



**Guidance for Developing the
Comprehensive Nutrient Optimization Plan**

Watershed Protection Branch
Environmental Protection Division

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Guidance for Developing the Comprehensive Nutrient Optimization Plan

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1.0 Purpose and Applicability

This document is intended to provide the regulated community guidance for the development of the Comprehensive Nutrient Optimization Plan (CNOP). The CNOP is not intended to be an overly burdensome permit condition and will likely piggy back routine evaluations performed by regulated facilities that continuously fine tune their operations. The guidance document is not intended to be a cookbook as each facility and its wastewater treatment components are unique. EPD is providing appropriate flexibility to regulated facilities when developing their CNOP.

Most of the wastewater treatment systems in Georgia were not originally designed to remove phosphorus and nitrogen, however systems have been and may continue to be retrofitted or upgraded to meet new and reduced TP and TN limits placed in NPDES wastewater permits, as assessments and regulations require.

EPD is requiring permitted facilities discharging TP and TN nutrients to evaluate their current processes, infrastructure, collections systems, and wastewater treatment plants to determine if they can reduce their TP and TN nutrient loads without installing new technologies, retrofitting their wastewater treatment plants or spending significant money.

This guidance document is only applicable to those facilities that discharge to waterbody with specific numeric nutrient criteria and a CNOP is required in a final effective NPDES permit.

2.0 Minimal CNOP Requirements

The CNOP permit condition requires the permittee to develop a plan that includes at a minimum, the following:

- a. identification and quantification of the sources of nutrients entering the wastewater treatment plant,
- b. evaluation of potential source reductions,
- c. identification and implementation of operational adjustments aimed to reduce nutrients, and
- d. establishment of site-specific nutrient reduction goals.

2.1. Identification and quantification of known sources of nutrients entering the wastewater treatment plant

Provide a broad or targeted overview of the potential sources of known nutrients entering the wastewater treatment plant. Influent sources may include domestic wastewater, industrial process or commercial wastewater, nonprocess water, contact and noncontact cooling water, boiler blow down, septic tank effluent, inflow and infiltration from sewage collection systems, etc.

Once the sources are identified, consider their potential contributions to the WWTP. Review or

evaluate the WWTP design assumptions. For example, X percent of influent is domestic or nondomestic. Consider developing a sampling plan to evaluate the influent and effluent to determine a baseline and percent reduction. Evaluate nutrient conversion within the existing treatment system. It may not be enough to just sample TN and TP at both locations. To understand the biokinetics, removal efficiencies, and synergistic effects consider sampling for BOD, TSS, NH₃, TP (& orthophosphate), TN, pH, DO, and temperature at various locations throughout the WWTP at a routine frequency for a predetermined amount of time to provide sufficient data for a comprehensive evaluation. Evaluate and sample return or recycle flows within the wastewater treatment plant.

Consider evaluating the microbial community within the WWTP to determine the biological removal of nutrients.

Utilize existing in-house resources and programs to collate data

- a. Pretreatment Program
- b. Watershed Protection Plan
- c. Municipal Sludge Disposal & Biosolids Program
- d. Industrial Sludge Disposal & Materials Management
- e. TMDLs
- f. Integrated Planning for Municipal Stormwater and Wastewater
- g. Capital Improvement Plans & Long-Range Integrated Water Resources Planning
- h. CMOM
- i. Green Infrastructure
- j. Sustainability Projects
- k. Stormwater Protection Plan
- l. Review budgeted and future plans (e.g. repair, rehabilitation, or replacement of specific infrastructure)
- m. Development an Asset Management Plan
- n. Review Chemical Material Safety Data Sheets
- o. Community Engagement
- p. Review Local Sewer Ordinances

2.2 Evaluation of potential source reductions

Based on the sources identified in Section 2.1, describe pathways for reducing their nutrient loads to the collection system and WWTP. This can include the need for additional comprehensive and targeted monitoring within the collection system for extended periods of time.

2.3 Identification and implementation of operational adjustments to reduce nutrients

Once the potential sources and source reductions or modifications have been identified, economic viability and practicability of implementation will be evaluated to determine the site-specific operational adjustments that may be performed.

2.4 Establishment of nutrient reduction goals

The development of reduction goals will be facility specific and be dependent on potentially many variables. The goals or targets may be in the form of quantifiable numeric reductions, qualitative narrative best management practices, or roadmaps to reduce nutrients in the effluent discharge over a specific period of time. The goals do not have to be numeric reductions, nor do they have to include the installation of additional wastewater treatment to reducing the current nutrient load. Goals could consider the organizations mission statements, regulatory and legal requirements, asset and operation management, or measurable check points and take into account sustainability and long-term impacts.

This following list describes a range of goals along with examples of approaches to address them. The examples are illustrative only.

a. Improve operational resilience

For example, understand operational, financial, and potential climate vulnerabilities and incorporate them into alternatives analysis as part of a broader risk management strategy.

b. Address wet weather impacts

For example, implement a mix of non-traditional infrastructure alternatives such as green infrastructure solutions with integrated stormwater controls (applicable if stormwater is commingled with wastewater prior to discharge).

c. Reduce nutrient loadings within the watershed

For example, partner with other community agencies to coordinate water quality projects such as nutrient trading or BMPs to reduce nutrient loads from inflow and infiltration.

3.0 Reporting and Retention

The CNOP shall be updated and retained on site in accordance with the requirements of the NPDES permit.

As specified in the NPDES permit, prior to the submittal of the CNOP, the permittee will submit semi-annual progress reports detailing the status of the development and implementation of the CNOP to the assigned EPD Compliance Office.

Annual Report: Each June 30th the permittee is to submit the following to EPD:

- a. An annual certification statement documenting that the CNOP is being implemented. The certification statement and signatory requirements shall comply with Part I.D.5 in this permit.
- b. A detailed progress report that provides a summary of the reduction goals and numeric targets (if developed) and discussion of how the goals and targets were achieved, BMPs that have been implemented, and new reduction goals and targets for the following year. The progress report shall also include any necessary changes made to the CNOP.

4.0 EPD Compliance Determination

The EPD Compliance team will review the submitted CNOP and determine if the intent and spirit of the permit condition has been met. They will send a letter acknowledging receipt of the CNOP and inform the permittee if additional actions are needed.

4.1 EPD Compliance Team Review Criteria

- a. Does the CNOP include language for items a. – d. from Section 2.0?
If yes, then the CNOP is complete.
If no, inform the facility of the deficiency(s) identified and provide a timeline to submit an updated plan.
- b. Once a completed CNOP has been received and reviewed, the CNOP should be retained onsite at the facility and the EPD Compliance Team will review it during their inspections.

5.0 Resources & Toolbox

Over the last decade, US EPA developed several documents, held dozens of trainings and created videos geared towards the optimization of current infrastructure and wastewater treatment plants to reduce nutrient pollutant loading (<https://www.epa.gov/nutrient-policy-data/epas-efforts-reduce-nutrient-pollution>).

<https://www.epa.gov/nutrient-policy-data/epas-efforts-reduce-nutrient-pollution>

<https://www.epa.gov/compliance/optimizing-nutrient-reduction-small-wastewater-treatment-plants>

<https://www.epa.gov/compliance/optimizing-nutrient-removal-activated-sludge-wastewater-treatment-plants>