

**EPA Region 4 NPDES Permit Quality Review**

**North Carolina**

**FINAL REPORT**

**September 2020**

## Contents

Executive Summary.....	3
I. PQR BACKGROUND.....	4
II. STATE PERMITTING PROGRAM GENERAL OVERVIEW .....	6
III. CORE REVIEW FINDINGS.....	8
A. Basic Facility Information .....	8
1. Facility Information .....	8
2. Permit Application Requirements .....	9
B. Developing Effluent Limitations .....	10
1. Technology-based Effluent Limitations.....	10
2. Reasonable Potential and Water Quality-Based Effluent Limitations .....	12
3. Final Effluent Limitations and Documentation .....	14
C. Monitoring and Reporting Requirements.....	15
D. Standard and Special Conditions.....	17
E. Administrative Process.....	18
F. Administrative Record and Fact Sheet.....	19
IV. NATIONAL TOPIC AREA FINDINGS .....	21
A. Permit Controls for Nutrients in Non-TMDL Waters.....	21
B. Effectiveness of POTW NPDES Permits with Food Processor Contributions .....	23
C. Small Municipal Separate Storm Sewer System Permit Requirements.....	25
V. REGIONAL TOPIC AREA FINDINGS .....	26
A. Use of Best Professional Judgement Regarding The Implementation Of EPA’s Cooling Water Intake Structure Rule For Existing Sources With Intake Flow Less Than 2 Million Gallons Per Day .....	26
VI. REVIEW OF PROGRESS ON ESSENTIAL ACTION ITEMS FROM LAST PQR .....	28
Table 1. Essential Action Items Identified During Last PQR 2013.....	28
VII. RECOMMENDED ACTION ITEMS FROM LAST PQR.....	32
Table 2. Recommended Action Items Identified During 2013 PQR.....	33
VIII. ACTION ITEMS FROM FY 2018–2022 PQR CYCLE .....	35
Table 3. Essential Action Items from FY 2018-2022 PQR Cycle .....	36
Table 4. Recommended Action Items from FY 2018-2022 PQR Cycle.....	37

## Executive Summary

The Environmental Protection Agency Region 4's National Pollutant Discharge Elimination System (NPDES) Permit Quality Review (PQR) for North Carolina found that permits issued in the state were of sufficient quality and consistency to support and uphold the intent and resources of the NPDES permit program. The PQR supplements EPA's routine review of NPDES permits being issued by the State of North Carolina during the issuance process. EPA's routine review of draft permits is referred to as "real time review".

The PQR examined 14 individual permits issued by the North Carolina Department of Environmental Quality (NCDEQ) for discharges from municipal utilities or Publicly Owned Treatment Works (POTWs) and industrial facilities of major and non-major discharge capacity. In addition, the PQR reviewed one small municipal separate storm sewer system (MS4) permit. These documents were created based on permitting policies and statewide permit-writer templates. The PQR also focused on several national and regional priority areas including:

- Permit Controls for Nutrients in Non-Total Maximum Daily Load (TMDL) Waters;
- Effectiveness of POTW NPDES Permits with Food Processor Contributions;
- Small MS4 Permit Requirements; and
- Minor Industrial Facilities with Cooling Water Intake Structures.

The PQR report presents a cyclical overview of the North Carolina NPDES permitting program and identifies new areas where the EPA and the NCDEQ continue to work together to strengthen NPDES permit language and documentation in all state permits. The PQR recognizes that state and region-specific challenges faced by NCDEQ include complex permits regarding emerging pollutants of concern and staff turnover.

Although the reviewed permits commonly conformed to national requirements, the EPA identified a few "essential" findings as well as several areas where we recommend focus to improve permit quality. These comments are noted in detail in the PQR report.

## I. PQR BACKGROUND

PQRs are an evaluation of a select set of NPDES permits to determine whether permits are developed in a manner consistent with applicable requirements established in the Clean Water Act (CWA) and NPDES regulations. Through this review mechanism, the EPA promotes national consistency, and identifies successes in implementation of the NPDES program as well as opportunities for improvement in the development of NPDES permits. The EPA conducted a previous PQR of NCDEQ's NPDES permitting program on May 29-31, 2013. The PQR summary report is available at:

[https://www.epa.gov/sites/production/files/2015-12/documents/nc\\_pqr\\_final\\_report.pdf](https://www.epa.gov/sites/production/files/2015-12/documents/nc_pqr_final_report.pdf).

From that review, the evaluation team proposed various action items to improve NCDEQ's NPDES permitting program. As part of the current PQR, EPA discussed with NCDEQ their progress in resolving the previous action items and EPA began a new review of their program.

Of the 15 action items identified during the previous PQR as being essential<sup>1</sup> actions, seven have been resolved and the remainder represent actions that are either longer-term activities or lower-level actions which are still in progress. In addition, the EPA recommended several action items to improve NCDEQ's NPDES program. These action items are identified in this PQR cycle as "recommended." Section VI of this report contains a status of the progress on action items identified during the first PQR.

For this PQR, the review identified new or additional action items to improve NCDEQ's NPDES permit program. The proposed action items are identified in Sections III and IV of this report and are divided into two categories to identify the priority that should be placed on each item.

- **Essential Actions** - Proposed essential action items address noncompliance with respect to a federal regulation, which the EPA has cited for each essential action item. The permitting authority must address these action items in order to come into compliance with federal regulations.
- **Recommended Actions** - Proposed recommended action items are recommendations to increase the effectiveness of the state's NPDES permit program.

The essential findings are used to augment the existing list of "follow up actions" currently tracked by EPA Headquarters on an annual basis and reviewed during subsequent PQRs.

Two members of the NPDES Permitting Section from the EPA Region 4 made up the review team. The PQR was conducted at NCDEQ's main office in Raleigh, North Carolina during July 30 – August 1, 2019.

---

<sup>1</sup> During the 2012-2017 PQR cycle, these action items were known as "Category 1" and address deficiencies or noncompliance with respect to federal regulations. The EPA is now referring to these action items going forward, as Essential. In addition, previous PQR reports identified recommendations as either "Category 2" or "Category 3" action items. The EPA is now consolidating these categories of action items into a single category: Recommended.

The NC PQR included reviews of core permit components and national and regional topic areas, as well as discussions between the PQR review team and NCDEQ staff addressing their program status and permit issuance process. The permit reviews focused on core permit quality and included a review of the permit application, permit, fact sheet, and any correspondence, reports or documents that provide the basis for the development of the permit conditions and related administrative process. The PQR also included conversations between the EPA and the state on program status, the permitting process, responsibilities, organization, staffing, and program challenges the state is experiencing.

A total of 14 permits were reviewed as part of the PQR.

<b>NPDES Permit ID</b>	<b>Permit Name</b>
NC0004944	Clariant Industries
NC0004243	Coats American
NC0023957	Cross Creek WWTP
NC0004944	Edge Water Treating
NCS000563	Elizabeth City MS4
NC0003298	International Paper
NC0024945	Irwin Waste WWTP
NC0029980	Miller Coors Plant
NC0081621	Muddy Creek WWTP
NCC000001	Neuse River Compliance Association Joint Permit
NC0006190	South Fork Industries
NC0024937	Sugar Creek WWTP
NC0039594	Town of Maiden
NC0021342	Town of Trenton

Of these, 13 permits were reviewed for the core criteria, six permits were reviewed for national topic areas, five permits were reviewed for regional topic areas, and one permit specific to the MS4 program was reviewed. Some permits were reviewed for both the core review as well as one or more topic specific area reviews. Permits were selected based on issuance dates and the

review categories that they fulfilled. All of the reviewed permits were issued within the previous five-calendar years and reflect current permitting practices for the time period of the PQR review.

### **Core Review**

The core permit review involved the evaluation of selected permits and supporting materials using basic NPDES program criteria. Reviewers completed the core review by examining selected permits and supporting documentation, assessing these materials using standard PQR tools and discussions with permit writers regarding the permit development process. The core review focused on the *Central Tenets of the NPDES Permitting Program*<sup>2</sup> to evaluate NCDEQ's NPDES program. Core topic area permit reviews are conducted to evaluate similar issues or types of permits in all states.

### **Topic Area Reviews**

The national topics reviewed in the NCDEQ NPDES program were: Permit Controls for Nutrients in Non-TMDL Waters, Small MS4 Permit Requirements, and Effectiveness of POTW NPDES Permits with Food Processor Contributions.

Regional topic area reviews target regional-specific permit types or aspects of permits. The regional topic area selected by the EPA Region 4 was the implementation of Cooling Water Intake Structure (CWIS) Best Management Practices for facilities not subject to the EPA's CWIS rule for new or existing sources. These reviews provide important information to NCDEQ, EPA Region 4, EPA Headquarters, and the public on specific program areas.

## **II. STATE PERMITTING PROGRAM GENERAL OVERVIEW**

NCDEQ currently has a NPDES permitting workforce of 15 full-time employees (FTEs) for their industrial and municipal permitting activities among all offices.

NCDEQ issues NPDES permits on a watershed basis, using a basin-wide information management system (BIMS). In addition to BIMS, NCDEQ maintains an aquatic toxicity in-house data management system. Permitting tools include dissolved oxygen (DO) modeling, a reasonable potential analysis (RPA) spreadsheet, an ammonia/total residual chlorine spreadsheet, a spreadsheet for textile facilities, and nutrient allocation tables

For each basin, a nutrient permitting strategy and guidance document is developed. Active, individual NPDES permits are identified and grouped into those facilities with or without nutrient allocations. Goals for permit renewals are identified, and permit template language for nutrient special conditions are provided along with the steps the permit writer should follow to ensure the correct conditions are included in each permit. A spreadsheet was developed that contains the following information:

---

<sup>2</sup> <https://www.epa.gov/npdes/central-tenets-npdes-permitting-program>

- NPDES permit number and discharge information,
- Discharge type (municipal, industrial, etc.),
- Sub-basin,
- Assigned permit writer,
- Total nitrogen and/or total phosphorus limits, averaging periods, etc.,
- Special conditions and/or allocations, and
- Flow category

Permit writers use various EPA and NCDEQ memoranda to develop water quality-based effluent limits (WQBELs). Technology-based effluent limits (TBELs) are based on the EPA Effluent Guidelines. Electronically available standardized permit and fact sheet templates are used to construct the draft permits. Permit packages are peer reviewed using checklists to ensure all required components have been included prior to finalization.

NCDEQ's permit universe was estimated based on information in the EPA's Enforcement and Compliance History (ECHO) database. Accordingly, NCDEQ administers approximately 1,266 individual permits, including 280 permits for POTWs (156 major permits and 124 minor permits), and 819 permits for non-POTWs (61 major permits and 758 minor permits). The state has three general NPDES permits for Concentrated Animal Feeding Operation (CAFO) permits: NCA300000 for cattle, NCA40000 for poultry, and NCA200000 for swine. In addition, NCDEQ administers individual storm water permits to 122 MS4s (6 Phase I MS4s and 108 Phase II MS4s) and eight non-traditional MS4s and a significant number of industries. The state administers 167 individual stormwater permits (non-MS4s). NCDEQ also issues eight non-stormwater general permits (GPs) covering 1,761 permittees in the following categories:

- Non-contact cooling water, cooling tower and boiler blowdown, condensate, exempt stormwater, cooling waters associated with hydroelectric operations, and similar wastewaters (NCG500000)
- Remediated groundwater and similar wastewaters contaminated with petroleum products (NCG510000)
- In-stream sand mining wastewater, associated stormwater and similar wastewaters (NCG520000)
- Seafood packing and rinsing, aquatic animal operations, and similarly designated wastewaters (NCG530000)
- Domestic wastewater from single family residences and other 100% domestic discharges with similar characteristics (NCG550000)
- Pesticide products (NCG560000)
- Reclaimed water from conjunctive use reclaimed water systems (NCG580000)
- Backwash wastewaters from greensand and conventional type water treatment facilities (NCG590000).

As of July 2019, 87 percent of North Carolina’s permits were current. The overall backlog of administratively continued domestic and industrial NPDES permits was 81 major permits and 80 non-major permits.

State initiatives that NCDEQ is currently implementing that will strengthen the permitting program include the following:

- NCDEQ continues to improve documentation in fact sheets pertaining to implementation of the state-wide mercury TMDL in NPDES permits;
- NCDEQ continues to increase the number of permits where the RPA uses site-specific instream background pollutant concentrations; and
- NCDEQ continues to implement measures to address nutrient loading to nutrient-impaired waters.

### **III. CORE REVIEW FINDINGS**

#### **A. Basic Facility Information and Permit Application**

##### **1. Facility Information**

###### *Background*

Basic facility information is necessary to properly establish permit conditions. For example, information regarding facility type, location, processes and other factors is required by NPDES permit application regulations (40 Code of Federal Regulations (C.F.R.) § 122.21). This information is essential for developing technically sound, complete, clear, and enforceable permits. Similarly, fact sheets must include a description of the type of facility or activity subject to a draft permit. Thirteen (13) permit files were reviewed to determine compliance with this element.

###### *Program Strengths*

NCDEQ consistently included the following elements regarding facility information in permit documents:

- a clear description of the facility in the fact sheet;
- a description of processes or services conducted by the facility;
- identification of outfalls and description of waste streams associated with each permitted outfall; and,
- location information relative to receiving waters.

###### *Areas for Improvement*

No areas for improvement were noted.

### Action Items

Essential	•None.
Recommended	• None.

## 2. Permit Application Requirements

### Background and Process

Federal regulations at 40 C.F.R. § 122.21 and 122.22 specify application requirements for permittees seeking NPDES permits. Although federal forms are available, authorized states are also permitted to use their own forms provided they include all information required by the federal regulations. This portion of the review assesses whether appropriate, complete, and timely application information was received by the state and used in permit development.

### Program Strengths

The following elements were found to be sufficient regarding permit applications:

- conformance with information requested in the EPA forms;
- timeliness of application submittal; and
- adequacy and quality of data submitted.

### Areas for Improvement

The permit files for three municipal treatment plants did not include a water balance with the permit application: (Town of Maiden (NC0039594); Irwin WWTP (NC0024945) and Muddy Creek WWTP (NC0081621). Per 40 C.F.R. §§ 122.21(g) and 122.21(j)(2)(iii), NCDEQ should ensure all permit applications include a water balance flow diagram.

### Action Items

#### Essential

- Permit application review procedures should ensure all permit applications comply with 40 C.F.R. §§ 122.21(g) and 122.21(j)(2)(iii)

#### Recommended

- None.

## B. Developing Effluent Limitations

### 1. Technology-based Effluent Limitations

NPDES regulations at 40 C.F.R. § 125.3(a) require that permitting authorities develop TBELs where applicable. Permits, fact sheets and other supporting documentation for POTWs and non-POTWs were reviewed to assess whether TBELs represent the minimum level of control that must be imposed in a permit.

#### *TBELs for POTWs*

##### *Background and Process*

POTWs must meet secondary or equivalent to secondary standards (including limits for biochemical oxygen demand (BOD), total suspended solids (TSS), pH, and percent pollutant removal), and must contain numeric limits for all of these parameters (or authorized alternatives) in accordance with the secondary treatment regulations at 40 C.F.R. Part 133. A total of six POTW permits were reviewed as part of the PQR.

##### *Program Strengths*

The following elements were found to be sufficient:

- description of facility and treatment processes;
- identification of applicable standards (secondary or equivalent to secondary);
- application of alternate effluent limitations (adjusted standards and alternative state requirements);
- accommodating multiple types of treatment systems at a single facility in developing effluent limitations;

- establishing effluent limitations in appropriate units and forms (i.e., concentration or mass; average weekly and average monthly).

#### *Areas for Improvement*

No areas for improvement were noted.

#### *Action Items*

Essential	•None.
Recommended	• None.

#### *TBELs for Non-POTW Dischargers*

##### *Background and Process*

Permits issued to non-POTWs must require compliance with a level of treatment performance equivalent to Best Available Technology Economically Achievable (BAT) or Best Conventional Pollutant Control Technology (BCT) for existing sources, and consistent with New Source Performance Standards (NSPS) for new sources. Where federal effluent limitations guidelines (ELGs) have been developed for a category of dischargers, the TBELs in a permit must be based on the application of these guidelines. If ELGs are not available, a permit must include requirements at least as stringent as BAT/BCT developed on a case-by-case using best professional judgment (BPJ) in accordance with the criteria outlined at 40 C.F.R. § 125.3(d).

##### *Program Strengths*

The following elements pertaining to TBELs were identified as being sufficient:

- facility description, including a discussion of proper categorization based on processes and whether the facility is an existing or a new source);
- expected waste streams and pollutants in the discharge;
- description of treatment processes and identification of applicable standards;
- extent of discussion of implementing technology-based standards and resulting effluent limitations development;
- case-by-case considerations;
- application of alternate effluent limitations;
- effluent limitations in appropriate units and forms (i.e., concentration or mass); and,
- calculation of effluent limitations based on effluent limitations guidelines.

### *Areas for Improvement*

No areas for improvement were noted.

### *Action Items*

Essential	•None.
Recommended	• None.

## **2. Reasonable Potential and Water Quality-Based Effluent Limitations**

### *Background*

The NPDES regulations at 40 C.F.R. § 122.44(d) require permits to include any requirements in addition to or more stringent than technology-based requirements where necessary to achieve state water quality standards, including narrative criteria for water quality. To establish WQBELs, the permitting authority must evaluate whether any pollutants or pollutant parameters could cause or contribute to an excursion above any applicable water quality standard.

The PQR for NCDEQ assessed the processes employed to implement these requirements. Specifically, the PQR reviewed permits, fact sheets, and other documents in the administrative record to evaluate how permit writers and water quality modelers:

- determined the appropriate water quality standards applicable to receiving waters,
- evaluated and characterized the effluent and receiving water including identifying pollutants of concern,
- determined critical conditions,
- incorporated information on ambient pollutant concentrations,
- assessed any dilution considerations,
- determined whether limits were necessary for pollutants of concern and, where necessary,
- calculated such limits or other permit conditions.

For impaired waters, the PQR also assessed whether and how permit writers consulted and developed limits consistent with the assumptions of applicable EPA-approved TMDLs.

Relevant action items from the prior PQR included whole effluent toxicity (WET) testing requirements and the inclusion of clear, specific, measurable, and enforceable minimum control measures in stormwater permits for small municipalities (i.e., small MS4 permits). NCDEQ methods for conducting WET tests are different from the EPA's promulgated methods. Other cited concerns included a need for better documenting the rationale in the fact sheet for the selection of species used in WET tests, as well as a discussion in the fact sheet regarding how the state selects facilities that are required to perform WET tests. This review also found that minimum control measures in small MS4 permits were vague. The previous finding indicated that the control measures did not exemplify the iterative approach to improving the baseline standard. NCDEQ continues to discuss with the EPA ways to: resolve the implementation of conventional WET procedures and supporting WET documentation in POTWs and industrial permits; and the need to have more clear, specific, measurable and enforceable control measures in small MS4 permits.

### *Program Strengths*

NC's program adequately includes the following elements pertaining to RPA and WQBELs:

- identification of receiving stream;
- applicable water quality standard;
- impairment status;
- applicable TMDLs;
- identification of pollutants of concern;
- discussion of data analyzed, including assumptions or default values (e.g., background);
- application of mixing zone policy;
- quality of discussion of water quality assessment RPA and models/analysis employed;
- subsequent development of WQBELs; and,
- discussion of antidegradation and anti-backsliding requirements.

### *Areas for Improvement*

Per 40 C.F.R. § 122.44(d)(1)(v), permitting authorities should implement WET testing in permits for cases where chemical-specific limits are difficult to calculate and the effluent has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative state water quality criterion. The permit files for the following facilities included a requirement to conduct WET testing: International Paper (NC0003298); Coats American (NC0004243); and Cross Creek WWTP (NC0023957). The WET testing requirements in the permits were not consistent with EPA test methods. NCDEQ is only conducting WET tests with five effluent concentrations plus a control when testing if a single effluent concentration fails the WET test. NCDEQ should conduct WET tests consistent with the EPA WET test methods (2002) promulgated at 40 C.F.R. Part 136 including all minimum test acceptability criteria (TAC) for a valid WET test.

### Action Items

#### Essential

- None

#### Recommended

- NCDEQ should conduct WET tests consistent with the EPA WET test methods (2002) promulgated at 40 C.F.R. Part 136 including all minimum test acceptability criteria (TAC) for a valid WET test (i.e., conduct WET tests with five effluent concentrations plus a control).

### 3. Final Effluent Limitations and Documentation

#### Background and Process

Permits must include all applicable statutory and regulatory requirements, including technology and water quality standards, and must include effluent limitations that ensure that all applicable CWA standards are met. The permitting authority must identify the most stringent effluent limitations and establish them as the final effluent limitations in the permit. In addition, for reissued permits, if any of the limitations are less stringent than limitations on the same pollutant in the previous NPDES permit, the permit writer must conduct an anti-backsliding analysis, and if necessary, revise the limitations accordingly. In addition, for new or increased discharges, the permitting authority should conduct an antidegradation review, to ensure the permit is written to maintain existing high quality of surface waters, or if appropriate, allow for some degradation. The NPDES regulations at 40 C.F.R. § 131.12 outline the common elements of the antidegradation review process.

In addition, permit records for POTWs and industrial facilities should contain comprehensive documentation of the development of all effluent limitations, including TBELs, applicable standards, data used in developing effluent limitations, and actual calculations used to develop effluent limitations. The procedures implemented for determining the need for WQBELs as well as the procedures explaining the basis for establishing, or for not establishing WQBELs should be clear and straight forward. The permit writer should adequately document changes from the previous permit, ensure draft and final limitations match (unless the basis for a change is documented), and include all supporting documentation in the permit file. The permit writer should sufficiently document determinations regarding anti-backsliding and antidegradation requirements.

#### Program Strengths

NCDEQ adequately documents the following regarding final effluent limitations:

- appropriateness of application of procedures for developing TBELs and WQBELs;

- adequacy of documentation of TBELs development, including discussion of applicable standards;
- thoroughness of discussion and documentation of RPA and WQBELs development;
- the evaluation/comparison and application of the most stringent of TBELs and WQBELs as the final effluent limitations; and
- anti-backsliding and antidegradation requirements and how permits satisfied these requirements.

#### *Areas for Improvement*

The following permits were reviewed to determine compliance with this element: International Paper (NC0003298); Coats American (NC0004243); Clariant Industries (NC0004944); Edge Water Treating (NC0004944); and South Fork Industries (NC0006190). The fact sheet for the International Paper facility did not include details for all applicable effluent guidelines in the fact sheet. NCDEQ should document the basis for each applicable TBEL and include TBEL calculations in the fact sheet.

#### *Action Items*

The applicable action item is discussed in Section F – Administrative Record and Fact Sheet.

### **C. Monitoring and Reporting Requirements**

#### *Background and Process*

NPDES regulations at 40 C.F.R. § 122.41(j) require permittees to periodically evaluate compliance with the effluent limitations established in their permits and provide the results to the permitting authority. Monitoring and reporting conditions require the permittee to conduct routine or episodic self-monitoring of permitted discharges and where applicable, internal processes, and report the analytical results to the permitting authority with information necessary to evaluate discharge characteristics and compliance status.

Specifically, 40 C.F.R. § 122.44(i) requires NPDES permits to establish, at minimum, annual reporting of monitoring for all limited parameters sufficient to assure compliance with permit limitations, including specific requirements for the types of information to be provided and the methods for the collection and analysis of such samples. In addition, 40 C.F.R. § 122.48 requires that permits specify the type, intervals, and frequency of monitoring sufficient to yield data which are representative of the monitored activity. The regulations at 40 C.F.R. § 122.44(i) also require reporting of monitoring results with a frequency dependent on the nature and effect of the discharge. 40 C.F.R. Part 127 requires NPDES-regulated entities to submit certain data electronically, including discharge monitoring reports and various program-specific reports, as applicable.

NPDES permits should specify appropriate monitoring locations to ensure compliance with the permit limitations and provide the necessary data to determine the effects of an effluent on the receiving water. A complete fact sheet will include a description and justification for all

monitoring locations required by the permit. States may have policy or guidance documents to support determining appropriate monitoring frequencies; documentation should include an explicit discussion in the fact sheet providing the basis for establishing monitoring frequencies, including identification of the specific state policy or internal guidance referenced. Permits must also specify the sample collection method for all parameters required to be monitored in the permit. The fact sheet should present the rationale for requiring grab or composite samples and discuss the basis of a permit requirement mandating use of a sufficiently sensitive Part 136 analytical method.

#### *Program Strengths*

NCDEQ has no known deficiencies regarding development and documentation/justification of monitoring and reporting requirements. The following program strengths were noted:

- identification of monitoring locations, appropriateness of monitoring locations, consistency of monitoring requirements, frequency, and location (e.g., influent monitoring of TSS and BOD to determine compliance with technology-based standards requiring minimum percent removal requirements for TSS and BOD);
- appropriate monitoring frequency based on type of discharge and corresponding limit basis (i.e., number of monthly samples used in calculating average monthly effluent limitations);
- specifying sampling and analytical methods consistent with 40 C.F.R. Part 136;
- inclusion of WET monitoring;
- minimum reporting requirements, including method of reporting;
- recordkeeping requirements.
- the state's practice of maintaining records of the decision-making process for establishing monitoring and reporting requirements (including monitoring location, sampling types, frequencies);
- information or data that the state uses to determine that a reduction in monitoring frequency is appropriate; and
- if the analysis for establishing appropriate monitoring requirements (e.g., frequency) is documented in the permit record.

#### *Areas for Improvement*

No areas for improvement were noted.

### *Action Items*

Essential

- None.

Recommended

- None.

## **D. Standard and Special Conditions**

### *Background and Process*

Federal regulations at 40 C.F.R. § 122.41 require that all NPDES permits, including NPDES general permits, contain certain “standard” permit conditions. Further, the regulations at 40 C.F.R. § 122.42 require that NPDES permits for certain categories of dischargers must contain additional standard conditions. Permitting authorities must include these conditions in NPDES permits and may not alter or omit any standard condition, unless such alteration or omission results in a requirement more stringent than those in the federal regulations.

Permits may also contain additional requirements that are unique to a particular discharger. These case-specific requirements are generally referred to as “special conditions.” Special conditions might include requirements such as: additional monitoring or special studies such as a mercury minimization plan; best management practices [see 40 C.F.R. § 122.44(k)]; or permit compliance schedules [see 40 C.F.R. § 122.47]. Where a permit contains special conditions, such conditions must be consistent with applicable regulations.

### *Program Strengths*

NCDEQ’s NPDES program does a satisfactory job of including the following elements in Standard and Special Conditions:

- explanation of relevance and purpose of special conditions;
- identification of measurable milestones if compliance schedules are established;
- explanation of special studies or additional monitoring requirements; and
- identification of and justification for special conditions for POTWs and pretreatment,
- completeness of standard conditions;
- stringency compared to federal requirements; and
- additional standard conditions based on facility category.

### *Areas for Improvement*

No areas for improvement were noted.

### *Action Items*

Essential	•None.
Recommended	• None.

## **E. Administrative Process**

### *Background and Process*

The administrative process includes documenting the basis of all permit decisions (40 C.F.R. § 124.5 and 124.6); coordinating the EPA and state review of the draft (or proposed) permit (40 C.F.R. § 123.44); providing public notice (40 C.F.R. § 124.10); conducting hearings if appropriate (40 C.F.R. § 124.11 and 40 C.F.R. §124.12); responding to public comments (40 C.F.R. § 124.17); and, modifying a permit (if necessary) after issuance (40 C.F.R. § 124.5). The EPA discussed each element of the administrative process with NCDEQ, and reviewed materials from the administrative process as they related to the core permit review.

North Carolina adheres to federal NPDES permitting regulations pertaining to:

- receiving and responding to comments;
- conducting hearings;
- modifying permits after issuance; and
- documenting the basis for permit decisions.

### *Program Strengths*

The following elements were found to be sufficient regarding facility information in permit documents:

- organization of comments received;
- response to comment document;
- revisions to permit limits or requirements;
- the process by which the draft permit was reviewed by the EPA or a state;

- discussion of permit modifications, rationale, and documentation of modifications.

*Areas for Improvement*

NCDEQ should ensure that public notice announcements include information on the physical address of the facility. 13 permit files were reviewed to determine compliance with this element. Per 40 C.F.R. § 124.10(d), public notices should include the physical address of the facility.

*Action Item*

Essential	<ul style="list-style-type: none"> <li>• Per 40 C.F.R. § 124.10(d), include the physical address of the facility in public notices</li> </ul>
Recommended	<ul style="list-style-type: none"> <li>• None</li> </ul>

**F. Administrative Record and Fact Sheet**

*Background and Process*

The administrative record is the foundation that supports the NPDES permit. If the EPA issues the permit, 40 C.F.R. § 124.9 identifies the required content of the administrative record for a draft permit and 40 C.F.R. § 124.18 identifies the requirements for a final permit. Authorized state programs should have equivalent documentation. The record should contain the necessary documentation to justify permit conditions. At a minimum, the administrative record for a permit should contain the permit application and supporting data; draft permit; fact sheet or statement of basis;<sup>3</sup> all items cited in the statement of basis or fact sheet including calculations used to derive the permit limitations; meeting reports; correspondence between the applicant and regulatory personnel; all other items supporting the file; final response to comments; and, for new sources where the EPA issues the permit, any environmental assessment, environmental impact statement, or finding of no significant impact.

Current regulations require that fact sheets include information regarding the type of facility or activity permitted, the type and quantity of pollutants discharged, the technical, statutory, and regulatory basis for permit conditions, the basis and calculations for effluent limits and conditions, the reasons for application of certain specific limits, rationales for variances or

<sup>3</sup> Per 40 C.F.R. 124.8(a), every EPA and state-issued permit must be accompanied by a fact sheet if the permit: Incorporates a variance or requires an explanation under 124.56(b); is an NPDES general permit; is subject to widespread public interest; is a Class I sludge management facility; or includes a sewage sludge land application plan.

alternatives, contact information, and procedures for issuing the final permit. Generally, the administrative record includes the permit application, the draft permit, any fact sheet or statement of basis, documents cited in the fact sheet or statement of basis, and other documents contained in the supporting file for the permit.

### *Program Strengths*

The following elements were found to be sufficient regarding fact sheets:

- quality of discussion of water quality assessment (identification of pollutants of concern, RPA, and subsequent development of WQBELs);
- administrative requirements;
- the organization and overall completeness of the permit record; and
- discussion of miscellaneous fact sheet issues identified, in this section.

### *Areas for Improvement*

- include detailed description of processes used at the facility
- when no WET limits are required, include a discussion regarding why no limits are necessary
- include documentation in the fact sheet pertaining to the selection of the most sensitive aquatic species for compliance with WET limits in the permit

The fact sheets for 13 permits were reviewed to determine compliance with this element. The fact sheet for the International Paper facility (NC0003298) did not include details for all applicable effluent guidelines in the fact sheet, per 40 C.F.R. § 122.44(d) and 124.8(4). NCDEQ should ensure that fact sheets for facilities with an applicable effluent guideline include pertinent discussions of TBELs, including calculations of effluent limits. The permit files for International Paper (NC0003298), Coats American (NC0004243), and Cross Creek WWTP (NC0023957) did not adequately discuss WET testing conditions in fact sheets. Per 40 C.F.R. § 124.8(4), when applicable, NCDEQ should discuss the inclusion or omission of WET limits or monitoring conditions in the permit fact sheet. Also, per 40 C.F.R. § 124.8(4), when applicable, NCDEQ should discuss in the fact sheet the rationale for selecting the most sensitive aquatic species for determining compliance with WET limits in the permit.

Fact sheets for POTWs which receive wastewater from indirect industrial users should include details regarding the implementation of the approved pretreatment program, including all the industrial users and associated classifications (i.e., significant industrial user (SIU), categorical industrial user (CIU)), as well as a discussion regarding the basis for limits for indirect industrial users.

For industrial facilities which withdraw water from waters of the United States for cooling purposes, the permitting authority should ensure that fact sheets discuss the applicability of the EPA's Cooling Water Intake Structure Rule or the use of BPJ to document that the CWIS complies with Section 316(b) for the CWA.

### Action Items

#### Essential

- Discuss the inclusion or omission of WET limits or monitoring conditions in fact sheets, as well as the rationale for selecting the most sensitive aquatic species for determining compliance with WET limits. 40 C.F.R. § 124.8(4)
- Ensure fact sheets for facilities with an applicable effluent guideline include pertinent discussions of TBELs, including calculations. 40 C.F.R. § 122.44(d) and 124.8(4)

#### Recommended

- Fact sheets for POTWs which receive wastewater from indirect industrial users should include details regarding the implementation of the approved pretreatment program.
- Discuss the applicability of EPA's CWIS Rule or the use of best professional judgment to document that the CWIS complies with Section 316(b) for the CWA.

## IV. NATIONAL TOPIC AREA FINDINGS

National topic areas are aspects of the NPDES permit program that warrant review based on the specific requirements applicable to the selected topic areas. These topic areas have been determined to be important on a national scale. National topic areas are reviewed for all state PQRs. The national topics areas are: Permit Controls for Nutrients in Non-TMDL Waters, Effectiveness of POTW NPDES Permits with Food Processor Contributions, and Small MS4 Permit Requirements.

### A. Permit Controls for Nutrients in Non-TMDL Waters

#### Background

Nutrient pollution is an ongoing environmental challenge; however, nationally permits often lack nutrient limits. It is vital that permitting authorities actively consider nutrient pollution in their permitting decisions. Of the permits that do have limits, many are derived from waste load allocations in TMDLs, since state criteria are often challenging to interpret. For this section, waters that are not protected by a TMDL are considered. These waters may already be impaired by nutrient pollution or may be vulnerable to nutrient pollution due to their hydrology and environmental conditions. For the purposes of this program area, ammonia is considered as a toxic pollutant, not a nutrient.

Federal regulations at 40 C.F.R. § 122.44(d)(vii)(A) require permit limits to be developed for any pollutant with the reasonable potential to cause or contribute to an impairment of water quality standards, whether those standards are narrative or numeric.

To assess how nutrients are addressed in the NCDEQ NPDES program, EPA reviewed four permits - Neuse River Compliance Association Joint Permit (NCC000001), Cross Creek WWTP (NC0023957), Sugar Creek WWTP (NC0024357), and Irwin WWTP (NC0024945). NCDEQ's July 20, 2016, NPDES Policy for the Implementation of Ammonia Criteria was also reviewed.

NCDEQ has both narrative and numeric ambient water quality criteria for nutrient-related parameters – dissolved oxygen, chlorophyll-a, and pH. The criteria for DO are narrative and numeric. The DO criterion which applies to Class C fresh and salt waters (Aquatic Life and Secondary Recreation) states “not less than 6.0 mg/l for trout waters; for non-trout waters, not less than a daily average of 5.0 mg/l with an instantaneous value of not less than 4.0 mg/l.” Swamp waters, lake coves, or backwaters, and lake bottom waters may have lower values if caused by natural conditions. The criteria for chlorophyll-a are numeric and are state-wide (40 ug/l applies to Class C fresh and salt waters (Aquatic Life and Secondary Recreation) and 15 ug/l applies to Trout designated waters). For pH, there are both narrative and numeric criteria. The pH provision states: “shall be between 6.0 and 9.0 except that swamp waters may have a pH as low as 4.3 if it is the result of natural conditions.” The state rules include additional narrative statements for nutrients at 15A NCAC 02B .0223 - Nutrient Sensitive Waters, as well as several basin-specific nutrient management strategy rules.

#### *Program Strengths*

The following are program strengths regarding how NC addresses nutrients:

- permits discuss impairment status of the waterbody, and which nutrient criteria apply
- fact sheets contain a discussion of RPA for nutrient discharges from the facility
- permits or fact sheets include compliance periods for nutrient-related parameters
- permits include appropriate monitoring requirements
- one permit, NPDES No. NCC000001, included other nutrient management approaches using water quality trading
- some permits are developed using a watershed-based permitting approach – Permit Nos. NC0023957, NC0024357, and NC0024945

#### *Areas for Improvement*

NCDEQ has issued two permits to discharge to nutrient-rich waters with limits for total phosphorus and ammonia-nitrogen, but no numerical limits for total nitrogen – NC0024945 and NC0024937. These discharges have the reasonable potential to cause or contribute to known nutrient impairments in impounded waters in the downstream state of South Carolina (Lake Wateree). The phosphorus limits appear to be performance-based limits and there is no indication in the permit fact sheets that they are water-quality based limits designed to meet downstream state water quality standards for phosphorus in Lake Wateree. There are no total nitrogen limits in the permits. There are monitor and report requirements for total nitrogen in the permits. NCDEQ has advised that because South Carolina has failed to develop a TMDL addressing nutrient impaired waters in Lake Wateree, there is no wasteload allocation applicable to North Carolina dischargers. These discharges also elevate nitrogen concentrations in their immediate receiving streams in North Carolina. NCDEQ has not assessed these waters

for nutrients and therefore they are not considered impaired. EPA recommends that NCDEQ explore the benefits of interpreting narrative water quality standards for certain nutrient-dominated water bodies such as these. An appropriate narrative standard for consideration is 15A NCAC 02B .0211(2), which is a general NCDEQ water standard applicable to Class C surface waters.

#### *Action Items*

Essential	•None
Recommended	•Explore the benefits of interpreting narrative water quality standards for certain nutrient-dominated water bodies

## **B. Effectiveness of POTW NPDES Permits with Food Processor Contributions**

The general pretreatment regulations (40 C.F.R. Part 403) establish responsibilities of federal, state, and local government, industry and the public to implement pretreatment standards to control pollutants from industrial users which may cause pass through or interfere with POTW treatment processes or which may contaminate sewage sludge.

#### *Background*

Indirect discharges of food processors can be a significant contributor to noncompliance at recipient POTWs. Food processing discharges contribute to nutrient pollution (e.g., nitrogen, phosphorus, ammonia) to the nation's waterways. Focusing specifically on the Food Processing Industrial Sector will synchronize PQRs with the EPA's Office of Enforcement Compliance and Assurance's Significant Non-compliance (SNC)/National Compliance Initiative (NCI).

The goal of the PQR was to identify successful and unique practices with respect to the control of food processor discharges by evaluating whether appropriate controls are included in the receiving POTW's NPDES Permit and documented in the associated Fact Sheet or Statement of Basis; as well as by compiling information to develop or improve permit writers' tools to be used to improve both POTW and industrial user compliance.

The PQR also assessed the status of the pretreatment program in NC as well as specific language in POTW NPDES permits. With respect to NPDES permits, focus was placed on the following regulatory requirements for pretreatment activities and pretreatment programs:

- 40 C.F.R. § 122.42(b) (POTW requirements to notify Director of new pollutants or change in discharge);
- 40 C.F.R. § 122.44(j) (Pretreatment Programs for POTWs);

- 40 C.F.R. § 403.8 (Pretreatment Program Requirements: Development and Implementation by POTW), including the requirement to permit all SIUs;
- 40 C.F.R. § 403.9 (POTW Pretreatment Program and/or Authorization to revise Pretreatment Standards: Submission for Approval);
- 40 C.F.R. § 403.12(i) (Annual POTW Reports); and
- 40 C.F.R. § 403.18 (Modification of POTW Pretreatment Program).

NCDEQ is the Pretreatment Program authority and chooses to implement their program by having the POTWs be the Control Authority. NCDEQ manages 114 approved pretreatment programs which control 604 SIUs.

NCDEQ implements the pretreatment program within the Pretreatment, Emergency Response & Collection Systems Branch (PERCS). This unit controls and documents the discharge of wastewater from SIUs and CIUs to the POTW and is responsible for the various permitting programs for wastewater collection systems, oversees wastewater collection construction, and coordinates the Division’s Emergency Response staff.

A summary of the reviewed POTW permits that have contributions from food processing facilities and their associated food processors is summarized in the following tables:

Permittee	Permit No.	Approved Pretreatment Program?	Design Flow Average (MGD)	No. of SIUs <sup>1</sup>	No. of Food Processors <sup>1</sup>
Cross Creek Water Refuse Facility	NC0023957	Yes	25	3	3
Irwin WWTP	NC0024945	Yes	15	2	2

<sup>1</sup>Based on the information provided in the permit application.

Facility Name	Permit Number	Receiving POTW	Type of Food Processor	Classification by EPD	Average Process Wastewater Discharge (gallons per day)	Monitored Pollutants
Carolina Foods, Inc	1003	Irwin Creek WWTP	Donuts	SIU	3,400	Flow, NH3, CBOD, Cr, COD, Cu, Ni, FOG, TSS, TP, Zn, pH
Valley Proteins, Inc.	2001CC	Cross Creek Water Refuse Facility	Protein Meals	SIU	501,800	Flow, CBOD, TSS, TKN, pH, NH3, FOG, As, Cd, Cr, Cu, Cyanide, Pb, Hg, Mo, Ni, Se, Ag, TP, Zn

NH<sub>3</sub>=ammonia, CBOD=carbonaceous biochemical oxygen demand, Cr=chromium, Cu=copper, Ni=nickel, FOG=fats, oils, and grease, TP=total phosphorous, TSS=total suspended solids, Zn=zinc, TKN=total Kjeldahl nitrogen, As=arsenic, Cd=cadmium, Pb=lead, Hg=mercury, Mo=molybdenum, Se=selenium, Ag=silver,

### *Program Strengths*

The following are strengths regarding how NCDEQ addresses POTWs with food processor contributions:

- permits for all POTWs include requirements to identify SIUs per 40 C.F.R. § 122.44(j)(1)
- permits for POTWs include the federal standard condition requirement for notification and impact assessment of significant changes in industrial flow or character per 40 C.F.R. § 122.42(b)

### *Areas for Improvement*

IU fact sheets need more information on how POTW facilities determine treatment capacity and develop local limits.

#### *Action Items*

Essential	• None
Recommended	• Include more information in the IU permit or fact sheet regarding the development of local limits and POTW capacity determination

## **C. Small Municipal Separate Storm Sewer System Permit Requirements**

### *Background*

As part of this PQR, the EPA reviewed the state’s small MS4 individual permit for Elizabeth City (NCS000563) for consistency with the Phase II stormwater permit regulations. The EPA recently updated the small MS4 permitting regulations to clarify: (1) the procedures to be used when using general permits (see 40 C.F.R. § 122.28(d)); (2) the requirement that the permit establish the terms and conditions necessary to meet the MS4 permit standard (i.e., “to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act”), including conditions to address the minimum control measures, reporting, and, as appropriate, water quality requirements (see 40 C.F.R. § 122.34(a) and (b)); and (3) the requirement that permit terms must be established in a “clear, specific, and measurable” manner (see 40 C.F.R. § 122.34(a)).

### *Program Strengths*

NCDEQ has invested adequate resources towards development and issuance of MS4 permits in a timely manner.

### *Areas for Improvement*

NCDEQ should ensure Conditions listed as part of the Minimum Control Measures (MCM) are clear and exemplify the iterative approach to improving the baseline standard and demonstrating “clear, specific, and measurable” goals. NCDEQ should include interim schedules or quantitative or qualitative measures to assess progress or overall compliance by the Permittee.

### *Action Items*

Essential	•None
Recommended	• Ensure that MS4 permits for small municipals include MCMs that are clear, specific, measurable, and enforceable by including interim schedules or quantitative or qualitative measures to assess progress or overall compliance by the Permittee.

## **V. REGIONAL TOPIC AREA FINDINGS**

### **A. Use of Best Professional Judgement Regarding the Implementation of EPA’s Cooling Water Intake Structure Rule for Existing Sources with Intake Flow Less Than 2 Million Gallons Per Day**

#### *Background*

Section 316(b) of the CWA requires that NPDES permits for facilities with cooling water intake structures ensure that the location, design, construction, and capacity of the structures reflect the best technology available to minimize harmful impacts on the environment. The CWIS Rule for Existing Facilities applies to facilities which withdraw more than two million gallons per day (MGD) of which more than 25% is used for cooling purposes to meet technology standards for impingement and entrainment. The rule, codified at 40 C.F.R. § 125.90, provides flexible technology standards to reduce damage to ecosystems. Any facility not covered by these national rules will continue to be subject to Section 316(b) requirements on a case-by-case, BPJ basis at 40 C.F.R. § 125.90(b). Permits, applications, and fact sheets for five minor facilities were reviewed to determine if NCDEQ was identifying such facilities as needing to comply with BPJ requirement part of the CWIS rule.

### *Program Strengths*

NCDEQ has identified major facilities that are subject to the CWIS Rule for Existing Sources and has begun correctly incorporating regulatory requirements per 40 C.F.R. § 125.90.

### *Areas for Improvement*

NCDEQ should ensure that permit applications for industrial facilities include a water balance and other language to determine if the facility should be subject to the BPJ for facilities which withdraw less than 2 MGD from waters of the United States, per 40 C.F.R. § 125.90(b). The permit files for International Paper (NC0003298), Coats American (NC0004243), Clariant (NC0004375), Waters Edge Treating (NC0004944), and South Fork Industries (NC0006190) did not clearly indicate if NCDEQ used BPJ to determine the extent of compliance with 40 C.F.R. § 125.90(b). NCDEQ should conduct more in-depth permit application reviews with a focus on water balance information and should discuss appropriate site-specific BPJ measures in the fact sheets addressing impingement minimization and entrainment of aquatic organisms.

### *Action Items*

Essential	•None.
Recommended	•Ensure fact sheets discuss the applicability of the Cooling Water Intake Structure Rule for Existing Sources or CWA Section 316(b) for each industrial facility.

## VI. REVIEW OF PROGRESS ON ESSENTIAL ACTION ITEMS FROM LAST PQR

This section provides a summary of the main findings from the last PQR and provides a review of the status of the state’s efforts in addressing the action items identified during the last PQR, conducted during May 29-31, 2013. As discussed previously, during the 2012-2017 PQR cycle, the EPA referred to action items that address deficiencies or noncompliance with respect to federal regulations as “Category 1”. The EPA is now referring to these action items going forward as “Essential”. In addition, previous PQR reports identified recommendations to strengthen the state’s program as either “Category 2” or “Category 3” action items. The EPA is consolidating these two categories of action items into a single category: Recommended.

**Table 1. Essential Action Items Identified During Last PQR 2013**

Program Area	Action Item Title	Status Update
National Topic	Nutrients	<b>No Category 1 Findings</b>
	Pretreatment	<p><b>Resolved</b></p> <p>The PQR assessed permit language for four selected permits, all with approved pretreatment programs, to determine if boilerplate language for the selected permits was included in the permits having pretreatment programs. The review of these four permits concluded that two notification requirements were not included in the permit language and pertain to: (1) introduction of pollutants to a POTW (40 C.F.R. § 122.42(b)(1)); and (2) any substantial change in volume or character of pollutants (40 C.F.R. § 122.42(b)(2)). However, other specific pretreatment language was included in the permit and this includes: (1) the requirements of 40 C.F.R. § 122.44(j)(2)(i) to develop and submit a local program in the case of pretreatment becomes necessary at a later date or, alternatively, a reopener clause specifically for pretreatment; (2) the requirements to identify in terms of character and volume of pollutants any Significant Industrial Users discharging into the POTW (40 C.F.R. § 122.44(j)(1)); and (3) permit contains notification requirements for quantity and quality of effluent to POTW and anticipated impact of the change in effluent to POTW (40 C.F.R. § 122.42(b)(3)).</p>

Program Area	Action Item Title	Status Update
		No further action required.
	General Permit for Stormwater Discharges from Construction Activity	<p><b>In Progress</b></p> <p>The reviewed permits appear to include effluent limits within the requirements to develop a Stormwater Pollution Prevention Plan (SWPPP). It is important to distinguish between the effluent limits in the permit, which NCDEQ is responsible for developing, and the discharger’s SWPPP, which is the documentation the permittee uses to demonstrate compliance with effluent limits in the permit. For enhanced transparency, the EPA recommends that effluent limits be included in a separate section of the permit from the SWPPP requirements.</p> <p>In addition, the reviewed permits appear to be missing many of the non-numeric effluent limit requirements promulgated in 2009 in the Construction &amp; Development Effluent Limitation Guidelines (C&amp;D Rule) at 40 C.F.R. § 450.21. It is unclear whether the permit is relying on the state’s Erosion and Sediment Control Planning and Design Manual. In the next permit cycle, the EPA recommends that the permit include requirements from the C&amp;D Rule as enforceable limits.</p> <p>EPA will continue to monitor the progress of this action item during regular reviews of permits.</p>
Regional Topics	Whole Effluent Toxicity Testing	<p><b>In progress</b></p> <p>The reviewed permits required either acute or chronic WET testing but not both. The administrative record did not demonstrate why some facilities were given acute toxicity monitoring requirements and why other facilities were given chronic toxicity monitoring requirements. When no WET limits were required, the fact sheets or administrative records did not document the reasons for the absence of WET limits. The reasons for determination of frequency of monitoring toxicity were not clear. In addition, it was not apparent from the reviewed permits that NC is meeting the minimum WET test method requirements. However, after further consultation NC</p>

Program Area	Action Item Title	Status Update
		<p>NCDEQ was able to provide the necessary documentation where the EPA approved the state's alternate WET Test procedure.</p> <p>NC should clearly document in permit fact sheets why some facilities were given acute toxicity monitoring requirements and others were given chronic toxicity monitoring requirements and how this is representative of the permitted effluent discharge.</p> <p>When no WET limits are required, the fact sheets should document the reasons for the absence of WET limits.</p> <p>NCDEQ should clearly document that the most sensitive species was selected when determining reasonable potential and compliance with permit's WET limits.</p> <p>NCDEQ should conduct WET tests consistent with the EPA WET test methods (2002) promulgated at 40 C.F.R. Part 136 including all minimum test acceptability criteria (TAC) for a valid WET test (i.e., conduct WET tests with five effluent concentrations plus a control). It appears that NCDEQ is only conducting WET tests with five effluent concentrations plus a control when testing at a single effluent concentration fails the WET test.</p> <p>The EPA will continue to work with NC on this action and will monitor the progress of the following actions item during regular reviews of permits.</p>
	Water Quality Trading	<p><b>In progress</b></p> <p>The reviewed permit and fact sheet did not show any calculation to explain how an individual allocation was to be determined as a share of the Tar-Pamlico Basin Association. As per 40 C.F.R. § 124.56(a), the fact sheet should include such information. This information is especially important because it appears that enforcement of the nutrient allocation is only through the Association's permit, not through permits for individual facilities. A reasonable potential analysis for nutrients</p>

Program Area	Action Item Title	Status Update
		<p>and other parameters was not documented in the permit file. This is inconsistent with 40 C.F.R. § 122.44(d)(1).</p> <p>The EPA will continue to work with NC on this action and will monitor the progress of this action item during regular reviews of permits.</p>
Basic Facility Information and Permit Application	Permit Application	<p><b>Resolved</b> Ensure all application forms comply with 40 C.F.R. § 122 Subpart B. No further action required.</p>
Water Quality-Based Effluent Limitations	Procedures	<p><b>Resolved</b> Review of the administrative record and fact sheets revealed that the RPA was not adequately done for many permits to show limits which would be protective of water quality. NCDEQ should develop procedures to ensure that permit writers consistently follow to demonstrate how effluent limits are protective of WQS and comply with CWA § 301(b)(1)(C).</p> <p>No further action required.</p>
	Mixing Zones	<p><b>Resolved</b> Any assumptions used in mixing zone calculations should be included in the fact sheet. In all cases, the critical conditions used in the RPA and limit calculations should represent actual conditions and actual updated flow and must ensure that applicable water quality standards are achieved (40 C.F.R. §§124.56 and 122.44).</p> <p>No further action required.</p>
	Anti-degradation Analyses	<p><b>Resolved</b> The administrative records for seven of the 18 permits reviewed did not indicate that anti-degradation analyses were conducted. The administrative records for the permits lacking adequate anti-degradation analyses are: Coats America, Inc. (NC0004243), Spruce Pine WWTP (NC0021423), Invista, S.A.R.L. (NC0001112), Tyson Foods, Inc. (NC0005126), PCS Phosphate, Inc. (NC0003255), Littleton WWTP</p>

Program Area	Action Item Title	Status Update
		<p>(NC0025691), and Pinetop WWT (NC0020435). The alternatives to the direct discharge should be analyzed as required by 15A NCAC 2H.0105(c)(2). NCDEQ should develop procedures so that these requirements are met. (40 C.F.R. § 131.12).</p> <p>No further action required.</p>
Special and Standard Conditions	Standard Conditions	<p><b>Resolved</b></p> <p>Ensure that the recently updated NPDES Standard Conditions boilerplate is included as a part of all permits and in all administrative files. (40 C.F.R. § 122.41).</p> <p>No further action required.</p>
Administrative Process	Comments Received During Public Notice Period	<p><b>Resolved</b></p> <p>Encourage NCDEQ to provide clarity in the Administrative Record on how comments received during the public comment process was addressed in the Final permit or whether the comment was not considered significant to warrant a change. This demonstrates transparency in the permitting process.</p> <p>No further action required.</p>
Documentation	Fact Sheet	<p><b>Resolved</b></p> <p>Develop a fact sheet template that includes all the requirements found in 40 C.F.R. 124.8.</p> <p>No further action required.</p>

## VII. RECOMMENDED ACTION ITEMS FROM LAST PQR

This section provides a summary of the recommendations from the last PQR, conducted May 29-31, 2013, and notes any state efforts to act on those recommendations. As discussed previously, during the 2012-2017 PQR cycle, the EPA referred to action items that are recommendations to strengthen the state’s program as either “Category 2” or “Category 3” action items. The EPA is consolidating these two categories of action items into a single category: Recommended.

**Table 2. Recommended Action Items Identified During 2013 PQR**

Program Area	Action Item Title	Status
National Topic - Nutrients	Require monitoring for both nitrogen and phosphorus and not just the limiting nutrients.	Resolved
	Provide documentation in the Fact Sheet on how the chlorophyll-a criteria are applied consistently in permits.	Resolved
National Topic - Stormwater	Separate effluent limits in permits from requirements to develop SWPPP.	Resolved
	For MS4 permits, include enforceable, non-numeric effluent limit requirements promulgated in 2009 in the Construction & Development Effluent Limitation Guidelines (C&D Rule) at 40 C.F.R. § 450.21.	Resolved
Regional Topic - Water Quality Trading	Provide documentation in the administrative record when concluding that no reasonable potential exists for nutrients and other parameters to cause or contribute to an impairment.	In progress
Basic Facility Information and Permit Application	Use checklists or other QA/QC procedures to ensure permit files/records applications have all required elements, including complete fact sheets and administrative record components.	Resolved
	Require use of sufficiently sensitive analytical methods and ensure method detection limits are documented in application forms.	Resolved
Technology-based Effluent Limitations	Provide a thorough discussion of applicable ELGs in the fact sheet. Also, for effluent limits established using production or flow, the basis for those values and associated calculations should be contained in the fact sheet.	In Progress
	When applicable, document the basis for anti-backsliding in the Administrative Record (40 C.F.R. § 124.56(a)).	Resolved

Program Area	Action Item Title	Status
Water Quality-based Effluent Limitations	Fact sheets should describe how pollutants of concern are determined (discharge monitoring reports (DMRs), application data, special studies, TBELs, TMDLs, etc.) (40 C.F.R. § 124.56).	Resolved
	Include a discussion in fact sheet regarding any parameters limited by WQBELs in the previous permit for which no effluent limits are in place in the current permit. For these omitted effluent limitations, information should be included to demonstrate that anti-backsliding provisions are satisfied (40 C.F.R. §§ 124.46(a) & 122.44).	Resolved
	For those permits where an applicable TMDL has been developed, include thorough discussion of how the TMDL requirements are, or are not, applicable and incorporated into the permit (40 C.F.R. §§ 124.56(a) & 122.44(d)(2)).	Resolved
Monitoring and Reporting	Use sufficiently sensitive EPA approved analytical methods.	Resolved
	Discuss in the administrative record how facilities comply with NC's two-prong approach for evaluating mercury limits in permits.	Resolved
Documentation	When applicable, include an additional discussion in the fact sheet pertaining to how the anti-backsliding requirements at 40 C.F.R. § 122.44(l) were satisfied.	Resolved
	Include in the fact sheet or permit file a comparison of previous effluent limits and new effluent limits as well as a discussion on the compliance history of the facility.	Resolved
	Include more thorough discussions in the fact sheet regarding whether a facility or discharge is a new or existing source.	Resolved
	Explain what data was used to assess water quality impacts and in conducting the RPA and effluent limitations calculations.	Resolved
	Discuss how pollutants of concern are determined.	Resolved

Program Area	Action Item Title	Status
	Provide a comparison of TBELs and WQBELs to ensure the more stringent limit is placed in the NPDES permit.	Resolved
	Provide more details the fact sheet regarding the basin-wide strategy, load allocations	Resolved
	Include more thorough discussions in the fact sheets regarding the reasonable potential or effluent limits to address state narrative criteria.	Resolved
	Fact sheets should include a more comprehensive explanation of any applicable water quality impairments and if the discharge contributes to the impairment.	Resolved

### VIII. ACTION ITEMS FROM FY 2018–2022 PQR CYCLE

This section provides a summary of the main findings of the Cycle 2 PQR and provides proposed action items to improve North Carolina’s NPDES permit programs, as discussed throughout sections III, IV, and V of this report.

The proposed action items are divided into two categories to identify the priority that should be placed on each Item and facilitate discussions between Regions and states.

- **Essential Actions** - Proposed “Essential” action items address noncompliance with respect to a federal regulation. The permitting authority is expected to address these action items in order to come into compliance with federal regulations. As discussed earlier in the report, prior PQR reports identified these action items as Category 1. Essential Actions are listed in Table 3 below.
- **Recommended Actions** - Proposed “Recommended” action items are recommendations to increase the effectiveness of the state’s or Region’s NPDES permit program. Prior reports identified these action items as Category 2 and 3. Recommended Actions are listed in Table 4 below.

*The following tables summarize only those action items that were identified in Sections III, IV, and V of the report.*

**Table 3. Essential Action Items from FY 2018-2022 PQR Cycle**

Topic	Action(s)
Facility Information	None
Permit Application Requirements	Enhance permit application review procedures that ensure all permit applications comply with 40 C.F.R §§ 122.21(g) and 122.21(j)(2)(iii).
TBELs for POTWs	None
TBELs for Non-POTW Dischargers	None
Reasonable Potential	None
WQBELs Development	None
Final Effluent Limitations and Documentation of Effluent Limitations Development	None
Establishing Monitoring and Reporting Requirements	None
Documentation of Monitoring and Reporting Requirements	None
Standard and Special Conditions	None
Administrative Process	Per 40 C.F.R. § 124.10(d), include the physical address of the facility in public notices.
Administrative Record and Fact Sheet	<p>Ensure fact sheets for facilities with an applicable effluent guideline include pertinent discussions of TBELs, including calculations. 40 C.F.R. § 122.44(d) and 124.8(4)</p> <p>Discuss the inclusion or omission of WET limits or monitoring conditions in fact sheets, as well as the rationale for selecting the most sensitive aquatic species for determining compliance with WET limits. 40 C.F.R. § 124.8(4)</p>
Nutrients	None
Pretreatment: Food Processing Sector	None
Municipal Separate Storm Sewer Systems	None
Cooling Water Intake Structure rule	None

**Table 4. Recommended Action Items from FY 2018-2022 PQR Cycle**

Topic	Action(s)
Facility Information	None
Permit Application Requirements	None
TBELs for POTWs	None
TBELs for Non-POTW Dischargers	None
Reasonable Potential	NCDEQ should conduct WET tests consistent with the EPA WET test methods (2002) promulgated at 40 C.F.R. Part 136 including all minimum test acceptability criteria (TAC) for a valid WET test (i.e., conduct WET tests with five effluent concentrations plus a control).
WQBELs Development	None
Final Effluent Limitations and Documentation of Effluent Limitations Development	None
Establishing Monitoring and Reporting Requirements	None
Documentation of Monitoring and Reporting Requirements	None
Standard and Special Conditions	None
Administrative Process	
Administrative Record and Fact Sheet	<p>Fact sheets for POTWs which receive wastewater from indirect industrial users should include details regarding the implementation of the approved pretreatment program.</p> <p>Discuss the applicability of the EPA’s CWIS Rule or the use of best professional judgment to document that the CWIS complies with Section 316(b) for the CWA.</p>
Nutrients	Explore the benefits of interpreting narrative water quality standards for certain nutrient-dominated water bodies.

Pretreatment: Food Processing Sector	Include more information in the Industrial User (IU) permit or fact sheet regarding the development of local limits and POTW capacity determination.
Municipal Separate Storm Sewer Systems (MS4s)	Ensure that MS4 permits for small municipals include MCMs that are clear, specific, measurable, and enforceable by including interim schedules or quantitative or qualitative measures to assess progress or overall compliance by the Permittee.
Cooling Water Intake Structure Rule	Ensure fact sheets discuss the applicability of the Cooling Water Intake Structure Rule for Existing Sources or Section 316(b) to each industrial facility.