

# **EPA Region 4 NPDES Permit Quality Review**

## **Kentucky**

**Review Date: December 8, 2021**

**Report Date: June 8, 2022**

Environmental Protection Agency – Region 4

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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 Kentucky found that permits issued in the Commonwealth 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 Commonwealth of Kentucky during the issuance process. EPA's routine review of draft permits is referred to as "real time review."

The PQR examined 12 individual permits issued by the Kentucky Department of Environmental Protection's Division of Water (DOW) and 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 to look at Whole Effluent Toxicity (WET) as a regional topic.

The PQR report presents a cyclical overview of the Kentucky NPDES permitting program and identifies new areas where EPA and DOW will work together to strengthen NPDES permit language and documentation in all Commonwealth permits. The PQR recognizes there are state and region-specific challenges faced by the Commonwealth of Kentucky including challenges with emerging pollutants and difficulty in recruiting and retaining technical staff. The reviewed permits routinely conformed to national requirements; however, the PQR identified 10 areas for permit quality improvement that are categorized as "essential." The EPA identified nine 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.

The DOW reviewed and provided comments on the draft PQR report in February 2022. The DOW 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

Permit Quality Reviews (PQRs) are an evaluation of a select set of National Pollutant Discharge Elimination System Program (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. EPA conducted a previous PQR of the Kentucky Department of Environmental Protection's Division of Water (DOW) NPDES permitting program on September 7-9, 2016. The PQR summary report is available at:

[https://www.epa.gov/sites/default/files/2017-10/documents/npdes\\_pqr\\_kentucky\\_2016.pdf](https://www.epa.gov/sites/default/files/2017-10/documents/npdes_pqr_kentucky_2016.pdf)

From that review, the evaluation team proposed various action items to improve Kentucky's NPDES permitting program. As part of the current PQR, EPA discussed with DOW their progress in resolving the previous action items, and EPA began a new review of their program. Of the 22 action items identified during the previous PQR, seven were categorized as being essential<sup>1</sup> actions (see definition below). To date, the DOW has resolved five of the previous PQR essential action items and nine of the recommended action items, and the remaining action items are still in progress. The recommended action items that are considered resolved have either been addressed by DOW or are no longer a priority and are not being pursued. Sections VI and VII of this report contain 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 the DOW's NPDES permit program. The proposed action items are identified in Sections III - V 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 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 Commonwealth's or Region's NPDES permit program.

The essential and recommended actions 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.

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<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. 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.

Eleven members of the NPDES Permitting Section from EPA Region 4 made up the review team. EPA conducted the PQR virtually with DOW on December 8, 2021.

The Kentucky PQR included reviews of core permit components and national topic areas, as well as discussions between the PQR review team and DOW staff regarding 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 EPA and the Commonwealth on program status, the permitting process, responsibilities, organization, staffing, and program challenges the Commonwealth is experiencing.

A total of 12 active NPDES permits were selected and reviewed as part of this PQR:

*Table 1. Permits Selected for PQR*

<b>NPDES Number</b>	<b>Permit Name</b>
KY0003620	Pikeville Generating Station
KY0004049	Paducah Gaseous Plant
KY0021466	Dry Creek WWTP
KY0024431	Rough River State Park
KY0066532	Hopkinsville Hammond Wood WWTP
KY0072761	Bee Creek WWTP
KY0092118	Precoat Metals
KY0094633	Kellogg's Pikeville Plant
KY0104400	Mount Sterling Hinkston Creek WWTP
KY0104540	Salyersville WWTP
KY0113085	D&B Truck and Equipment Sales LLC
KYG200000	Phase II Small Municipal Separate Sewer System (MS4) General Permit

Of these, eight permits were reviewed for core criteria and seven permits were reviewed for the national topic areas. Some permits were reviewed for both the core review as well as the national topic areas review. Permits were selected based on issuance or modification dates and the review categories that they fulfilled. All the reviewed permits were issued within the previous five calendar years and reflect current permitting practices at the time of the PQR. The DOW provided all documents electronically in advance of the PQR visit.

## 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 talking 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 Kentucky'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 DOW NPDES program were 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 MS4 Permit Requirements.

Regional topic area reviews target regional-specific permit types or aspects of permits. EPA looked at Whole Effluent Toxicity (WET) as a regional topic for this PQR.

## II. STATE PERMITTING PROGRAM GENERAL OVERVIEW

The Surface Water Permits Branch (SWPB) of the Kentucky Department of Environmental Protection's DOW administers all Kentucky Pollutant Discharge Elimination System (KPDES) permits. Housed under the SWPB are the following four sections:

- Permit Support Section
- Municipal Section – Writes POTW permits
- Stormwater Section – Writes coal/non-coal mining discharge permits and stormwater-only discharge permits
- Industrial Section – Writes industrial discharge permits involving process wastewater discharge, private sanitary wastewater discharge permits, and agricultural discharge permits

The SWPB Frankfort office issues all KPDES permits and administers the Pretreatment Program and MS4 Program. The DOW has ten field offices, which are in Bowling Green, Columbia, Florence, Frankfort, Hazard, London, Louisville, Madisonville, Morehead, and Paducah. These field offices conduct inspections of permitted facilities and investigation of citizen complaints to determine compliance with permits and regulations.

The SWPB has 16 KPDES permit writers as well as six administrative support staff, one wasteload allocation modeler, one WET coordinator, one pretreatment program coordinator, and one MS4 program coordinator. The KPDES program also relies on other programs within

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

the DOW, including the Water Quality Branch and the Field Operations Branch. Permit writers are trained through internal mentoring, EPA's NPDES Permit Writer's in-person and virtual courses, and pre-recorded EPA NPDES Permit Writer's webinars.

The DOW utilizes various permitting tools and systems in the KPDES permit development process. Permit writers use KPDES permit and fact sheet templates to generate various types of permits and implement the SWPB's *General Procedures for Limitations Development*<sup>3</sup> and *Permitting Procedures for Determining Reasonable Potential*. The *Steady State Toxics Wasteload Allocation Model* (SSTWAM) is a Microsoft Excel-based model used to analyze reasonable potential and to develop mixing zone effluent limitations. DOW staff rely on the CORMIX modeling software to evaluate discharges through a diffuser outfall.

To support KPDES permit development and implementation, DOW uses the *Consultants to Government to Industries* (CGI) program TEMPO360 database to store and maintain permit and compliance data. The DOW maintains permit development documentation, correspondence, monitoring and reporting information, and compliance records in electronic format in the DOW's TEMPO360 data management system. The DOW flows the data from TEMPO360 to EPA's Integrated Compliance Information System (ICIS). Permittees implement discharge reporting requirements using the NetDMR (a system that allows for the electronic submission of KPDES discharge monitoring reports). The KPDES program uses correspondence templates and an automated notification procedure from TEMPO360 to distribute public notices.

The DOW utilizes a management review process as part of its Quality Assurance/Quality Control (QA/QC) process. Draft individual permits are reviewed, at a minimum, by a supervisor prior to public notice and by both a supervisor and branch manager prior to final issuance. Staff use checklists and permit templates to develop draft and final permits.

Based on July 2021 data, the DOW administers 1,303 individual NPDES permits, including 240 permits for POTWs (91 major permits and 149 non-major permits) and 1,063 permits for non-POTWs (47 major permits and 1,016 non-major permits). In addition, DOW administers individual stormwater permits to 262 permittees. The DOW administers 13 master general permits (GPs); three of these GPs have NPDES permit coverage under the Commonwealth's permit-by-rule regulations, and approximately 7,423 permittees are covered under the remaining ten GPs. The largest of the GP sectors is for construction activities (3,543 permittees). Significant industries identified within the Commonwealth include healthcare, manufacturing, retail, education, and oil and gas and mining industry. Notices of Intent (NOIs) for coverage under these GPs are submitted via electronic forms in Kentucky's eForms system and are tracked through the TEMPO360 database. All DOW's permits are available online.

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<sup>3</sup> General Procedures for Limitations Development, Department for Environmental Protection, Division of Water, Surface Water Permits Branch, revised August 24, 2016. <https://eec.ky.gov/Environmental-Protection/Water/PermitCert/KPDES/Documents/General%20Procedures%20for%20Limitations%20Development.pdf>

The DOW has 70 approved pretreatment programs covering 83 POTWs state-wide. There are currently 202 Categorical Industrial Users (CIUs) and 11 non-significant categorical industrial users (NSCIUs). The DOW's pretreatment program does not issue any general permits.

As of July 2021, DOW estimates that the overall backlog of administratively continued domestic and industrial NPDES permits is 39 major permits, 51 minor permits, and two general permits.

Some general initiatives that DOW is currently developing that will strengthen the permitting program include:

- Converting all paper-based individual permit application forms into a fully electronic eForm. The eNOIs for general permits currently utilize the fully electronic eForms.
- Developing an enhanced eSearch system for public use to allow for greater access and search capabilities for publicly available documents such as issued permits, applications under review, and draft permits on public notice.
- The DOW is updating its Nutrient Reduction Strategy to highlight Kentucky's progress to date and to lay out the agency's future nutrient reduction efforts.

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

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

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

###### *Background and Process*

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

###### *Areas for Improvement*

The application form of an industrial permit (KY0113085) included four locational maps, but none of the maps included the information required under 40 CFR § 122.26(c)(1)(i)(A). Specifically, individual applications for discharges of stormwater associated with industrial activity must include a site map showing topography of the facility, including each of its drainage and discharge structures, the drainage area of each stormwater outfall, and several



other items. The DOW must ensure that a site location map submitted with the application includes the location(s) of the outfall and drainage structure(s).

*Action Items:*

Essential	<ul style="list-style-type: none"><li>• Ensure the site location map submitted with the application includes the location(s) of the outfall and drainage structure(s) (40 CFR §122.26(c)(1)(i)(A)).</li></ul>
Recommended	<ul style="list-style-type: none"><li>• None</li></ul>

## 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*

Permit applications were generally submitted on time for the reviewed permits. Some of the provided administrative files included letters from Kentucky to the permittees regarding notification of their permit expiration and solicitation of new permit applications.

### *Areas for Improvement*

For some reviewed permits, EPA found that permit application forms either lacked certain information or were incomplete without any explanation. The DOW must ensure that all applications are complete prior to issuance of a permit.

For example, one of the applications was missing sampling for required parameters (KY011308). 40 CFR § 122.26(c)(1)(i)(E) requires quantitative data for certain parameters from all outfalls containing a stormwater discharge associated with industrial activity. Since this permit (KY011308) covers stormwater-only outfalls, a monitoring waiver is not allowed as it would be for process and non-process waste from industrial facilities. Therefore, sampling must be conducted for all parameters on the application form<sup>4</sup>.

The application form for another permit (KY0024431) did not include effluent characteristic monitoring data for two outfalls (001 and 004), and the application noted that waivers were requested for certain parameters of a third outfall (003). The provided administrative file did

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<sup>4</sup> Form F of the KPDES application.

not contain an explanation for the absence of this information. The DOW sent the applicant a letter on January 28, 2021, indicating that the application was deemed complete. The final permit includes effluent and monitoring requirements for these outfalls, but it is unclear how DOW developed these limits without sampling data from the application. Though DOW clarified that discharge monitoring report (DMR) data was available, they also must ensure the receipt of a complete application to issue the permit (40 CFR § 122.21(e)).

*Action Items:*

Essential	<ul style="list-style-type: none"><li>• Ensure that permit applications for industrial stormwater discharges contain quantitative data for the required parameters under 40 CFR §122.26(c)(1)(i)(E).</li><li>• Ensure the receipt of a complete application in order to issue the permit 40 CFR 122.21(e).</li></ul>
Recommended	<ul style="list-style-type: none"><li>• None</li></ul>

## **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 BOD, TSS, pH, and percent pollutant removal), and must contain numeric limits for all these parameters (or authorized alternatives) in accordance with the secondary treatment regulations at 40 CFR Part 133. A total of four POTW permits were reviewed as part of the PQR.

##### *Program Strengths*

All the reviewed POTW permits include TBELs. The limits were consistent with federal regulations and included 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 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).

The DOW's procedures for determining and establishing appropriate TBELs for non-POTWs are consistent with federal statutes, policies, and guidance. The four non-POTW reviewed permits included TBELs based on applicable ELGs and BPJ.

*Program Strengths*

The DOW correctly identified and implemented applicable ELGs in permits for industrial facilities based on the expected waste streams and pollutants in the discharge. The calculations of ELG-based TBELs were correct in the reviewed permits, and the limits were expressed in the appropriate units and forms.

*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 CFR § 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 such “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 state water quality standard.

The PQR for Kentucky 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.

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.

### *Program Strengths*

Fact sheets clearly identified the receiving stream(s) along with the associated designated uses, antidegradation category, 7Q10 low flow, and harmonic mean flow. The DOW applies reasonable potential analyses (RPA) procedures using its *Permitting Procedures for Determining “Reasonable Potential”* guidelines. The DOW uses standard spreadsheets and models when conducting RPA, and the spreadsheet also considers potential mixing zones and dilutions. The DOW’s use of its RPA procedures and spreadsheets provides consistency for limit development.

### *Areas for Improvement*

See discussion under Section IV.A. Permit Controls for Nutrients in Non-TMDL Waters.

*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 NPDES 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. Technology-based effluent limits 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*

Fact sheets included adequate documentation of TBEL development, as well as discussions of applicable water quality standards and effluent guidelines. When applicable, permits contained the most stringent limit between TBELs and WQBELs, and the fact sheets provided a justification.

#### *Areas for Improvement*

See discussion under Section III.F. Administrative Record and Fact Sheet.

*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 periodically 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 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*

Kentucky's permits included appropriate monitoring requirements based on the facility type, type of discharge, and corresponding limit basis. The permits included language specifying

sampling consistent with 40 CFR Part 136 and requirements for sufficiently sensitive analytical methods. Permits also required facilities to submit completed DMR information into DOW's approved electronic system.

#### *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 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.

#### *Program Strengths*

Except for the items noted below, Kentucky's permits included standard conditions with language as stringent as the federal language.

#### *Areas for Improvement*

For most of the reviewed permits, the "Duty to Reapply" section of the standard conditions must be modified for consistency with 40 CFR § 122.41(b) by adding the following underlined words: "Duty to reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for [and obtain] a new permit."

For existing manufacturing, commercial, mining, and silvicultural dischargers, DOW must include the additional notification conditions required under 40 CFR §§ 122.42(a)(1) and (2) in the standard conditions. Section 2.12.1(2) of one of the permits (KY0094633) refers to 40 CFR § 122.42(a)(1); however, the language seems to indicate that the notification requirement under 40 CFR § 122.42(a)(1) is already in place. As such, the notification requirement in the permit ends up being for pollutants not covered under § 122.42(a)(1). One way to address this finding is to add the notification requirements under §§ 122.42(a)(1) and (2) to the standard conditions, while also keeping the requirement of planned changes affecting pollutants not covered by these notification requirements. This is related to a finding in KDOW’s 2016 PQR (Verify or ensure that standard permit conditions include the notification conditions in 40 CFR 122.42(a) and (b)).

The standard conditions section of the Small MS4 Phase II General Permit states that: “The permittee is advised that applicable KPDES permit conditions in KPDES regulation 401 KAR 5:065, Section 1, will apply to all discharges authorized by this permit.” Section 1 of these KPDES regulations only covers definitions established in 40 CFR § 122.2, and therefore DOW must instead cite 401 KAR 5:065, Section 2, which references multiple federal regulations, including 40 CFR § 122.41 (conditions applicable to all permits).

*Action Items:*

Essential	<ul style="list-style-type: none"> <li>Revise the “Duty to reapply” section of the standard conditions consistent with 40 CFR §122.41(b).</li> <li>Include the additional notification conditions required under 40 CFR §122.42(a)(1) and (2) in the standard conditions for existing manufacturing, commercial, mining, and silvicultural dischargers.</li> <li>For the Phase II MS4 general permit standard conditions, DOW must cite 401 KAR 5:065, Section 2, which references multiple federal regulations, including 40 CFR §122.41.</li> </ul>
Recommended	<ul style="list-style-type: none"> <li>None</li> </ul>

## 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 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). EPA discussed each element of the



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

### *Program Strengths*

Kentucky sends letters by email to its permittees, notifying them that a draft permit has been completed and sent to public notice. The notification letter provides a weblink address to the draft documents and clearly states the close of the public notice period.

### *Areas for Improvement*

During the PQR meeting, EPA noted that DOW must keep a record of public notices in the administrative record (40 CFR § 124.10). Kentucky provides public notice of its NPDES permits, other DOW program reports, and public hearings through a webpage devoted to public notices. A website is an appropriate means to provide public notice on DOW's proposed actions; however, there is no record of public notice for past permits because the website is continually updated. EPA provided some ways to satisfy this regulatory requirement, such as taking a screenshot of the electronic public notice for each permit to add to the administrative record or keeping the notices available on the webpage. This was a finding in 2016PQR.

The DOW described its process for public noticing draft permits, which includes an email notification that is distributed to interested parties. The email provides a link to the Kentucky Energy and Environment Cabinet's website to view the draft permit, fact sheet, and application materials. These items are publicly viewable, regardless of whether the viewer is a member of the email distribution list. The DOW maintains a copy of the sent email in the electronic mailbox associated with the email notification, and they recently started retaining a copy of the sent email in the TEMPO database where other permit record documents are stored. The files that are shared on the public viewer are locked within TEMPO at the time they are placed on public notice. In addition, the DOW assigns attributes to the locked documents which enable the documents to be publicly viewable on the Cabinet's website on the date the public notice period begins. Following the PQR meeting, the DOW provided an image from the TEMPO database as an example of the document attributes for a given permit, illustrating when the document was publicly viewable.

Considering this information, EPA has adjusted the scope of the initial finding related to public notice content requirements outlined under 40 CFR § 124.10(d)(1)(i-vii). The required contents for public notice of NPDES permit actions include:

- Name and address of office processing the permit action;
- Name and address of permittee or permit application;
- Brief description of the business conducted at the facility or activity;
- Name, address, telephone number of a person from whom interested parties may obtain further information;
- Brief description of the comment procedures and information of any hearing that will be held, including a statement of procedures to request a hearing; and

- General description of the location of each existing or proposed discharge point and the name of the receiving water.

Since Kentucky provides email notifications of its public notice website, one option to address this finding is to ensure that public notice emails contain the minimum required information outlined above. Alternatively, the DOW could include this required information in the notification letter, which is routinely retained in the administrative file, and attach this letter to the public notice email. The public notice notification letters reviewed during this PQR already contain some of the required information.

Additionally, EPA recommends that any permit changes between permit issuances be documented in the fact sheet, permit issuance letter, and/or an addendum. Without a record of the changes, it is difficult for the public to know whether any changes were made to the final permit following public notice. Kentucky should also document whether significant comments had been received, and if so, whether the permit had been revised, or not. This was PQR recommendation in 2016.

*Action Items:*

Essential	<ul style="list-style-type: none"> <li>• Maintain a record of public notices that contain all required content in the administrative record (40 CFR §124.10).</li> </ul>
Recommended	<ul style="list-style-type: none"> <li>• Document any permit changes between permit issuances in the fact sheet, permit issuance letter, and/or an addendum.</li> </ul>

## 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;<sup>5</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,

<sup>5</sup> 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.

for new sources where 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*

The administrative records contained permit application and supporting data, draft and final files, and fact sheets with the statement of basis for the permit requirements. Kentucky provides access to its administrative records through a web-based system, through which the public can query online searches or retrieve permit documents.

Regarding the reviewed fact sheets, some contained calculation of WQBEL development and corresponding master equations, and some included a table comparing calculated TBELs and WQBELs. This type of information is useful in understanding the underlying rationale behind permit limits.

### *Areas for Improvement*

Fact sheets should include clear rationale of how permit limits were derived and justification for modifying limits in the final permit. Such explanations are especially important in cases where a limit has been increased (i.e., made less stringent) or removed entirely, to preclude an interpretation that anti-backsliding provisions have been triggered. EPA recommends that Kentucky include any calculations or other necessary explanation of the derivation of specific effluent limitations in its fact sheets (40 CFR § 124.56(a)). This was a finding in the 2016 PQR.

Where a limit included in the prior permit has been removed in the current permit, the fact sheet should provide a clear explanation of why the limit was removed and how there was no reasonable potential for that pollutant. In one permit (KY0094633), mass limits for ammonia were removed and the monthly average concentration limit for oil and grease was increased without any explanation in the fact sheet. In a separate permit (KY0004049), phosphorus monitoring was removed without a clear explanation of why it was eliminated. In two other permits (KY0004049 and KY0021466), WET limits were removed without a detailed explanation in the fact sheet (See Section V.A. Regional Topic Area Findings – Whole Effluent Toxicity).

The fact sheet should also document the comparison of TBELs and WQBELs, where applicable, and the selection of the most stringent limits. One permit reviewed (KY0094633) established TBELs for BOD<sub>5</sub>, TSS, Oil and Grease; however, the fact sheet lacked documentation of WQBELs

calculated for those parameters. The DOW should interpret its narrative standards and calculate WQBELs for comparison with the TBELs. Alternatively, DOW could provide a justification in the fact sheet discussing how TBELs would not cause a violation of the narrative standards (WQBELs).

*Action Items:*

Essential

- None

Recommended

- The fact sheet should document the comparison of TBELs and WQBELs, where applicable, and the selection of the most stringent limits.
- Where a limit included in the prior permit has been removed in the current permit, the fact sheet should provide a clear explanation of why the limit was removed and how there was no reasonable potential for that pollutant.
- Fact sheets should contain any calculations or other necessary explanation of the derivation of specific effluent limitations (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 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 CFR § 122.44(d)(1)(i) require permit limits to be developed for any pollutant with the reasonable potential to cause or contribute to an excursion of any state water quality standards, whether those standards are narrative or numeric. Kentucky has established narrative water quality criteria for total nitrogen (TN), total phosphorus (TP), and

carbon. The DOW uses this narrative to apply phosphorus controls on point source dischargers to reduce cultural eutrophication in receiving waters on a case-by-case basis.

To assess how nutrients are addressed in the Kentucky NPDES program, EPA Region 4 reviewed four permits for facilities discharging to nutrient-impaired waters that do not have TMDLs. Three of the reviewed permits are major/minor POTW facilities (KY0066532, KY0104400, KY0104540) and one is an industrial facility (KY0004049).

The three POTW permits included monitoring for TN and TP with one permit (KY0104540) including TP limits. The industrial facility (KY0004049) did not include monitoring for TN and only included monitoring for TP in two out of 15 permitted outfalls.

### *Program Strengths*

The DOW includes nutrient parameter monitoring for POTWs even if they do not discharge to nutrient-impaired waters. The DOW's permits require effluent nutrient monitoring to develop baseline loading data for facilities that discharge to nutrient-impaired waters. This data could, in the future, inform RPAs to determine whether WQBELs are necessary to mitigate such nutrient-impaired waters.

### *Areas for Improvement*

40 CFR § 122.44(d)(1)(i) requires that an RPA be performed and that effluent limits be included in permits as needed to ensure the achievement of water quality standards. For each of the municipal and industrial reviewed permits for this topic area, the fact sheets must provide more explanation concerning whether and how it was determined that reasonable potential does not exist for TP and TN. If reasonable potential exists to result in an excursion of the Commonwealth's nutrients criteria, limits must be included in the permits. During this PQR process, the DOW provided additional documents that included revised justification language in the nutrients section of their fact sheets along with plans to implement TP limits in one of the POTW facilities (KY0066532).

### *Action Items:*

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

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

The general pretreatment regulations (40 CFR 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 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 Office of Enforcement Compliance and Assurance (OECA)'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 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 Kentucky 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).

To identify permits to review for this topic, EPA used information provided from Kentucky in addition to information from the Toxics Release Inventory (TRI) custom query function within the EPA's Enforcement and Compliance History Online (ECHO) system. EPA reviewed the different lists and selected two POTWs that appeared to have food processing Industrial Users (IUs). EPA was unable to find any municipal NPDES permits for POTWs that accept food-processing waste from unpermitted industrial users.

*Table 2. NPDES Permits Selected for the Pretreatment Topic Area*

Permittee	Permit No.	Approved Pretreatment Program?	Design Flow (MGD)	No. of SIUs <sup>1</sup>	No. of Food Processors <sup>1</sup>
Bee Creek	KY0072761	Yes	8.75	4	2
Dry Creek	KY0021466	Yes	5.25	54	1

<sup>1</sup>Based on the information provided in the permit application. These are both “categorical” and “non-categorical” users.

Two food processing IU permits were also reviewed as part of the PQR. They are identified in the table below.

*Table 3. IU Permits Selected for PQR*

Facility Name	Permit Number	Receiving POTW	Type of Food Processor	Average Process Wastewater Discharge (gallons per day)	Monitored Pollutants
Lyons Magnus, Inc	IND-00073	Dry Creek	Flavor Extracts	0.0055 MGD	Arsenic, Cadmium, Chloride, Chromium IV, Chromium, Copper, Cyanide, Iron, Lead, Mercury, Nickel, Oil and Grease, Phenolics, Phosphorus, Selenium, Silver, Zinc
Kenlake Foods	110-21-26	Bee Creek	Food Processing	0.00111 gallons per batch, 53 batches discharged per year	Arsenic, Cadmium, Chromium, Hexavalent Chromium, Copper, Cyanide, Lead

*Program Strengths*

The DOW maintains an up-to-date approved pretreatment program list that is available to the public. The Commonwealth also implements and requires nutrient monitoring for both the influent and effluent of the POTW.

*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 timeframe. The DOW must also ensure that standard permit conditions include the notification conditions in 40 CFR § 122.42(b). EPA also recommends that permits contain both approval and modification dates of the approved POTW Pretreatment Program. Currently, permits only contain approval dates for the programs.

*Action Items:*

**Essential**

- Ensure that standard NPDES permit conditions for POTWs include all the provisions in 40 CFR §122.42(b).

**Recommended**

- POTWs should provide adequate notice to the Director when there are significant changes to industrial flow or character (40 CFR §122.42(b)).
- The fact sheet or permit should include the approval and modification dates of the approved POTW Pretreatment Program

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

### *Background*

As part of this PQR, EPA reviewed the Commonwealth’s Small MS4 General Permit (KYG200000) for consistency with the Phase II stormwater permit regulations. EPA recently updated the small MS4 permitting regulations to clarify: (1) the procedures to be used when using 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*

Kentucky’s overall MS4 program has made progress over the past several years, and the Phase I MS4 permits have shown iterative improvements with each permit cycle. In particular, the post-construction sections in the Phase I and Phase II MS4 permits include prescriptive performance standards, green infrastructure considerations, and requirements for the maintenance of structural and non-structural BMPs.

The DOW’s staff coordinate with EPA personnel on MS4 policy and programmatic issues, as well as technical support needs. The DOW shares preliminary draft permits with EPA to allow for any early comments or suggestions to be incorporated into the draft permit for public notice. The



DOW also coordinates with the Kentucky Stormwater Association, sharing information regarding current and pending stormwater program updates.

### *Areas for Improvement*

When reissued<sup>6</sup>, Kentucky's Phase II MS4 General Permit must be consistent with the requirements of the Remand Rule. Specifically, the Phase II permit must include requirements that are clear, specific, and measurable for a comprehensive general permit (40 CFR §§ 122.28(d)(1) and 122.34(a)). Many, if not all, of the Minimum Control Measures (MCMs) in the permit reference DOW's *Phase II SWQMP Preparation Guidance* for "specific BMPs that may be used to comply with [that given] MCM." The information contained in this guidance document is the type of detail that needs to be incorporated into the permit and fact sheet.

As the next Phase II general permit is being drafted, the DOW should pay extra attention to the following permit sections as a result of the PQR review:

- **Public Education** – The permit should include more specifics and interim timeframes. For instance, DOW could list out specific target audiences for public education activities or methods to reach the public. Also, as part of the requirements under Sections 2.2.1.5. and 2.2.1.6., the permittee should first be required to develop a process or mechanism in its Stormwater Management Plan to assess how well its public education and outreach programs change public awareness and behaviors (i.e., surveys, tracking the number of attendees, interviews, etc.), before measuring and tracking the required items.
- **Illicit Discharge Detection and Elimination** – Language under this MCM should be refined. Rather than having the permittee develop procedures for every element of this MCM, the permit could list out minimum measures or criteria that such procedures should include. For example, along with asking the permittee to develop procedures for locating priority areas likely to have illicit discharges, the permit could identify certain focus areas: industrial or commercial areas, areas with a history of past illicit discharges, areas with a history of illegal dumping, areas with onsite sewage disposal systems, areas with older sewer lines or a history of sewer overflows or cross-connections, and areas upstream of sensitive waterbodies.
- **Construction** – The DOW should expand/make more explicit the requirement to develop a procedure to inventory projects. For example, the permittee should be required to continue to maintain an inventory of all active public and private construction sites that result in a total land disturbance of one acre or more. The inventory would be continuously updated as new projects are permitted and projects completed. The permit could require minimum tracking information such as relevant contact information for each project, size of disturbance, whether the project has submitted for coverage under Kentucky's Construction General Permit, etc.
- **Construction** – The DOW needs to tighten the language regarding site inspection frequencies to be more specific and give minimum, exact timeframes. Instead, the permit

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<sup>6</sup> Kentucky is scheduled to reissue its Small MS4 Phase II General Permit by May 2023.

gives a “recommended level of effort” for periodic inspections of monthly for all active sites and within two weeks after initiation of land disturbance for new sites.

- Construction – In addition to the requirement to develop training programs for MS4 staff and construction site-operators, the permit could also require a minimum number of trainings as part of these programs and procedures (i.e., initial training in permit year 1, refresher trainings in years # and #).
- Post-Construction – There is a reporting element requiring the permittee to provide a written summary of any training that MS4 staff have received on post-construction; however, there is not an actual training requirement under this MCM. The DOW should add a corresponding post-construction training requirement for MS4 staff.
- Pollution Prevention – This MCM section should be greatly expanded to detail specific measures and action items. In addition, the required operation and maintenance plan should also include an inspection/visual monitoring component, and could include procedures for Pesticide, Herbicide, and Fertilizer Application and Management.

EPA Region 4 is available to assist the Commonwealth with suggesting specific permit changes that would be consistent with the Remand Rule. EPA also recommends that Kentucky review and consider the extensive permit examples provided in the MS4 Permit Compendia, available on EPA’s website at: <https://www.epa.gov/npdes/municipal-sources-resources>.

In addition, EPA recommends that the permit include a provision to develop and/or maintain an inventory of all post-construction structural stormwater control measures installed and implemented at new development and redevelopment sites. Creating an inventory of post-construction BMPs will enable permittees to know what control measures they are responsible for and will assist in the planning of inspections, maintenance, and follow-up actions. The permit could also identify the type of post-construction, contact, locational, and other information each permittee should track.

*Action Items:*

Essential

- Reissue Kentucky’s Phase II Small MS4 general permit to be consistent with the requirements of the Remand Rule. Specifically, the Phase II permit must include requirements that are clear, specific, and measurable for a comprehensive general permit (40 CFR §122.28(d)(1) and §122.34(a)).

Recommended

- The MS4 general permit should include a provision to inventory post-construction stormwater control measures.

## V. REGIONAL TOPIC AREA FINDINGS

### A. Whole Effluent Toxicity (WET)

#### *Background*

WET describes the aggregate toxic effect of an aqueous sample (e.g., whole effluent wastewater discharge) as measured by an organism's response when exposed to the sample (e.g., lethality, impaired growth, or reproduction). EPA's WET tests replicate the total effect of environmental exposure of aquatic life to toxic pollutants in an effluent without requiring the identification of the specific pollutants. WET testing is a cost-effective approach, using one test to assess all chemical and additive effects. It can be used to assess municipal and industrial effluent toxicity, impairment of surface waters, stormwater impacts, water quality criteria development, and TMDL targets. WET testing is a vital component to implementing water quality standards under the NPDES permits program in accordance with the CWA Section 402. It supports meeting the goals of the CWA Sections 101(a) and (a)(2), with respect to restoring and maintaining "the chemical, physical, and biological integrity of the Nation's waters and "...the protection and propagation of fish, shellfish, and wildlife". WET implements EPA's national policy and states' narrative criteria of "no toxics in toxic amounts" Chapter 391-3-6-.03(5)(e).

The statutory basis for requiring the implementation of WET or WET limits in NPDES permits is Section 301(b)(1)(C) of the CWA, which requires that permits include limits as stringent as necessary to meet state water quality standards. Most state water quality standards include chronic sublethal endpoints to meet the CWA's statutory goal for the protection and propagation of fish, shellfish, and wildlife. The chronic sublethal WET endpoints, such as growth and reproduction as reflected in the state water quality standards, are used in the NPDES permits program to protect the propagation of aquatic life.

Based on the CWA's provisions to protect the biological integrity of the nation's waters, EPA's regulations require that all effluent discharges to the waters of the U.S. be assessed to determine whether there is the reasonable potential for an excursion of state water quality standards such as the aquatic life protection criteria. RPAs evaluate the potential for permitted effluent discharges to cause toxic impacts to aquatic life through determination of whether pollutant concentrations are at a level that would result in an excursion of a state's WET water quality standards. RPAs are conducted to determine whether controls are necessary for wastewater discharges to surface waters. 40 CFR § 122.44(d)(1)(i) requires limitations to control all pollutants or pollutant parameters that are or may be discharged at a level which will cause or have the reasonable potential to cause or contribute to an excursion above any state water quality standard. The potential to cause or contribute to an excursion of a state's WET water quality standard is the provision that provides preventive protection before there is an

impact to aquatic organisms at a level that would result in an excursion of a state's WET water quality standard.

The focus of EPA's WET review for the PQR was to verify that permits and facts sheets are implementing WET appropriately. Fact sheets should include a robust discussion of WET limit development and take into consideration the past five years of WET testing results, ambient water quality data, and the Commonwealth's WET strategy. Permits should include WET limits or monitoring, along with frequency of testing. Permits and fact sheets should clearly reference the most recent EPA toxicity test methods and procedures used, in particular, for WET tests that indicate measured toxicity which exceed the permit WET limit or monitoring requirements and the need to do a new WET test with a fresh effluent sample. The permit should also include Toxicity Identification Evaluation (TIE) and Toxicity Reduction Evaluation (TRE) requirements when WET limits or monitoring requirements are exceeded.

Seven permits were reviewed using the Region 4 PQR WET checklist. Of the seven permits reviewed specifically for WET, five were POTWs and two were industrial facilities. One of the permits reviewed was classified as a minor; the others were classified as major facilities.

#### *Program Strengths*

Kentucky's water quality standards contain narrative and numeric acute and chronic (including chronic sub-lethal endpoints) criteria, including separate chronic toxicity criteria for non-persistent and persistent or bioaccumulative toxics. The Commonwealth has a general narrative criterion for toxicity and specific criteria expressed in Toxic Units (TUs) for acute toxicity (0.3 TUa) and chronic toxicity (1 TUc).

The reviewed permits contained clear and specific WET language. The most recent EPA toxicity test methods were referenced in all reviewed permits. The permits required two species (*Ceriodaphnia dubia* and *Pimphales promelas*) to be tested. Permits specified sample type, test duration, type of test (static or renewal test), and dilution series based on the discharge specific instream waste concentration (IWC). If a routine test is invalid (did not meet EPA's minimum Test Acceptability Criteria or TACs), then a new sample must be collected and a new toxicity test is required, and the invalid test data must also be submitted to DOW. A retest uses a new sample of the effluent. Accelerated monitoring is required if a WET limit or monitoring trigger is exceeded, and ultimately a TIE/TRE is initiated if accelerated monitoring indicates a persistent toxicity impact to aquatic life problem. For permits containing a WET limit which has been exceeded that then triggers accelerated testing as required under the permit, any additional exceedances of the WET limit that result from the accelerated testing are also considered to be a permit violation. The permits contained extensive TIE/TRE language directing the facility to continue monthly WET testing, requires the DOW to approve the TIE/TRE plan, and outlines specific information to be included in the final report. Permits also included a reopener condition to allow for additional permit requirements, if necessary.

*Areas for Improvement*

No RPA calculations were performed for the reviewed permits, but the policy laid out in Section 2.1.4 of Kentucky’s *General Procedures for Limitation Development* assumes that reasonable potential exists for industrial and municipal facilities rated as major facilities by EPA, municipalities with approved pre-treatment programs, and industrial dischargers with complex waste streams. It is unclear in this policy whether WET monitoring or limits are assigned to these facilities, and complex waste streams are not clearly defined. EPA’s *Technical Support Document for Water Quality-based Toxics Control* (TSD) provides guidance on how to conduct RPAs using Toxic Units, and EPA recommends that DOW use the TSD approach to calculate reasonable potential. Some permit fact sheets only referenced Kentucky’s water quality standards, lacking detail regarding the basis for WET limits. Kentucky’s *General Procedures* also indicate the species sensitivity for WET testing is considered, but no explanation was provided about the types of species that were tested and how the species sensitivity was determined. Two permits (KY0004049 and KY0021466) removed WET limits based on the lack of past WET limit exceedances; however, DOW did not provide a detailed explanation in the fact sheet beyond citing the state’s WET water quality standards.

*Action Items:*

Essential	<ul style="list-style-type: none"><li>• None</li></ul>
Recommended	<ul style="list-style-type: none"><li>• Consider using EPA's TSD approach to calculate reasonable potential.</li><li>• Consider adding more detail to fact sheet discussions relating to reasons for limit removal.</li></ul>

## **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 September 7-9, 2016, and provides a review of the status of the Commonwealth’s efforts in addressing the action items. As discussed previously, during the 2012-2017 PQR cycle, EPA referred to action items that address deficiencies or noncompliance with respect to federal regulations as “Category 1”. EPA is now referring to these action items going forward, as Essential.

Table 4. Essential Action Items Identified During the 2016 PQR

Program Area	Action Item Title	Status
Facility Information and Permit Application	Ensure that complete permit applications are submitted in a timely manner (e.g., within 180 days prior to expiration) and that application data is sufficiently current to be representative of conditions at the time of permit issuance. (40 CFR § 122.21(c))	Timing issue resolved; Completeness issue ongoing
WQBELs	Where a limit included in the prior permit has been removed in the current permit discuss in the fact sheet whether backsliding provisions apply and, if so, how they have been satisfied. (40 CFR § 122.44 (I))	Resolved
Monitoring and Reporting	Ensure that all permits require that sampling and analysis methods must be consistent with applicable federal requirements by clearly referencing or incorporating current 40 CFR 136 methods and require that sufficiently sensitive methods be used for those parameters of concern. Or as otherwise stated: “For the purposes of the NPDES program, when more than one test procedure is approved under this part for the analysis of a pollutant or pollutant parameter, the test procedure must be sufficiently sensitive as defined at 40 CFR 122.21(e)(3) and 122.44(i)(1)(iv).”	Resolved, but Kentucky should update regulation citation in fact sheets
Standard and Special Conditions	Verify or ensure that standard permit conditions include the notification conditions in 40 CFR 122.42(a) and (b).	Ongoing
	Verify that KPDES permitting penalty provisions are updated to reflect inflation adjustments to CWA penalties (40 CFR § 19.4)	Resolved
Pesticides	Include in the permit, all enforceable regulatory references from the fact sheet. (40 CFR §122.48 and § 124.6)	Resolved
RPA	Where effluent limits were removed from previous permits, the Commonwealth should document the reason for removal of a previous monitored or limited parameter and how this complies with anti-backsliding regulatory provisions. (40 CFR § 122.44 (I))	Resolved

## VII. RECOMMENDED ACTION ITEMS FROM LAST PQR

This section provides a summary of the recommendations from the last PQR, and notes any Commonwealth efforts to act on those recommendations. As discussed previously, during the 2012-2017 PQR cycle, EPA referred to action items that are recommendations to strengthen the Commonwealth’s program as either “Category 2” or “Category 3” action items. EPA is consolidating these two categories of action items into a single category: Recommended. Note that previous recommendations with a “resolved” status have either been addressed by DOW or are no longer being pursued by EPA.

*Table 5. Recommended Action Items Identified During the 2016 PQR*

Program Area	Action Item Title	Status
Facility Information and Permit Application	Verify that DOW has accurate location data for permitted outfalls and facilities.	Ongoing
TBELs	Ensure that the description of each non-POTW facility in each respective fact sheet sufficiently describes the operation, processes, products and waste streams, as well as whether an ELG is applicable to a permitted discharge.	Resolved
	Ensure that the basis for BPJ limits is clearly explained in each relevant fact sheet.	Resolved
WQBELs	In cases where there is reason to question the accuracy or utility of water quality data DOW should ask the permittee to resubmit data, and/or submit the actual laboratory analysis/data sheets, or request additional sampling and monitoring be done via a short- term compliance schedule.	Resolved
Monitoring and Reporting	Update all references to the most current revision or indicate that the “most current revisions of all regulatory references be applied.”	Resolved
Administrative Process	Place a copy of each public notice of a draft KPDES permit in the relevant permit file.	Ongoing
	After the close of the public comment period amend the fact sheet to include (or otherwise document in the permit file) a statement (such as a Notice of Determination) as to whether public comments were received and written responses to such comments were prepared. A best practice could be to note in the record if no comments were received at all, or if no public hearing was requested.	Ongoing

Program Area	Action Item Title	Status
Documentation	Ensure that each non-POTW facility characterization is sufficient to determine whether an ELG is applicable. Encourage DOW to explicitly present in the fact sheet whether an applicable ELG exists or not.	Resolved
	In discussing the basis for WQBELs, clarify to the extent feasible within fact sheets how permit writers work from effluent data to a determination of reasonable potential to developing limits for various types of pollutants (e.g., biochemically degradable, toxics).	Ongoing
	Include in each fact sheet a short description of the process used to select pollutants of concern including whether they were based on application data or DMR data.	Resolved
	Expressly document the comparison of TBELs and WQBELs where applicable and the selection of the most stringent limits, possibly through the inclusion of a table in the fact sheets.	Ongoing
	Include a specific statement in fact sheets regarding what has changed from the prior permit to the new permit and, what has changed between the draft and final permit.	Ongoing
RPA	Present consistent units of measure for data used in the RPA to ensure that calculations are reproducible.	Resolved
	When establishing the final determination for permit issuance, ensure that results presented in the fact sheet are accurately transferred into the permit.	Resolved
	Refrain from using only a single data point in the RPA. The EPA does recognize that Form 2C: Existing Manufacturing, Commercial, Mining, and Silvicultural Discharges, only requires a single sample for effluent analysis; however, reviewing and including in the RPA the past 5 years of DMR data, with all application data submitted and comparing to previous permit data gives a clearer review of the conditions from the facility, for which to base final effluent limitations on.	Resolved

## 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 Kentucky’s NPDES permit programs, as discussed in Section III-V of this report.



The proposed action items, as summarized in the tables below, are divided into two categories to identify the priority that should be placed on each item and facilitate discussions between EPA 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 6 below.
- **Recommended Actions** - Proposed “Recommended” action items are recommendations to increase the effectiveness of the Commonwealth’s or Region’s NPDES permit program. Prior reports identified these action items as Category 2 and 3. Recommended Actions are listed in Table 7 below.

*Table 6. Essential Action Items from FY 2018–2022 PQR Cycle*

Topic	Action(s)
Facility Information and Permit Application	Ensure the site location map submitted with the application includes the location(s) of the outfall and drainage structure(s) (40 CFR §122.26(c)(i)(A)).
	Ensure that permit applications for industrial stormwater discharges contain quantitative data for the required parameters under 40 CFR §122.26(c)(1)(i)(E).
	Ensure the receipt of a complete application in order to issue the permit (40 CFR §122.21(e)).
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	Revise the “Duty to reapply” section of the standard conditions consistent with 40 CFR §122.41(b).

	<p>Include the additional notification conditions required under 40 CFR §122.42(a)(1) and (2) in the standard conditions for existing manufacturing, commercial, mining, and silvicultural dischargers.</p> <p>For the Small Phase II MS4 permit, the special conditions must cite 401 KAR 5:065, Section 2, which reference multiple federal regulations, including 40 CFR §122.41.</p>
Administrative Process	Maintain a record of public notices that contain all required content in the administrative record (40 CFR §124.10).
Administrative Record and Fact Sheet	None
Nutrients	Limitations must control all pollutants or pollutant parameters that will cause, have the reasonable potential to cause, or contribute to an excursion of a state's water quality standards (40 CFR § 122.44(d)(1)(i)).
Pretreatment: Food Processing Sector	Ensure that standard NPDES permit conditions for POTWs include all the provisions in 40 CFR §122.42(b).
Municipal Separate Storm Sewer Systems (MS4s)	Reissue Kentucky's Phase II Small MS4 general permit to be consistent with the requirements of the Remand Rule. Specifically, the Phase II permit must include requirements that are clear, specific, and measurable for a comprehensive general permit (40 CFR §122.28(d)(1) and §122.34(a)).
Whole Effluent Toxicity (WET)	None

*Table 7. 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	None
WQBELs Development	None
Final Effluent Limitations and Documentation of Effluent Limitations Development	None
Monitoring and Reporting Requirements	None

Standard and Special Conditions	None
Administrative Process	Document any permit changes between permit issuances in the fact sheet, permit issuance letter, and/or an addendum.
Administrative Record and Fact Sheet	The fact sheet should document the comparison of TBELs and WQBELs, where applicable, and the selection of the most stringent limits.
	Where a limit included in the prior permit has been removed in the current permit, the fact sheet should provide a clear explanation of why the limit was removed and how there was no reasonable potential for that pollutant.
	Fact sheets should contain any calculations or other necessary explanation of the derivation of specific effluent limitations (40 CFR § 124.56(a)).
Nutrients	None
Pretreatment: Food Processing Sector	POTWs should provide adequate notice to the Director when there are significant changes to industrial flow or character (40 CFR §122.42(b)).
	The fact sheet or permit should include the approval and modification dates of the approved POTW Pretreatment Program.
Municipal Separate Storm Sewer Systems (MS4s)	The MS4 general permit should include a provision to inventory post-construction stormwater control measures.
Whole Effluent Toxicity (WET)	Consider using EPA's TSD approach to calculate reasonable potential.
	Consider adding more detail to fact sheet discussions relating to reasons for limit removal.