

EPA Region 4 NPDES Permit Quality Review

South Carolina

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Executive Summary

The Environmental Protection Agency (EPA) Region 4's National Pollutant Discharge Elimination System (NPDES) Permit Quality Review (PQR) for South 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 the EPA's routine review of South Carolina's draft NPDES permits during the issuance process. The EPA's routine review of draft permits is referred to as "real time review."

The PQR examined 12 individual permits issued by the South Carolina Department of Health and Environmental Control (DHEC), along with one general permit. These documents were created based on permitting policies and statewide permit writer templates. The PQR also focused on several national priority areas, including:

- Permit Controls for Nutrients in Non-Total Maximum Daily Load (TMDL) Waters;
- Effectiveness of Publicly Owned Treatment Works (POTW) NPDES Permits with Food Processor Contributions; and
- Small Municipal Separate Storm Sewer System (MS4) Permit Requirements.

PQRs usually focus on regional topics that address systemic permitting issues identified during real time review of draft permits. For this cycle of the PQR, Region 4 elected not to address any regional priority areas as topics.

The PQR report presents a cyclical overview of the South Carolina NPDES permit program and identifies new areas where the EPA and DHEC will work together to strengthen NPDES permit language and documentation in all state permits. The PQR recognizes that state and region-specific challenges faced by the State of South Carolina include implementation of the electronic permitting (ePermitting) system and challenges with emerging pollutants.

The permits reviewed routinely conformed to national requirements, however, the PQR identified two areas for permit quality improvement that are categorized as "essential." The EPA identified 11 other areas for permit improvement that are categorized as "recommended." These comments are noted in detail in the PQR report and summarized in Section VIII.

DHEC reviewed and provided comments on the draft PQR report during May 2021. DHEC agreed with most of the draft PQR findings and recommendations and has either committed to, or begun, to take action to address many of the proposed action items.

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 DHEC's NPDES permit program on May 3-5, 2016. A summary of the 2016 PQR is available at:

https://www.epa.gov/sites/production/files/2017-09/documents/finaland_signed_scdhec_pqr_feb_2017.pdf

In the 2016 PQR, the evaluation team proposed action items to improve DHEC's NPDES permit program. As part of the current PQR, the EPA assessed DHEC's progress toward resolving the previous action items. Of the 16 action items identified during the previous PQR, only one was categorized as being an essential¹ action item. The finding categorized as essential was resolved. Sections VI and VII of this report contain a summary of the progress on the essential and recommended action items identified during the previous PQR.

For this PQR, the review identified new action items to improve DHEC's NPDES permit program. The 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** - address noncompliance with respect to a federal regulation, which EPA has cited for each essential action item. The permitting authority must address these action items in order to comply with federal regulations.
- **Recommended Actions** - are recommendations to increase the effectiveness of the state's NPDES permit program.

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

The review team for the South Carolina PQR included 11 members of the NPDES Permitting Section from the EPA Region 4, and all the reviews were done virtually. The PQR meeting was conducted virtually on February 24, 2021.

¹ During the 2012-2017 PQR cycle, these action items were known as "Category 1" and address deficiencies or noncompliance with respect to federal regulations. 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. EPA is now consolidating these categories of action items into a single category: Recommended.

The South Carolina PQR included reviews of core permit components and national topic areas, as well as discussions between the PQR review team and DHEC staff addressing their program status and permit issuance process. The permit reviews 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 EPA and the state on program status, the permitting process, responsibilities, organization, staffing, and program challenges the state is experiencing.

A total of 13 active NPDES permits were selected and reviewed as part of this PQR:

NPDES Number	Permit Name
SC0000990	Chargeurs Wool, Inc
SC0003883	South Carolina Generating Company (SCGENCO) A.M. Williams Station
SC0038229	Celanese LTD
SC0039284	McCall Farms, Inc
SC0004278	Duke Energy Carolinas LLC, Catawba Nuclear Station
SC0020443	City of Rock Hill Manchester Creek WWTP
SC0034843	Clemson University WWTF
SC0042994	Pickens Co/18 Mile Creek Upper WWTP
SC0025798	Town of Kershaw/Hanging Rock Creek WWTP
SC0035971	Town of Kingstree
SC0040436	City of Walterboro
SC0045462	City of Florence - Main Plant
SCS400001	Town of Arcadia Lakes, City of Forest Acres and Richland County

Of these, eight permits were reviewed for the core review and nine were reviewed for the national topic areas. Some permits were reviewed for both the core review as well as a national topic area review. Permits were selected based on issuance or modification dates, and the review categories that they fulfilled. All the reviewed permits were issued or modified within the previous five calendar years and reflect current permitting practices for the period of the PQR review. DHEC provided all documents to the EPA electronically.

Core Review

The core permit review involved the evaluation of selected permits and supporting materials using basic NPDES program criteria. Permits reviewed for core review included SC0000990, SC0003883, SC0038229, SC0039284, SC0004278, SC0020443, SC0034843, and SC0042994. Reviewers completed the core review by examining selected permits and supporting documentation, assessing these materials using standard PQR tools, and talking with permit writers regarding the permit development process. The core review focused on the *Central*

*Tenets of the NPDES Permitting Program*² to evaluate DHEC'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 DHEC NPDES program were: Permit Controls for Nutrients in Non-TMDL Waters (SC0004278, SC0020443, SC0034843, and SC0042994), Effectiveness of POTW NPDES Permits with Food Processor Contributions (SC0025798, SC0035971, SC0040436, SC0045462), and Small MS4 Permit Requirements (SCS400001).

Regional topic area reviews target regional-specific permit types or aspects of permits. The EPA did not select any regional topics for this PQR, as there were no systemic issues (not already covered by the national topics) identified during routine real-time review of permits that elevated to the PQR review level.

II. STATE PERMITTING PROGRAM GENERAL OVERVIEW

DHEC currently has a NPDES permitting workforce of 25 full-time employees (FTEs) for their industrial and municipal permitting activities among all offices; however, some of these staff are also involved in other activities, resulting in approximately 24.5 FTEs for permitting activities. Supplementary NPDES permit program support includes staff who work on modeling, TMDL development, monitoring, data management, and administrative support.

To support the NPDES permit program, DHEC has established templates for permits, fact sheets, public notices, and correspondence. These items are designed to aid DHEC in maintaining uniformity and consistency in developing permits among all permit writers and serve as training tools for new permit writers. In addition, DHEC has a strong internal mentoring program for new permit writers and this provides additional consistency to permit development.

DHEC utilizes a peer review process as part of its Quality Assurance/Quality Control (QA/QC) process. Checklists are used during the QA/QC process to ensure consistency in the reviews. These checklists have been incorporated into the ePermitting instructions and workflows.

The universe of state-issued permits was provided by DHEC during the development of this PQR report (May 2021). Accordingly, DHEC administers 375 individual NPDES permits, including 161 permits for POTWs (102 major permits and 59 non-major permits), 210 permits for non-POTWs (59 major permits and 151 non-major permits), and four (4) individual stormwater permits covering 10 permittees. Significant industries in the state are Electrical Services; Organic Chemicals, Plastics and Synthetic Fibers; Plastics; and Textiles. DHEC administers 14 master general permits and has approximately 3,095 permittees covered under these permits, not counting the Construction Stormwater General Permit. The average number of permit coverages issued each of the past three years under the Construction Stormwater General

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

Permit is roughly 2,600 new permittees per year. The largest of the general permit sectors is construction activities, followed by industrial stormwater (1,744 permittees).

As of May 2021, DHEC estimates that the overall backlog of administratively continued domestic and industrial permits is approximately 50% of the individual permit universe (71 major permits, 119 non-major permits), and 9 general permits that cover 176 facilities. Most of the delays in permit development and issuance have been related to the development of the state's ePermitting system, and much of the state's manpower has been focused on the implementation of that system. The implementation of the new Steam Electric Rule caused delays as well. DHEC has a strategy for dealing with the backlog to bring the numbers down. The state plans on focusing first on the reissuance of the general permits, which will have the greatest impact on the backlog numbers, and then on steam electric permits.

DHEC's current state initiatives to strengthen the permit program include:

- Continued development and expansion of the ePermitting system. When complete, all documents relevant to the permits will be online.
- Implementation of a statewide emergency system called Palmetto. With this system, a permittee can communicate directly with the state before, during, and after an emergency. The permittee can provide status updates and request assistance.
- Continued development of statewide Per- and Polyfluoroalkyl Substances (PFAS) strategies.
- Reissuance of steam electric facility permits and expired general permits.

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 CFR § 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.

Program Strengths

- The reviewed permits include pertinent information, such as permit issuance dates, effective dates, expiration dates, authorized signatures, and specific authorization-to-discharge information.
- Fact sheets include the appropriate receiving waterbody information.

- Industrial permit fact sheets contain a description of the type of facility or activity and wastewater treatment process (SC0000990, SC0003883, SC0038229, SC0039284).

Areas for Improvement

- For the municipal facility permits reviewed for core review (SC0034843, SC0020443, SC0042994), only the Standard Industrial Classification (SIC) codes are provided in fact sheets to describe the activity at the facility. A more detailed description in the fact sheets about the activity at the facility (in addition to the SIC code) would provide additional information to the public.
- For all permits reviewed for core review, a more detailed description of the physical location(s) of the discharge(s) should be included in the fact sheet, when appropriate. The EPA notes that the latitude and longitude are already included in the application; however, the public may not have access to the application when reviewing a permit on public notice.

Action Items

Essential	• None
Recommended	<ul style="list-style-type: none"> • Ensure municipal fact sheets include information about the activity (such as treatment processes used) at the facility (40 CFR § 124.8(b)(1)). • Consider adding a more detailed description in the fact sheets of the location of the discharge (40 CFR § 124.56(c)).

2. Permit Application Requirements

Background and Process

Federal regulations at 40 CFR §§ 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 reviewed applications consistently identify the latitude and longitude of outfalls and other necessary basic facility information.
- The reviewed applications appear to have been submitted on time. Most of the applications were stamped with the date DHEC received them.
- DHEC has incorporated the application process into their ePermitting system.

Areas for Improvement

- The line drawings showing water flow through the facility are lacking detail or missing data for some permits that were reviewed for the core review (SC0003883 and SC0042994).

Action Items

Essential

- Ensure that the line drawings of the water flow through the facility and water balance include approximate average flows at the intake, discharge points, and between units (40 CFR § 122.21(g)(2) and 40 CFR § 122.21(j)(2)(iii)).

Recommended

- None

B. Developing Effluent Limitations

1. Technology-Based Effluent Limitations

NPDES regulations at 40 CFR § 125.3(a) require that permitting authorities develop technology-based requirements where applicable. Permits, fact sheets, and other supporting documentation for POTWs and non-POTWs were reviewed to assess whether technology-based effluent limitations (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 CFR § 133. A total of three POTW permits were reviewed as part of the core review for the PQR (SC0020443, SC0034843, SC0042994).

Program Strengths

- All the POTW permits reviewed include TBELs. The limits are consistent with federal regulations and include the appropriate units and forms.

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 must be consistent with New Source Performance Standards (NSPS) for new sources. Where federal effluent limitation guidelines (ELGs) have been developed for a category of dischargers, 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 basis using best professional judgment (BPJ) in accordance with the criteria outlined at 40 CFR § 125.3(d).

DHEC’s procedures for determining and establishing appropriate TBELs for non-POTWs are consistent with federal statutes, policies, and guidance. All five non-POTW reviewed permits had TBELs based on applicable ELGs and TBELs based on BPJ (SC0000990, SC0003883, SC0038229, SC0039284, and SC0004278).

Program Strengths

- TBELs are consistent with federal regulations and are in the appropriate units and forms.
- Non-POTW permit fact sheets identify the applicable ELGs and provide the calculations used to determine the final limits.

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

40 CFR § 122.44(d) requires 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 water quality-based effluent limits (WQBELs), the permitting authority must evaluate whether any pollutants or pollutant parameters cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard.

The PQR for DHEC 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:

- 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.

Program Strengths

- Fact sheets clearly identify the receiving stream(s) along with the associated designated uses, applicable water quality standards, impairment status, and applicable TMDLs.
- Standard spreadsheets and models are used when conducting reasonable potential analyses which provides consistency for limit development.
- When applicable, discussions of mixings zones and dilution allowances were provided.

Areas for Improvement

No areas for improvement were noted.

Action Items

Essential	• None
Recommended	• None

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 regulations at 40 CFR § 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. TBELs should include assessment of 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

- DHEC applies appropriate procedures for developing TBELs and WQBELs.
- Adequate documentation of TBEL development, including discussions of applicable standards, are included.
- When applicable, permits contain the most stringent limit between TBELs and WQBELs.

Areas for Improvement

No areas for improvement were noted.

Action Items

Essential	• None
Recommended	• None

C. Monitoring and Reporting Requirements

Background and Process

NPDES regulations at 40 CFR § 122.41(j) require permittees to evaluate compliance with the effluent limitations established in their permits and to 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 CFR § 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 CFR § 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 CFR § 122.44(i) also require reporting of monitoring results with a frequency dependent on the nature and effect of the discharge. 40 CFR § 127 requires NPDES-regulated entities to submit certain data electronically, including Discharge Monitoring Reports (DMRs) 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 (40 CFR § 136) analytical method.

Program Strengths

- Permits include appropriate monitoring requirements based on facility type, type of discharge, corresponding limits basis, and require at least annual monitoring for all parameters.
- Language is included in permits specifying sampling and analytical methods consistent with 40 CFR § 136.
- Most permits include monitoring for Whole Effluent Toxicity (WET).
- DHEC is now including language in the permits to require facilities to use the electronic DMR system when reporting monitoring results.

Areas for Improvement

- Limits and monitoring requirements for WET are often located in a table separate from other effluent limitations and monitoring requirements. Either including the WET requirements in the main limits table or adding a footnote to the main limits table that lets the applicant and reader know there are additional monitoring requirements for that outfall, would help reduce the risk that this requirement be overlooked. This applies to all permits reviewed for the core review except SC0020443.
- It is recommended that the state require facilities to conduct permitted WET testing with no less than two species (invertebrate and vertebrate). If only one species is required for permitted WET testing, there should be an explanation included in the fact sheet or permit discussing why the chosen species is considered the most sensitive test species for the facilities' receiving waters.

Action Items

Essential	<ul style="list-style-type: none">• None
Recommended	<ul style="list-style-type: none">• Include WET requirements in the main limits table, or add a footnote to the main table to direct the reader to the additional requirements.• Include requirement to conduct permitted WET testing with no less than two species or include an explanation as to why single species is the most sensitive (40 CFR § 122.44(d)(1)(ii)).

D. Standard and Special Conditions

Background and Process

Federal regulations at 40 CFR § 122.41 require that all NPDES permits, including NPDES general permits, contain certain “standard” permit conditions. Further, the regulations at 40 CFR § 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 CFR § 122.44(k)] or permit compliance schedules [see 40 CFR § 122.47]. Where a permit contains special conditions, such conditions must be consistent with applicable regulations.

During the EPA’s review, it was noted that prior to 2020, DHEC was not requiring all permittees to submit DMRs electronically. Phase 1 of the Electronic Reporting Rule required all permittees to begin submitting DMRs electronically by December 21, 2016. In 2020, DHEC began including in permits the requirement to submit DMRs electronically. Almost all permittees are now doing so, and DHEC is working toward ensuring that all permittees are submitting their DMRs electronically.

Program Strengths

- DHEC permits include all federally required standard conditions with language as stringent as the federal language.

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 CFR § 124.5 and 124.6); coordinating the EPA and state review of the draft (or proposed) permit (40 CFR § 123.44); providing public notice (40 CFR § 124.10); conducting hearings if appropriate (40 CFR § 124.11 and 124.12); responding to public comments (40 CFR § 124.17); and modifying a permit (if necessary) after issuance (40 CFR § 124.5). The EPA discussed each element of the

administrative process with DHEC and reviewed materials from the administrative process as they related to the core permit review.

Program Strengths

- DHEC’s administrative processes are generally effective and well-organized.
- Applications go through both administrative and technical reviews to ensure they are complete.
- Draft permits go through a QA/QC check by management prior to public notice, and checklists have been developed to ensure this is a consistent process.

Areas for Improvement

- The EPA recommends that the public notices contain an additional description of the business conducted at the facility. Currently the public notices only present the SIC code. This is applicable to all public notices associated with the permits reviewed as part of the core review. Additional information on the activities at the site would help the public understand the type of facility being permitted.

Action Items

Essential	• None
Recommended	• Public notices should contain a brief description of the business conducted at the facility or activity described in the permit application (40 CFR 124.10(d)(1)(iii)).

F. Administrative Record and Fact Sheet

Background and Process

The administrative record is the foundation that supports the NPDES permit. If EPA issues the permit, 40 CFR § 124.9 identifies the required content of the administrative record for a draft permit and 40 CFR § 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;³ 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

³ Per 40 CFR § 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.

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 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

- DHEC's newly developed ePermitting system will streamline the permitting process and allow for documents in the administrative record to be more readily available.
- Fact sheets provide an evaluation/comparison and application of the most stringent TBELs and WQBELs as the final effluent limit, as appropriate.
- Fact sheets for industrial permits contain thorough documentation of WQBEL development and often include the corresponding master equations.

Areas for Improvement

- The fact sheet for Clemson University (SC0034843) describes the receiving waterbody impairment for polychlorinated biphenyls (PCBs) and states that monitoring is being added into the permit. The fact sheet should include information on why PCB monitoring is included.
- Reasonable potential determinations and actual calculations of limits should be included in fact sheets. In each of the municipal permit fact sheets reviewed for core review (SC0034843, SC0020443, SC0042994), DHEC includes generic examples of limit calculations instead of actual calculations made to establish final permit limitations. Certain practices that are used in DHEC's industrial permit rationales could be used in the municipal permits in order to more clearly explain the limitations (e.g., include a statement that indicates whether reasonable potential was found; not include generic calculations when they are not needed).

Action Items

Essential

- None

Recommended

- Include a brief explanation for why monitoring is being added for a new pollutant (40 CFR § 124.56(a)).
- Ensure that fact sheets include explanation of reasonable potential determinations and actual calculations of limits (40 CFR § 124.56(a)).

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 wasteload 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 CFR § 122.44(d)(1)(i) require permit limits to be developed for any pollutant that will cause, have the reasonable potential to cause, or contribute to an excursion above water quality standards, whether those standards are narrative or numeric. South Carolina has established numeric water quality criteria for total nitrogen (TN), total phosphorus (TP), and chlorophyll-a. These criteria are based on an ecoregional approach and are applicable to standing waters (i.e., reservoirs, lakes, ponds) of 40 acres or more.

To assess how nutrients are addressed in the South Carolina NPDES program, the EPA reviewed four permits for facilities discharging to nutrient-impaired waters that do not have TMDLs. Three of the reviewed permits are major POTW facilities (SC0034843, SC0020443, SC0042994), and one is an industrial facility (SC0004278). The three POTW permits include limits for TP and monitoring for TN. The industrial permit does not include monitoring or limits for TP or TN since

the facility was not discharging these pollutants at levels that would contribute to nutrient impairments. Therefore, no findings applied to the industrial permit.

Program Strengths

- DHEC has developed numeric water quality criteria for TN, TP, and chlorophyll-a, and provides a thorough description of these criteria in the fact sheets.
- DHEC often includes limits for TP in their permits and describes in the fact sheets how these limits are derived.

Areas for Improvement

- For each of the municipal permits reviewed for this topic area, the fact sheets should provide more explanation concerning if and how it was determined that reasonable potential does not exist for TP, TN, and chlorophyll-a. If reasonable potential exists to result in an excursion of the state’s nutrients criteria, limits should be included in the permits. During this PQR process DHEC agreed to immediately begin making progress implementing this essential action item.

Action Items

Essential	<ul style="list-style-type: none">• Limitations must control all pollutants or pollutant parameters that will cause, have the reasonable potential to cause, or contribute to a water quality impairment (40 CFR § 122.44(d)(1)(i)).
Recommended	<ul style="list-style-type: none">• None

B. Effectiveness of POTW NPDES Permits with Food Processor Contributions

The general pretreatment regulations (40 CFR § 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) in the nation’s waterways. Focusing specifically on the Food Processing Industrial Sector will synchronize PQRs with the Significant Non-compliance (SNC)/National Compliance Initiative (NCI) from the Office of Enforcement and Compliance Assurance (OECA).

The goal of the PQR is 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 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 South Carolina 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 CFR § 122.42(b) (POTW requirements to notify Director of new pollutants or change in discharge);
- 40 CFR § 122.44(j) (Pretreatment Programs for POTWs);
- 40 CFR § 403.8 (Pretreatment Program Requirements: Development and Implementation by POTW), including the requirement to permit all significant industrial users (SIUs);
- 40 CFR § 403.9 (POTW Pretreatment Program and/or Authorization to revise Pretreatment Standards: Submission for Approval);
- 40 CFR § 403.12(i) (Annual POTW Reports); and
- 40 CFR § 403.18 (Modification of POTW Pretreatment Program).

DHEC, in its role as the approval authority, oversees the development and implementation of the local pretreatment programs in the state. These local pretreatment programs are developed and implemented in accordance with South Carolina regulation R61-9.403, and the CWA. The universe of pretreatment programs was provided by DHEC at the time of the PQR meeting (February 2021). Accordingly, there are 87 Pretreatment Programs authorized by the state. Of those 87 programs, 61 are Primary Programs and 26 are secondary⁴. Those approved programs oversee 274 non-categorical significant industrial users (NCSIUs) and 351 categorical industrial users (CIUs).

To identify permits to review for this topic, the EPA used information provided by DHEC as well as the Toxics Release Inventory (TRI) custom query function within the EPA's Enforcement and Compliance History Online (ECHO) system. The EPA reviewed the different lists and selected four POTWs that appeared to have food processing Industrial Users (IUs). Of these, three facilities had approved pretreatment programs (SC0035971, SC0040436, and SC0045462) and one did not (SC0025798).

The facility without an approved pretreatment program, SC0025798, accepts waste from an unpermitted NCSIU (though this facility is not specifically a food processor). Per South Carolina

⁴ The terms "primary" and "secondary" are used to designate which POTW DHEC assigns the pretreatment program for programmatic issues. In the case where there are multiple POTWs under one pretreatment program, one POTW will be the primary facility and the rest are secondary facilities.

regulation R61-9 403.8(a), the POTW would not be required to have a pretreatment program unless DHEC determined that the nature of the industrial discharge could impact the treatment facility. As this facility does not have an approved pretreatment program, DHEC would be considered the Control Authority.

One additional food processor was identified as potentially discharging to the POTW but was not noted in the POTW's NPDES application. It is uncertain at this time if the facility would be considered a NCSIU or CIU and need to be reported in the POTW's NPDES application. It is also unclear if the facility is a known IU to the POTW. DHEC has requested additional information on this facility.

Municipal NPDES Permits Reviewed for Food Processor Topic:

Permittee	Permit No.	Approved Pretreatment Program?	Design Flow (MGD)	No. of SIUs ¹	No. of Food Processors
Town of Kershaw Hanging Rock Creek WWTP	SC0025798	No ²	0.8	1	1
Town of Kingstree	SC0035971	Yes	3.5	2	1
City of Waterboro	SC0040436	Yes	2.64	1	1
City of Florence Main Plant	SC0045462	Yes	22.0	9	1

¹ Based on the information provided in the permit application or from discussions with DHEC. SIUs include both NCSIUs and CIUs

² Kershaw had a pretreatment program until 2012; they did not meet the criteria for having to maintain a Pretreatment Program and were removed

Three food processing SIU permits were identified as discharging to the POTWs reviewed during this PQR. They are identified and summarized in the table below.

Facility Name	Permit Number	Receiving POTW	Type of Food Processor	Classification	Average Process Wastewater Discharge (gallons per day)	Monitored Pollutants
DSM Nutritional Products, LLC	003	Town of Kingstree WWTP	Food Supplement Manufacturing	CIU; 40 CFR § 439 – Subpart A	648,750	NH3, BOD ₅ , TSS, COD, O&G, pH, Temp, Cd, CN-, Pb, Hg, Zn, Acetone, 4-methyl-2-pentanone, Isobutyraldehyde, n-Amyl acetate, n-Butyl acetate, Ethyl acetate, Isopropyl acetate, Methyl formate,

						Isopropyl ether, Tetrahydrofuran, Benzene, Toluene, Xylenes, n-Heptane, Methylene chloride, Chloroform, 1,2-dichloroethane, Chlorobenzene, O-Dichlorobenzene, Diethylamine, Triethylamine, Flow
Crescent Dairy & Beverage, LLC	001	City of Walterboro	Ultra-pasteurization of milk and fruit beverages	CIU; 40 CFR Part 405 – Subpart B	6,000	BOD ₅ , TSS, NH ₃ , O&G, Flow
Ruiz Foods	1021	City of Florence Main Plant	Preparation of Mexican food through means of steam cooking, frying and freezing	NCSIU	49,000	BOD ₅ , TSS, O&G, Cu, Phenols, Zn, Flow

NH₃ = Ammonia, BOD₅ = 5-day biological oxygen demand, TSS = total suspended solids, O&G = oil and grease, Cd = cadmium, CN- = cyanide, Pb = lead, Hg = mercury, Zn = zinc, Cu = copper

Program Strengths

- All reviewed POTW permits contain requirements to implement the general and specific prohibitions established in 40 CFR § 403.5(a)(1) and (b).
- The POTW permits state that permittees must operate a POTW pretreatment program in accordance with the federal General Pretreatment Regulations at 40 CFR § 403.
- All permits contain the requirements for notification and impact assessment when there are significant changes in industrial flow and character in accordance with 40 CFR § 122.42(b).
- DHEC’s pretreatment staff review the POTW applications and draft NPDES permits to ensure the appropriate pretreatment language is included.

Areas for Improvement

- 40 CFR § 122.42(b) requires that POTWs provide adequate notice to the Director when there are significant changes to the industrial flow or character; however, the term “adequate” is not defined. EPA recommends defining this time frame.
- Permit writers should consider incorporating information on the SIUs (e.g., categorical status, pollutant loadings, flows, etc.) into the fact sheet. In situations where the POTW does not have an approved pretreatment program, the fact sheet should discuss why individual controls were not required.

- It is uncertain if the food processor identified as discharging to the POTW with an unapproved program should have been noted in the POTW’s application. DHEC should institute permit application review procedures that ensure that all potential SIUs and CIUs are identified and properly classified in Section F of the POTW NDPES application. As per 40 CFR § 403.8(f)(2), all possible IUs that might be subject to a pretreatment program should be identified.

Action Items

Essential	• None
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Recommended	<ul style="list-style-type: none"> • POTWs must provide adequate notice to the Director when there are significant changes to industrial flow or character (40 CFR § 122.42(b)). Recommend that the permits define what "adequate" means. • Permit writers should consider incorporating information on the SIUs (e.g., categorical status, pollutant loadings, flows, etc.) into the fact sheet. In situations where the POTW does not have an approved pretreatment program, the fact sheet should discuss why individual controls were not required. • DHEC should institute permit application review procedures that ensure that all potential SIUs and CIUs are identified and properly classified in Section F of the POTW NDPES application. As per 40 CFR § 403.8(f)(2), all possible IUs that might be subject to a pretreatment program should be identified.
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C. Small Municipal Separate Storm Sewer System Permit Requirements

Background

As part of this PQR, the EPA reviewed the Richland County Municipal Separate Storm Sewer System (MS4) permit (SCS400001) for consistency with the stormwater permitting regulations. One national topic area for this round of PQRs was focused on Phase II small MS4 permits, but EPA Region 4 opted instead to review the Richland County Phase I permit because South Carolina’s Phase II MS4 General Permit was expired at the time of this review. Richland County is a Phase I medium-size MS4 and has two co-permittees, Arcadia Lakes (pop. 739) and Forest Acres (pop. 10,412).

The EPA recently updated the small MS4 permitting regulations to clarify: (1) the procedures to be used when implementing general permits (see 40 CFR § 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 CFR § 122.34(a) and (b)); and (3) the

requirement that permit terms must be established in a “clear, specific, and measurable” manner (see 40 CFR § 122.34(a)).

Program Strengths

- Overall, DHEC has implemented a strong regulatory program for its municipal stormwater programs. The development of permits and stormwater management programs undergo a thorough process that is extensively negotiated by the state and regulated community, and DHEC maintains open communication and coordinates regularly with EPA Region 4 on its permits. DHEC has taken a rigid stance to ensure that MS4s are consistent in meeting all regulatory requirements, and permits are reissued with emphasis on the iterative process in progressing the program to produce environmental results.
- The Richland County MS4 permit includes the minimum regulatory elements, but also includes additional elements that help strengthen the permit. The permit contains a WQBEL section that is applicable not only to permitted stormwater discharges but also to impaired and sensitive waters. Namely, these WQBELs are applicable to TMDL watersheds; Impaired Water Quality Monitoring Stations; and to Sensitive Waters classified as Outstanding National Resource Waters; Outstanding Resource Waters; Trout Put, Grow and Take; and Source Water Protection Areas, including groundwater protection areas. WQBELs developed to protect water quality criteria in TMDL watersheds are consistent with the assumptions and requirements of available waste load allocations (WLAs) for the discharge, and these WLAs are listed within the permit.

Areas for Improvement

- At the time of this PQR review, all other South Carolina Phase I MS4 permits⁵ and the Phase II Small MS4 General Permit are expired and have been administratively continued. This backlog of permits has been attributed to staff shortages at DHEC, and the permit reissuance schedule has been further disrupted by the COVID-19 pandemic.
- Since South Carolina’s MS4 Phase II General Permit was updated prior to the January 2017 effective date of the Remand Rule, DHEC will need to consider ways in which the permit can be updated to be consistent with the requirements of the rule. All permit provisions will need to be expressed in a clear, specific, and measurable manner. If the state chooses to provide MS4s with the initial opportunity to propose specific actions that they will take during the permit term, the permit will need to incorporate the Two-Step General Permit procedures that the Remand Rule established in 40 CFR § 122.28(d)(2). If the state uses the Two-Step General Permit approach, the permit provisions must still be expressed in clear, specific, and measurable form. The EPA also recommends that the state review and consider the extensive permit examples

⁵ Besides the Richland County MS4 permit, which expires 6/2021

provided in the MS4 Permit Compendia, available on The EPA's website at: <https://www.epa.gov/npdes/municipal-sources-resources>.

Action Items

Essential

- None

Recommended

- Upon reissuance, update South Carolina's Phase II MS4 General Permit to be consistent with the requirements of the Remand Rule (40 CFR § 122.28(d)(2)).

V. REGIONAL TOPIC AREA FINDINGS

EPA Region 4 has elected not to include the optional Regional Topics in this review.

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

This section provides a summary of the main findings from the last PQR, conducted May 3-5, 2016, and provides a review of the status of the state’s efforts in addressing the action items. As noted 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 below describes the Essential Action Item identified during the 2016 South Carolina PQR and a status update.

Table 1. Essential Action Items Identified During the 2016 PQR

Program Area	Action Item Title	Status Update
Monitoring and Reporting	South Carolina has not yet adopted the sufficiently sensitive methods federal regulation requirements (40 CFR Part 136).	(Resolved)

VII. RECOMMENDED ACTION ITEMS FROM LAST PQR

This section provides a summary of the recommendations from the last PQR, conducted May 3-5, 2016, 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 the 2016 PQR

Program Area	Action Item Title	Status
Facility Information	Include additional description of municipal facilities in rationales, including basic information regarding the treatment process employed.	(In progress)
	Include outfall identifier (i.e. 001), and location information (Latitude/Longitude), in the permits.	(In progress)
	Describe the actual designated uses of the receiving water in the rationale, not just the alphabetical acronym.	(In progress)
TBELs	Ensure that rationales explain the facility characterization process (how the applicability of ELGs is determined) and, where applicable, how performance levels are determined.	(Resolved)
	In the rationale, identify the wasteload allocation worksheet as part of the documentation for water quality-based requirements.	(Resolved)
WQBELs	In the rationale, identify the wasteload allocation worksheet as part of the documentation for water quality-based requirements.	(Resolved)
	Consider ways in which rationales can include more site-specific information applicable to the permitted facility and not just by reference.	(In progress)
Administrative Process (including public notice)	The state should update the permit rating sheet anytime a facility submits an application with reduced production rates, pursuant to 40 CFR 122.44.	(In progress)
	Include documentation in an addendum to the permit rationale noting whether or not any public comments were received and whether a hearing was conducted.	(Not pursuing)
Documentation (including fact sheet)	In reissued permits with new or increased loadings, provide a better explanation in the permit or fact sheet detailing how antidegradation requirements are addressed pursuant to 40 CFR § 121.44(l).	(Resolved)
	Where discharge limits are carried forward from a prior permit, recognizing that the rationale referred to the application, ensure that the basis for current limits is clear, including compliance with anti-backsliding.	(Resolved)
	Where multiple flow conditions are included in the rationale for an upgrade of a POTW, or where operational fluctuations are indicated for variable production at industrial	(Resolved)

Program Area	Action Item Title	Status
	facilities, tiered limits are suggested. Clarify in the permit how facility should make notification to the state of these changes and identify any approval authority procedures.	
	While generic examples of limit calculations are helpful, the rationales should reflect the actual calculations made to establish final permit limitations.	(In progress)
Whole Effluent Toxicity (WET)	Consider placing the WET limit requirements in the effluent limits table of the permit. Include a more thorough description of the dilutions required to complete the WET tests in the permit.	(In progress)
Resource Extraction	Current closure plans should be included or referenced in the NPDES permits.	(Not pursuing)

VIII. ACTION ITEMS FROM FY 2018–2022 PQR CYCLE

This section provides a summary of the main findings of the PQR and provides proposed action items to improve South Carolina’s NPDES permit program, as discussed throughout sections III and IV of this report. As of the publication date of this report, DHEC has already begun implementing several of the action items identified during the current PQR cycle.

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 comply 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 and IV of the report.

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

Topic	Action(s)
Facility Information	None
Permit Application Requirements	Ensure that the line drawings of the water flow through the facility and water balance include approximate average flows at the intake, discharge points, and between units (40 CFR § 122.21(g)(2) and 40 CFR § 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
Monitoring and Reporting Requirements	None
Documentation of Monitoring and Reporting Requirements	None
Standard and Special Conditions	None
Administrative Process	None
Administrative Record and Fact Sheet	None
Permit Controls for Nutrients in Non-TMDL Waters	Limitations must control all pollutants or pollutant parameters that have the reasonable potential to cause, potential to cause, or contribute to an excursion of a state water quality standard which can result in an impairment of the receiving water(s) (40 CFR § 122.44(d)(1)(i)).
Pretreatment: Food Processing Sector	None
Small Municipal Separate Storm Sewer Systems (MS4s)	None

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

Topic	Action(s)
Facility Information	Ensure municipal fact sheets include information about the activity (such as treatment processes used) at the facility (40 CFR § 124.8(b)(1)).
	Consider adding a more detailed description in the fact sheet of the location of the discharge (40 CFR § 124.56(c)).
Permit Application Requirements	None
TBELs for POTWs	None
TBELs for Non-POTW Dischargers	None
Reasonable Potential	None
WQBEL Development	None
Final Effluent Limitations and Documentation of Effluent Limitations Development	None
Monitoring and Reporting Requirements	Include WET requirements in the main table or add a footnote to the main table to direct the reader to the additional requirement.
	Include requirement to conduct permitted WET testing with no less than two species or include an explanation as to why single species is the most sensitive (40 CFR § 122.44(d)(1)(ii)).
Standard and Special Conditions	None
Administrative Process	Public notices shall contain a brief description of the business conducted at the facility or activity described in the permit application (40 CFR 124.10(d)(1)(iii)).
Administrative Record and Fact Sheet	Include a brief explanation for why monitoring is being added for a new pollutant (40 CFR § 124.56(a)).
	Ensure that fact sheets include explanation of reasonable potential determinations and actual calculations of limits (40 CFR § 124.56(a)).
Permit Controls for Nutrients in Non-TMDL Waters	None
Pretreatment: Food Processing Sector	POTWs must provide adequate notice to the Director when there are significant changes to industrial flow or character (40 CFR § 122.42(b)). Recommend that the permit define what "adequate" means.
	Permit writers should consider incorporating information on the SIUs (e.g., categorical status, pollutant loadings, flows, etc.) into the fact sheet. In situations where the POTW does not have an approved pretreatment program, the fact sheet should discuss why individual controls were not required.

	DHEC should institute permit application review procedures that ensure that all potential SIUs and CIUs are identified and properly classified in Section F of the POTW NDPES application. As per 40 CFR § 403.8(f)(2), all possible IUs that might be subject to a pretreatment program should be identified.
Small Municipal Separate Storm Sewer Systems (MS4s)	Upon reissuance, update South Carolina's Phase II MS4 General Permit to be consistent with the requirements of the Remand Rule (40 CFR § 122.28(d)(2)).