

Region 7 NPDES Program and Permit Quality Review Kansas

Review Date: April 15, 2021
Report Date: December 29, 2021

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Executive Summary

The Permit Quality Review (PQR) for Kansas was conducted remotely from February 2021 through the exit interview on April 15, 2021. The COVID-19 pandemic drove the necessity of a remote PQR. While the Kansas Department of Health and Environment (KDHE) staff provided all permits, applications, and fact sheets electronically, a thorough file review was not practicable. However, KDHE promptly responded to any requests for additional information from the permit record.

The PQR focused on the three national priorities, plus Concentrated Animal Feeding Operations (CAFOs), Industrial Stormwater, and Construction Stormwater permits as Regional focus areas. The reviewers found that KDHE NPDES permits generally met applicable requirements and were protective of water quality. While a handful of essential action items were identified, all appeared correctable within days to less than 6 months.

The breakdown of permits reviewed in this PQR, by type and number issued by KDHE, is as follows:

Category	Number	Topic Type
Core	15	National
• Major Municipal	9	
• Major Industrial	2	
• Minor Municipal	3	
• Minor Industrial	1	
Nutrient	3	National
• Municipal Major	2	
• Industrial	1	
Pretreatment	4	National
Small Municipal Separate Storm Sewer System (MS4)	1	National
CAFO	3	Regional
Industrial Stormwater	1 GP	Regional
Construction Stormwater	1 GP	Regional

Kansas permits 1,362 facilities with individual permits. As of March 30, 2021, 99% of Kansas’s permits are current. KDHE deserves recognition for consistently maintaining a high percentage of permits current.

Reviewers noted several laudable features of the KDHE NPDES permitting:

- Permit backlog of <1%.
- Watershed-based permitting – all permits in a major river basin expire and are reissued in the same year.

- Sending out and following up on permit renewal applications well ahead of permit expiration.
- A comprehensive database management system utilized by permit writers to assess facility trend data.
- A comprehensive statewide surface water quality network that provides excellent long-term data for determining water quality-based permit limits.
- Collection of influent and effluent nutrient data.
- Incorporation of nutrient permit limits specified by total maximum daily loads (TMDLs).

Based on the PQR, the reviewers found Kansas NPDES permits generally met applicable requirements and were protective of water quality. While a handful of essential action items were identified, all appeared correctable within short timeframes. The essential action items are as follows:

- All permit applications must include the proper signatory requirements per 40 CFR 122.22(a)(3). KDHE's application combines part of 40 CFR 122.22(b) that addresses reports and documents outside of the application.
- Reasonable potential analyses need to follow a consistent procedure per 40 CFR 122.44(d)(1)(ii). Kansas has identified a procedure in the document *Kansas Implementation Procedures - Wastewater Permitting*, but it did not appear to be utilized.
- Fact Sheets or file documentation need to clearly indicate the calculations used to generate permit limits per 40 CFR 124.56(a).
- All major permits must have at least annual monitoring requirements for whole effluent toxicity (WET) limits per 40 CFR 122.21(j)(5)(iv)(B) with more frequent monitoring, as necessary [40 CFR 122.41(j)(1) and 122.48(a-c)].
- Permit writers must ensure that the NPDES permit application includes all industrial users or potential SIUs and identifies any applicable categorical classifications. [40 CFR 122.21(j)(6)].
- All publicly owned treatment works (POTW) NPDES permits must contain all the requirements per 40 CFR 122.42(b).
- All POTW NPDES permits with approved pretreatment programs must require a written technical evaluation of the need to revise local limits following permit issuance or reissuance [40 CFR 122.44(j)(2)(ii)].
- KDHE must require that NPDES CAFOs inspect land application equipment for leaks per 40 CFR 412.4(c)(4).
- All NPDES CAFO permits need to make clear what terms of the nutrient management plan are enforceable parts of the permit per 40 CFR 122.42(e)(5).

KDHE reviewed and provided comments on the draft PQR report. The state agreed with many of the draft PQR's findings and recommendations and committed to take action to address many of the proposed action items. Several of these actions – e.g., annual WET requirements for POTWs - are already underway.

I. PQR BACKGROUND

The NPDES PQRs are an evaluation of a select set of NPDES permits to determine whether permits are developed in a manner consistent with applicable requirements established in the Clean Water Act (CWA) and NPDES regulations. Through this review mechanism, the U.S. Environmental Protection Agency (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 previously conducted a PQR of the Kansas NPDES permitting program on March 1, 2017. The PQR summary report is available at:

https://www.epa.gov/sites/production/files/2019-08/documents/kansas_2016_pqr_final.pdf.

As part of the 2017 PQR, the evaluation team proposed various action items to improve the Kansas NPDES permitting program. As part of the current PQR, EPA requested updates from Kansas on the progress on those action items. All Category 1¹ items have been fully implemented, with one exception which has been partially implemented. Of the three action items identified during the last PQR as being Essential tasks, two have been resolved and the remainder represent actions that are either longer-term activities or lower-level actions which Kansas is still addressing. In addition, EPA identified recommended action items to improve Kansas's program; Kansas has chosen to implement many of the recommended actions. Section VI of this report contains a detailed review of the progress on action items identified during the last PQR.

During this review, the evaluation team proposed action items to improve the Kansas NPDES permit program. The proposed action items are identified in sections III, IV, and V of this report and are divided into two categories to identify the priority that should be placed on each item and facilitate discussions between Region 7 and the state.

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

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

EPA's review team consisted of three Regional staff: Mike Tate on Core and Nutrient permit reviews; Mark Matthews on Small MS4, CAFO, Industrial Stormwater, and Construction

¹ During the 2012-2017 PQR cycle, these action items were known as "Category 1" and addressed deficiencies or noncompliance with respect to federal regulations. EPA is now referring to these action items 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.

Stormwater permits; and Paul Marshall with a Headquarters contractor on Pretreatment. The review was conducted virtually, so no onsite file review was possible. The review concluded with an exit interview involving several Kansas DHE staff on April 15, 2021.

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

A total of 25 permits were reviewed as part of the PQR. Of these, 15 permits were reviewed for the core review, 8 for national topic areas, and 5 for regional topic areas. Some permits were reviewed for both the core review and one or more topic areas. Permits were selected based on issuance date and the review categories that they fulfilled.

Core Review

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

Topic Area Reviews

The national topics reviewed in the Kansas NPDES program were:

- Permit Controls for Nutrients in impaired waters before approval of a TMDL;
- Small Municipal Separate Storm Sewer System (MS4) Permit Requirements; and
- Effectiveness of POTW NPDES Permits with Food Processor Contributions.

Regional topic area reviews target region-specific permit types or particular aspects of permits. The regional topic areas selected by EPA Region 7 were:

- CAFOs,
- Construction Stormwater, and
- Industrial Stormwater.

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

These reviews provide important information to Kansas, EPA Region 7, EPA HQ, and the public on specific program areas.

II. STATE PROGRAM BACKGROUND

A. Program Structure

The State of Kansas has been authorized by EPA to administer a program equivalent to the federal NPDES program continuously since 1974. KDHE has been authorized for the base program, federal facilities, and general permits. KDHE is not authorized for pretreatment or biosolids. KDHE jointly administers the pretreatment program with Region 7 via a Memorandum of Agreement (MOA).

EPA oversees the state permitting program and provides the national framework for the NPDES Program, including requirements for state programs. The state program authorization involves permitting, inspection, and enforcement activities that require varying interactions between KDHE and their regulated community.

EPA and KDHE entered into an updated MOA governing the NPDES permit and enforcement programs on February 19, 2020. The updated MOA replaced a 42-year-old agreement between KDHE and EPA.

The Kansas NPDES Program is housed in the KDHE Topeka Central Office and has been recently restructured. All NPDES permitting except for the concentrated animal feeding operations (CAFOs) is administered by two Sections in the Bureau of Water (BOW), while the CAFO program is administered by the Bureau of Environmental Field Services (BEFS) Livestock Waste Management Section.

The Water Permitting and Compliance (WPC) Section in the Bureau of Water provides operational surveillance of NPDES and State non-NPDES non-discharge wastewater facilities, administers a compliance and enforcement program, and carries out administrative permitting duties.

Three units within the WPC Section distribute NPDES duties as follows:

1. **The Technical Services Unit** is responsible for enforcement and compliance; data management; records management; public notice; and NPDES administrative duties. This unit also develops and administers certain general permits.
2. **The Industrial Programs Unit** is responsible for permitting the discharge of industrial wastewater. This section manages the program for pretreatment of industrial wastewater directed to municipal wastewater collection and treatment systems (although the state is not authorized for the pretreatment program through the CWA), and the quality of stormwater discharges associated with industrial or construction-related activities subject to federal CWA provisions or Kansas surface water quality standards (WQS). All permits for wastewater from drinking water facilities are written in the Industrial Programs Section. All other industrial/federal NPDES and State non-NPDES non-discharge permits are written by a shared-duty engineer, a shared-duty environmental scientist, and their supervisor in the

Industrial Programs Section. Construction stormwater general permits are written by one engineer while the industrial stormwater general permits are written by one of the shared-duty engineers in the Industrial Programs Section. Pretreatment permits for indirect dischargers discharging to non-pretreatment POTWs are written by the other shared-duty environmental scientist in the Industrial Programs Section.

- 3. The Municipal Programs Unit** is responsible for NPDES and non-NPDES State non-discharge permitting for municipal wastewater including municipal separate storm sewer systems (MS4s), combined sewer systems (CSSs), and commercial entities such as mobile home parks, restaurants, and camps. Permits are written by three engineers in the Municipal Programs Section as well as two environmental technicians. The Municipal Programs Section also administers the Clean Water State Revolving Loan fund (CWSRF). The CWSRF provides financial assistance for construction of wastewater infrastructure projects at publicly owned treatment works. State funds associated with the CWSRF are utilized in contracting for process optimization aimed at nutrient reduction.

The WPC Section has nine positions that draft non-CAFO NPDES permits. Three of those positions are currently vacant. The permit writers also have other duties that include drafting state non-discharge (non-NPDES) wastewater permits; plan and specification review for new and modified treatment facilities and sewer collection systems; and State Revolving Fund (SRF) project management by the Municipal Program Unit staff. On average, each permit writer annually drafts around 145 individual permits or permits based on general permit notices of intent to discharge (NOIs).

The Livestock Waste Management Section (LWMS) in BEFS reviews applications and issues NPDES permits for CAFOs. By state statute, all CAFOs in Kansas are required to have an NPDES permit. Medium-sized and small animal feeding operations (AFOs) that have a significant pollution potential are required to apply for a state permit. This Section ensures facilities are complying with applicable statutes, regulations, and permitting requirements. The Section consists of eleven employees (not counting administrative staff) with five positions currently vacant at the time of the PQR. There are nine inspectors located throughout the state at six field offices who are responsible for inspecting large CAFOs every 18 months and other State-permitted livestock operations once a permit cycle. The inspectors also investigate complaints associated with livestock facilities.

The LWMS has six individuals that draft NPDES CAFO permits and are supported by three administrative and data management staff. On average, each permit writer drafts 14 permits per year. The LWMS staff also draft state (non-NPDES) permits for medium-sized operations (300 – 999 animal units) and handles a registration system for very small (< 300 animal unit) facilities.

BEFS routinely coordinates with the Bureau of Water's Planning and Standards (P&S) Unit in TMDL efforts. The P&S Unit also provides input on permit decisions related to impaired waters and TMDLs, develops statewide surface WQS, and develops the Water Quality Review limits

for permits.

In addition to the Bureau of Water central office staff, BEFS staff provides inspection and technical assistance activities in support of the permitting and compliance efforts from six District Offices located in Chanute, Wichita, Dodge City, Salina, Hays, and Lawrence.

The Kansas Water Pollution Control Data-Base Management System (DBMS)

Kansas uses an Oracle DBMS for primary management of the Kansas water pollution control program. The DBMS is currently undergoing a major upgrade that will provide additional tools and capabilities to NPDES permit writers. The new system, Kansas Environmental Information Management System (KEIMS), is projected to go on-line later in 2021. As with any new data system, Kansas is expecting a few hiccups that may impede permitting efforts and transfer of data to EPA's ICIS-NPDES database for a short period of time.

The current system is searchable and provides users with basic permit information, inspection data, discharge monitoring report (DMR) data, and access to a "library" of special reports and programs. The permit search/data entry option provides the ability to search the database for permittees via the type of permit (commercial, municipal, federal, industrial, or pretreatment), state permit number, city, county, facility name, federal permit number, KDHE district, watershed basin, and active or inactive status. The data for each permitted facility can be accessed and updated through a set of screens (called tabs) which include the facility data, schedule of compliance summary, various addresses, bypass and combined sewer overflow (CSO) information, certified operator information, outfall descriptions and locations, permit parameters and limits, inspection information, permit billing history, and the DMR pass/fail status summary. The data from the state DBMS is batch-uploaded nightly to ICIS-NPDES.

State process for issuing permits

Non-CAFO

One of the programs in the DBMS is a permit tracking database used to provide the status of the permits being worked for reissuance, as well as indicate facilities due for permit reissuance (with a 9 to 12-month lead time). Permit status tracking meetings are held at regularly scheduled times within WPC. The permit tracking system/checklist is a working database to ensure all steps in the process (application, development, water quality certification, fact sheets, public notification, etc.) have been followed as well as to track the dates each step is completed. The WPC works closely with the Planning and Standards (P&S) Unit to ensure NPDES permit issuance and water quality certification of permits functions smoothly and problems are resolved quickly and efficiently. The P&S Unit is also responsible for the state TMDL program, ensuring TMDL wasteload allocations are properly interpreted for NPDES permits. Prior to public notification, all permits are reviewed by an experienced program manager.

A flow chart detailing with non-CAFO permitting was provided by KDHE and is included in Appendix A.

KDHE issues its permits on a 5-year watershed basis. Permits are synchronized by eleven major river basins. A major benefit of this effort is the coordination of permit issuance with TMDL implementation.

CAFO

BEFS administers the CAFO permit program through its Livestock Waste Management Section in Topeka. In Kansas all facilities meeting the federal definition of a CAFO are required to obtain NPDES permits. Permits are tracked through a state DBMS with data uploaded to the federal ICIS-NPDES database management system.

The central office staff receive and review CAFO applications and nutrient management plans (NMPs) and issue the NPDES permits. Once draft permits are developed, central office staff also handle public notification of new, renewing, or modified permits through the *Kansas Register* – the official state newspaper – and an email list. Public hearings are also coordinated through the central office including responses to comments.

Two flow charts detailing with CAFO permitting were provided by KDHE and included in Appendix A. Based on state statute, KDHE is required to handle swine permitting in a slightly different manner than permitting for other animal species, thus, the two different permitting flow charts.

Training

Training for permit writers consists of:

- Familiarization with Kansas-specific laws, regulations, and policies. Each permit writer is given sufficient time to become familiar with [Kansas Statutes](#) and [Regulations](#) dealing with NPDES permitting.
- Familiarization with three key documents - [Kansas Minimum Standards of Design for Water Pollution Control Facilities](#), [Kansas Implementation Procedures -Wastewater Permitting](#) and [Kansas Implementation Procedures -Water Quality Standards](#).
- Mentoring by an experienced permit writer.
- Participation in the EPA Permit Writer's Training, when available.
- Participation in conferences, workshops, and webinars dealing with Clean Water Act issues.

New permit writers are initially given non-complex permits to develop. These cover discharges like non-contact cooling water and municipal lagoon effluent. The work is overseen by a more experienced staffer and ultimately reviewed for consistency with other permits by the WPC Section Chief or the Technical Services Unit Chief in the WPC Section. Feedback is then provided to the permit writer. As the permit writer gains more experience, more complex permits are assigned.

B. Universe and Permit Issuance

Issuance Rate and Backlog

As of March 30, 2021, KDHE's permit database indicates a total of 1,584 facilities with individual direct discharge or pretreatment permits that are either active or expired; 57 major facilities (48 municipal, 8 industrial, and 1 federal); 1,030 minor facilities; 433 CAFOs; and 64 individual MS4 permits. Currently, KDHE has a backlog of less than 1%. Since the last PQR, KDHE issued three permits that had experienced lengthy backlogs: JCW Nelson Complex (14 years backlogged); JCW Tomahawk Creek (7 years backlogged); and the Unified Government of Wyandotte County Kaw Point (10 years backlogged). All three permits are major permits.

The active NPDES individual permit breakdown (including industrial facilities that are indirect dischargers to POTWs) is shown in Table 1. KDHE also has six general NPDES permits that cover 3,824 permittees. The general permit breakdown is shown in Table 2. Data in Tables 1 and 2 represent data at the time of the PQR and have likely changed since.

Table 1. Individual Permits by Type

Individual Active Permits	Permits
Industrial Direct Discharge	543
Industrial Pretreatment	58
Publicly Owned Treatment Works (municipal wastewater)	451
Commercial (non-municipal sewage)	31
Wastewater permits for public water treatment plants	63
Federal Facilities	5
Concentrated Animal Feeding Operations	433
Total	1,584

Table 2. General Permit Coverage

General Permits	Authorizations
Hydrostatic Testing	34
Construction Stormwater	2,638
Industrial Stormwater Activity	855
Concrete ready mix	183
Total	3,710

The Kansas Water Pollution Control Permit Program administers both NPDES permits, and non-NPDES State Non-Overflowing (Non-Discharge) permits. The State Non-Discharge permits (see Table 3) regulate water pollution control facilities that do not discharge pollutants to waters of the United States. The permits for these facilities include conditions that require land application of wastewater and sludge at agronomic rates. Proper land application of the wastewater and sludge helps ensure that any nonpoint source runoff from the land application sites minimizes the release

of any pollutants to waters of the U.S., a significant part of the December 2004 Kansas Surface Water Nutrient Reduction Plan.

Table 3. State Non-Discharge Permits

Non-Discharge Permit Type	Permits
Commercial (non-municipal sewage)	140
Industrial	65
Municipal	276
Federal Facility	1
State Permitted Animal Feeding Operations	1,328
Certified Animal Feeding Operations	1,327
Total	3,137

C. State-Specific Challenges

As mentioned previously, the state is standing up a significantly enhanced data management system. KDHE is developing the DBMS under contract with Windsor Solutions. The system will include many new tools to assist permit writers and will make accommodation for upload of Phase 2 e-Reporting elements to ICIS-NPDES. Development of that system, beta testing, and routine vendor meetings have required a significant amount of all permitting staff time, reducing time available for permit development and review. As of the date of this review, permit backlog was exceptionally low, but KDHE has cautioned it could increase as the data system is transitioned due to heavy reliance on their data management systems. There are generally “glitches” to resolve and a learning curve for its use. However, once the transition is complete and the data system optimized, permitting will catch up and should be more efficient.

KDHE also faces the challenge many government agencies face in recruiting qualified technical staff - as evidenced by a 33% vacancy rate for non-CAFO permit staff. KDHE is exploring ways to attract and retain qualified staff within the strictures of its human resources requirements.

D. Current State Initiatives

KDHE has been implementing the [Kansas Surface Water Nutrient Reduction Plan](#) under which major POTWs are required to optimize and treat for nitrogen and phosphorus. About 85% of the volume of point source discharge of wastewater is from those major facilities that have a design flow of one million gallons per day (MGD) or larger, so there is an economy of scale in focusing on controls based on treatment technology for those facilities.

Kansas has been successful in getting voluntary nutrient reduction coupled with use of their WQS antidegradation process to drive other changes – including Integrated Plan commitments for around 60 MGD of biological/chemical nutrient reduction treatment. While the Reduction Plan has been successful, the original goal of nutrient permit limits for major dischargers by 2019 has fallen slightly short. It would be worthwhile for KDHE to update their expectations.

Kansas has many lagoon facilities serving small communities with an average size of 350 people. Facultative lagoons for these very small communities operate using no electrical energy input

and require very little operational control. Currently, the state has found no other technology that could serve dependably in these small and remote applications. Some studies have found that well-operated lagoons generally produce a high-quality discharge for most pollutant parameters but are not capable of meeting stringent ammonia limits year-round unless significant stream mixing is available. KDHE developed a lagoon multiple discharger variance (MDV) for ammonia which has been adopted as a water quality standard and approved by EPA. The MDV has been awarded to 53 permittees. KDHE estimates about one-third of lagoon facilities do not require the MDV because they have a sufficient mixing zone to allow compliance with ammonia water quality-based effluent limits.

III. CORE REVIEW FINDINGS

Core permits reviewed for the 2021 PQR are included in Table 4.

Table 4. Core Permits Reviewed

Category	Name	NPDES Permit Number	Number
Total			15
Major Industrial	Coffeyville Resources Refining Holley Frontier Refining	KS0000248 KS0000761	2
Major POTW	Newton WWTF Lawrence Kansas River Facility Lawrence Wakarusa Facility Olathe Cedar Creek Facility Manhattan WWTF Unified Government Kaw Point WWTF Johnson County Wastewater Nelson Complex Abilene Eldorado	KS0100528 KS0038644 KS0099031 KS0081299 KS0036714 KS0038563 KS0055492 KS0097667	9
Minor Industrial	Element LLC	KS0101524	1
Minor POTW	Mankato Elbing Goddard	KS0095231 KS0116645 KS0098485	3

A. Basic Facility Information and Permit Application

1. Facility Information

Background

Basic facility information is necessary to properly establish permit conditions. For example, information regarding facility type, location, processes, and other factors is required by NPDES

permit application regulations (40 CFR 122.21). This information is essential for developing technically sound, complete, clear, and enforceable permits. Similarly, fact sheets must include a description of the type of facility or activity subject to a draft permit.

Program Strengths

KDHE permits reviewed provided a very good facility-level information. The permits and fact sheets:

1. Described in detail the waste streams and treatment process employed at the facility. The descriptions also included any approved changes to the facility ranging from minor enhancements to multimillion-dollar upgrades.
2. Each outfall was generally described and identified by latitude and longitude on the cover page.
3. The permit provided good receiving stream network information in addition to the major HUC 8 basins where the discharges are located in support of KDHE’s basin permitting strategy.

Areas for Improvement

1. Only one permit reviewed - Element, LLC - did not include a latitude/longitude for both facility and the outfall. The single latitude/longitude provided did not indicate if it was the outfall location or the facility location.

Action Items

Essential	•None
Recommended	•Locations of all outfalls need to be included with good descriptions of the sampling locations for each outfall.

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.

KDHE uses its own application forms, which are based on EPA's forms. KDHE uses its own DBMS to track the status of new permits and those in the reissuance process and uses the DBMS to

identify permits set to expire and generates notification of those needing renewal applications 9-12 months ahead of permit expiration. The permit applications reviewed were all received in a timely manner and provided the basic facility information. Follow-up with permittee was generally not necessary to obtain a complete application.

KDHE generates pre-filled applications based on previous facility information to send to the permittee with directions to change any incorrect information. This provides a streamlined application process for the permittee and leads to fewer incomplete applications. This is important in Kansas where the median community size is less than 500 persons.

Permit writers use the DBMS to check the application information, including the facility data; schedule of compliance summary; various addresses; bypass and CSO information; certified operator information; outfall descriptions and locations; permit parameters and limits; inspections information; permit billing history; the DMR pass/fail status summary; and discharge data during the prior permit cycle. Paper files for POTWs and industrial discharge facilities contain printouts of DMRs for the permit writer's review.

POTWs

Applications for POTWs included a confirmation of responsible parties and a facility description but did not include a summary of discharge data as KDHE uses DMRs to review that data per 40 CFR 122.21(j) (access to substantially identical information). Major POTWs are required to do a minimum of three priority pollutant scans during the five-year permit term. Whole effluent toxicity (WET) testing (with enforceable limits) is included in all permits for major POTWs. In recent years KDHE had alternated years with priority pollutant testing and WET testing. Upon notification by EPA, KDHE now requires a minimum of annual WET testing.

Non-POTWs

Industrial permittees used appropriate forms as supplied by KDHE, including Form 2C, the lack of which was identified as an essential action item in the previous PQR. KDHE also uses additional forms to collect information, allowing for more efficient permit development. A minimum of three priority pollutant scans and a minimum of annual WET testing was required in the major permits reviewed.

Program Strengths

The Kansas program has a number of program strengths aimed at getting complete applications from their permittees, particularly small permittees. Those strengths include:

1. All permits reviewed had applications for their current permits as a part of the record.
2. KDHE's providing pre-filled renewal applications to permittees streamlines the permitting process and requires less follow up with permittees.
3. KDHE sends renewal applications to permittees with ample lead time to comply with the *duty to reapply* requirements of 40 CFR 122.21(d).

Areas for Improvement

A few areas for improvement were noted in the area for application of applications. Those areas of improvement include:

1. KDHE permit application forms improperly cite the application signatory requirements from 40 CFR 122.22(a) by combining portions of 40 CFR 122.22(b) which are the signatory requirements “reports required by permits”.
2. The date KDHE determines the application is complete could not be found in the record. Since the allowance for administratively extended permits hinges on receipt of a complete application 180 days prior to permit expiration [40 CFR 122.21(d)], documenting the date KDHE determines the permit application is complete is necessary. The acceptance date for a complete application could be placed in Fact Sheets/Statements of Basis which would clearly document application receipt date.
3. EPA observes that under the NPDES regulations, monitoring frequency should be done in a manner that is representative of the permitted discharge.

Action Items

Essential	<ul style="list-style-type: none"> •All permit applications must include the proper signatory requirements per 40 CFR 122.22(a)(3). KDHE's application combines part of 40 CFR 122.22(b) that addresses reports and documents outside of the application.
Recommended	<ul style="list-style-type: none"> •Would be good practice to specify in the Fact Sheet/Statement of Basis the date KDHE considered an application complete. This is important in whether an administrative continuation is valid.

B. Developing Effluent Limitations

1. Technology-based Effluent Limitations

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

TBELs for POTWs

Background and Process

POTWs must meet secondary or equivalent-to-secondary standards (including limits for biochemical oxygen demand (BOD), total suspended solids (TSS), pH, and percent pollutant removal) and must contain numeric limits for all these parameters (or authorized alternatives)

in accordance with the secondary treatment regulations at 40 CFR Part 133. A total of 12 POTW permits were reviewed as part of the PQR.

EPA's review found that KDHE has appropriately established technology-based permit limits for POTWs: all permits reviewed contained all parameters required by Part 133. The Kansas Implementation Procedures define how TBELs for POTWs will be calculated, and the procedures are the same as the requirements of Part 133. KDHE uses an alternative state requirement for TSS limits in lagoon discharges. The limits approved by EPA in 1978 allow for 80 mg/L TSS as a monthly average. KDHE utilizes a weekly average of 120 mg/L.

The state allows permittees to request carbonaceous BOD₅ (CBOD₅) limits in lieu of BOD₅ limits. KDHE properly applies CBOD₅ limits as 5 mg/L less than BOD₅ limits per 40 CFR 133.102(a)(4).

All TBELs for POTWs were calculated correctly and expressed in appropriate units. POTW limits included weekly averages and daily maximums, appropriate percent removals, and pH limits. KDHE does not calculate mass-based limits for BOD and TSS. Federal rules encourage, but do not require, calculation of mass-based limits. KDHE routinely uses mass-based limits for nutrient limits – for total nitrogen and total phosphorus.

It was unclear from the record whether KDHE evaluates contributions from industrial users for all permits. For certain POTWs with very large industrial contributors, e.g., Liberal, KS and meatpacker National Beef, the permits and fact sheets indicate the industrial user contribution is factored into the permit.

Program Strengths

1. KDHE POTW permits provide very good descriptions of the treatment facility and unit processes.
2. KDHE POTW permits properly address secondary treatment or alternative secondary treatment limits. Fact sheets clearly indicate where secondary treatment requirements are the basis for treatment limits.
3. KDHE properly establishes secondary limits including units of measure and durations – weekly and monthly for POTW permits.

Areas for Improvement

1. KDHE needs to document the assessment of any potential for impacts by industrial users. This may be as simple as documenting discussions with the pretreatment coordinator regarding any industrial user concerns.

Action Items

Essential	•None
Recommended	•Ensure the record demonstrates contributions from industrial users are taken into account.

TBELs for Non-POTW Dischargers

Background and Process

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

Permits for industrial facilities included limits for all parameters defined in the applicable ELG and were expressed in monthly averages and daily maximums in the units required by the ELG. All TBELs reviewed for industrial facilities were calculated correctly. Industrial limits included all parameters defined in the ELG. Permits were reviewed for two complex refineries: Coffeyville Resources Refinery and Holly Frontier Refining. ELGs for each were calculated for each permit, and those calculations were clearly documented. Waivers to hexavalent chromium parameter in the ELG were cited and justified in the fact sheets. The fact sheets for the two refineries did a thorough job of explaining where Kansas WQS were more stringent than ELG values and used to set permit limits.

KDHE also uses its own refinery-specific form to collect additional information. The additional information assists the permit writers in identifying the types of production units at the facility and subsequently the appropriate portions of the ELG to apply.

The other Industrial permit reviewed was for an ethanol production facility (Element LLC). Proper use of best professional judgment (BPJ) was employed in conjunction with WQBELs and wasteload allocations (WLAs) established via TMDLs.

Program Strengths

1. The permits and fact sheets indicated the non-POTW permits were based on accurate categorization of the industries and the processes at those industries.
2. The permits and fact sheets described the industrial production processes as well as the wastewater treatment processes at each facility.
3. ELG permit limits were calculated correctly and applied where more stringent than the KS WQS or TMDL wasteload allocations. The permit limits were expressed in appropriate units including both mass and/or concentration.
4. KDHE applied case-by-case considerations for specific facilities – e.g., the waivers for hexavalent chromium ELGs at the refineries.

Areas for Improvement

1. Better documentation of how pollutants of concern (POCs) were selected

Action Items

Essential	•None
Recommended	•Provide better fact sheet documentation of how POCs were selected

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 could cause, have the potential to cause, or contribute to an excursion above any applicable water quality standard.

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

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

Process for Assessing Reasonable Potential

Kansas has adopted a chemical-specific reasonable potential (RP) analysis procedure developed by EPA Region 6 as a part of the document titled [Kansas Implementation Procedures - Wastewater Permitting](#). Use of the procedures is adopted in regulation K.A.R. 28-16-60. The permitting procedures assume that all major dischargers and select minor dischargers have reasonable potential to cause or contribute to an excursion of the state's whole effluent toxicity (WET) WQS, resulting in possible unacceptable toxicity (impairment), and therefore are given WET limits.

No permit reviewed appeared to have utilized the KDHE-adopted RP procedure. Where RP was mentioned, it typically represented a permit writer's judgement that no reasonable potential existed. Opinion or judgement can be used to establish RP, like KDHE does with WET, but should not be used to exclude RP.

Examples of where RP was mentioned in permit documents include:

1. The City of Manhattan permit. The fact sheet states no parameters were measured above the permit limit, so there was no RP. Since RP considers variability, the calculation for RP might conclude RP exists if there is significant variability for a particular parameter in the effluent. If so, a permit limit is required.
2. The Johnson County Wastewater Nelson Complex permit. It appeared possible that RP could exist for copper, with one sample at 17.8 ug/L and one at 20 ug/L compared to a WQBEL of 25 ug/L. At minimum, an RP calculation should have been completed to ensure copper did not need to be limited in the permit.

It was discussed with KDHE that the responsibility for calculating RP be moved from the individual permit writers and to the water quality certification staff. The certification staff calculate WQBELs, so it might be most efficient to calculate RP at the same time. KDHE stated they would explore options for ensuring RP was properly analyzed.

Process for Developing WQBELs

KDHE calculates WQBELs using the procedures found in the *Kansas Implementation Procedures*, K.A.R 28-16-28, and the *Technical Support Document for Water Quality-Based Toxics Control (TSD)* [EPA/505/2-90-00]. Kansas water quality standards are adopted in regulation at K.A.R. 28-16-28b through 28-16-28h.

The [Kansas Implementation Procedures – Wastewater Permitting](#) sets the rules on all aspects of water quality-based permitting including low flows used in calculations, mixing zones and use of CORMIX modeling, background pollutant assumptions, limit derivation, WET policy, etc. Key items from the procedures include:

1. Kansas periodically adjusts low flow estimates based on USGS-derived streamflow data.
2. Mixing zones are linked to the corresponding aquatic life support category ranging from most restrictive for special aquatic life use waters to less restrictive for expected aquatic life support and restricted aquatic life support. The CORMIX model is generally used with an allowance for other models as approved by KDHE. Mixing zones are limited in length (300 m) and width ($\leq 25\%$, $\leq 50\%$, $\leq 100\%$) depending on aquatic life support category. The mixing zone size may be modified downward or eliminated if KDHE determines there is a significant public health or environmental concern. KDHE also allows permittees to perform dye studies to verify modeled mixing zones as was the case for the Lawrence, Kansas River WWTF permit. For all permits reviewed, KDHE properly applied mixing zone procedures.
3. Kansas has developed a set of validated spreadsheet models to calculate WQBELs. The models appear to properly apply the regulation-required mixing zones, low flows, and upstream water quality. As mentioned previously, Kansas has a statewide ambient monitoring program that is wide ranging and has been in operation for over 30 years, so there is a wealth of stream water quality data on which to base permit calculations.

All Kansas individual draft NPDES permits go through a water quality review by the Planning and Standards (P&S) Unit prior to the draft permit being developed. The P&S Unit is also responsible for WQS and TMDL development, as well as the state ambient monitoring program, thus being best positioned to calculate water quality-based permit limits and interpret TMDLs. The following information is reviewed by the P&S Unit during the water quality review: information provided by the permit writer; information available from previous water quality reviews (if any); receiving stream characteristics; stream classification; designated use; mixing zone; 303(d) listing; and TMDL waste load allocations (WLAs) if any. All permits include "mapping" of stream reaches and designated uses. Applicable information is entered into various models used to calculate water quality-based limits pursuant to the Kansas Surface Water Quality Standards, as adopted in Kansas Administrative Regulations, and the [Kansas Implementation Procedures -Water Quality Standards](#).

The calculated water quality-based permit limits are compared to technology-based limits and TMDL WLAs, as appropriate by the permit writer. The permit writer then uses the strictest of the limits to draft the permit.

In practice, it appears that permit writers generally include limits for all pollutants of concern. Pollutants of concern (POCs) are identified by pollutant scans, TMDLs, or effluent guidelines. As noted previously, appropriate application of RP analyses might identify other POCs. It was noted that permit writers generally address all pollutants identified in permit applications and priority pollutant scans. One exception noted in the review was the City of Manhattan permit where the application indicated an organic compound from landfill waste was sent to the facility. The permit writer did not explain why that pollutant was neither limited nor monitored.

All permits except one minor POTW, City of Elbing, properly included both chronic and acute limits for toxics. The City of Elbing permit appeared to be an outlier by not including an acute limit for ammonia. Even though the monitoring frequency for this small lagoon is once per quarter, the permit must include acute (daily maximum) and chronic (monthly average) limits.

The permit writer also decides to include a limit or require monitoring for POCs. The permit writer determines if limits are based upon WQS, and details permit limitations in addition to providing the basis of derivation in the statement of basis/fact sheet. The explanations of limits or monitoring are generally documented in the fact sheet. Two examples of where monitoring was used where limits are regulatorily required are:

1. The Holly Frontier Refinery had a TMDL, established WLA for phosphorus. The permit only required monitoring for phosphorus.
2. The fact sheet for Element, LLC, an ethanol producer, states "Total Chloride, Chemical Oxygen Demand (COD), sulfate, temperature, oil and grease are based on BPJ as there is potential to violate KSWQS." The permit only required monitoring for those parameters. If there is RP, the parameters are required by regulation to have limits.

Program Strengths

Reasonable Potential

1. The state assumes RP for WET from all majors except for some cooling water discharges. KDHE requires submission of chemical additives and the respective material safety data sheets (MSDSs) for the chemicals used in cooling water. Where cooling water is treated with chemical additives, RP for WET is assumed.

WQBEL Development

1. KDHE has a very extensive long-term statewide ambient monitoring network that allows for establishing sound background stream concentrations for permit limit calculations.
2. KDHE has developed spreadsheet models to calculate permit limits reducing the opportunity for calculation error.

3. KDHE does a good job at identifying when WQBELs supersede technology-based limits which is frequently the case.
4. KDHE has a multi-discharger variance (MDV) approved for lagoon ammonia. The MDV clearly states how ammonia limits will be calculated per the MDV. The MDV creates a streamlined variance process.
5. Although not always included in all fact sheets, KDHE uses the CORMIX model to calculate mixing zones where appropriate.
6. For the permits reviewed, anti-backsliding provisions were properly applied. This was particularly evident for ammonia where KDHE recently adopted the 2013 recommended criteria. While the criteria are significantly more stringent overall, there may be a month or two in a year where the WQBELs are slightly higher due to the criteria being both pH and temperature dependent. It was noted those rare instances were allowable backsliding.

Areas for Improvement

Reasonable Potential

1. Application of RP analyses has largely been overlooked in the permitting process. KDHE has agreed to establish a mechanism to appropriately apply RP.
2. Explain in fact sheet why POCs were selected.

WQBEL Development

1. Fact sheets or file documentation must include information sufficient to understand how WQBELs are calculated per 40 CFR 124.56(a). KDHE has developed spreadsheet models that calculate permit limits. Those are not a part of the fact sheet but included in the record. However, some of the models (e.g., the ammonia and BOD₅ models) do not show the formulae being used to make the calculations.
2. Facilities receiving ammonia limits based on the lagoon ammonia multi-discharger variance need to have limits that include a duration component. They are only reported as a frequency of monitoring and a magnitude. As discussed with KDHE, a monthly average is appropriate. Data reported to ICIS-NPDES uses monthly average to describe the duration component.
3. KDHE needs to update their antidegradation procedures to comply with the 2015 WQS Regulatory Revisions in 40 CFR 131.12.
4. KDHE needs to establish quality control measures to ensure all permits contain chronic and acute limits where appropriate.

Action Items

<p>Essential</p>	<ul style="list-style-type: none"> • <u>Reasonable Potential</u> • Reasonable Potential Analyses need to follow a consistent procedure per 40 CFR 122.44(d). Kansas has identified a procedure in the document <i>Kansas Implementation Procedures - Wastewater Permitting</i>, but it did not appear to be utilized. • <u>WQBEL Development</u> • Fact Sheets or file documentation needs to clearly indicate the calculations used to generate permit limits per 40 CFR 124.56(a). • If reasonable potential is demonstrated, ensure permits include a water quality-based effluent limitation, per 40 CFR 122.44(d)(1)(i), not only monitoring.
<p>Recommended</p>	<ul style="list-style-type: none"> • <u>Reasonable Potential</u> • Acknowledge in the Fact Sheet why POCs were included and other identified pollutants were excluded. • <u>WQBEL Development</u> • The lagoon ammonia MDV limits should specify a duration component. • When evaluating RP with a small data set, KDHE should use the maximum reported effluent concentration, which is recommended by EPA's 1991 TSD, rather than using the geometric mean effluent value when evaluating RP. • Establish a quality control procedure to ensure all permits contain acute and chronic limits where appropriate.

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 WQS regulations at 40 CFR 131.12 outline the common elements of the antidegradation review process.

In addition, permit records for POTWs and industrial facilities should contain comprehensive documentation of the development of all effluent limitations. TBELs should include assessment of applicable technology-based 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 straightforward. 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.

For the POTW permits reviewed, permit writers apply applicable secondary treatment requirements and consider water quality as well (ammonia, total residual chlorine, WET, etc.). For the industrial facilities, permit writers make the assessment of applicable Standard Industrial Classification (SIC) Code and determine if an ELG applies. In both cases, the permit writer creates a list of pollutants of concern, and the WLAs are calculated by water quality specialists using KDHE-developed spreadsheet calculation tools and/or interpretation of appropriate TMDLs. The results of the WQBEL/TMDL analyses are identified in a Water Quality Review Memorandum submitted to the permit writer. KDHE also properly applied alternate secondary limits for lagoon TSS and the calculation of ammonia limits for lagoons where the approved MDV was applied. The most stringent of the TBELs, WQBELs, and/or TMDL WLAs are then reflected in the permit.

Permit limits for POTWs and industrial facilities are calculated in units consistent with the applicable effluent guidelines. Permit limits are stated in terms of mass and concentration for all parameters (except pH, WET, and temperature).

Permit writers generally provide the basis for permit limits and changes from previous permits for both POTWs and non-POTWs. Fact sheets indicate the basis of each permit limit (or monitoring requirement). Fact sheets also contain a description of any changes in limits as permits are renewed with a reason for the new limit.

As noted earlier, fact sheets fall short of some of the requirements in 40 CFR 124.56(a) and improvement has been cited as an essential action item. Generally, all needed information exists at various places in the permitting record, so correction should be a matter of consistently pulling all that information together in the fact sheet. That said, KDHE fact sheets generally include very good descriptions of treatment process associated with the permit.

Also noted earlier as an essential action item was the use of reasonable potential analysis. Once the RP analysis is consistently applied, its inclusion in the fact sheet will be necessary.

Stream segments and designated uses were clearly mapped and applied in derivation of WQBELs. CWA Section 303(d) listings and stream impairments were identified in fact sheets. All pollutants and forms of impairment were addressed by permit writers and covered in the fact sheet and permit.

KDHE does a very good job of noting where antidegradation is applied and notes the application of antidegradation in its public notice documents, which provides transparency to the public. As noted previously, it is recommended KDHE update its antidegradation implementation procedures to account for the 2015 update to federal WQS rules. Backsliding was generally addressed and appropriately applied per the previous example of new ammonia criteria.

Program Strengths

1. KDHE evaluates antidegradation appropriately for new and expanded dischargers. KDHE is also transparent with the public in its public notice documents, noting where a new or expanded discharge is subject to an antidegradation analysis.
2. KDHE’s cooperative approach between the WPC and P&S Unit in calculating WQBELs and TMDL WLAs leads to proper identification of the proper TBELs and WQBELs (including WQBELs based on TMDL WLAs).
3. KDHE application of backsliding. As noted, ammonia permit limits associated with adoption of new, more stringent ammonia criteria were handled properly.

Areas for Improvement

1. As noted previously, fact sheets need to meet the requirements of 40 CFR 124.56(a).
2. As noted previously, RP analyses need to be appropriately performed and the conclusions included in fact sheets.

Action Items

Essential	<ul style="list-style-type: none"> • See Section B.2. - <i>Reasonable Potential and Water Quality-Based Effluent Limitations</i>. • Fact Sheets need to meet the requirements of 40 CFR 124.56(a). See Section B.2. - <i>WQBEL Development</i>.
Recommended	<ul style="list-style-type: none"> • See Section B.2. - <i>Reasonable Potential and Water Quality-Based Effluent Limitations</i>. • Update Kansas Antidegradation Procedures or apply antidegradation procedures per 40 CFR 131.12.

C. Monitoring and Reporting Requirements

Background and Process

NPDES regulations at 40 CFR 122.41(j) require permittees to evaluate compliance with the effluent limitations established in their permits and 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 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 the 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 determination of 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 40 CFR Part 136 analytical method.

The KDHE implementation process is highly standardized for routine parameters, with the suggested monitoring frequency for mechanical plants and large lagoons based on the average daily design flow as specified in the [Kansas Implementation Procedures: Wastewater Permitting](#). There has been longstanding agreement between EPA and KDHE on the monitoring frequencies specified in the *Implementation Procedures*. The permit writer can use BPJ to appropriately increase or decrease the monitoring frequency based on several factors listed in the *Kansas Implementation Procedures*, such as the historical performance based on DMR data for the treatment facility, or nutrient limits that are expressed as a rolling annual average. For example, the City of Abilene WWTF has an average daily design flow of 1.3 MGD which would require twice-monthly monitoring. Twice monthly monitoring is employed for most pollutants; however, total phosphorus limits are expressed as a rolling annual average and only monthly monitoring is required.

Most permits reviewed had adequately identified monitoring locations specified by both description and latitude/longitude (lat/long). One exception was the Element, LLC ethanol facility that only indicated a single lat/long. It was unclear if the lat/long was for the facility or the outfall or both. Some permits give better narrative descriptions of monitoring locations than others. For instance, the Lawrence Kansas River WWTF gives the effluent sampling as

“Plant Discharge to Receiving Stream”, while the Olathe Cedar Creek permit has the effluent location denoted as *“Main Plant Discharge to Receiving Stream (Monitoring location is immediately downstream of the UV disinfection facility station unless otherwise noted)”*. The Lawrence monitoring location could be anywhere from the disinfection unit to actual outfall pipe, while the Olathe monitoring location is much more precise. Clearly locking in a monitoring location will ensure all samples collected are at the same location and are more comparable over time.

For POTWs, KDHE includes monitoring for all TBEL parameters as required by the secondary treatment requirements of 40 CFR Part 133, including the influent monitoring required to calculate percent removal. KDHE also includes influent monitoring for total phosphorus and total kjeldahl nitrogen (TKN) to provide designers insight on nutrient load for any current or future nutrient reduction designs. While KDHE included monitoring for WET in major POTW permits, some permits do not require annual monitoring per 40 CFR 122.21(j)(5)(iv)(B). Annual monitoring was required for all non-POTW major permits reviewed.

For non-POTWs, KDHE includes monitoring for all parameters covered in the applicable ELG or identified as needing a TBEL through the BPJ process. When the need for a WQBEL was identified, limits and monitoring were present in the permit.

Monitoring for influent flow data at POTWs was not consistent. Of the permits reviewed, The El Dorado, Lawrence-Wakarusa, Newton, and Goddard WWTFs all had permit requirements for monitoring influent flow. None of the other permits had influent flow requirements. Some explanation should be provided as to why influent flow monitoring is only required for certain facilities. Influent flow data is highly recommended for the design of upgrades, evaluation of infiltration and inflow (I&I) of the collection system, and overall operation of a treatment system. Influent monitoring will also allow for observation of peak flows, in both frequency and amplitude, associated with I&I from the collection system as well as indicate any potential bypassing at the facility headworks.

The Standard Conditions sections of all permits reviewed required conformity with 40 CFR Part 136 methods and appropriate methods for WET testing. Kansas requires that all environmental labs supplying data as required by NPDES permits be accredited through KDHE; thus, assuring that all testing is standardized, and labs use appropriate methods.

For existing permits, KDHE uses DMR data to provide the monitoring data required for a permit application. The rules in 40 CFR 122.21 allow this, so long as the permit writer has all the monitoring data required in the rules. Per the 2017 PQR, KDHE is also utilizing EPA Form 2C for industrial permittees. For new permits, KDHE assesses effluent guidelines, data from similar facilities, TMDL WLAs, and application data supplied by the permittee to set limits and monitoring requirements. All permits are subject to Kansas regulation K.A.R. 28-16-62 which allows the agency to reopen the permit if limits need to be modified or added.

KDHE incorporates electronic reporting requirements into permits meeting EPA’s Phase 1 e-Reporting Rule. KDHE is currently undergoing a significant data system upgrade that will ultimately allow - among other new features - on-line application as well as submission of data for EPA’s Phase 2 e-Reporting Rule. The upgraded system is also being designed to make NPDES permits available on-line.

Program Strengths

1. Requiring influent monitoring for nutrients will assist in assessing WWTF performance and aid in any future design.
2. Statewide environmental laboratory certification program run by KDHE helps ensure quality data.
3. Inclusion of WET monitoring in all major and some minor permits with proper citation of the acute and chronic WET test methods.
4. Inclusion of required conditions in all permits (e.g., recordkeeping, e-Reporting, and use of 40 CFR Part 136 test methods).

Areas for Improvement

1. All major discharger permits must require at least annual monitoring for WET per 40 CFR 122.21(j)(5)(iv)(B), but may require more frequent monitoring, as necessary (40 CFR 122.41(j)(1) and 122.48(a-c)).
2. Locations of all outfalls with good narrative descriptions are needed on all permits.
3. Explanation of inclusion/exclusion of influent flow monitoring should be included in permit fact sheets.

Action Items

Essential	<ul style="list-style-type: none"> •All major permits must have at least annual monitoring requirements for WET limits per 40 CFR 122.21(j)(5)(iv)(B) with more frequent monitoring as necessary [40 CFR 122.41(j)(1) and 122.48(a-c)].
Recommended	<ul style="list-style-type: none"> •Locations of all outfalls need to be included with good descriptions of the sampling locations for each outfall. •Explanation for inclusion or exclusion of influent flow monitoring should be provided.

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 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.

KDHE uses boilerplate standard conditions. In the 2017 PQR, EPA included Category 1 findings that KDHE include pretreatment requirements in permits for pretreatment cities. In 2018, KDHE revised the standard conditions to meet the PQR items identified. All core permits reviewed included the revised standard conditions. EPA found no further changes, except for an updated email address. No additional changes are needed regarding standard conditions at this time.

Special conditions were included in numerous permits, as needed. Their use included compliance schedules; sludge requirements; e-Reporting requirements; and other facility specific requirements. Nutrient goals for total nitrogen and total phosphorus are listed under the special conditions for major WWTFs as specified in the [Kansas Surface Water Nutrient Reduction Plan](#). WET follow up procedures are described in the Kansas Implementation Procedures and these are included in special conditions.

KDHE allows schedules of compliance (SOCs) per EPA-approved WQS regulation, K.A.R. 28-16-28f(c). KDHE’s rule limits the length of SOC to three years with an exception provision for up to 5 years. KDHE determines whether the permit SOC or an enforcement order is the best tool to compel compliance. With the restriction on SOC timeframes, KDHE will sometimes issue enforceable compliance orders and include a reference to the orders in permits e.g., the Johnson County Wastewater Nelson Complex permit.

KDHE also allows variances compatible with 40 CFR 131.14. The procedures and requirements for individual and multi-discharger variances are spelled out in the Kansas WQS and [the Kansas Implementation Procedures -Water Quality Standards](#). KDHE has adopted a multi-discharger variance (MDV) for lagoon ammonia. The MDV has been approved as a water quality standard in Kansas. The MDV is only for domestic waste facultative lagoons. At permit renewal, KDHE evaluates each lagoon against the eligibility criteria in the MDV and if a permittee is deemed eligible, permit limits are established per the methodology adopted in the MDV.

Program Strengths

1. KDHE boilerplate standard conditions adopted March 1, 2018 contain conditions as stringent as the federal requirements and added pretreatment conditions as required in the 2017 PQR.

2. KDHE uses special conditions to highlight specific state and federal requirements – e.g., [Kansas Surface Water Nutrient Reduction Plan](#) requirements and federal biosolids requirements (40 CFR Part 503).
3. KDHE appropriately applied a schedule of compliance in the Element, LLC permit requiring a stormwater pollution prevention plan. The schedule was less than one year, so no interim requirements were necessary.

Areas for Improvement

1. None

Action Items

Essential	•None
Recommended	•None

E. Administrative Process

Background and Process

The administrative process includes documenting the basis of all permit decisions (40 CFR 124.5 and 124.6); coordinating 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 Kansas and reviewed materials from the administrative process as they related to the core permit review.

KDHE has implemented the permit administrative process as required. KDHE uses a standardized approach that assures an efficient administrative process. Permittees are contacted early so that applications are on time, and the process of getting a draft permit to public notice and re-issued is orderly.

A public notice announcement listing the names, addresses, legal descriptions, and receiving waters of facilities as well as a summary of proposed permits are placed in the *Kansas Register* – the official state of Kansas newspaper. The *Kansas Register* is available on-line at no cost or by hardcopy subscription; and is published every Thursday, including holidays. KDHE also maintains an email list of individuals wishing to receive permit public notices and sends email

notices weekly. Public notices of state-wide concern are published in the *Kansas Register* and major daily newspapers across the state. Regional and local issues are public noticed in the *Kansas Register*, regional, local daily and/or weekly newspapers based upon circulation of the newspaper and/or status as the official newspaper for the entity.

Outside of new or expanded CAFO permits which routinely have public hearings, there are rarely requests for public hearings on other NPDES permits. When there are, KDHE appoints a hearing officer who records verbal and written comments and sends those to the permitting staff. A response to comment is developed and distributed to all interested parties. All hearing, comment, and response information is included in the official record in the Central Office. KDHE responses to written comments outside of a hearing are maintained in the official record.

KDHE does not have a permit database that can be accessed by the public on its website. Plans are to make the permits publicly available via the KDHE website with the implementation of KDHE's upgraded database management system planned for later this calendar year. Currently, all official facility record information is stored at the Central Office.

Overall, KDHE has submitted permit-related information to EPA in a timely manner as agreed to in the Performance Partnership Grant (PPG). Once a week, KDHE e-mails EPA the list of draft water pollution control permits going on public notice the following week. KDHE also sends EPA notices of public hearings. As agreed in the PPG and the MOA, KDHE sends EPA copies of all draft permits for major facilities, as well as the fact sheets and other supporting documentation, such as the water-quality certification and DMR data used in determining permit and monitoring requirements. Also, per the MOA, EPA has 30 days to review and comment and/or initiate the objection process on the draft permit. Upon request, KDHE will send copies of minor permits to EPA electronically.

Once permits are issued, KDHE may modify them. A determination is made on whether the modification is minor – e.g., typographic errors. If so, KDHE reissues the modified permit and sends a copy to EPA. For other modifications, KDHE places the modified permit on public notice, accepts comments, and holds a hearing if necessary.

Due to an inability to do a thorough on-site file review, it could not be determined how KDHE did or did not document the bases for permit decisions.

Program Strengths

- KDHE broadly distributes public notices to a list of interested parties via email.
- EPA appreciates KDHE providing the public notice document one week prior to its publication in the *Kansas Register*. The extra week provides EPA 37 days for review.

Areas for Improvement

- Verify the record accurately documents KDHE's ultimate decision on each permit placed on public notice.

Action Items

Essential	•None
Recommended	•Verify the official record documents KDHE's decision on each permit

F. Administrative Record and Fact Sheet

Background and Process

The administrative record is the foundation that supports the NPDES permit. If EPA issues the permit, 40 CFR 124.9 identifies the required content of the administrative record for a draft permit and 40 CFR 124.18 identifies the requirements for a final permit. Authorized state programs should have equivalent documentation. The record should contain the necessary documentation to justify permit conditions. At a minimum, the administrative record for a permit should contain the permit application and supporting data; draft permit; fact sheet or statement of basis;³ all items cited in the statement of basis or fact sheet including calculations used to derive the permit limitations; meeting reports; correspondence between the applicant and regulatory personnel; all other items supporting the file; final response to comments; and, 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.

The PQR did not include a review of the physical permit file and all supporting documents making up the administrative record due to pandemic-related travel restrictions. However, past

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

reviews have not indicated deficiencies with the record which consist of paper files maintained in the Topeka Central Office. The permit files are populated with documents provided by permitting staff and maintained by administrative staff.

KDHE provided electronic versions of permit applications, the current permit, the immediate past permit, and the fact sheet. EPA also maintains electronic copies of KDHE public notice documents that are also a part of the record. As questions arose reviewing these documents, KDHE provided copies of other record documents electronically. A review of these records indicated the state followed the administrative procedures required by 40 CFR Part 124, as described above. The portion of the administrative record reviewed along with fact sheets contain very good descriptions of the facility and the process waste streams. Treatment descriptions are complete and well written.

It is up to the individual permit writers to send documents related to the permitting process to the hardcopy files maintained in the KDHE Central Office. KDHE archives files and has procedures to keep records for at least the minimum time specified in federal rule.

EPA reviewed the fact sheets and statements of basis included with all draft major permits and select minor permits KDHE has sent to EPA during the year as well as the fact sheets/statements of basis for permits reviewed during the PQR. In addition to the fact sheets, KDHE provides a Water Quality Review Memorandum that reviews all the data to make sure the permit complies with WQS. Fact sheets included listing of all permit limits, and how the limits were derived (technology-based effluent limits or TBELs, WQBELs, and/or TMDL WLAs, etc.). The fact sheets reviewed included the outcome of the KDHE permit derivation process but did not consistently provide calculations supporting the permit limits. For example, formulae used for BOD and ammonia calculations were not included in the fact sheets. While the printouts of the water quality certification spreadsheets provided the outcome of the analyses, formulae could not be examined without having access to the electronic version of the spreadsheet model and an above average understanding of MS Excel formulae. It did appear, however, KDHE's permit derivation approaches set forth in the [Kansas Implementation Procedures - Wastewater Permitting](#) were followed but were not detailed in every Fact Sheet.

KDHE relies heavily on the allowance at 40 CFR 122.21(j) where the KDHE Director may waive any submission of any information if he or she has access to substantially identical information. Thus, someone reviewing the record may not find submission of certain information by the permittee if it has been waived by KDHE e.g., effluent monitoring data as a part of their application. It would be good practice for KDHE to place a statement in the fact sheet or other record document to acknowledge any such waivers.

Program Strengths

1. KDHE has a fixed, mature process for maintaining the administrative record.
2. Fact Sheets do an excellent job at describing treatment processes, and facility description.
3. Fact Sheets clearly indicate the bases for permit limits, e.g., TBEL, WQBEL, and/or TMDL WLAs.

Areas for Improvement

1. Fact sheets do not include all calculations/formulae used to develop WQBELs. This shortcoming can be fairly easily overcome by appending printouts of the spreadsheets used to calculate the WQBELs and ensuring those printouts contain the formulae utilized.
2. The fact sheet or other part of the record should include an acknowledgement that KDHE waives submission of certain information which KDHE already has identical information per 40 CFR 122.21(j). Otherwise, it may be unclear to a file reviewer if the information is missing, or simply waived.

Action Items

Essential	<ul style="list-style-type: none"> •As identified earlier, Fact Sheets must comply with 40 CFR 124.56 by providing any calculations or other necessary explanation of the derivation of specific effluent limitations
Recommended	<ul style="list-style-type: none"> •It would be good practice to include in a program document or the fact sheets for POTWs “referencing information previously submitted to the Director” or Director may waive any requirement of this paragraph if he or she has access to substantially identical information” per 40 CFR 122.21(j). KDHE takes advantage of this provision in looking at DMR data submission.

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 Municipal Separate Storm Sewer System (MS4) Permit Requirements.

A. Permit Controls for Nutrients in Non-TMDL Waters

Background

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

Federal regulations at 40 CFR 122.44(d)(1)(i) require permit limits to be developed for any pollutant that causes, has the reasonable potential to cause, or contributes to an impairment of water quality standards, whether those standards are narrative or numeric.

To assess how nutrients are addressed in the Kansas NPDES program, EPA Region 7 reviewed 3 permits as well as the *Kansas Surface Water Nutrient Reduction Plan*.

Table 5. Nutrient Permits Reviewed

Category	Name	NPDES Permit Number	Number
Total			3
Major POTW	Manhattan WWTF	KS0036714	1
Minor Industrial	Creekstone Farms Beef	KS0101524	1
Other	Dodge City Water Reclamation Facility	KS0099830	1

In March 2011, EPA announced a framework for nutrient reductions that, in part, called for ensuring the effectiveness of point source permits in sub-watersheds targeted or identified as priorities due to nutrient pollution – the “Stoner memo”. The framework specifically identified permits for municipal and industrial wastewater treatment facilities that contribute significant nitrogen and phosphorus loadings, CAFOs, and urban stormwater sources that discharge into nitrogen and phosphorus impaired waters or are significant sources of nitrogen and phosphorus. The framework was later reiterated in 2016 memo titled *Renewed Call to Action to Reduce Nutrients Pollution and Support for Incremental Actions to Protect Water Quality and Public Health* - the “Beauvais memo”.

In 2004, KDHE took what was then a unique approach to nutrient control as described in the [Surface Water Nutrient Reduction Plan](#). The Plan was a forerunner to the 2011 Stoner memo in that it promoted incremental nutrient reduction while studying methods for developing criteria. The plan established a policy for phasing in technology-based limits for major point sources and nonpoint source controls using an adaptively managed approach. KDHE established nutrient goals for major POTWs on a long-term schedule that allowed for consideration of treatment cost. Major industrial permittees are treated similarly; however, the Plan recognizes that while significant nutrient reduction can be attained by industrial majors, it may not be to the specific technology-based limits for POTWs. So, while Kansas isn’t doing a traditional RP calculation, they are in effect determining the need for nutrient reduction for permits through their Nutrient Reduction Plan. The Kansas process does not translate narrative criteria into enforceable permit limits since technology-based limits are currently applied.

The Plan also recognizes the outsized impact of unregulated nonpoint sources of nutrients in the state, while acknowledging the role point sources play. Technology-based nutrient limitations were to be phased into municipal WWTF permits over three permit cycles – by January 1, 2020. It was expected that most major (> 1 MGD average design flow) municipal WWTFs could meet total nitrogen limits of 8 mg/L and total phosphorus limits of 1.5 mg/L on

an annual average basis with biological nutrient removal technology. In Kansas, the 48 major POTWs account for 85 % of the wastewater discharging to Kansas waters.

At the current time, Kansas has adopted the response parameter chlorophyll-a (Chl-a) as a numeric nutrient criterion for reservoirs. Where appropriate, KDHE models total nitrogen (TN) and total phosphorus (TP) concentrations that drive Chl-a.

Where reservoirs are not drivers of nutrient limits, KDHE's Plan was to require major and large mechanical minor WWTFs building new plants or significantly upgrading their current plants to include nutrient reduction in their plans and to conduct cost and feasibility studies in order to meet the planned nutrient reduction. As Kansas has not adopted causal nutrient WQSs, the level of nutrient reduction is based upon the receiving stream characteristics, facility design flow rate and other factors. Kansas has listed waters as impaired for nutrients without having nutrient criteria e.g., diurnal DO and pH fluctuation. Where TMDLs translate to nitrogen or phosphorus limits, NPDES permits contain limits conforming to the TMDL wasteload allocations (WLAs).

There is a requirement for minor or non-major POTWs (<1 MGD average design flow) to optimize treatment for nutrient removal and evaluate the cost of incorporating technology-based biological nutrient removal if the WWTF is proposed for expansion. To help meet that requirement, KDHE has engaged CleanWaterOps (Grant Weaver, PE) to provide group training and facility-specific training in Kansas. Kansas also contracted with the late Jerry Grant, PE to provide hands-on nutrient optimization for smaller mechanical plants in Kansas.

To assess how nutrients are addressed in the Kansas NPDES program, EPA Region 7 reviewed 3 permits (City of Manhattan WWTF, Creekstone Farms Premium Beef, and Dodge City Water Reclamation Facility).

- The City of Manhattan WWTF is a major facility that was designed and built to provide for nutrient reduction. The permit requires rolling annual average mass limits for total nitrogen (TN) and total phosphorus (TP) of 734 and 91.91 lb/day, respectively. While the TP limit is based on a TMDL WLA, the TN limit is based the Nutrient Reduction Plan coupled with application of antidegradation when the plant was recently upgraded. The plant has routinely met and exceeded the permit limits achieving a 95% reduction in TP (36 lb/day) and an 85% reduction in TN (285 lb/day). It should also be noted that the plant is currently at about one-half of its hydraulic capacity, so the mass would double at full design capacity to 570 lb/day for TN and 72 lb/day for TP – still well below the permitted values.
- Creekstone Farms Premium Beef is a minor industrial facility subject to effluent guidelines per 40 CFR Part 432, Subpart B -Complex Slaughterhouses. Therefore, there is an ELG limit for TN; TP is not a pollutant parameter subject to the ELG but is limited by KDHE based on a TMDL WLA. A significant WWTF upgrade is required by a Schedule of Compliance to be operational and meet the TP limit by March 31, 2022.

- Dodge City Water Reclamation Facility is a major POTW. The facility has the option to discharge to surface waters or irrigate effluent. When the facility discharges to the surface, nutrient limits are imposed – rolling annual averages of TN of 8 mg/L and TP of 1.5 mg/L per the Kansas Nutrient Reduction Plan. The facility averages 5.2 mg/L TN and 0.68 mg/l. Both well below their respective permit limits.

Kansas has been very successful in getting nutrient reduction from their POTWs and industries either through optimization or construction. A review of 2020 annual average data in ICIS-NPDES indicates the following as an aggregate average for all facilities reporting TN and TP:

Table 6. Effluent Nutrient Data for Kansas Permittees

Parameter	Median (mg/L)	Average (mg/L)
Total Phosphorus	1.7	2.2
Total Nitrogen	8.1	13.0

Kansas has also required both influent and effluent nutrient monitoring for all majors and significant minor POTWs and industrial facilities where nutrients are a pollutant of concern. This information – particularly influent concentrations – is extremely valuable to designers in optimizing and designing nutrient reduction.

As would be expected, KDHE has adapted their nutrient reduction strategies as more was learned following the publication of the [Kansas Surface Nutrient Reduction Plan](#). For example, the initial technology-based goals were 8.0 mg/L TN and 1.5 mg/L TP. With TP being of more concern in freshwater, KDHE has allowed permittees to opt for 10 mg/L TN and 1.0 mg/L TP. Now would be a good opportunity for KDHE to update the Plan and include updated implementation as well as goals and targets.

Program Strengths

1. Kansas requires nutrient monitoring in most permits where nutrients are a pollutant of concern – including lagoons.
2. All Kansas fact sheets reviewed discussed any nutrient impairments or TMDLs for the receiving water.
3. All Kansas fact sheets reviewed included the basis for monitoring or limits.
4. Kansas assumes nutrients in all POTW discharges and has been collecting TP and TN data for a decade or more.
5. The *Kansas Surface Water Nutrient Reduction Plan* has produced significant reductions in point source nutrients.

Areas for Improvement

1. Since some of the implementation measures and goals in the [Kansas Surface Water Nutrient Reduction Plan](#) have changed, the Plan should be updated to reflect Kansas' latest thinking.
2. KDHE should investigate any other mechanisms available that might accelerate nutrient reduction—e.g., exploring the possible use of translating narrative criteria.

Action Items

Essential	<ul style="list-style-type: none">•None
Recommended	<ul style="list-style-type: none">•KDHE should update the <i>Kansas Nutrient Reduction Plan</i> to incorporate new reduction targets, goals, and dates.•Explore other mechanisms to accelerate nutrient reduction.

B. Effectiveness of POTW NPDES Permits with Food Processor Contributions

Background

The PQR national topic area *Effectiveness of POTW NPDES Programs with Food Processor Contributions* evaluates successful and unique practices with respect to food processor industrial users (IUs) by evaluating whether appropriate controls are included in the receiving POTW's NPDES permit and documented in the NPDES permit fact sheet or statement of basis. This topic area aligns with the EPA Office of Enforcement Compliance and Assurance National Compliance Initiative, [Reducing Significant Noncompliance with National Pollutant Discharge Elimination System Permits](#) by gathering information that can be used to provide permit writers with tools to maintain or improve POTW and IU compliance with respect to conventional pollutants and nutrients.

The food processing sector manufactures edible foodstuffs such as dairy, meat, vegetables, baked goods, and grains from raw animal, vegetable, and marine material. The main constituents of food processing wastewaters are conventional pollutants (BOD, TSS, oil and grease [O&G], pH, and bacteria) and non-conventional pollutants (such as phosphorus and ammonia). These pollutants are compatible with POTW treatment systems. However, the POTWs may not be designed or equipped to treat the intermittent or high pollutant loadings that can result from food processing indirect discharges.

The General Pretreatment Regulations at 40 CFR 403.5(c)(1) require POTWs with approved pretreatment programs to continue to develop and apply local limits (LLs) as necessary to control any pollutant that can reasonably be discharged into the POTW by an IU in sufficient amounts to pass through or interfere with the treatment works, contaminate its sludge, cause problems in the collection system, or jeopardize workers health and safety. POTWs that do not have approved pretreatment programs may also be required to develop specific LLs as circumstances warrant (see 40 CFR 403.5(c)(2)). LLs and other site-specific requirements are enforced by the POTW through IU control mechanisms and the POTW's Sewer Use Ordinance.

The General Pretreatment Regulations require an approval authority to ensure that all substantive parts of the POTW's pretreatment program are fully established and implemented, including control mechanisms a POTW issues to its IUs to reduce pollutants in the indirect discharge (see 40 CFR 403.11). The Kansas Department of Health and Environment (KDHE) issues NPDES permits directly to POTWs in Kansas. KDHE does not have the authority to implement the pretreatment program; therefore, EPA Region 7 is the Approval Authority for Kansas POTWs. EPA Region 7 operates under a Memorandum of Agreement (MOA) in which KDHE performs some of the duties on behalf of EPA Region 7.

Table 7 identifies the pretreatment and NPDES requirements considered during this PQR. In this table, the terms Director and Permitting Authority refer to EPA Region 7. The term Control

Authority refers to the two POTWs with approved pretreatment programs, or to KDHE for the two POTWs without an approved pretreatment program.

Table 7. Regulatory Focus for this Section of the PQR

Citation	Description
40 CFR 122.42(b)	POTW requirements to provide adequate notice of new pollutants to the Director
40 CFR 122.44(j)	Pretreatment Programs for POTW
40 CFR 124.3(a) and (c)	The POTW must submit a timely and completed application for an NPDES permit or NPDES permit renewal
40 CFR 124.8(a) and (b)	The permitting authority must prepare a fact sheet for every draft permit for a major NPDES facility. Fact sheets must briefly set forth the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit including references.
40 CFR 403.5(a), (b) and (c)	National pretreatment standards: Prohibited discharges
40 CFR 403.3	Definitions
40 CFR 403.8	Pretreatment program requirements: Development and implementation by POTW
40 CFR 403.10	Development and submission of NPDES state pretreatment programs
40 CFR 403.11	Approval procedures for POTW pretreatment programs and POTW granting of removal credits

Findings

Pretreatment Program Coverage

As shown in Table 8, 67 POTWs in Kansas, or approximately 15 percent of all NPDES-permitted POTWs in the state, receive indirect discharges from one or more significant industrial users (SIUs). Among them, 25 POTWs are covered in 17 approved pretreatment programs; those POTWs are the control authority for a total of 216 SIUs. KDHE serves as the control authority for 57 CIUs in POTWs without an approved pretreatment program.

Table 8. Kansas SIUs by Pretreatment Program Status

SIU Description	Number of SIU(s) Controlled by an Approved Pretreatment Program (25 POTWs) ¹	Number of SIU(s) Not Controlled by an Approved Pretreatment Program (42 POTWs) ¹	Total
Categorical Industrial User (CIU)	98	57 ²	155
Non-CIU	118	0 ³	118
Total SIU	216	57	273

¹ Data source: Received data via email on 6/15/2021 from the EPA Region 7 Pretreatment Coordinator.

² KDHE issues control mechanisms to all CIUs in non-approved POTW pretreatment programs.

³ KDHE does not issue control mechanisms to non-categorical SIUs in non-approved POTW pretreatment programs. The total number of non-categorical SIUs discharging to POTWs without an approved pretreatment program is unknown.

KDHE's Permitting and Compliance Section is responsible for writing NPDES permits for both municipal and industrial permittees. KDHE and EPA Region 7 require POTWs with a design flow of 5 million gallons per day (MGD) or greater that receive process wastewater from discharging SIUs to develop and implement a formal pretreatment program. KDHE and EPA Region 7 have required an approved pretreatment program at an additional eight POTWs with a design flow of less than 5 MGD, due to potential impacts from SIU wastewater discharges. There are currently a total of 17 approved pretreatment programs in the state.

Major and non-major wastewater treatment plants (WWTPs) are required by 40 CFR 124.3(a) to submit the EPA permit application and include details on their SIUs. Before drafting a municipal permit, the KDHE permit writers contact the KDHE pretreatment coordinator to ask if there are any industries discharging non-compatible wastewater to the city wastewater treatment plant. Additionally, the permit writers ask if any pretreatment requirements need to be incorporated in the NPDES permit. KDHE's pretreatment coordinator provides the specific pretreatment language needed for each NPDES permit.

KDHE's pretreatment coordinator sends questionnaires to potential SIUs discharging to POTWs without an approved pretreatment program. Based on the responses received, KDHE's pretreatment coordinator inspects industrial users that may be subject to pretreatment standards. KDHE sends a permit application to industrial users that need a permit. As outlined in the memorandum of agreement (MOAs), KDHE staff confer with EPA Region 7 to determine if a POTW needs to develop an approved pretreatment program.

Under the MOA, KDHE staff perform all the day-to-day operations of the pretreatment program. KDHE's pretreatment coordinator reviews annual and semi-annual pretreatment program reports, LLs, and program modifications. However, program modifications, including LL modifications, sewer use ordinance (SUO) modifications, etc., must be approved by EPA Region 7.

EPA Region 7 determined that only a small number of SIUs in Kansas are food processors. Table 8 shows that 155 of the 273 SIUs are CIUs, covered by federal categorical pretreatment standards (see 40 CFR 403.8(f)(1)(ii)). There are currently no Federal categorical pretreatment standards for food processors.

Table 9 identifies the four NPDES permits selected for this topic area. All four have an SUO controlling discharges to the POTW. Table 9 shows minimum standards for IUs through the SUO LLs and/or surcharge controls for conventional pollutants. The type of control (LL or surcharge) and parameters controlled vary by SUO; all four regulate BOD₅ (or carbonaceous biochemical oxygen demand [CBOD₅]) and TSS and two control O&G. SUOs are available online for all of the POTWs (hyperlinked in the table).

Table 9. NPDES Permits Selected for the Pretreatment Topic Area

Permittee (SUO is linked)	Permit No.	Approved Program?	Design Average Flow (MGD)	No. of SIUs ¹	No. of Food Processor IUs ¹	Example of SUO Controls
City of Abilene	KS0098647	No	1.5	2	2	Local limits for BOD, TSS, and flow; the SUO does not list additional numeric limits Surcharge for BOD and TSS
City of Emporia	KS0046728	Yes	4.6	11	3	Local limits for BOD, suspended solids, O&G, pH, silver, arsenic, cadmium, cyanide, chromium, copper, mercury, nickel, lead, and zinc Surcharge for BOD and suspended solids
City of Moundridge	KS0021008	No	0.233	1	1	Local limits for pH, BOD, suspended solids, and flow Extra strength charge for BOD, suspended solids, and O&G
City of Topeka	KS0042714 (North Plant); KS0042722 (Oakland Plant)	Yes	12.0 (North Plant); 16.0 (Oakland Plant)	20	9	Local limits for BOD, TSS, ammonia, arsenic, cadmium, cyanide, chromium, copper, mercury, molybdenum, nickel, selenium, silver, lead, and zinc User charge based on suspended solids, BOD, O&G, and chlorine demand

¹ Based on the information provided in the permit application.

EPA performed reviews of three food processing SIU permits issued by POTWs in approved programs (two for the City of Emporia, and one for the City of Topeka, as listed in Table 10). EPA reviewed these discharge control mechanisms issued by the POTWs to identify how, and if any, IU controls on conventional pollutants are being implemented. EPA Region 7 and KDHE do not issue permits to non-categorical SIUs discharging to POTWs without approved pretreatment programs.

Table 10. Summary of Industrial User Discharge Permit Conditions

Facility Name	Permit Number ¹	Receiving POTW	Type of Food Processor ²	Classification by POTW	Average Process Wastewater Discharge (gallons per day [gpd]) ²	Monitored Pollutants ³
Hostess Brands Corp	P-04-9	City of Emporia	Bakery	SIU	98,000	<u>Limits:</u> Temperature and O&G <u>Surcharges:</u> BOD and TSS
Simmons Pet Food, Inc.	P-02-9	City of Emporia	Pet foods	SIU	51,000	<u>Limits:</u> O&G and pH <u>Surcharges:</u> BOD and TSS
Frito-Lay, Inc.	13-2096-16	City of Topeka	Snack foods	SIU	494,000	<u>Limits:</u> pH, Temperature, O&G, TKN, and Total Phosphorus <u>Surcharges:</u> BOD and TSS

¹ All the control mechanisms reviewed were permits issued by the control authority to the SIU.

² Based on information included in the POTW’s 2020 Pretreatment Annual Report.

³ Based on information included in the industrial user’s control mechanism. Includes parameters identified in the permit with numerical discharge limits, applicable surcharge values, and/or monitoring only requirements.

Minimal monitoring of a potentially inconsistent-quality industrial user discharge may prevent a POTW from detecting and expeditiously reacting to influent quality changes. EPA compared IU effluent limitations and discharge monitoring frequencies for food processors with those for the receiving POTWs to evaluate the adequacy of IU discharge monitoring frequencies to support timely detection of discharges with the potential to cause problems with the POTW collection or treatment systems.

Table 11. Comparison of POTW and Industrial User Discharge Permit Conditions

IU and Receiving POTW	Pollutant Monitoring Frequency and Limit ¹									
	Total P		Ammonia		BOD		TSS		O&G	
City of Emporia										
Hostess Brands Corp	N/A	N/A	N/A	N/A	Bi-weekly	300 mg/L	Bi-weekly	300 mg/L	Bi-weekly	150 mg/L

IU and Receiving POTW	Pollutant Monitoring Frequency and Limit ¹									
	Total P		Ammonia		BOD		TSS		O&G	
Simmons Pet Food, Inc.	N/A	N/A	N/A	N/A	Bi-weekly	300 mg/l	Bi-weekly	300 mg/L	Bi-weekly	150 mg/L
City of Emporia	1x/week	Monitor only MA in lbs/day and mg/L	1/week (Total Nitrogen)	Monitor only	1/week	45 mg/L WA; 30 mg/L MA	1/week	45 mg/L WA; 30 mg/L MA	N/A	N/A
City of Topeka										
Frito Lay	1/quarter	Monitor only	1/quarter (TKN)	Monitor only	1/quarter	Surcharge only	1/quarter	Surcharge only	1/quarter	150 mg/L
City of Topeka North Plant	1/month	Monitor only MA in lbs/day and mg/L	1/month (TKN)	Monitor only	2/week (CBOD ₅)	40 mg/L WA; 25 mg/L MA	2/week	45 mg/L WA; 30 mg/L MA	N/A	N/A
City of Topeka Oakland Plant	1/month	Monitor only MA in lbs/day and mg/L	1/month (TKN)	Monitor only	2/week (CBOD ₅)	40 mg/L WA; 25 mg/L MA	2/week	45 mg/L WA; 30 mg/L MA	N/A	N/A

¹ For this table, not applicable is abbreviated N/A, weekly average is abbreviated WA, monthly average is abbreviated MA, and monthly maximum is abbreviated MM.

Program Strengths

Approved Programs

The City of Emporia's and City of Topeka's NPDES permits contain effluent limitations for BOD, TSS, and pH based on secondary treatment standards in accordance with 40 CFR 133.102. The NPDES permits also establish effluent monitoring and/or limitations for phosphorus and nitrogen. As noted above in Table 9, the City of Emporia has adopted LLs for BOD, suspended solids, pH, and O&G and calculates a surcharge for BOD and suspended solids. The City of Topeka has adopted LLs for BOD, TSS, and ammonia and calculates a user charge based on suspended solids, BOD, O&G, and chlorine demand.

The industrial user permits issued to the food processors by the City of Emporia have similar monitoring frequencies to the POTW's NPDES permit for BOD and TSS. The permit issued to the food processor by the City of Topeka has less frequent monitoring frequencies for all parameters. These monitoring frequencies appear adequate to provide the POTW information to assess if the industrial conventional pollutant load affects the POTW operations.

The City of Emporia's and City of Topeka's NPDES permits require the POTWs to implement approved pretreatment programs per 40 CFR 403.8, and the fact sheets for both of the NPDES permits identify the approval date of the approved pretreatment program. Pretreatment requirements are incorporated by reference in the NPDES permits.

Non-Approved Programs

The NPDES permits for both the City of Abilene and the City of Moundridge contain effluent limitations for BOD, TSS, and pH based on secondary treatment standards in accordance with 40 CFR 133.102. The City Abilene's NPDES permit also imposes effluent limitations for ammonia. The NPDES permit also imposes effluent monitoring requirements for phosphorus, total Kjeldahl nitrogen (TKN), nitrate plus nitrite, total nitrogen, and chlorides. The City of Moundridge's NPDES permit also imposes effluent monitoring requirements for phosphorus, TKN, total nitrogen, arsenic, and zinc. In addition, both the City of Abilene and the City of Moundridge have adopted LLs for BOD and TSS; the City of Moundridge has also adopted LLs for pH. Both the City of Abilene and the City of Moundridge have adopted LLs for flow rate. Because these POTWs have low design average flow rates, high flow rates from industrial sources could result in upsets in the treatment processes.

The NPDES permits for both the City of Abilene and the City of Moundridge require the permittees to "...require any industrial user of the treatment works to comply with 33 USC Section 1317, 1318 and any industrial user of storm sewers to comply with 33 USC section 1308."

Areas for Improvement

Approved Programs

The City of Emporia's and City of Topeka's NPDES permits do not require a written technical evaluation of the need to revise LLs following permit issuance or reissuance [40 CFR 122.44(j)(2)(ii)]. Additionally, the NPDES permit fact sheets for both pretreatment programs do not state when LLs were last evaluated and the date that the current limits were adopted. Permit writers should specify the POTW's most recent LLs submission date in the permit to ensure that the program is adequately evaluating its LLs, in compliance with the federal regulations.

The NPDES permit fact sheets for the City of Emporia and the City of the Topeka do not identify and characterize the contributing industrial dischargers. Permit writers should identify industrial dischargers in the fact sheet to ensure that all discharges to the POTW are properly characterized and controlled.

The NPDES permit fact sheets for both the City of Emporia and City of Topeka Oakland Plant do not identify the approval and modification dates of the approved POTW pretreatment programs nor do they identify the basis for requiring program development and implementation. Permit writers should specify the program approval or modification dates in fact sheets to ensure that the program includes up-to-date federal regulations. Additionally, NPDES permit fact sheet for the City of Topeka North Plant does not state that the City is required to develop and implement an approved pretreatment program.

The NPDES permits for both the City of Emporia and City of Topeka state, "Any anticipated facility expansions, production or flow increases, or production or wastewater treatment system modifications which result in a new, different or increased discharge of pollutants shall be reported to the Division at least one hundred eighty (180) days before such change." However, this language does not specifically include "any *new* introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the [Clean Water Act] CWA" as required in 40 CFR 122.42(b)(1).

The City of Emporia's and City of Topeka's NPDES permit applications do not specify, for SIUs, the average daily volume of wastewater discharged, whether the SIU is subject to categorical standards, or whether any problems at the POTW have been attributed to the SIU in the past 4.5 years. Permit writers must ensure that the NPDES permit application includes all industrial users or potential SIUs and identifies any applicable categorical classifications. [40 CFR 122.21(j)(6)]. Permit writers also must ensure that the NPDES permit applications received are complete and accurate. It should be noted that POTWs with approved pretreatment programs may request to substitute their most recently submitted annual pretreatment report that contains SIU characterization information in place of Section F of the NPDES Application Form. [40 CFR 122.21(j)(6)(iii)]. Additionally, this substitution of the use of the pretreatment annual report should be noted in the permit fact sheet.

Non-Approved Programs

The City of Abilene’s and City of Moundridge’s NPDES permit applications do not specify, for SIUs, the average daily volume of wastewater discharged, whether the SIU is subject to categorical standards, or whether any problems at the POTW have been attributed to the SIU in the past 4.5 years. Permit writers must ensure that the NPDES permit application includes all industrial users or potential SIUs and identifies any applicable categorical classifications. [40 CFR 122.21(j)(6)]. Permit writers also must ensure that the NPDES permit applications received are complete and accurate.

The food processing SIUs discharging to Abilene and Moundridge were not issued discharge permits. Facilities that meet the definition of SIU in 40 CFR 403.3(v) should be issued a discharge permit.

Action Items

Essential

- Permit writers must ensure that NPDES permit applications received are complete and accurate, including identification of SIUs. [40 CFR 122.21(j)(6)]
- Permit writers must ensure that the NPDES permit application includes all industrial users or potential SIUs and identifies any applicable categorical classifications. [40 CFR 122.21(j)(6)].
- Permit writers must ensure that NPDES permits for POTWs contain all of the requirements in 40 CFR 122.42(b).
- Permit writers must ensure that that all NPDES permits for POTWs with approved pretreatment programs requires a written technical evaluation of the need to revise local limits following permit issuance or reissuance. [40 CFR 122.44(j)(2)(ii)]

Recommended

- Permit writers should specify the program approval or modification dates in fact sheets to ensure that the program includes up-to-date federal regulations.
- Permit writers should specify the POTW’s most recent local limits submission date in the permit to ensure that the program is adequately evaluating its local limits, in compliance with the federal regulations.
- Permit writers are reminded to ensure POTWs maintain adequate controls on industrial discharges to ensure that the POTW is protected from pollutant loads that could overwhelm the wastewater treatment plant. This includes specifying all applicable effluent limits, slug discharge control plan requirements, and notification requirements.

C. Small Municipal Separate Storm Sewer System (MS4) Permit Requirements

Background

Prior to 2019 Kansas had been permitting regulated small MS4s through general permits; currently small MS4s are being regulated through individual permits which all follow the same template. As part of this PQR, EPA reviewed Lenexa's small MS4 permit 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 coverage is by 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 (MCMs), 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

- KDHE's small MS4 permit template contains clear, specific, and measurable permit requirements while at the same time offering a great deal of flexibility for a municipality to develop a stormwater management program tailored to its specific needs by using a points-based system for implementing the six MCMs. The permit contains a menu of specific BMPs that can be used to meet each MCM. There is a total of 64 different BMP choices specified in the permit for implementing the 6 MCMs. Each BMP has a certain point value associated with it and the permit specifies the minimum total point score (which can increase over time) that the municipality must achieve for each MCM.

For example, the Lenexa permit requires that for the Public Education and Outreach (P Ed & O) MCM, the City must implement BMPs totaling to 4 points annually for 2021 and 2022; and 7 points annually in 2023 and thereafter. The permit contains 17 different P Ed & O BMPs for the City to choose from, with each BMP having a point value associated with it. Some BMPs are worth one point, while others have point values up to three. The City has the flexibility to choose among the BMPs so long as it meets the minimum assigned point total for each year. Lenexa has submitted their Stormwater Management Plan and intends to exceed the minimum permit point requirements by achieving 7 points in 2021, and 14 points annually every year thereafter. In fact, Lenexa plans to far exceed the required annual point totals for each of the six MCMs.

- The permit contains all of the elements required under the federal regulations and represents a large improvement over the previous generation of permits.

- The permit does a good job of making the BMP menu items clear, specific, and measurable. For example, one of the BMPs for P Ed & O is for the city to maintain a stormwater website. As part of “maintaining” the website the city must check all the links on the website monthly to make sure they all work, and to keep a log of the monthly checks, along with logging changes to the website.

Areas for Improvement

- Trying to find the right balance of assigning point values to the various BMP choices can be challenging. Some BMPs which require a great deal of effort on the part of the permittee may not have a correspondingly high point value. For example, one of the BMP menu options in the P Ed & O MCM is to post the City’s MS4 permit and Stormwater Management Plan on a city website. This option would take a relatively low level of effort and is worth one point. But options which may require much more effort, like stenciling 10% of the City’s stormwater inlets per year are only worth two points. If KDHE finds, as the program develops, that MS4s tend to be choosing the options that require the least amount of effort, the Department may want to recalibrate the points-based system. One way this might be done is by raising the total point requirement for each BMP so that points assigned to each option can better represent the level of effort needed to implement that option.

Action Items

Essential	•None
Recommended	•After the first permit term evaluate whether the points-based system needs to be recalibrated

V. REGIONAL TOPIC AREA FINDINGS

A. NPDES Concentrated Animal Feeding Operation (CAFO) Permits

Kansas’s Bureau of Environmental Field Services administers the CAFO permit program through its Livestock Waste Management Section in Topeka. In Kansas all facilities meeting the federal definition of a CAFO are required to obtain NPDES permits. At the time of this PQR there were 432 such facilities which all had current individual NPDES permits. Animal feeding operations

(AFOs) with animal numbers corresponding to medium sized federal facilities, as well as smaller facilities which have significant pollution potential, are required to obtain permits issued under State authority. At the time of this PQR there were 1,328 such facilities.

The central office staff receive and review CAFO applications and nutrient management plans (NMPs) and issue the NPDES permits. Six field offices are responsible for inspecting CAFOs. Inspections are scheduled so that each CAFO is inspected at least once in an 18-month period. Inspections also occur when complaints are received about a CAFO. At the time of the PQR there are 7 staff members who write CAFO permits. The permits follow a 'template' of sorts so that even though the permits are individual permits they tend to be very similar if they were written near the same time – 'templates' change over time. For this PQR three CAFO permits were reviewed that were similar but also with some significant differences; partially this is due to the four-year time span over which the permits were written. The following is a general description of the three CAFO permits reviewed as part of this PQR:

KM Feeders (NPDES ID #KS0080730) is a 6,000 head (maximum) beef cattle feeding operation in Rice County, KS. The CAFO is in the jurisdiction of the North Central District Office. The facility is an open feedlot about 53 acres in size with three sedimentation basins (shallow basins for settling solids) and three runoff retention structures.

Stone Post Dairy, LLC (NPDES ID #KS0115061) is a 7,450 head (maximum) dairy operation in Hodgeman County, KS. The CAFO is in the jurisdiction of the Southwest District Office. The facility consists of buildings and open lot areas totaling about 135 acres, with six sedimentation basins and four runoff retention structures.

Tiffany Cattle Co., Inc. (NPDES ID #KS0116351) is a 13,000 head (maximum) beef cattle feeding operation in McPherson County, KS. The CAFO is in the jurisdiction of the North Central District Office. The facility is an open feedlot about 100 acres in size, with eight runoff retention structures.

Federal regulations that apply to these CAFOs are found in 40 CFR 122.42(e) and various subsections of 40 CFR Part 412. KDHE's CAFO permitting program requires that CAFOs submit a NMP for approval before a permit can be issued. KDHE further requires that the NMP be developed in compliance with the 2010 Kansas Technical Standards for Nutrient Management. (The Technical Standards require that facilities must annually sample manure, litter, compost, and process wastewater for total nitrogen, organic nitrogen, ammonium-nitrogen, phosphorus, and moisture content. Also, application field soils must be sampled for organic matter, pH, phosphorus, potassium, and nitrate-N. The risk of phosphorus loss and nitrogen loss must be assessed and accounted for when determining appropriate application rates. There must also be a 100-foot separation distance or 35-foot vegetative buffer between applied wastes and downgradient surface water, tile intakes, sinkholes, and well heads.) In addition, KDHE generally requires that permittees use forms developed by the department for the annual reports and operations reports required by the permits. If permittees are properly using all these state-required mechanisms, and complying with their NPDES permit, then all the

federal requirements in the above regulations should be met – save one. 40 CFR 412.4(c)(4) requires that permitted CAFOs periodically inspect land application equipment for leaks. This requirement was not found in any of the permits or above required state-approved forms/standards. There is a state provided NMP template available for use by permittees which includes monitoring application equipment during application; however, use of this template is not required therefore this type of inspection is not mandatory.

There were some differences among the permits reviewed; some deficiencies and inconsistencies were identified. For example, federal regulations at 40 CFR 122.42(e)(4) say that any permit issued to a CAFO must include the requirement to submit an annual report which contains information about the amount of manure generated in the year and its disposition. The annual reporting requirement was handled differently in each permit reviewed. The Stone Post Dairy permit contained a detailed annual report requirement that included all the federal requirements for an annual report. The KM Feeders permit contained no annual reporting details but just required that the annual report be submitted on a state-approved form (the state-approved form contains all the federal requirements). The Tiffany Cattle permit did not have a requirement to submit an annual report even though the cover letter transmitting the permit to the operator indicated that it did.

Inspections are another area where there were significant inconsistencies between the permits reviewed. The Stone Post Dairy permit contained a section listing several required visual inspections to be conducted, but it did not contain every inspection required by federal regulation. The Tiffany Cattle permit and the KM Feeders permit did not contain any inspection requirements. The permits do require an Operations Report to be kept on State-approved forms, and the Operations Report form does list all the federally required inspections – except for the requirement to inspect land application equipment. But all three permits said that the Operations Reports did not need to be submitted to KDHE (unless requested) only to be maintained on site.

A further example of significant inconsistency involves the requirement to implement a nutrient management plan. Federal regulations at 40 CFR 122.42(e)(1) say that any permit issued to a CAFO must include the requirement to implement a nutrient management plan that contains the best management practices necessary to meet various federal requirements. Two of the three permits reviewed did not have any sort of general requirement to implement an NMP. These permits did, in a few places, refer to specific requirements of the facility's approved NMP that are federally mandated (so, for example, the permits require that soil sampling and analysis be conducted as specified in the facility's approved NMP) but the permits only refer to the approved NMP for a few of the federally mandated items, not all of them. It is not clear why those particular approved NMP items were chosen to be included in the permit. As a mitigating factor, Kansas requires all NPDES regulated CAFOs to have their NMPs approved by KDHE before permit coverage is granted; and the NMP template that KDHE provides includes the federally mandated items. But without a specific requirement in the permit to implement the approved NMP, or at least the federally mandated parts of it, there is an enforcement vulnerability. It should be noted that the Stone Post Dairy permit (which is the most recently

issued permit) did have a section of the permit with NMP requirements; but this section did not contain all the federally mandated NMP provisions and it was not clear why the items that appear there were chosen.

The permit deficiencies noted above appear to be more due to arbitrary oversights rather than considered decisions. But they do highlight a need for mechanisms to be put in place which will produce permits consistent with the minimum federal requirements, and each other.

When promulgating the CAFO regulations that required NMPs, EPA was clear that not everything in a NMP is to be considered an enforceable term of the permit. However, 40 CFR 122.42(e)(5) identifies the minimum terms of an NMP to be included in a CAFO's NPDES permit as enforceable requirements of the permit. These enforceable terms of the NMP are to be clear in the permit so as to provide notice, both to the operator and to the public, about what is enforceable and to ensure compliance with the discharge reduction and prevention measures in the NMP. KDHE has a document online titled, "Guidance Document for Nutrient Management Plans (Compliance with the 2008 EPA CAFO Final Rule)," which makes clear which parts of an NMP are considered by KDHE to be terms of the permit. However, this document is not referenced anywhere in the permit, application, NMP template, or the KS Technical Standard, so it is not clear how the public or the operator would know about the document.

In a similar vein, federal regulations specify what terms and conditions must be in NPDES CAFO permits (specifically 40 CFR 122.42(e)(1) through (e)(6)). While it appears that KDHE is generally requiring its NPDES regulated CAFOs to meet each of these federal terms and conditions, the terms and conditions are not always being required directly by the permits. For example, federal regulations at 40 CFR 122.42(e)(6) say that, "any permit issued to a CAFO must require the following procedures to apply when a CAFO owner or operator makes changes to the CAFO's nutrient management plan previously submitted to the Director". The regulations then go on to lay out some specifics of the procedures for modifying an NMP. While all these federally mandated procedures might be met by the permittee and KDHE during the NMP modification process, the permits reviewed did not contain the modification procedures specified in federal regulation. If the federal NMP modification procedures are not spelled out in the permit itself, the permit should require compliance with a cited procedure in Kansas regulations which meets the federal procedural requirements.

Action Items

Essential	<ul style="list-style-type: none"> • As required in 40 CFR 412.4(c)(4), KDHE must require that NPDES CAFOs inspect land application equipment for leaks. • As required by 40 CFR 122.42(e)(5), all NPDES CAFO permits need to make clear what terms of the nutrient management plan are enforceable parts of the permit. This could possibly be done through the permit referencing the “Guidance Document for Nutrient Management Plans (Compliance with the 2008 EPA CAFO Final Rule).”
Recommended	<ul style="list-style-type: none"> • The permitting program should re-evaluate how the mandatory permit conditions of 40 CFR 122.42(e)(1) through (e)(6) are incorporated into all NPDES CAFO permits. • Procedures should be established to produce more consistency across permits written by different permit writers.

B. Stormwater Permits

The NPDES program requires that stormwater discharges from certain municipal separate storm sewer systems (MS4s), industrial activities, and construction activities be permitted. Kansas is authorized to implement the NPDES program and automatically assumes responsibility for implementing the stormwater program.

Kansas issues individual permits for all MS4s. The State issues a general permit that provides coverage for stormwater discharges from regulated construction activities and there is also a general industrial stormwater permit for regulated industrial activities. Industrial facilities not eligible for coverage under the general permit are covered by individual permits. Stormwater permits are written at the central office in Topeka and the central office has a comprehensive stormwater website set up to assist with the permitting needs of the regulated community. In addition to the small MS4 permits discussed in the section IV above, during the PQR Region 7 also reviewed the general industrial stormwater permit (KSR000000), and the general construction stormwater permit (KSR100000).

General Permit for Stormwater Discharges from Construction Activity - KSR100000

The general permit which covers stormwater from construction sites over one acre is effective from August 1, 2017 to July 31, 2022. The permit was issued after the effective date for the new construction stormwater effluent guidelines and includes all the effluent guideline requirements of 40 CFR 450.21, including more detailed requirements than needed to meet those regulations. Examples of provisions exceeding the minimum requirements include: stormwater pollution prevention (SWP2) Plans must be developed and prepared under the supervision of a licensed Kansas professional engineer, geologist, architect, or landscape

architect or a Certified Professional in Erosion and Sediment Control. The permit requires the minimization of discharges from stream crossings through the immediate stabilization of disturbed bank areas. The permit also requires immediate stabilization of disturbed steep slopes (defined as 40% or greater).

General Industrial Stormwater Permit – KSR000000

KDHE covers most regulated stormwater discharges from industrial activities in one of two ways: facilities needing a separate individual NPDES permit for the direct discharge of wastewater to waters of the state, have stormwater related requirements added to the conventional individual NPDES permit; and facilities needing only a permit for the discharge of stormwater seek and receive coverage under the state's industrial stormwater general permit. Both types of authorizations are issued out of the central office. If a facility is subject to a specific stormwater ELG, it will be issued an individual permit. The current industrial stormwater general permit became effective November 1, 2016, and expired October 31, 2021.

The permit is typical of industrial stormwater permits in that the permittee is required to reduce pollutants mainly by the implementation of best management practices (BMPs), performing and documenting inspections, and training employees. Facilities are required to develop a written, site-specific stormwater pollution prevention plan (SWP2 plan) that contains details of the specific pollution prevention actions which are to be implemented at the facility. Facilities are not required to submit their SWP2 plan to the Department unless notified by the Department that they must do so. Inspections must be conducted at least quarterly, and the inspections and any follow-up actions based on the inspections are required to be documented and the record retained. Periodic visual inspections of the stormwater discharge quality are required and are to be documented.

Program Strengths

1. The construction stormwater permit (KSR100000) meets and exceeds all the federal requirements.
2. The industrial stormwater permit (KSR000000) is clear that the SWP2 Plan itself does not contain effluent limits, but rather the SWP2 Plan documents the specific control measures that will be used to meet the limits contained in the permit (i.e., the technology-based BMP limits).

Areas for Improvement

1. There is no requirement for industrial facilities covered by the general permit to do any sampling of their stormwater discharge (although individual permits for stormwater ELG facilities would have sampling requirements). Sampling is optional as is comparison of sample results to EPA's benchmark values. If, however, samples are compared to the benchmarks and the benchmarks are exceeded then there is a mandatory evaluation of whether corrective actions are needed. Monitoring of BMP effectiveness is accomplished through inspection requirements.

2. KDHE might be able to improve the water quality protection provided by their 2021 reissued industrial stormwater general permit by incorporating requirements and sampling specific to the different industrial sectors. For example, setting benchmark sampling levels could gauge the significance of monitored pollutant levels, thereby providing an indication of whether the current BMPs are effective enough.
3. While employee training is required by the industrial permit, there is no requirement to keep records of employee training.
4. The construction stormwater permit should contain a statement similar to the industrial permit which makes it clear that the SWP2 Plan itself does not contain effluent limits.

Action Items

Essential	•None
Recommended	<ul style="list-style-type: none"> •Evaluate whether certain categories of industrial facilities should be required to sample their stormwater discharge and report the results, or potentially take corrective actions based on the results. •Consider including a requirement to retain records of employee training related to stormwater management. •The construction stormwater permit should contain a statement similar to the industrial permit which makes it clear that the SWP2 Plan itself does not contain effluent limits. •Evaluate whether any of the provisions of EPA's 2021 MSGP should be adopted for use in KDHE's 2021 general industrial stormwater permit.

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

This section provides a summary of the main findings from the last PQR and provides a review of the status of the state’s efforts in addressing the action items identified during the last PQR, finalized March 1, 2017. 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. In addition, previous PQR reports identified recommendations to strengthen the state’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.

Table 12. Essential Action Items Identified During Last PQR [2017]

Program Area	Action Item Title	Status Update
Permit Application	Inclusion of 3 Priority Pollutant Scans	(Resolved) KDHE began to immediately require three priority pollutant scans prior to the 2017
	Inclusion of Form 2C for Industrial Permittees	(Resolved) KDHE indicated this is now normal practice. All permits reviewed in the current PQR included Form 2C
Regional Priority – CAFO	Permits Must Include Requirements of 40 CFR 122.42(e)(l) through (e)(6))	(Resolved) KDHE began to include all requirements in CAFO permits following receipt of the previous PQR
Pretreatment	POTW Permits Must Contain Notification Requirements for 40 CFR 122.42(b)	(Resolved) KDHE changed their permit Standard Conditions March 1, 2018 to include the notification requirements.
	All POTW Permits Must Contain Requirements of 40 CFR 122.44(j)(l) to identify SIUs	(Resolved) KDHE changed their permit Standard Conditions March 1, 2018 to include the notification requirements.
	All POTW Permits with Approved Pretreatment Programs Contain Requirement to Provide a Technical Evaluation of the Need to Calculate or Reevaluate Local Limits Following Permit Issuance or Reissuance per 40 CFR 122.44(j)(2)(ii)]	(Resolved) KDHE changed their permit Standard Conditions March 1, 2018 to include the notification requirements.

Program Area	Action Item Title	Status Update
	Region 7/KDHE Ensure Industrial User Permits Contain Conditions for Sampling (40 CFR Part 136 methods) and Notification Requirements per CFR 403.8(f)(1)(iii)(B).	(Resolved) KDHE began including the sampling and notification requirements upon receipt of the 2017 PQR.

VII. RECOMMENDED ACTION ITEMS FROM LAST PQR

This section provides a summary of the recommendations from the last PQR, finalized March 1, 2017, and notes any state 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 state’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.

Table 13. Recommended Action Items Identified During 2017 PQR

Program Area	Action Item Title	Status
Monitoring and Reporting	Permit writers Consider Increased Monitoring Frequency for discharges prone to high variability or potential for toxicity.	(In progress)
National Topic – Nutrients	KDHE Continue to Encourage All Facilities to Meet the Surface Water Nutrient Reduction Plan reduction targets by 2019.	(Resolved)
Reasonable Potential and WQBELs	Fact sheets Need More Detail on Selection of Pollutants of Concern, Reasonable Potential, and KDHE Permitting Rationale.	(Not started)

Program Area	Action Item Title	Status
Regional Topic – Stormwater	Renewed Construction Stormwater Permit Must Include Modified Effluent Guideline Requirements of 40 CFR Part 450, Including Definition of "Infeasible."	(Resolved)
	Renewed General Construction and Industrial Stormwater Permits Should Make Clear the SWPPP Does Not Contain Effluent limits, but the SWPPP Must Include the Specific Control Measures Used to Meet the Permit Limits (i.e., Technology-based BMP Limits).	(Resolved)
	Renewed Construction Stormwater Permit Should Include the Requirement for Buffer and Vegetative Filter Strips Contain a Specific Numeric Target.	(Resolved)
	Water Quality Protection Could be Improved by Incorporating EPA's 2015 MSGP Sampling Requirements and Benchmarks for Certain Industrial Sectors.	(Resolved)
	Industrial Permits Should Define "Pollutant" and "Toxic Pollutant."	(Resolved)
	Next Round General MS4 Permits Should Incorporate the Six Minimum Control Requirements Directly into the Permit, Rather Than Referencing Them Via Website.	(Resolved)
Regional Topic – CAFO	EPA suggests that KDHE review CAFO Annual Reports in comparison with the respective NMPs to determine which facilities may have issues.	(In progress)
Pretreatment	Region 7/KDHE Should Ensure They Meet the CMS Goals for Conducting Inspections and Audits at POTWs in Kansas.	(Resolved)
	KDHE Should Ensure that the Fact Sheets for POTWs with Pretreatment Programs Designate that a Pretreatment Program is Required and Designate the Date(s) the Program was Approved and Modified.	(Not pursuing)
	KDHE Should Discuss in Fact Sheets for POTWs with Approved Pretreatment Programs Whether the Reasonable Potential Analysis Conducted to Develop Water Quality-based Limits Included Analysis of all Pollutants Common for the Types of Industries Discharging to the POTW.	(Not pursuing)

VIII. ACTION ITEMS FROM FY 2018–2022 PQR CYCLE

This section provides a summary of the main findings of this PQR and proposes action items to improve Kansas NPDES permit programs, as discussed throughout sections III, IV, and V of this report.

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

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

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

Table 14. Essential Action Items from FY 2018-2022 PQR Cycle

Topic	Action(s)
Facility Information	None
Permit Application Requirements	<ul style="list-style-type: none"> • All permit applications must include the proper signatory requirements per 40 CFR 122.22(a)(3). KDHE's application combines part of 40 CFR 122.22(b) that addresses reports and documents outside of the application.
TBELs for POTWs	None
TBELs for Non-POTW Dischargers	None
Reasonable Potential	<ul style="list-style-type: none"> • Reasonable Potential Analyses need to follow a consistent procedure per 40 CFR 122.44(d)(1)(ii). Kansas has identified a procedure in the document Kansas Implementation Procedures - Wastewater Permitting, but it did not appear to be utilized.
WQBELs Development	<ul style="list-style-type: none"> • Fact Sheets or file documentation needs to clearly indicate the calculations used to generate permit limits per 40 CFR 124.56(a).

Topic	Action(s)
	<ul style="list-style-type: none"> • If reasonable potential is demonstrated, ensure permits include a water quality-based effluent limitation, per 40 CFR 122.44(d)(1)(i), not only monitoring.
Final Effluent Limitations and Documentation of Effluent Limitations Development	<ul style="list-style-type: none"> • See Section B.2. - Reasonable Potential and Water Quality-Based Effluent Limitations. • Fact Sheets need to meet the requirements of 40 CFR 124.56(a).
Establishing Monitoring and Reporting Requirements	<ul style="list-style-type: none"> • All major permits must have at least annual monitoring requirements for WET limits per 40 CFR 122.21(j)(5)(iv)(B) with more frequent monitoring, as necessary [40 CFR 122.41(j)(1) and 122.48(a-c)].
Documentation of Monitoring and Reporting Requirements	None
Standard and Special Conditions	None
Administrative Process	None
Administrative Record and Fact Sheet	<ul style="list-style-type: none"> • As identified earlier, Fact Sheets must comply with 40 CFR 124.56 by providing any calculations or other necessary explanation of the derivation of specific effluent limitations
Nutrients	None
Pretreatment: Food Processing Sector	<ul style="list-style-type: none"> • Permit writers must ensure that NPDES permit applications received are complete and accurate, including identification of SIUs. [40 CFR 122.21(j)(6)] • Permit writers must ensure that the NPDES permit application includes all industrial users or potential SIUs and identifies any applicable categorical classifications. [40 CFR 122.21(j)(6)]. • Permit writers must ensure that NPDES permits for POTWs contain all of the requirements in 40 CFR 122.42(b). • Permit writers must ensure that that all NPDES permits for POTWs with approved pretreatment programs requires a written technical evaluation of the need to revise local limits following permit issuance or reissuance. [40 CFR 122.44(j)(2)(ii)]
Municipal Separate Storm Sewer Systems (MS4s)	None
Regional Topic - CAFO	<ul style="list-style-type: none"> • As required in 40 CFR 412.4(c)(4), KDHE must require that NPDES CAFOs inspect land application equipment for leaks. • As required by 40 CFR 122.42(e)(5), all NPDES CAFO permits need to make clear what terms of the nutrient management plan are enforceable parts of the permit. This could possibly be done through the permit referencing the “Guidance

Topic	Action(s)
	Document for Nutrient Management Plans (Compliance with the 2008 EPA CAFO Final Rule)."
Regional Topic - Stormwater	None

Table 15. Recommended Action Items from FY 2018-2022 PQR Cycle

Topic	Action(s)
Facility Information	<ul style="list-style-type: none"> • Locations of all outfalls need to be included with good descriptions of the sampling locations for each outfall.
Permit Application Requirements	<ul style="list-style-type: none"> • Would be good practice to specify in the Fact Sheet/Statement of Basis the date KDHE considered an application complete. This is important in whether an administrative continuation is valid.
TBELs for POTWs	<ul style="list-style-type: none"> • Ensure the record demonstrates that contributions from industrial users are taken into account.
TBELs for Non-POTW Dischargers	<ul style="list-style-type: none"> • Provide better fact sheet documentation of how POCs were selected
Reasonable Potential	<ul style="list-style-type: none"> • Acknowledge in the Fact Sheet why POCs were included and other identified pollutants were excluded.
WQBELs Development	<ul style="list-style-type: none"> • The lagoon ammonia MDV limits should specify a duration component. • When evaluating RP with a small data set, KDHE should use the maximum reported effluent concentration, which is recommended by EPA's 1991 TSD, rather than using the geometric mean effluent value when evaluating RP. • Establish a quality control procedure to ensure all permits contain acute and chronic limits where appropriate.
Final Effluent Limitations and Documentation of Effluent Limitations Development	<ul style="list-style-type: none"> • See Section B.2. - Reasonable Potential and Water Quality-Based Effluent Limitations. • Update Kansas Antidegradation Procedures or apply antidegradation procedures per 40 CFR 131.12.
Establishing Monitoring and Reporting Requirements	None
Documentation of Monitoring and Reporting Requirements	<ul style="list-style-type: none"> • Locations of all outfalls need to be included with good descriptions of the sampling locations for each outfall.

Topic	Action(s)
	<ul style="list-style-type: none"> Explanation for inclusion or exclusion of influent flow monitoring should be provided.
Standard and Special Conditions	None
Administrative Process	<ul style="list-style-type: none"> Verify the official record documents KDHE's decision on each permit.
Administrative Record and Fact Sheet	<ul style="list-style-type: none"> It would be good practice to include in a program document or the fact sheets for POTWs "referencing information previously submitted to the Director" or Director may waive any requirement of this paragraph if he or she has access to substantially identical information" per 40 CFR 122.21(j). KDHE takes advantage of this provision in looking at DMR data submission.
Nutrients	<ul style="list-style-type: none"> KDHE should update the <i>Kansas Nutrient Reduction Plan</i> to incorporate new reduction targets, goals, and dates. Explore other mechanisms to accelerate nutrient reduction.
Pretreatment: Food Processing Sector	<ul style="list-style-type: none"> Permit writers should specify the program approval or modification dates in fact sheets to ensure that the program includes up-to-date federal regulations. Permit writers should specify the POTW's most recent local limits submission date in the permit to ensure that the program is adequately evaluating its local limits, in compliance with the federal regulations. Permit writers are reminded to ensure POTWs maintain adequate controls on industrial discharges to ensure that the POTW is protected from pollutant loads that could overwhelm the wastewater treatment plant. This includes specifying all applicable effluent limits, slug discharge control plan requirements, and notification requirements.
Municipal Separate Storm Sewer Systems (MS4s)	None
Regional Topic - CAFO	<ul style="list-style-type: none"> The permitting program should re-evaluate how the mandatory permit conditions of 40 CFR 122.42(e)(1) through (e)(6) are incorporated into all NPDES CAFO permits. Procedures should be established to produce more consistency across permits written by different permit writers.
Regional Topic - Stormwater	<ul style="list-style-type: none"> Evaluate whether certain categories of industrial facilities should be required to sample their stormwater discharge and report the results, or potentially take corrective actions based on the results.

Topic	Action(s)
	<ul style="list-style-type: none"> • Consider including a requirement to retain records of employee training related to stormwater management. • The construction stormwater permit should contain a statement similar the industrial permit which makes it clear that the SWP2 Plan itself does not contain effluent limits. • Evaluate whether any of the provisions of EPA's 2021 MSGP should be adopted for use in KDHE's 2021 general industrial stormwater permit.

Appendix A – KDHE Permitting Flow Charts





