



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

Ms. Sara Anderson
Manager, Surface Water Permits Branch
Division of Water
Kentucky Department of Environmental Protection
300 Sower Boulevard, 3rd Floor
Frankfort, Kentucky 40601

Subject: Transmittal of Final Kentucky Permit Quality Review Report

Dear Ms. Anderson:

Thank you for your thorough review of the U.S. Environmental Protection Agency's Permit Quality Review (PQR) report for the Commonwealth of Kentucky. The EPA has discussed your comments with staff in the EPA's Headquarters and we accept your recommended changes to the document.

The next steps in the PQR process are to post the final PQR report on the EPA's website and for the EPA Regional staff to track compliance with the Category 1 Findings through their oversight role in reviewing the draft permits Kentucky submits to the EPA. The EPA Headquarters plans to conduct another PQR in Kentucky in five years. Should you have any questions or concerns regarding our response to your comments, please contact Ms. Molly Davis, of my staff, at (404) 562-9236 or via email at davis.molly@epa.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mary S. Walker".

Mary S. Walker
Director
Water Protection Division

Enclosure

Region 4 NPDES Permit Quality Review
Commonwealth of Kentucky
Final

September 7-9, 2016

U.S. EPA Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

Contents

I.	PQR BACKGROUND	1
II.	COMMONWEALTH PROGRAM BACKGROUND	2
	A. Program Structure	2
	B. Universe and Permit Issuance	3
	C. State-Specific Challenges.....	7
	D. Current Commonwealth Initiatives	7
III.	CORE REVIEW FINDINGS	7
	A. Basic Facility Information and Permit Application	7
	1. Facility Information.....	7
	2. Permit Application Requirements.....	8
	B. Technology-based Effluent Limitations	9
	1. TBELs for POTWs.....	9
	2. TBELs for Non-POTW Dischargers.....	10
	C. Water Quality-Based Effluent Limitations.....	10
	D. Monitoring and Reporting.....	13
	E. Standard and Special Conditions.....	14
	F. Administrative Process.....	14
	G. Administrative Record.....	15
	1. Documentation of Effluent Limitations	17
	H. National Topic Areas	18
	1. Nutrients	18
	2. Pesticides	19
	3. Pretreatment	20
	4. Stormwater	21
IV.	REGIONAL TOPIC AREA FINDINGS.....	24
	A. Reasonable Potential Analysis.....	24
V.	ACTION ITEMS.....	25
	A. Basic Facility Information and Permit Application	26
	B. Technology-based Effluent Limitations	26
	C. Water Quality-Based Effluent Limitations.....	27
	D. Monitoring and Reporting.....	27
	E. Standard and Special Conditions.....	27
	F. Administrative Process (including public notice)	28
	G. Documentation (including fact sheet).....	28
	H. National Topic Areas	29
	1. Nutrients	29
	2. Pesticides	29
	3. Pretreatment	29
	4. Stormwater	29
	I. Regional Topic Areas	29
	1. Reasonable Potential Analysis	29

I. PQR BACKGROUND

National Pollutant Discharge Elimination System (NPDES) Permit Quality Reviews (PQRs) are an evaluation of a select set of NPDES permits issued by an authorized permitting authority 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 EPA promotes national consistency, identifies successes in implementation of the NPDES program and identifies opportunities for improvement in the development of NPDES permits.

EPA's review team, consisting of EPA Headquarters staff, EPA Region 4 staff, and contractor support, conducted a review of the Commonwealth of Kentucky NPDES permitting program (KPDES) which included an on-site visit to the Kentucky Department for Environmental Protection (DEP) offices in Frankfort, Kentucky on September 7-9, 2016.

The Kentucky PQR includes core permit reviews and topic area reviews, including national topics and a specific regional topic. The core permit reviews involve the evaluation of selected permits and supporting materials using basic NPDES program criteria. These reviews focus on core permit quality and include 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. 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 focuses on the *Central Tenets of the NPDES Permitting Program* to evaluate the Kentucky KPDES program. The PQR process also included conversations between EPA and the DEP staff on program status, the permitting process, responsibilities, organization, staffing, and program challenges the Commonwealth is experiencing.

National topic area permit reviews are conducted to evaluate similar issues or types of permits nationwide. The national topics reviewed as part of the Kentucky PQR were: nutrient requirements, the pesticide general permit, pretreatment program implementation, and Commonwealth stormwater permitting.

Regional topic area reviews target regionally-specific permit types or particular aspects of permits. The regional topic area selected by EPA Region 4 included: DEP's process for evaluating whether a pollutant causes, has the reasonable potential to cause or contributes to an exceedance of water quality criteria. More commonly called the RPA analysis. This review provides important information to DEP, EPA Region 4, EPA Headquarters and the public regarding specific program areas.

A total of 14 permits were reviewed as part of the PQR. Twelve (12) permits were reviewed for the core review topic issues; the review also included the regional topic issue. The Multi-Sector General permit for Stormwater (KYR000000) and the Pesticide General Permit (KYG990000) were also reviewed for their NPDES program requirements. Permits reviewed were selected based on their issuance date and the review categories that they fulfilled.

The information in Section II is based on information provided by DEP during the onsite interviews and from questionnaires submitted to the EPA.

II. COMMONWEALTH PROGRAM BACKGROUND

A. Program Structure

Within the Kentucky Department for Environmental Protection's Division of Water (KDOW), the Surface Water Permits Branch (SWPB) is responsible for administering Kentucky Pollutant Discharge Elimination System (KPDES) permits. SWPB includes Permit Support, Resource Extraction and Wet Weather Sections. All KPDES permits are issued through the Frankfort office. There are 10 DEP field offices. These are located in Bowling Green, Columbia, Florence, Frankfort, Hazard, London, Louisville, Madisonville, Morehead, and Paducah. These field offices conduct inspections of permitted facilities and assess compliance with permits and regulations. SWPB has 15 KPDES permit writers as well as several staff that support the permit development and administration process (6 administrative support staff, 1 wasteload allocation modeler, 4 wet weather engineers, 1 WET coordinator [this position is currently vacant], and 1.5 pretreatment coordinators). These staff support various SWPB responsibilities. Permit writers are trained primarily through internal mentoring and the use of U.S. EPA's online NPDES Permit Writers' Course.

KDOW permit writers use various tools in the KPDES permit development process. These include KPDES permit and fact sheet templates that include integrated Commonwealth permit procedures and requirements (i.e., permit writers determine whether provisions are applicable and apply the specified procedures or requirements). These templates also serve as a checklist for permit content. KDOW has a written procedure, spreadsheet tool and standard operating procedures for determining whether a pollutant poses a reasonable potential to cause or contribute to an excursion of Commonwealth water quality criteria. The Steady State Toxics Wasteload Allocation Model (SSTWAM) is used to analyze reasonable potential and can calculate effluent limits for toxic pollutants that have numeric water quality criteria based on information supplied by the user (stream flow, effluent flow, hardness, effluent concentrations, etc.). SWPB staff also use the QUAL2K model to develop effluent limitations for biochemically-degradable wastewaters, including five-day biological oxygen demand (BOD₅), pH, and dissolved oxygen (DO). They use CORMIX as a mixing zone analysis model.

Data systems that are used to support KPDES permitting include EPA's Integrated Compliance Information System (ICIS), eForms, TEMPO (DEP's data management system), and NetDMR (a system that allows for the electronic submission of KPDES discharge monitoring reports).

With regard to ensuring permit accuracy and consistency, draft individual permits are, at a minimum, reviewed by a supervisor prior to public notice and by both a supervisor and branch manager prior to issuance. A checklist is used to review general permits, while individual

permits are based on templates that function as a checklist for content. KPDES permit files are documented using paper and electronic files, with electronic files constituting the official permit record. Correspondence, monitoring and reporting records, and compliance records are maintained in electronic format.

B. Universe and Permit Issuance

As of July 6, 2016, KDOW administers 254 POTW permits (85 major, 153 non-major, 16 CSO) and 1005 non-POTW permits (50 major, 954 non-major, 1 CAFO). In addition, KDOW administers the following 15 KPDES general permits that authorize 5071 permittees:

- KYG04 – (old) Coal Mining Operations (390)
- KYG05 – Abandoned Mine Lands (PBR Type)
- KYG11 – Concrete and Asphalt plant (191)
- KYG12 – Closed landfills (PBR type)
- KYG15 – Airports (PBR Type, 5)
- KYG20 – Small MS4 (51)
- KYG40 – On-Site waste water treatment (Home Unit) (901)
- KYG50 – Public Transportation Garage (130)
- KYG64 – Drinking Plant Backwash (93)
- KYG84 – Non-Coal Mining (216)
- KYG99 – Pesticides application (PBR type)
- KYGE4 – E. KY Coal mining (925)
- KYGW4 – W. KY Coal mining (67)
- KYR00 – SW Industrial (859)
- KYR10 – SW Construction (1638)
- KYG76 – Public Swimming/Bathing Facilities (*under development*)

With regard to stormwater permitting, KDOW administers a municipal, an industrial and a construction stormwater general permit (4718 permittees).

For major KPDES permits, 73 of 135 (54 percent) are administratively continued. For non-major permits, 289 of 6820 (4 percent) are administratively continued. These numbers are improving and are a priority for KDOW.

The discussion below describes the permit development and issuance process based on information provided by KDOW.

KDOW uses their own version of permit application forms (both paper and electronic) based on the federal NPDES permit application forms. These are referred to as “KPDES” permit forms. Permit application reminders are sent to permittees one year ahead of, as well as 2-3 months prior to, the deadline for permits being reissued (i.e., 180 days prior to permit expiration). The information submitted in KPDES permit applications is entered into the DEP database (TEMPO) and into ICIS. Applications undergo an administrative review to verify that the correct forms have been submitted and all relevant sections appear to be complete. Application forms specify

that data submitted must be less than 4.5 years old to comply with regulatory criterion for current activities. Where application data appears old or inconsistent with the latest facility activity, KDOW may simply ask the facility for a verification of the data or, if needed, they may ask the facility for new data. A letter is sent to each permittee when an application is deemed complete. SWPB supervisors assign permits to permit writers, who then conduct a technical review of the application. Typically, permits are assigned on a rotating basis considering resources and availability. In this manner staff develop diversified skillsets.

Permit writers develop the components of the permit and fact sheet with support from additional staff regarding issues such as implementing Total Maximum Daily Loads (TMDLs), water quality standards, wasteload allocations (WLAs), and nutrient standards. Technology-based effluent limits (TBELs) are largely based on effluent limitations guidelines (ELGs), with the exception of oil and grease and total suspended solids (TSS), which are based on best professional judgement and derived from EPA documents. Water quality-based effluent limits (WQBELs) are based on the Commonwealth's reasonable potential analysis (RPA) procedures and water quality standards. For High Quality Waters, limits are applied according to these criteria:

- If the calculated pollutant discharge level is below 70 percent of the applicable water quality criteria, then no limit or monitoring is required in the permit.
- If the level is 70-90 percent of the criteria, monitoring is required, and
- If the discharge level is above 90 percent of the criteria, a limit is required.

The water quality models noted above (SSTWAM and QUAL2K), are used to support the development of WQBELs. KDOW noted generally, all available valid data are used, although outliers are sometimes excluded. KDOW assumes background pollutant levels in all of their receiving streams are measured at zero.

Mixing zones must be requested by the permit applicant and mixing zone requirements are based on water quality regulations, with the size of such zones limited (e.g., no more than 1/3 the volume of a receiving water at 7Q10 conditions; or 1/10 the volume of a lake). KDOW regulation assumes complete mixing within a mixing zone. Some mixing zones include a zone of initial dilution (ZID). In addition, certain narrative requirements apply to mixing zones (e.g., bioaccumulative pollutants are limited; Exceptional Waters are restricted). For mixing zone analyses background pollutant levels are assumed to be zero in most cases, however, background data are considered if available.

Water quality standards are instream standards that are applied at the point of discharge (i.e., end-of-pipe). However, for one facility permit reviewed that has multiple stormwater outfalls KDOW only required instream sampling upstream and downstream of the facility, stating since it was not violating its water quality criterion, monitoring of the effluent was not needed and stream monitoring reduced the overall monitoring burden on the facility.

Like discharges to unimpaired surface waters; discharges to impaired waters must meet applicable water quality standards. KDOW implements the same limits on impaired waters as in High Quality Waters (Water Quality Standards (WQS) are written for High Quality Waters), with

the exception of iron. Where waters impaired by iron are identified, Kentucky has developed specific provisions to abate that impairment with [iron's] own impaired waters criteria. Where a TMDL has been established, site specific limits are included in relevant permits based on how the TMDL is written. KDOW permit writers coordinate with TMDL staff as well as with other permit support staff when addressing and implementing TMDL criterion in permits.

Anti-backsliding restrictions apply in any case where a TBEL limit is applied at a less stringent value than previously. When this occurs the relevant fact sheet normally explains the applicability of such restrictions and how they have been satisfied. However, during the permit review one permit record indicated that the previous permit had an iron limit, but the iron limit was not included in the reissued permit. For future permitting a clearer discussion of the reasons for removing limits should be made. This limit removal may have been based on a recalculation of the water quality criteria using updated hardness values that allowed the limits to be removed from the new permit.

Antidegradation requirements are applied to new or expanded discharges and implementation provisions are established in Commonwealth regulations. When applicable, conformance with antidegradation requirements is described in the relevant fact sheet. Commonwealth regulations (401 KAR 10:030 Section 1 (2)(b) 2 b) provide that, for municipal facilities, an approved facility plan satisfies the Commonwealth antidegradation requirements.

When establishing discharge monitoring and reporting (DMR) requirements permit writers often start with the monitoring provisions in the prior permit and adjust requirements based on whether those provisions appear sufficient to assess compliance considering the frequency and nature of the discharge. Although this is a good starting point for developing new permit monitoring and reporting requirements, comparison of current operations and conditions should always support the frequency and sample type when establishing DMR requirements.

Permit writers also review any recent violations identified in the ICIS database and apply EPA monitoring guidance. For POTWs, monitoring typically corresponds to the design capacity of the plant, although frequency can vary. KDOW policy allows that whole effluent toxicity (WET) testing can be reduced after two years (assuming toxicity is not identified), however, at the beginning of the five-year cycle for new permit reissuance, monthly WET monitoring requirements reinstate for the two test species as previously identified. The Commonwealth has a new lab certification program; so now permittees are required to use only approved labs for their effluent analysis and reported data must be reported at minimum detection limits (MDLs). The use of approved sampling and analytical methods is identified with a reference to 40 CFR Part 136, however, some permits reviewed indicated the permittee selected less sensitive methods for monitoring and reporting on submitted DMRs. The practice of using less sensitive methods for effluent and permit analysis can lead to inaccurate results or poor compliance monitoring. Kentucky has since stated that sufficiently sensitive analytical methods are now required in new permits for effluent analysis as per the latest EPA Guidelines.

Language for Standard Conditions in a KPDES permit are based on the federal regulations. It was noted that KDOW recently removed the bulk of the boiler plate and standard conditions from the permit and factsheet and placed it in a Commonwealth managed Internet webpage for reference. This allows quick reference and ease of revisions to those criterion, but does not meet the intent of the inclusion of these requirements in the permit. For example: typical narrative conditions may include buffer zone requirements (coal permits), best management plans and no oil sheen or floatables allowed from, or in effluent wastestreams. Also, the removal of these written criteria in the permit can lead to a lapse of application of [other] minimal requirements, and [mis-]understanding of exactly how permit conditions were developed. KDOW standard conditions are reviewed and updated annually. It is recommended when completing the next update that KDOW ensure the CWA penalty provisions reflect [current] inflation adjustments (see 40 CFR 19.4).

Fact sheets are developed concurrent with permit development for all KPDES permits. To promote consistent fact sheets and permits KDOW permit writers use a template format. This PQR revealed that more and specific detail should be included in fact sheets for clarity of the foundational issue(s) of which a particular permit limitation is being developed. For instance, including more detail in the description of the basic design and activities being performed at the facility being permitted helps to verify that appropriate regulatory standards and water quality criteria are being applied. This also provides consistency with operations permitted across the Commonwealth. Inclusion of, or specific references to all of the criteria used to establish the permit limits and monitoring criteria, and clarification of the units of measure applied, [can] also reflect a quality control aspect of the permitting process.

KDOW has a separate group that is responsible for CWA section 401 certification (i.e., Commonwealth water quality certification of federal permits or licenses).

Public notification of pending approvals for draft and/or final KPDES permits meet regulatory requirements by being published on the DEP website. Draft permits are made available as part of the required 30-day public notice and comment period. For major facility KPDES permits public notices continue to be printed in a local newspaper in the area of closest impact. The DEP Internet website provides access to each draft permit, the relevant fact sheet, the permit application, maps, and associated information. Although KDOW attempts to address all concerns with a draft permit before the public notice and comment period, permittees often will comment on their draft permit during the public notice process. Third-party comments may also be received during this phase. When significant comments on a draft permit are received, a response to comment(s) letter is attached to the final permit. If the draft permit is, or is not, revised based on any significant comment a Notice of Determination (NOD) should be included to explain the reasons for revising, or not revising the draft permit. KDOW indicated that few public hearings are requested or held each year (e.g., 2-3 requests); that these are mostly for coal mining permits. If a hearing is held, KDOW documents the comments received at that hearing and the hearing record becomes a public document. Only a few KPDES permit appeals occur each year and the appeal process is specified in their statutes.

C. Commonwealth-Specific Challenges

Key challenges that affect KDOW's permitting program include the following:

- Reduction of the KPDES permit backlog is improving and this is expected to free up resources to focus on other initiatives.
- Providing staff with opportunities for improved permit development skills and implementation training on-site or within driving distance of DEP.
- Retaining experienced and well-trained permitting and support staff is challenging and results in the need to continually develop qualified permitting personnel.

D. Current Commonwealth Initiatives

Key initiatives that may improve KDOW's KPDES permit program include the following:

- Increased coordination between the various internal groups contributing to KPDES permits development, such as the KPDES permitting staff and the TMDL staff.
- Progress examining coal mining permits, developing effective permit requirements and issuing coal mining general permits.
- Increasing Commonwealth support regarding wastewater treatment plant optimization, which can potentially save energy, lower costs, improve nutrient treatment and removal, and support water quality trading programs.
- KDOW Form 1 (for POTWs) now includes operator information such as the operator's name and license number.
- KDOW has made substantial progress and continues its transition to digital permit records.
 - KDOW discarded 850 linear feet of old program [paper] files and converted this information into digital format when DEP moved into its new building.
 - Is currently using e-DMRs.
 - Is transitioning plans and specifications to digital format in the next year or two.

III. CORE REVIEW FINDINGS

A. Basic Facility Information and Permit Application

1. Facility Information

Basic facility information is necessary to accurately establish permit conditions. For example, information regarding facility type, design, discharge/flow, location, processes, pretreatment programs, and other factors is required by NPDES permit application regulations (40 CFR 122.21). This information is essential for developing technically sound, water quality protective, and enforceable permits. Similarly, according to 40 CFR 124.8 and 124.56, fact sheets must include a description of the type of facility or activity subject to a draft permit.

The core permits reviewed explicitly authorize the discharge(s) subject to detailed permit conditions; they identify the receiving water, and provide for an effective term of five years or

less by defining the permit issuance, effective, and expiration dates. Most permits and fact sheets included the physical location (i.e., address) of the facility. The fact sheets for the core permits included a brief description of the permit applicant's operation. Each fact sheet indicates the permitting action (new permit or reissuance). The most current fact sheet format includes information regarding characterization of the effluent, prescribed treatment of the generated wastewaters, better identification of their respective outfalls, and better identification of the receiving water, including use classification using Commonwealth codes and antidegradation category. The description and geolocation (i.e., latitude/longitude) of outfalls has improved.

However, in two non-POTW permits, the review revealed a very brief description of the applicant's operation which made it difficult to understand the nature of the operation. In a few permits it was noted that a clearer understanding of the operations at a facility is necessary in order to select the appropriate ELGs, develop TBELS, and in some cases TMDL requirements. Understanding the activities of the industry will also guide the permit writer to look for missing data and/or compare data to other similar types of facilities for effluent limitation development. The reported latitude/longitude data was identical for the facility and outfall locations. Here, accuracy of the outfall locations assists in selection of appropriate water quality standards and/or TMDL conditions to apply to a particular facility and thus ensuring protection of the receiving waterbody. KDOW staff indicated that their GIS section is working with the help of field staff to increase the accuracy of these geolocational data.

2. Permit Application Requirements

Federal regulations at 40 CFR122.21 and 122.22 specify application requirements for permittees seeking NPDES permits. While federal permit application forms are available, authorized states, and/or Commonwealths, are permitted to use their own application 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 Commonwealth and used in permit development.

KDOW uses both paper and electronic KPDES permit application forms. The appropriate KPDES permit applications were identified in the respective permit records for each of the core permits reviewed. The permit applications reviewed were generally received on time and were mostly complete, however, this PQR did identify that in a few instances applications were not received 180 days prior to permit expiration. KDOW staff indicated that, in addition to the permit application reminders discussed in II.B above, they email and/or call the permittee and, as a last resort, will use enforcement tools to prompt a permittee to submit an application.

In general, the permit applications reviewed included all of the effluent sampling data required. Except for one permit the original application appeared to be incomplete yet the permit record included a letter from KDOW saying it was complete; for this application the permittee subsequently submitted additional information. It is generally understood that the permit writer makes the final determination of a complete application, however if additional information or data is required and requested, the draft permit should not be public noticed

until the record is deemed complete. The regulations at § 122.21(e) state that the Director, “[must] not issue a permit before receiving a complete application...” Application data older than 5 years should not be used unless vetted to meet current conditions. Additionally, authorized signatures should be validated according to 40 CFR § 122.22.

It was noted that the federal WQS for bacteria changed to *E. coli* in 2009; although under Commonwealth water quality standards, limits can address either fecal coliform or *E. coli* until 10/31/2019, and Commonwealth application forms allow either. (Federal NPDES applications continue to request fecal coliform data.) In another permit record, the application as submitted was outdated. In several permit files it was not possible to tell from the application whether pollutant scans were collected within the permit term. The lack of sample dates on the application forms made this difficult to determine and no lab sheets, or chain of custody forms were identified in the available records.

KDOW staff noted that keeping track of licensed operators has been a challenge. As a result, KDOW Form 1 (for POTWs) now includes operator information such as the operator’s name and license number. This is innovative and such information helps ensure that qualified operators are in place at POTWs.

For several permits as reviewed, the records indicated the signature on the application is not by the company official, or other authorized person pursuant to 40 CFR § 122.22; clarifying who has legal authority to sign applications is a priority issue for KDOW. KDOW indicated that electronic reporting should reduce this noncompliance issue. KDOW also noted that they have a lot of documentation addressing authorized signers in their files. However, during this review it was not easily recognizable from documents provided as to who was authorized or not.

B. 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 and receiving water protection that must be imposed in a permit.

1. TBELs for POTWs

POTWs must meet secondary or equivalent to secondary standards (including limits for BOD₅, TSS, pH, and percent pollutant removal), for treatment of their effluent, and their permits must contain numeric limits for all of these parameters (or authorized alternatives) in accordance with the secondary treatment regulations at 40 CFR Part 133. Seven POTW permits were reviewed for these conditions as part of the PQR.

The fact sheets for the core permits reviewed include a basic description of operations at each facility and a description of the treatment processes employed. The background information in the fact sheets for these permits explains the applicable technology-based standards (e.g., secondary treatment) as well as defining special considerations. In the revised fact sheet

format, this Internet linked¹ information is entitled *General Procedures for Limitations Development*. These fact sheets also explain the basis for, and development of, the discharge limits included in these permits. The effluent limits in these core permits are as stringent, or more stringent, than required by secondary treatment. For example, the CBOD₅ limits for several POTW permits are more stringent than secondary treatment requirements based on use of the QUAL2K model. These permits typically also include effluent limits for other “biochemically-degradable” pollutants such as ammonia, DO, and phosphorus when based on that model. The TBELs in the core permits reviewed are established in appropriate units and forms.

2. TBELs for Non-POTW Dischargers

Permits issued to non-POTWs [Industrial] 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 be consistent with New Source Performance Standards (NSPS) for new sources. Where federal ELGs have been developed for a category of dischargers, the TBELs in a permit must be based on the application of these guidelines. If ELGs are not available, a permit must include requirements at least as stringent as BAT/BCT developed on a case-by-case using best professional judgment (BPJ) in accordance with the criteria outlined at 40 CFR 125.3(d).

The core review examined five non-POTW permits. One of these permits was developed for an industrial facility subject to an ELG. For others, it was difficult to determine whether an effluent limitation guideline (ELG) was applicable to the facility. The fact sheets for these non-POTW permits include a basic facility description, but could provide better detail and description of operations occurring at the facility. For example, for one permit, the fact sheet does not describe the facility operations and does not indicate what specific processes the facility engages in. In addition, it does not identify what products are manufactured, nor what wastestreams are generated from facility operations. When this was brought to the attention of KDOW staff, they indicated that more recent fact sheets now have a section that says “not applicable” if there are no applicable ELGs. In general, TBELs in the non-POTW permits were consistent with ELGs where applicable and were specified in appropriate units and forms.

C. Water Quality-Based Effluent Limitations

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 Commonwealth water quality standards, including narrative criteria for water quality. To establish such “water quality-based effluent limits” (WQBELs), the permitting authority must evaluate the proposed discharge and determine whether technology-based requirements are sufficiently stringent to protect water quality standards, and whether any pollutants or pollutant parameters cause, have the reasonable potential to cause or contribute to an excursion above any applicable water quality standard.

¹ <http://dep.ky.gov/formslibrary/Documents/General%20Procedures%20for%20Limitations%20Development.pdf>

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

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

For impaired waters, the PQR also evaluated the process in which permit writers consulted with other programs within KDOW and developed limits consistent with the assumptions of applicable EPA-approved TMDLs.

The core permit's fact sheet includes a general discussion of the process used by KDOW to determine reasonable potential and calculate permit limits. This discussion is detailed but it is generic (i.e., it does not describe how the process was applied to each specific facility). The newer fact sheets do include more facility-specific information. The fact sheets for the permits reviewed also include the results of the water quality analyses conducted and describe the basis for each permit limit. For example, the POTW permit fact sheets explain which limits are assessed and based on wasteload allocations using QUAL2K (i.e., CBOD₅, ammonia, DO and phosphorus) and include summary results for these analyses. In addition, the POTW permit files included the wasteload allocation request form, which includes the results of the model analysis.

Both POTW and non-POTW permit fact sheets include a summary of SSTWAM input and output parameters (the summary of output ranged from a few parameters to many) and, for all but one permit, the record materials reviewed include the full SSTWAM file, which includes reasonable potential findings and limits if warranted. The SSTWAM files include effluent and receiving water data; and allow for the use of background data, but typically background data were not included, as well as water quality criteria and certain calculations.

Of the three POTW SSTWAM sheets reviewed the electronic file materials include calculations. In contrast, the one industrial SSTWAM sheet did not include the calculations, it had a tab for Limitations and RPA Summary. It is unclear why this was omitted. In general, the limits in the core permits reviewed were consistent with these analyses and with the documentation in the respective files. For two permits, the associated water quality spreadsheets indicated reasonable potential for one or more parameters, however, no limits for these parameters are included in the respective permits. For both permits, the respective fact sheets explained the

basis for the decisions. In one case, one data point was excluded due to “suspected sample contamination” and that no other data analyzed indicated reasonable potential for the parameter of concern. In the second case, reasonable potential was identified for three metals but the fact sheet explained that the data for these metals is not consistent with pollutants reasonably expected to be discharged from the facility or indirect dischargers that are discharging to this facility and, thus the permit requires monitoring only. The EPA would contend that if reasonable potential (RP) is found for a set of data, and data is suspect based on the facility, perhaps additional sampling should be required; at a minimum those parameters should be included in the permit for at least one or two monitoring cycles to verify their presence or not. This better clarifies that a sample was not mixed up with another facility, samples contaminated, or unauthorized discharges were not occurring.

Anti-backsliding and Antidegradation

The general limit development discussion included in the fact sheets reviewed describes the Commonwealth’s anti-backsliding requirements and exceptions, as well as the antidegradation policy, implementation procedures, and compliance. The fact sheets also include an antidegradation categorization code (ONRW, EW, IW, or HQ)² for each receiving water and, where applicable, a discussion of how antidegradation requirements have been applied to the permitted facility. For example, in one of the permits reviewed, pollutant loads increased from the previous permit and the fact sheet indicated the permittee developed a regional facility plan which fulfills Commonwealth requirements under 401 KAR 10:030 Section 1(3)(b)2. b. In another permit, however, a limit included in the prior permit was not included in the reissued permit and the fact sheet did not specifically discuss anti-backsliding nor its exclusion from the new permit. In other permits, where associated fact sheets indicated that the receiving water is impaired, the relevant fact sheet identifies the nature of the impairment. However, the fact sheets for facilities discharging to waters that are not impaired did not specifically identify this, which made it unclear whether the permit writer considered this impairment information or not. Where an applicable TMDL exists, the fact sheets indicate the pollutant or basis for the TMDL, although where a TMDL did not exist, the fact sheets omit any discussion of TMDLs. The municipal permits reviewed include WET limits and the fact sheets discuss the basis for these limits.

A modification for one permit included only daily maximum limit values and KDOW staff explained that they generally look only at acute criteria when the outfall is stormwater-dependent or the discharge is a batch outfall. They cited Federal regulations require maximum daily and average monthly limits for continuous discharge, but non-continuous discharge can be specified as frequency, total mass, rate of discharge, or by prohibition or limitation by mass, concentration or other appropriate measure. (40 CFR 122.45(d) & (e)). So max daily limit for non-continuous stormwater seems allowable for this case.

² Outstanding National Resource Water (ONRW), Exceptional Water (EW), Impaired Water (IW) or High Quality (HQ) Water. High Quality Water is the default category for waters not classified as ONRW, EW or IW and waters not assessed by the Cabinet.

One permit for stormwater and non-contact cooling water discharges determined reasonable potential by monitoring upstream and downstream to determine facility contribution and comparing that against WQC. Appropriate NPDES permit limits are based on the application of water quality standards, effluent guideline values, TBELs, and other water quality based limitations as they pertain to the effluent as discharged from the facility being permitted. Monitoring the health of the receiving stream, by collecting data upstream and downstream of the outfall to determine facility contribution is a good tool to understand the effectiveness of the applicable effluent limitations, but is contrary to the CWA methods for implementing the regulations. Non-contact cooling waters can and most times do contain biocides and other anti-bacterial or corrosion preventing chemical additives for which WET testing would be most appropriate to ensure that the discharge is not toxic.

D. Monitoring and Reporting

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

Specifically, 40 CFR 122.44(i) requires NPDES permits to establish, at a minimum, annual 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.

The core permits reviewed require monitoring for all of the parameters subject to permit limits and specify the frequency and location of such monitoring. The core permit monitoring requirements appeared sufficient to assess compliance with effluent limitations. The municipal permits typically include chronic WET testing requirements and all of the municipal permits include influent monitoring for CBOD₅ and TSS for comparison of percent reductions to verify sufficient treatment. Several of the core permits reviewed expressly require sampling and analysis methods consistent with 40 CFR Part 136, however, for some permits it was difficult to identify a specific reference to Part 136 (references to Commonwealth regulations were identified in the permits, including 401 KAR 5:065 sec. 2(8), which provides that KPDES permit conditions shall be as in 40 CFR 136, eff. July 1, 2008)³. See reference below and note these references should be updated.

³ Note that the current regulatory edition for Title 40, CFR Part 136 is May, 18, 2012.

The permits reviewed require analytical methods be sufficiently sensitive to measure at or below the specified limit. They also require that monitoring information be reported on Discharge Monitoring Reports. KPDES permits place the responsibility on the permittee to figure out the most sensitive method to use. KDOW staff noted that sometimes there is more than one sufficiently sensitive method available and that, when that is the case, they give the permittee the option of deciding which method to use so as not to limit them to sending their samples a particular lab. KDOW also stated that the [recent federal] definition of sufficiently sensitive method is now much clearer, which has allowed KDOW to make their own language more explicit.

E. Standard and Special Conditions

Federal regulations at 40 CFR 122.41 require that all NPDES permits, including NPDES general permits, contain an enumerated list of “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 required by the federal regulations.

In addition to standard permit conditions, permits may also contain additional requirements that are unique to a particular permittee or 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 pollutant management plan or 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.

The core permits reviewed include the standard permit conditions specified in 40 CFR 122.41 and their standard conditions in general, appear to be consistent with federal standard conditions. However, KDOW should ensure that CWA penalty provisions are updated to reflect inflation adjustments (see 40 CFR 19.4). Two additional notification conditions (40 CFR 122.42(a) and (b)) were not identified in all of the permits reviewed.

Certain special conditions were also included in the core permits reviewed. These can vary by permit and can include conditions that address pretreatment, sludge/Biosolids, wet weather, compliance schedules, Best Management Practices (BMP), and numerous other requirements. KDOW indicated that the new permit format has separate sections for Standard Conditions, BMP Requirements, and Other Conditions.

F. Administrative Process

The administrative process includes documenting the basis of all permit decisions (40 CFR 124.5 and 40 CFR 124.6); coordinating EPA and Commonwealth 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 40 CFR 124.12); responding to public comments (40 CFR

124.17); and, modifying a permit (if necessary) after issuance (40 124.5). During the onsite review the EPA discussed each element of the administrative process with DEP, and reviewed materials from the administrative process as they related to the core permit review.

The core permit files that were reviewed contain letters to the relevant permittees documenting that the respective draft permits have been made available for review through KDOW's public notice process whereby the web-based or published notices include a link to the relevant draft permit, fact sheet and information regarding comment and final decision procedures. Under Commonwealth regulations, major permits are subject to public notice by publication of specified information in a local newspaper but these notices were not found in the permit files. KDOW staff indicated that they will work to place a copy of these public notices into the record; stating they are currently maintained separately.

Public comments and responses were found in some permit files but were not identified for many of the core permits reviewed. It was not easy to determine whether comments had been submitted regarding a specific permit. It is assumed that public comments were not submitted for all permits.

Several permits had been modified after being issued. In most cases the changes were minor and overall these changes followed applicable procedures. The modifications were documented and explained in the relevant fact sheet and permit file.

G. Administrative Record

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 Commonwealth programs should identify equivalent documentation as provided in the Code of Federal Regulations or the "CFR". The record shall contain the necessary documentation to justify permit conditions. At a minimum, the administrative record for a permit shall contain the permit application and supporting data; draft permit; fact sheet or statement of basis; 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 permit conditions; final response to comments; and, for new sources, any environmental assessment, environmental impact statement, or finding of no significant impact.

Under current EPA regulations (40 CFR 124.8 and 124.56) fact sheets are required for major NPDES permits, general permits, permits that incorporate a variance or warrant an explanation of certain conditions, and permits subject to widespread public interest. The 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.

Each of the core permit files reviewed contains the draft and final permit and fact sheet, permit application and associated data, cover letters/correspondence, DMR and effluent data, WQ model spreadsheets, WLA request (POTWs), public notice and fee letter, rating worksheet, activity log and, where applicable, modifications, response to comment, and mixing zone requests. These documents support WQBEL development and are referenced in the respective fact sheets. The files made available were well organized and most were available electronically.

KDOW develops fact sheets for all KPDES permits. KDOW recently streamlined and edited the structure of their fact sheets. The older format includes an extensive (60-plus pages) general discussion of “Permit Limits and Requirements Development” as the first portion of the fact sheet followed by a section that addresses “Permit-Specific Limits and Requirements Development” and then “Other Information.” The “Permit Limits and Requirements Development” section includes subheadings that address TBELs, WQBELs, Standard Conditions, Special Conditions, and Commonwealth Conditions. The “Permit-Specific Limits and Requirements Development” sections includes subheadings that address:

- Synopsis of Application,
- Receiving/ Intake Waters,
- Outfalls/ Internal Monitoring Points/ Instream Monitoring Points/ Sludge Monitoring,
- Wastewater/ Sludge Treatment Provided,
- Proposed Effluent Limitations and Monitoring Requirements,
- Proposed Pretreatment Program Monitoring Requirements,
- Limits Development,
- Antidegradation,
- Schedule of Compliance,
- Special Conditions, and
- “State” Conditions.

The revised fact sheet format moves the discussion of “Permit Limits and Requirements Development” to a webpage that is referenced and linked in each fact sheet (“General Procedures for Limitations Development”). The revised format also includes facility-specific sections addressing:

- Facility Synopsis,
- Receiving/ Intake Waters,
- Outfall (*insert outfall number*) (including but not limited to limits and monitoring requirements, calculations, and justification of requirements),
- Other Conditions (including but not limited to standard conditions, and sufficiently sensitive analytical methods), and
- Other Information (including but not limited to SSTWAM input and output).

These fact sheets discuss the basis for the permit requirements. No hearing records were identified for the core permits reviewed. KDOW indicated permit writers use a work activity log to ensure completeness of the process and record.

1. Documentation of Effluent Limitations

Permit records for POTWs and industrial facilities should contain comprehensive documentation of the development of all effluent limitations. Technology-based effluent limits should include an 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 water quality-based effluent limitations as well as the procedures explaining the basis for establishing, or for not establishing, water quality-based effluent limitations 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 fact sheets for the POTW core permits reviewed included the information described in III.G above, [unless otherwise noted] including a basic description of the facility, effluent, the treatment process, limits (including discussion of the basis for limits), monitoring requirements and other conditions.

As previously stated, the core review examined five non-POTW permits. With regard to the documentation supporting the selected TBELs, the fact sheets for these permits included minimal descriptions, which made it difficult in some instances to determine whether an ELG was applicable to the facility or not. KDOW staff indicated that the revised fact sheets now expressly indicate if no ELG is applicable or state otherwise.

The newer fact sheets include effluent information for each outfall and a description of treatment; the previous format only includes a description of treatment and reported discharge levels. However, for the permits reviewed, this discussion could have been more detailed to better indicate how the data was used to derive each limit and what analysis is applied to establish the final limit(s). Several of the industrial permit fact sheets indicate that certain permit limits are based on BPJ, but their respective fact sheets only include a basic discussion of the basis for such limits. This review indicates there could be more clarity in the fact sheet on the basis of how and why BPJ limits were applied.

With regard to documentation supporting the development of WBQELs, the permits and fact sheets for the core permits reviewed consistently identify the relevant receiving water by name and the fact sheets include one or more use designations (letter codes). The new fact sheet format includes information regarding any "Impaired Water Status" and the receiving water's "Antidegradation Categorization." Where a receiving water has not been assessed for water quality impairments the default category applied by the Commonwealth is "High Quality Waters" (HQ) and many of the fact sheets reviewed use this code. In cases where fact sheets indicate that the receiving water is impaired, the nature of the impairment is further defined or

clarified. Where an approved TMDL exists that applies to the receiving water body, the fact sheets describe the pollutant or basis for the TMDL.

The general description of permit development in the fact sheets provides an overview of which pollutant data are considered when evaluating reasonable potential, as well as applicable standards and procedures for considering mixing zones and calculating limits. Notwithstanding this general discussion, the fact sheets reviewed did not specifically explain how KDOW selected pollutants of concern for specific facilities, although the respective permit record materials (i.e., QUAL2K and SSTWAM files) do identify the parameters considered and thus indicate the scope of the water quality analysis. For both POTW and non-POTW permits, additional clarity could be provided by ensuring that the fact sheets or referenced documents specifically describe the key steps in the WQBEL development process. In one major non-POTW permit, where RP was not identified for all outfalls, it was not clear how pollutants from one outfall had been screened for potential water quality impacts. That particular permit identified an outfall that receives stormwater runoff, compressor condensate and flush water and goes first through a retention pond before discharging to the receiving stream, but did not have associated limits or monitoring requirements. The EPA has concerns about this deficiency in assessment.

The fact sheets reviewed do not include an explicit comparison of WQBELs and TBELs and an indication that, where relevant, the most stringent limit has been selected, although the general permit development information linked to the new fact sheet format does indicate that this is the process that is used. Most authorized permitting authorities include a table in their fact sheets that compares WQBELs and TBELs as well as limits from the previous permit and identifies the limit selected. KDOW staff noted that the justification in the fact sheets address both the TBELs and WQBELs, but may not address a WQBEL for a parameter if no reasonable potential was determined. KDOW staff also stated that they cite the regulations in the fact sheet as justification. Finally, for reissued permits, the fact sheets reviewed do not include a specific statement regarding what has changed from the prior permit to the new permit, and what has changed between the draft and final permit. This information is not required to be included in a fact sheet, however, it does help the public better understand the permitting action.

H. National Topic Areas

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 were reviewed for all Commonwealth PQRs. The national topics areas are: nutrients, pesticides, pretreatment and stormwater.

1. Nutrients

For more than a decade, both nitrogen and phosphorus pollution has consistently ranked as one of the top causes of degradation of surface waters in the U.S. Since 1998, the EPA has

worked at reducing the levels and impacts of nutrient pollution. A key part in this effort has been the support the EPA has provided to States to encourage the development, adoption and implementation of numeric nutrient criteria as part of their water quality standards (see the EPA's *National Strategy for the Development of Regional Nutrient Criteria*). In a 2011 memo to the EPA regions titled *Working in Partnerships with States to Address Nitrogen and Phosphorus Pollution through use of a Framework for Commonwealth Nutrient Reductions*, the Agency announced a framework for managing nitrogen and phosphorus pollution that, in part, relies on the use of NPDES permits to reduce nutrient loading in targeted or priority watersheds.

To assess how nutrients are addressed in Kentucky's NPDES program, EPA Region 4 reviewed the basic nutrient limitations included in their permitting program for this PQR. The Commonwealth responded to programmatic interview questions prior to the site visit with the following: "Kentucky regulations are not nitrogen or phosphorous specific. 401 KAR 10:031." Surface water standards. Section 1. Nutrients Criterion states "Nutrients shall not be elevated in a surface water to a level that results in a eutrophication problem."

Specifically, "Kentucky is currently evaluating individual permittees for reasonable potential to cause or contribute to an excursion of the narrative nutrient criteria on a case-by-case basis. Pursuant to 401 KAR 5:065, Section 2(4) and 40 CFR 122.44(d)(1), this evaluation considers various factors such as designated uses established in 401 KAR 10:026, existing controls on point and nonpoint sources, the variability of the pollutant in the effluent, the sensitivity of the species to toxicity testing as it pertains to the evaluation of the whole effluent toxicity testing, and the dilution of the effluent in the receiving stream where appropriate, and the options for determining effluent limits provided in 40 CFR 122.44(d)(1) where applicable."

Program Strengths:

To implement specific numeric-based limits in permits, procedures are in place to calculate values based on a variety of background data provided by the permittee and any Kentucky database information. There are no obstacles in Commonwealth law preventing KDOW from fully implementing nutrient permit requirements once they are established.

Critical Findings: None.

2. Pesticides

Background

On January 7, 2009, the Sixth Circuit vacated the EPA's 2006 NPDES Pesticides Rule on Aquatic Pesticides (71 Fed. Reg. 68483, November 27, 2006) and found that point source discharges of biological pesticides and chemical pesticides that leave a residue, into waters of the U.S. were pollutants under the CWA. *National Cotton Council of America v. EPA*, 553 F.3d 927 (6th Cir., 2009). As a result of the Court's decision to vacate the 2006 NPDES Pesticides Rule, NPDES permits are required for discharges of biological pesticides and of chemical pesticides that leave a residue, to waters of the United States. In response to this decision, on April 9, 2009, the EPA

requested a two-year stay of the mandate to provide the EPA time to develop general permits, to assist NPDES-authorized states to develop their NPDES permits, and to provide outreach and education to the regulated community. On June 8, 2009, the Sixth Circuit granted the EPA the two-year stay of the mandate. On March 28, 2011, the U.S. Court of Appeals for the Sixth Circuit granted the EPA's request for an extension to allow more time for pesticide operators to obtain permits for pesticide discharges into U.S. waters. The court's decision extended the deadline for when permits would be required from April 9, 2011 to October 31, 2011.

EPA proposed a draft pesticide general permit (PGP) on June 4, 2010, to cover certain discharges resulting from pesticide applications in unauthorized states, tribes and territories. The EPA Regional offices and State NPDES authorities may issue additional general permits or individual permits, if needed. On October 31, 2011, the EPA issued the final NPDES Pesticide General Permit (PGP) for Discharges from the Application of Pesticides. The federal PGP applies where the EPA is the permitting authority. All delegated state NPDES authorities have issued state pesticide general permits as of June 2013. DEP issued its first pesticide general permit in June 2013 and the permit expires in May 2018.

Program Strengths:

Region 4 reviewed KDOW's pesticide general permit with a focus on verifying its consistency with NPDES program requirements. The permit covers: (1) mosquito and other flying insect pest control, (2) weed and algae pest control, (3) animal pest control, and (4) forest canopy pest control. In short, it was found that this permit meets the requirements to obtain coverage for all discharges from the application of pesticides including all pesticide use patterns described in the EPA pesticide permit by all operators of discharges including decision-makers and applicators. The review found that the permit was consistent with CWA requirements.

With minor exceptions, there are no obstacles in state law preventing KDOW, the Commonwealth's NPDES permitting authority, from fully implementing the pesticide permit requirements.

Critical Findings: In order to improve enforceability of its intended conditions several passages in the fact sheet were identified that should in the opinion of this review be included in the body of the permit.

3. Pretreatment

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

The goal of this pretreatment program review was to assess the status of the pretreatment program in Kentucky, as well as assess 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);
- 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).

The PQR also summarizes the following: program oversight, which includes the number of audits and inspections conducted; number of significant industrial users (SIUs) in approved pretreatment programs; number of categorical industrial users (CIUs) discharging to municipalities that do not have approved pretreatment programs; and the status of implementation of changes to the general pretreatment regulations at 40 CFR part 403 adopted on October 14, 2005 (known as the streamlining rule).

Comprehensive State/Commonwealth Pretreatment Program Audits (CSPPA) include: (1) on-site visits to all appropriate Commonwealth offices, including central and field offices; (2) compliance oversight visits to a statistically significant percentage of public utility (i.e., POTW) pretreatment programs and, if appropriate, Commonwealth-controlled significant industrial users; and (3) a desk audit of the legal authorities, formal procedures, and resources available to the Commonwealth's industrial pretreatment program. Since the CSPPA takes a more comprehensive look at the pretreatment program, the EPA's evaluation of the Commonwealth's pretreatment permitting activities will be included in the CSPPA report provided separately to the Commonwealth's Director. The EPA will notify the Commonwealth's pretreatment program director prior to conducting the next CSPPA.

Critical Findings: None.

4. Stormwater

The NPDES program requires stormwater discharges from certain municipal separate storm sewer systems (MS4s), industrial activities, and construction sites to be permitted. Generally, EPA and NPDES-authorized states issue individual permits for medium and large MS4s and general permits for smaller MS4s, industrial activities, and construction activities.

Background

The NPDES program requires stormwater discharges from certain municipal separate storm sewer systems (MS4s), construction sites, and industrial activities to be permitted. Generally, EPA and NPDES-authorized states/Commonwealth's issue individual permits for medium and large MS4s and general permits for smaller MS4s, construction activities, and industrial activities. The EPA Region 4 staff reviews all draft MS4 and construction permits in Kentucky as per the NPDES MOA with the Commonwealth of Kentucky. The Region makes its official comments and recommendations about permit quality during these reviews.

The MS4 permit requires permittees to develop and implement a storm water management program that includes the six minimum control measures, evaluation/assessment and reporting efforts, and recordkeeping. MS4s are required to design a storm water management program that:

- Reduces the discharge of pollutants to the "maximum extent practicable" (MEP);
- Protects water quality; and
- Satisfies the appropriate water quality requirements of the Clean Water Act.

MEP is the standard that establishes the level of pollutant reductions that MS4 operators must achieve through implementation of a storm water management program. The strategies used to reduce pollutants to the MEP may be different for each MS4 because of unique local hydrologic, geologic, and water quality concerns in different areas.

As part of the PQR, EPA reviewed Lexington-Fayette Urban County Government's Phase I MS4 permit, KYS000002. For construction stormwater activities, EPA reviewed Kentucky's general permit, KYR100000.

Stormwater Discharges from Municipal Separate Storm Sewer Systems (KYS000002)

There are two Phase I MS4s within the Commonwealth of Kentucky. These include Louisville and Jefferson County Metropolitan Sewer District (MSD) and Lexington-Fayette Urban County Government (LFUCG). In 2016, there were 106 Phase II communities in Kentucky. The Kentucky Transportation Cabinet is considered by KDOW as a Phase II permittee and has an individual Phase II MS4 permit. At the time of review, MSD's Phase I MS4 permit and Kentucky's Phase II MS4 general permits were expired, although KDOW had already completed the public notice and participation process for both permits. Given that the PQR process coincided with the transition period of the MSD and Phase II MS4 general permits, they were not included as part of the PQR. As such, the permit for LFUCG was selected for review.

KDOW issued the Phase I MS4 permit to LFUCG on May 1, 2015, effective June 1, 2015. The permit contains a set of program requirements, and tables that contain more detailed and measurable requirements specific for LFUCG. The LFUCG MS4 permit contains the required elements of an effective program including the development of a Stormwater Quality Management Program (SWQMP). The SWQMP, which is required to be routinely reviewed and updated, contains various elements and directives that must be reported on in an annual

report. The City's permit requirements and tables contains all the specifics and details about each core element required of a Phase I stormwater program.

Program Strengths:

The Region 4 staff reviewed the permit for adherence to the federal MS4 requirements. Overall, Kentucky's administration of the NPDES stormwater program and its permits continues to operate at or above EPA's level of expectations.

The LFUCG permit sections are clear, specific, measurable, and enforceable. As an example, EPA is pleased to see that minimum illicit discharge detection and elimination (IDDE) and construction inspection frequencies are specified, and that the permit includes clear performance standards and maintenance requirements for post-construction. Another strength of the permit is the specification of BMP and monitoring requirements for discharges into waterbodies with EPA-approved or established TMDLs, as well as for discharges to impaired waters without a TMDL. The monitoring section has multiple types of monitoring components that comprise the overall stormwater monitoring program. For example, the permit includes dry, wet weather, and biological monitoring, habitat assessment requirements, instream sampling, and other monitoring to assess various Storm Water Monitoring Programs (SWMP) elements.

Critical Findings: None.

As a general matter, EPA suggests that future iterations of MS4 permits in Region 4 continue to incorporate clear, specific, measurable, and enforceable requirements. Over the past several years, EPA has been taking a closer look at MS4 permits within the Region with an expectation that permit requirements are consistent with the statutory and regulatory maximum extent practicable requirement, and that the development of appropriate performance standards should be specified in the permit and not be left to the permittee. KDOW can refer to EPA's MS4 Permit Improvement Guide for examples of permit provisions and rationales to see what level of detail and specificity EPA is looking for during permit reviews, especially as KDOW finalizes the Phase II MS4 general permit.

Stormwater Discharges from Construction Activity (KYR100000)

KDOW issued the general permit for stormwater discharges associated with construction activity on November 21, 2014, effective December 1, 2014, and expires on November 30, 2019. There is a detailed fact sheet, and the permit is broken down into various sections: permit requirements, notice of intent requirements, other requirements, and standard conditions.

Program Strengths:

In this last permit cycle, KDOW changed the permit process so that coverage is automatically terminated unless the permittee submits a Coverage Extension form. That is, all existing coverages are terminated by KDOW one year after the permit effective date; and for new projects that do not submit a Notice of Termination, termination of coverage occurs two years

after authorization to discharge is granted. This change will help KDOW keep better track of active construction projects.

The permit also includes the non-numeric effluent limitations that are required as part of the Construction and Development Rule. To satisfy antidegradation requirements and implementation procedures, when applicable, KDOW requires permittees to select and document in the SWPPP enhanced control measures and BMPs, as well as a justification of their use. Depending on the receiving water classification and whether the receiving water is designated as impaired on Kentucky's recent CWA Section 305(b) report, permittees may be required to maintain a minimum of a 25 to 50-foot buffer zone as a means of providing adequate protection of receiving waters.

Critical Findings:

There were no critical findings identified. In the next permit cycle, EPA recommends that the permit include specific requirements for correction of problems found at a project site, such as deadlines for initiating and completing work on corrective actions.

IV. REGIONAL TOPIC AREA FINDINGS

A. Reasonable Potential Analysis (RPA)

EPA regulations at § 122.44(d)(1)(i) state: "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any [s]tate or in this case, Commonwealth water quality standard, including [C]ommonwealth narrative criteria for water quality." Because of that regulation, the EPA and many authorized NPDES states refer to the process that a permit writer uses to determine whether a WQBEL is required in an NPDES permit as a reasonable potential analysis, or RPA. The regulation also specifies that the reasonable potential determination must apply not only to numeric criteria, but also to narrative criteria (e.g., *no toxics in toxic amounts, presence of pollutants or pollutant parameters in amounts that would result in nuisance algal blooms*). A permit writer can conduct a reasonable potential analysis using effluent and receiving water data and modeling techniques.

"When determining the need for a WQBEL, a permit writer should use any available effluent and receiving water data as well as other information pertaining to the discharge and receiving water (e.g., type of industry, existing TBELs, compliance history, stream surveys), as the basis for a decision. The permit writer might already have data available from previous monitoring or he or she could decide to work with the permittee to generate data before permit issuance or as a condition of the new permit. EPA recommends that monitoring data be generated before effluent limitation development whenever possible. Monitoring should begin far enough in advance of permit development to allow sufficient time to conduct chemical analyses. Where data are generated as a condition of the permit (for example for a new permittee), it might

be appropriate for the permit writer to include a reopener condition in the permit to allow the incorporation of a WQBEL if the monitoring data indicate that a WQBEL is required.”⁴

Although individual coal permits were not specifically included in this PQR, an extensive review of these permits has been performed by EPA Region 4 in the recent past. It was considered that including these comments presented a more holistic review of the Commonwealth’s RPA procedures.

According to the Kentucky Permitting Procedures for Determining “Reasonable Potential” five samples is sufficient to assess reasonable potential. One sample is allowed if there is an absence of other effluent characterization. For coal mine site permits, a one sample characterization of effluent is the norm because of the absence of monitoring requirements for pollutants of concern.

Also, reasonable potential for coal mine permits are assessed for narrative constituents such as conductivity. The 2014 General Permit (GP) for Coal Mining, Processing, and Associated Activities located in the Eastern Kentucky Coal Fields (KYGE40000) states that data available for surface waters in eastern Kentucky related coal mining discharges show reasonable potential for in-stream sediment control structured to violate the narrative water quality standards for specific conductance. When sites are covered under this GP, reasonable potential is assumed and Whole Effluent Toxicity testing is required to limit narrative criteria for no toxics in toxic amounts. Occasionally in some individual coal permits, reasonable potential for narrative criteria is not assessed.

Critical Findings:

Of the 12 permits reviewed during this PQR it wasn’t clear whether a consistent method was used for calculating and presenting RPA decisions. For instance, some permits are evaluated using a single data point from current or even past permit application data, while others used DMR data, or previous permit limits. Some RPAs did not include all the sample or application data submitted by the permittee. During the review of these permits, confusion exists with some final limitations because units of measure are sometimes mixed and/or transposed, which makes the data hard to compare and confirm. There is also limited or insufficient documentation to support removal of previously issued effluent limits. Sometimes the reason provided is that RPA indicates no further need for the limit and it is simply removed without evaluating anti-backsliding criteria.

V. ACTION ITEMS

This section provides a summary of the main findings of the review and provides proposed action items to assist and improve Kentucky’s KPDES permit programs. This list of proposed

⁴ This passage is taken directly from the [U.S. EPA NPDES Permit Writers Manual](#), September 2010, publication number EPA-833-K-10-001.

action items will serve as the basis for ongoing discussions between EPA Region 4 and DEP as well as between EPA Region 4 and EPA HQ. These discussions should focus on eliminating program deficiencies to improve performance by enabling good quality, defensible permits issued in a timely fashion.

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

- **Critical Findings** (Category One) - Most Significant: Proposed action items will address a current deficiency or noncompliance with respect to a federal regulation.
- **Recommended Actions** (Category Two) - Recommended: Proposed action items will address a current deficiency with respect to EPA guidance or policy.
- **Suggested Practices** (Category Three) - Suggested: Proposed action items are listed as recommendations to increase the effectiveness of the state's or Region's NPDES permit program.

The critical findings and recommended actions proposed should be used to augment the existing list of "follow up actions" currently established as an indicator performance measure and tracked under EPA's Strategic Plan Water Quality Goals or may serve as a guide for modifications to the Region's program management.

A. Basic Facility Information and Permit Application

The core permits reviewed specifically authorize the discharge subject to specified permit conditions and provide basic information regarding the facility, the receiving water, and the permitting action. In addition, the permit applications reviewed were generally received on time and were typically complete. Proposed action items to help KY DOW strengthen its NPDES permit program include the following:

- 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. (Pursuant to 40 CFR § 122.21(c) (Category One).
- Verify that KDOW has accurate location data for permitted outfalls and facilities. (Category Two).

B. Technology-based Effluent Limitations

The limits in the core POTW permits reviewed are as stringent, or more stringent, than required by secondary treatment. Similarly, non-POTW permits appear to implement required TBELs. Proposed action items to help DEP strengthen its permit program include the following:

- Ensure that the description of each non-POTW facility in each respective fact sheet sufficiently describes the operation, processes, products and wastestreams, as well as whether an ELG is applicable to a permitted discharge. (Category Two).

- Ensure that the basis for BPJ limits is clearly explained in each relevant fact sheet. (Category Two).

C. Water Quality-Based Effluent Limitations

The fact sheets reviewed describe the process KDOW uses to develop WQBELs and also include summaries of the analyses conducted. In addition, the permit files reviewed include the water quality analyses based on KDOW's water quality modeling spreadsheets. Proposed action items to help DEP strengthen its KPDES permit program include the following:

- 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. (Pursuant to 40 CFR § 122.44 (I) (Category One).
- In cases where there is reason to question the accuracy or utility of water quality data KDOW 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. (Category Two).

D. Monitoring and Reporting

The core permits reviewed generally require monitoring for all of the parameters subject to permit limits and such monitoring requirements appeared sufficient to assess compliance with effluent limitations. Proposed action items to help DEP strengthen its NPDES permit program include the following:

- 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)." (Category One).
- Update all references to the most current revision, or indicate that the "most current revisions of all regulatory references be applied." (Category three).

E. Standard and Special Conditions

The core permits reviewed include the standard permit conditions specified in 40 CFR 122.41 and also include appropriate special conditions. Proposed action items to help DEP strengthen its NPDES permit program include the following:

- Verify or ensure that standard permit conditions include the notification conditions in 40 CFR 122.42(a) and (b). (Category One).

- Verify that KPDES permitting penalty provisions are updated to reflect inflation adjustments to CWA penalties (Pursuant to 40 CFR § 19.4). (Category One).

F. Administrative Process (including public notice)

File reviews indicate that draft permits are subject to public notice and that public comments are being considered and responses are prepared for permits that receive significant comments. Proposed action items to help DEP strengthen its NPDES permit program include the following:

- Place a copy of each public notice of a draft KPDES permit in the relevant permit file. (Category Two).
- 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. (Category Three).

G. Documentation (including fact sheet)

The fact sheets for the core permits reviewed include both general permit development information and a discussion of the basis for facility-specific requirements. In addition, the permit files include appropriate support documents including draft and final permits and fact sheets, permit applications, correspondence, DMR and effluent data, water quality analyses, public notice letters and other documents. Proposed action items to help DEP strengthen its NPDES permit program include the following:

- Ensure that each non-POTW facility characterization is sufficient to determine whether an ELG is applicable. Encourage KDOW to explicitly present in the fact sheet whether an applicable ELG exists or not. (Category Two).
- 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). (Category Three).
- 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. (Category Three).
- 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. (Category Three).

- 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. (Category Three).

H. National Topic Areas

Proposed actions items for core topic areas are provided below.

1. *Nutrients*

There are no proposed action items for this topic area.

2. *Pesticides*

- Include in the permit, all enforceable regulatory references from the fact sheet. (Pursuant to 40 CFR §122.48 and § 124.6). (Category One).

3. *Pretreatment*

There are no proposed action items for this topic area.

4. *Stormwater*

There are no proposed action items for this topic area.

I. Regional Topic Area

Proposed action items for special focus areas are provided below.

1. *Reasonable Potential Analysis (RPA)*

The 12 permits reviewed during this PQR employed considerable variability in their methods used to calculate, and present RPA decisions.

- 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. (Pursuant to 40 CFR § 122.44 (I).) (Category One)
- Present consistent units of measure for data used in the RPA to ensure that calculations are reproducible. (Category Two)
- When establishing the final determination for permit issuance, ensure that results presented in the fact sheet are accurately transferred into the permit. (Category Three)

- 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. (Category Three)