment Plant water quality discharge criteria. I wanted to follow up with to see about timing to receive feedback on the water quality discharge requirements as discussed on the May 26, 2026 meeting. We are at a point in the project that we cannot make further progress on the treatment plant design until we have a better understanding of anticipated discharge criteria. If you could please let me know the timing for this and/or next steps needed to determine. Also let us know if there is any information from us that might help this process along.

Thank you.



Andrew Lombard, PE (RI)

Managing Engineer I, NE

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Proposed Cornwall WWTP
Determining Nitrogen Limits
20260519

The document titled “Nitrogen Control for Small Sewage Facilities” (P. Stacey, 2010), was reviewed to evaluate permit needs for the proposed Cornwall wastewater treatment plant (WWTP). This document provides guidance for wastewater treatment plants that discharge less than 20 lbs/day of nitrogen. Item number 3 states that “Any permit application for a new discharge to surface waters will require a nitrogen limit in their permit, regardless of size”.

Considerations for determining a discharge limit for nitrogen:

According to the effluent limits and MBR capabilities for the proposed Cornwall WWTP provided by the consultant, this system can achieve a nitrogen effluent concentration less than 10 mg/L (Figure 1). Using the Cornwall WWTP design flow of 15,000 gpd and 10mg/L for the nitrogen concentration, the nitrogen mass load leaving the plant will 12.54 pounds/day. Considering attenuation which will occur between the discharge location and Long Island Sound (TE factor = 0.35), approximately 4.38 pounds/day will be discharged to Long Island Sound.

System Design

NSU Membrane Bioreactors (MBR's)

Typical Major Constituent Design Parameters and MBR Capabilities

Typical Regulatory Effluent Limits and MBR Capabilities

(Discharge to Surface Water/Groundwater/Direct Reuse at END OF PIPE).

Note: Town of Cornwall MBR System Anticipated to be STD MLE MBR STYLE

	Surface Water	Groundwater	CT Direct Reuse	Std MLE MBR Capabilities
BOD	30 mg/l	30 mg/l	20 mg/l	< 10 mg/l
TSS	30 mg/l	30 mg/l	20 mg/l	< 10 mg/l
NH3	2 mg/l	N/A	N/A	< 1.5 mg/l
TN	N/A	10 mg/l	10 mg/l	< 10 mg/l
TP	M&R	N/A	N/A	< 5 mg/l
pH	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5
Turbidity	N/A	N/A	2 per 24 hr Ave	< 2 mg/l
Ecoli or Fecal	200 col/100ml	200 col/100ml	100 col/100ml	ND median /100ml for 7 days, no sample over 14 col/100ml

M&R=Monitor and Report

N/A=Not Applicable (typically not included as an effluent limit)

Figure 1. Effluent Limits and MBR Capabilities. The Cornwall WWTP anticipated performance is under the “Std MLE MBR Capabilities” column.

Questions/Comments:

Include optimization and monitoring as a condition of the permit to evaluate for more stringent limits upon renewal of the permit.

Is there an existing discharge that this plant will receive or is this plant being constructed only for new development? If there's an existing discharge, consider if this plant will mitigate an existing pollution issue (i.e. malfunctioning septic system).

Total Phosphorus Thoughts/Considerations

The '[Interim Phosphorus Reduction Strategy](#)' sets a goal of achieving an 8.4 Enrichment Factor or lower throughout a given watershed to limit major deviations in natural biological integrity in rivers and streams. The EF is a unitless metric that provides an estimate of the level of anthropogenic phosphorus loading to river and stream. The receiving stream of the proposed discharge is the Housatonic River in Cornwall. The estimated EF at the point of discharge is ~ 5.23. At a minimum, Total Phosphorus should be included as a parameter to monitor as part of the permit. In addition, because this is a new discharge, we suggest an average performance limit concentration of 1 mg/l and permitted daily load of 0.13 lbs/day. This would ensure that the EF does not increase above current levels in downstream waters.

NPDES Design Flow: 0.015 mgd

Suggested Average Performance Limit Concentration: 1 mg/L

Suggested Permit Daily Load: 0.13 lbs/day