




Kentucky Division of Water
2017 Annual Report



CONTENTS



CONTENTS.....	2
EXECUTIVE SUMMARY	4
MISSION	6
INFRASTRUCTURE PLANNING	7
Drinking Water Action Plan.....	7
Wastewater Action Plan	8
Risk MAP	9
Dams and Levees	12
Floodplain Management.....	13
WATER RESOURCES PLANNING	15
Water Resources Board	15
Drought Response in 2016.....	15
Source Water Protection Assistance Program (SWPAP).....	18
WATER QUALITY.....	21
EPA Approval of Kentucky’s Revised Criteria for Selenium	21
Surface Water	22
Harmful Algal Blooms (HABs).....	23
Federal Clean Water Act, Section 305(b) Assessments / Total Maximum Daily Loads (TMDLs)	24
Clean Water Act, Section 401, Certification of USACE Nationwide Permits.....	25
COMPLIANCE AND INSPECTIONS	27
Public Drinking Water Systems	28
Drinking Water Advisory Council (DWAC)	30
EPA Office of Water Visit to Kentucky	31
WATER MAPS PORTAL (watermaps.ky.gov)	32
WATERSHED IMPROVEMENT EFFORTS	33
PERMITTING.....	36

Permit Issuance 36

New Rules and Challenges 38

General Permits 39

 Coal Mining 39

 Stormwater from Construction Sites 39

 Stormwater Associated with Industrial Activities 40

NetDMR Conversion to CDX..... 40

Combined and Separate Sewer Systems 40

Municipal Separate Storm Sewer Systems (MS4s) 42

EXECUTIVE SUMMARY



Dear Reader,

The Kentucky Division of Water (DOW) is pleased to provide its Annual Report for Fiscal Year 2017 (FY17 - July 1 2016 through June 30, 2017). This report summarizes the achievements of DOW scientists, specialists, and administrative staff in meeting the DOW goals of:

- Protecting, managing, and restoring water resources
- Full compliance with the Safe Drinking Water Act
- Conducting effective water resources planning
- Meeting federal and state program requirements
- Promoting better management and communication of data

Governor Bevin launched the Red Tape Reduction (RTR) initiative for all state government agencies in July 2016. The primary goal of the initiative is to review and reduce the overall number of state regulations, however, the RTR also provides the opportunity to evaluate programs and processes in order to identify how DOW can continue its mission of managing, protecting, and enhancing the water resources of the Commonwealth with greater efficacy.

DOW began actively reviewing its regulations prior to the implementation of the RTR. In April 2017, the DOW filed proposed revisions to several regulations contained in 401 KAR Chapter 8 (Public Water Supply). Through consolidation, DOW will reduce the number of regulations in the chapter from eighteen to fourteen, as well as revise outdated processes to align with current practice, and place longstanding policies and guidance into regulatory language. This work will enable the regulated community and the public transparent access to rules that are more clear and definitive. The proposed regulation changes moved through the regulatory process pursuant to Kentucky Revised Statutes Chapter 13A, and will go into effect in Fall 2017.

DOW continued its collaborative efforts with the public and stakeholders on a wide variety of issues. History demonstrates that collaboration and partnership provide significant opportunities to resolve issues water-related issues more effectively and efficiently, and that a free exchange of ideas assists in addressing challenges.

The 2017 Kentucky General Assembly passed House Joint Resolution 56 which directed the Division of Water to examine the myriad of issues regarding small, privately owned wastewater treatment plants and make recommendations for solutions to the Legislative Research Commission.

The Water Resources Board, established by 2016 HB 529, has been active in advising the cabinet about water resources needs and planning, especially regarding agriculture and rural community water resources resiliency and future needs.

The stakeholder-based Wastewater and Drinking Water Advisory Councils continued to work with the DOW regarding issues and challenges faced by public water and wastewater systems.

The division's responses to the 2016 drought, drinking water source water threats, and harmful algal blooms (HABs) also benefited from coordinated, collaborative work between DOW and a wide variety of federal, state, local, and private partners throughout the Commonwealth.

The Water Maps Portal carried its award-winning recognition as an innovative information resource into its second year when DOW received the 2017 Esri Award for Special Achievement in GIS. DOW continues to develop and launch maps, viewers, and story boards so that users can easily and transparently access important information regarding the Commonwealth's water resources and local conditions.

I invite you to read more about the activities of DOW, its accomplishments in monitoring, assessing, and improving the waters of the Commonwealth, and its ongoing efforts to preserve, protect, and manage these important resources for the benefit and enjoyment of Kentucky citizens.

Peter T. Goodmann, Director
Division of Water

MISSION

The mission of the Kentucky Division of Water is to manage, protect, and enhance the quality and quantity of the Commonwealth's water resources for present and future generations through voluntary, regulatory, and educational programs.



Kentucky River from Ft Hill

DOW Staff Photo

INFRASTRUCTURE PLANNING



The condition of water infrastructure is of concern across the nation. Although many challenges remain, DOW has taken steps to plan for and implement sustainable solutions to Kentucky's water-related infrastructure. DOW actively engages with utilities through the Wastewater Planning and Capacity Development programs. DOW will review Regional Facility plans for municipal wastewater collection, conveyance, and treatment systems which are used to evaluate the needs of a system and make recommendations. The Capacity Development program works directly with Public Water Systems (PWSs) to assess their financial, managerial, and technical capacity to deliver safe drinking water through on-site reviews and assistance.

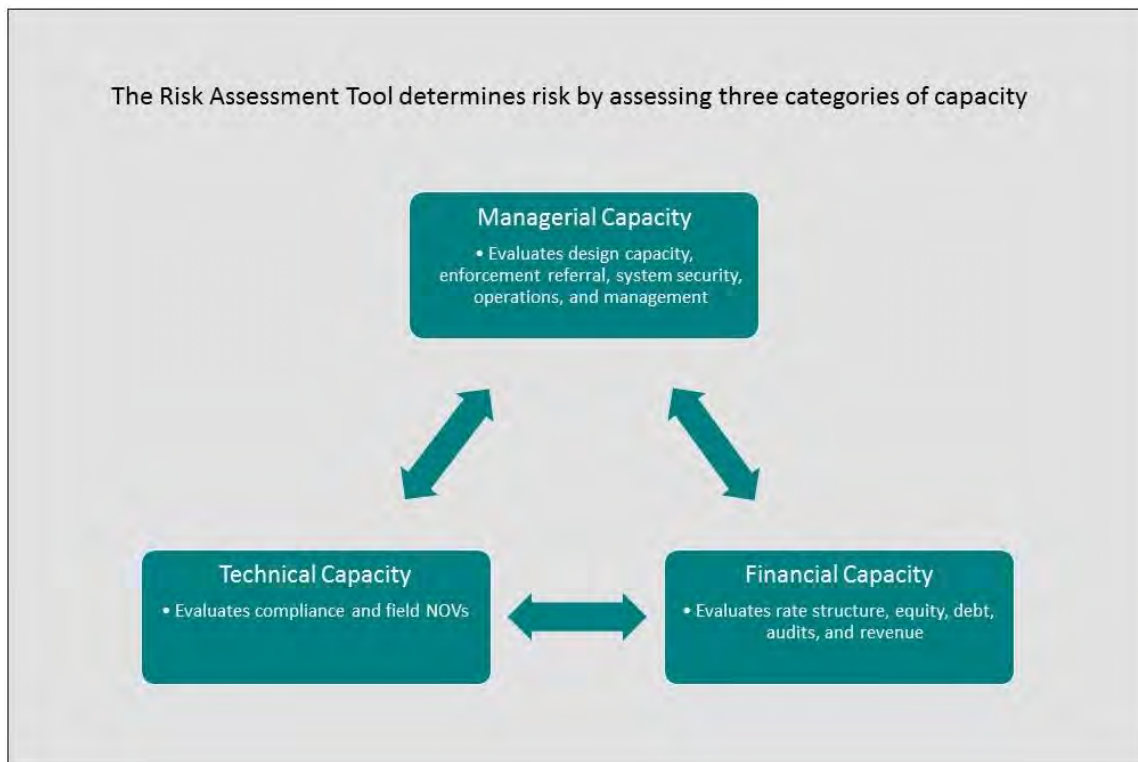
DOW representatives also actively engage in federal and state advisory committees, workgroups, and associations in order to represent the Commonwealth's best interests, and provide support to organizations such as the Association of State Floodplain Managers, Association of State Dam Safety Officials, Kentucky Association of Mitigation Managers, Kentucky Stormwater Association, and Kentucky Association of Mapping Professionals. Participation in these groups enables DOW to provide communities with tools to assess areas of concern and in some cases, providing funding through the State Revolving Fund in collaboration with the Kentucky Infrastructure Authority (KIA) to address infrastructure needs.

Drinking Water Action Plan

The ability of (PWSs) to provide safe, reliable drinking water is critical to public health and the economic vitality of Kentucky. As the state administrator of the federal Safe Drinking Water Act (SDWA), DOW strives to work with its stakeholders and the industry to ensure that PWSs have the ability to provide drinking water that complies with the Act. Of greatest concern are the condition and management of drinking water infrastructure because inadequate or failing infrastructure impedes the ability of PWSs to maintain SDWA compliance, poses a risk to public health, and endangers local economies.

In order to identify and address key infrastructure, economic, regulatory, and programmatic barriers to the sustainability and resiliency of Kentucky's public water systems, DOW began developing a Drinking Water Action Plan during FY17. As a prelude to a fully developed plan, DOW developed a Risk Assessment Tool to determine the current state of PWSs in Kentucky. The tool utilizes data from the Drinking Water

Sanitary Survey, inspections, and compliance reviews to determine technical, managerial, and financial risk factors, and allows users to analyze specific criteria within those categories. These data are crucial to address current and future needs of PWSs, and can be used to develop strategic plans moving forward.



The Kentucky Infrastructure Authority, the Public Service Commission, Department for Local Government, Kentucky Rural Water Association, and the Rural Development Assistance Partnership assisted in developing the Risk Assessment Tool. A draft of the Drinking Water Action Plan is currently under internal review and DOW will seek additional input prior to implementation.

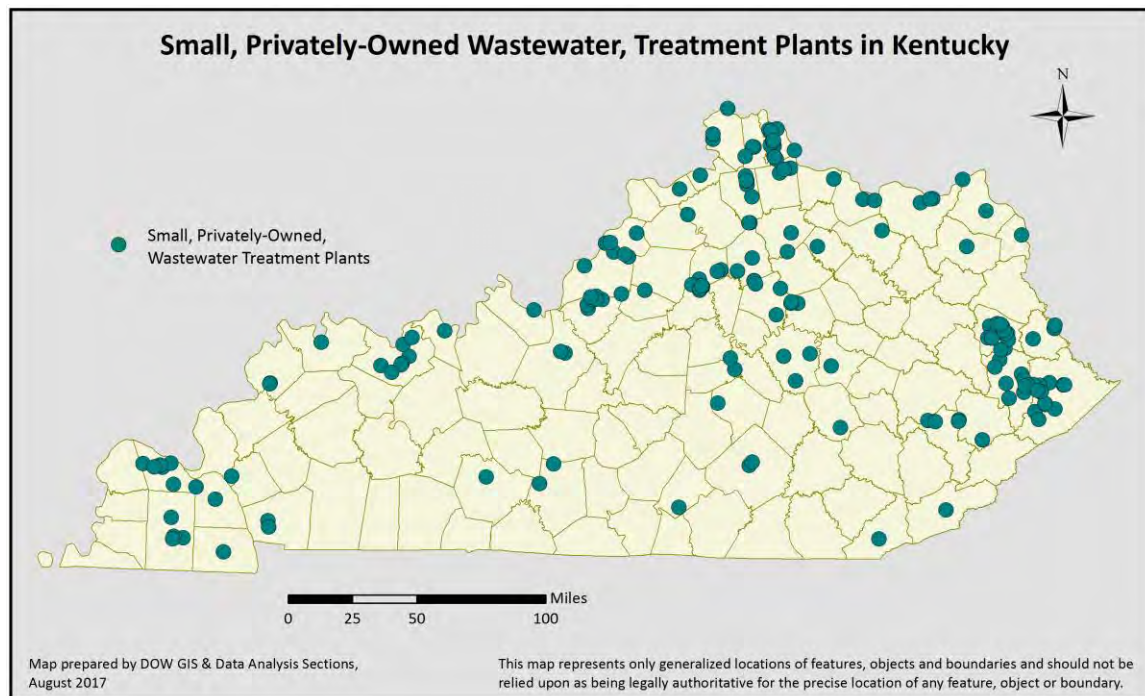
Wastewater Action Plan

During its 2016 legislative session, the Kentucky General Assembly passed House Joint Resolution (HJR) 56 to address risks to human health and the environment resulting from the failure of small, privately-owned and operated wastewater treatment plants. The resolution directed the EEC to identify:

- relevant information regarding privately-owned and operated small wastewater treatment plants in the Commonwealth;
- indicators required to assess the risk of financial, technical, or structural failures, or abandonment of these small treatment plants;

- potential state and local collaborative emergency interventions to respond to plant failures; and
- legislative changes that may help mitigate failure or abandonment of small treatment plants, or that may provide for continuity of service to the plant's customers.

In collaboration with the stakeholder group convened by HJR 56, DOW compiled a list of small wastewater treatment plants, and the group is preparing to submit its report to the General Assembly by December 1, 2017.

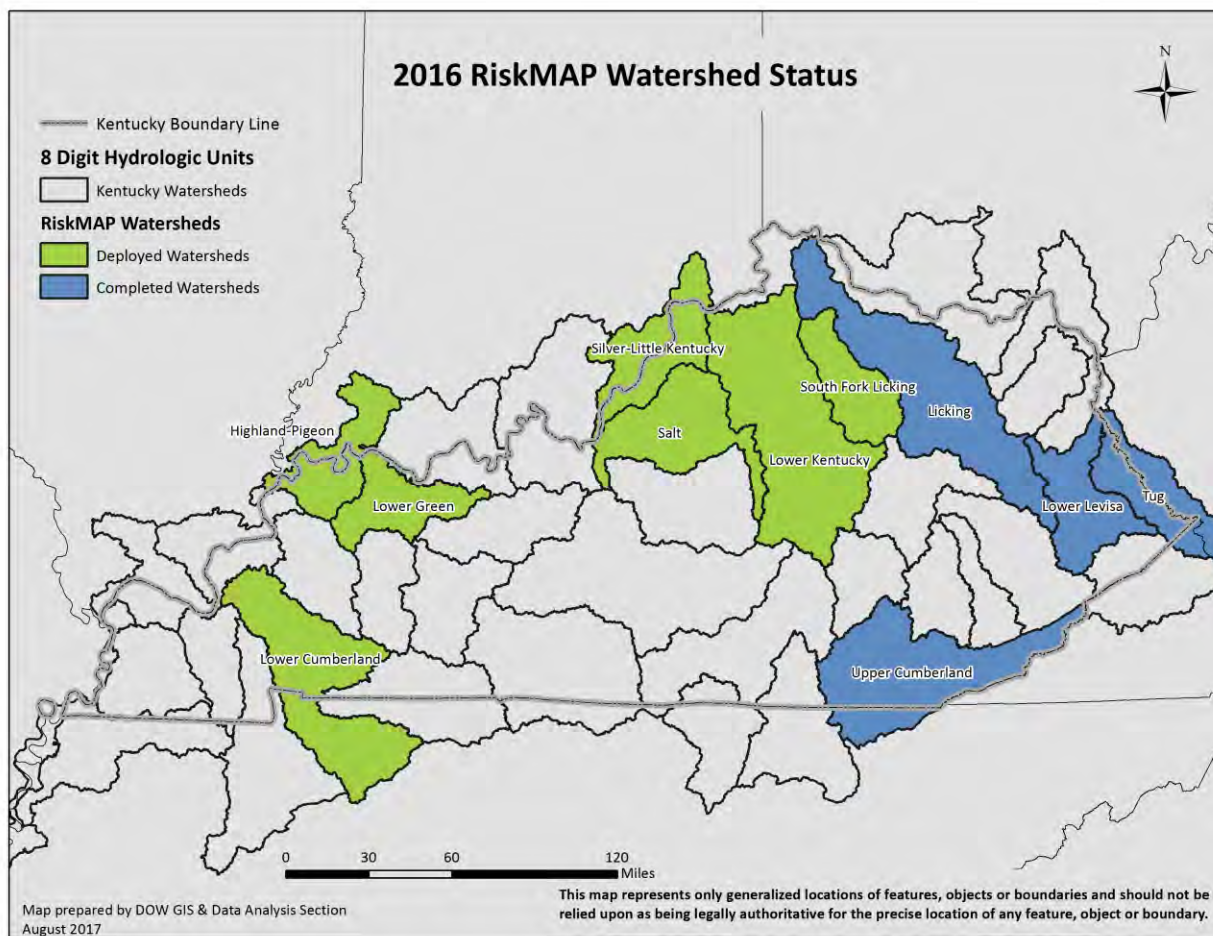


Risk MAP

Flooding poses a significant risk to citizens and critical infrastructure in the Commonwealth, and flood hazard identification and communication remains a priority for DOW. The Risk MAP program remains active to identify flood hazards, assess the risks of major floods, plan mitigation efforts to minimize community risks, and communicate risk to citizens and communities across the Commonwealth. Risk MAP ties flood hazard identification with critical infrastructure planning, and many of the tools and products developed through Risk MAP benefit other programs and initiatives. DOW leveraged Risk MAP to facilitate collection of LiDAR (Light Detection and Ranging - a remote sensing method used to examine the Earth's surface) for the entire Commonwealth. By the end of calendar 2017, a complete LiDAR-based Digital

Elevation Model should be available statewide. DOW continues to coordinate with its LiDAR partners in developing a plan to maintain and update the state's LiDAR datasets.

The flood risk products created through Risk MAP are designed to change the conversation from whether a property is located in a floodplain, to the level of risk to a property based on its proximity to a floodplain. DOW partnered with Kentucky Emergency Management (KYEM) to conduct the flood risk assessment for the 2018 Commonwealth Hazard Mitigation Plan update, which builds on the relationship between DOW and KYEM in managing, reducing, and mitigating flood risks.



Additionally, DOW continues to develop web-based tools to communicate flood risks to Kentucky citizens and communities. Through Risk MAP, enhanced flood risk identification for approximately 65% of the Commonwealth's population has been initiated or completed. This benefits local officials, emergency managers, businesses, and individual citizens by providing credible flood hazard information for informed decision-making. Current Risk MAP initiatives include work in the Lower Kentucky, Lower Cumberland, Lower Green, Highland-Pigeon, Silver-Little Kentucky, Middle Ohio-Laughery, South Fork Licking River and

Rolling Fork watersheds. The information can be easily accessed on the DOW watermaps portal (<http://www.watermaps.ky.gov>) and the FEMA Map Service Center (<https://msc.fema.gov>). Each year, DOW revises its Risk MAP business plan to reflect new or updated needs and resulting flood risks in watersheds with high populations.

To further the goal of reducing flood risks, DOW has been the state lead for the US Army Corps of Engineers' Silver Jackets initiative since 2012.



Partnerships formed with other federal, state, and local agencies initiated three pilot projects in FY17 which will

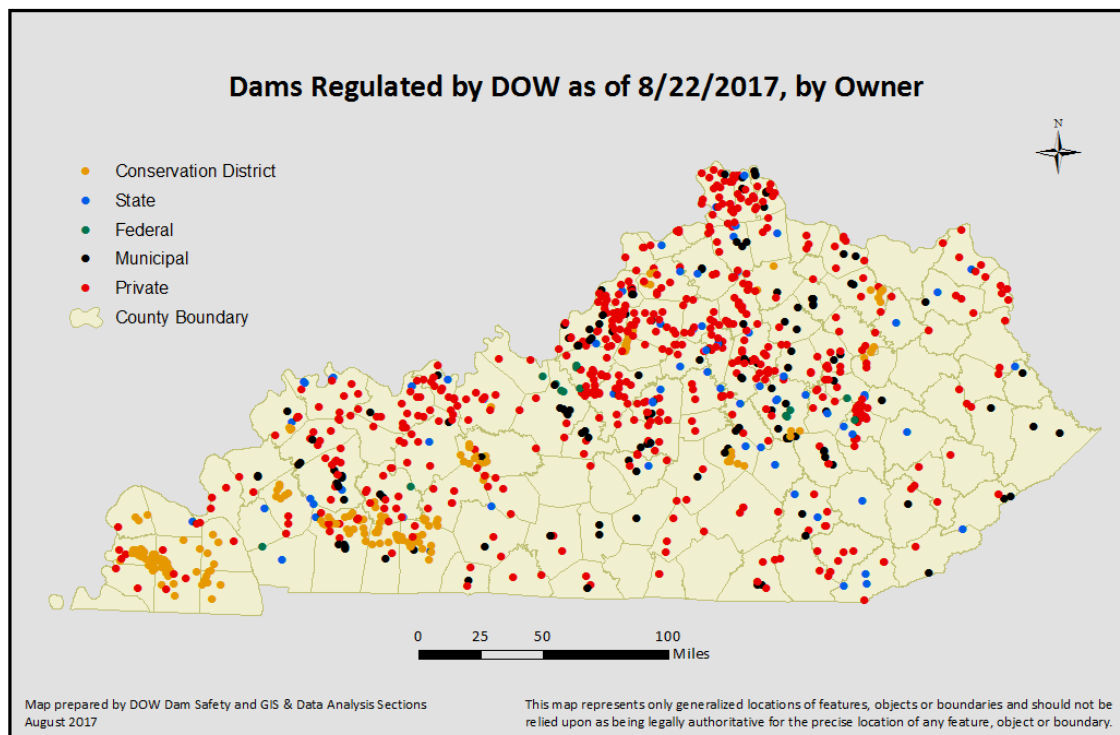
- 1) assess flooding issues on the Green River in the City of Liberty;
- 2) conduct a loss avoidance study on the Tug Fork in Pike County; and
- 3) create a public information campaign with the National Weather Service (NWS) and the Kentucky Weather Preparedness Committee using the NWS "Turn Around Don't Drown" messaging.

Additional efforts include structure-based flood risk assessments in partnership with the City of Hopkinsville. This virtual, interactive tool will allow users to view various flood levels, and to participate in the Technical Mapping Advisory Council to advise FEMA on the development of the national flood hazard mapping program.

Dams and Levees

Protecting sensitive areas like floodplains, and areas impacted by dams and levees, is critically important to the Commonwealth's economic and ecologic interests. The DOW strives to balance these efforts through regulatory, technical assistance, outreach, and educational activities.

Dams, levees, and other water-related infrastructure provide significant benefits to Kentucky's citizens and communities through recreation, water supply, power generation, and flood control. However, many dams and levees in Kentucky are approaching their design life. DOW helps support these components of water resources infrastructure by monitoring nearly 1,000 active dams in the Commonwealth, except for those owned and operated by the US Army Corps of Engineers (USACE) and those permitted by the Department of Natural Resources. Of the nearly 1,000 dams, approximately 80% are privately owned. To promote sustainable use and manage dam-related hazards, DOW regularly inspects and conducts condition assessments on regulated dams. Additionally, high level engineering analyses and LiDAR help create inundation data should a dam failure occur, and serve as the cornerstone for developing Emergency Action Plans (EAPs).



The Commonwealth, through its various agencies, owns approximately 80 dams which are generally associated with state parks or wildlife management areas, but may also serve as roads or are used by universities. The State Owned Dam Repair (SODR) program invests annual appropriations into Commonwealth-owned dams. Rather than continuing the historical practice of using those funds for expensive upgrades to dams that have encountered hazard creep or deterioration, DOW recently began a more holistic approach to dam-related risk management by assessing several repair alternatives, including downstream mitigation options or a combination of repairs and mitigation. This approach allows DOW to strategically analyze SODR needs for up to 6 years in the future.

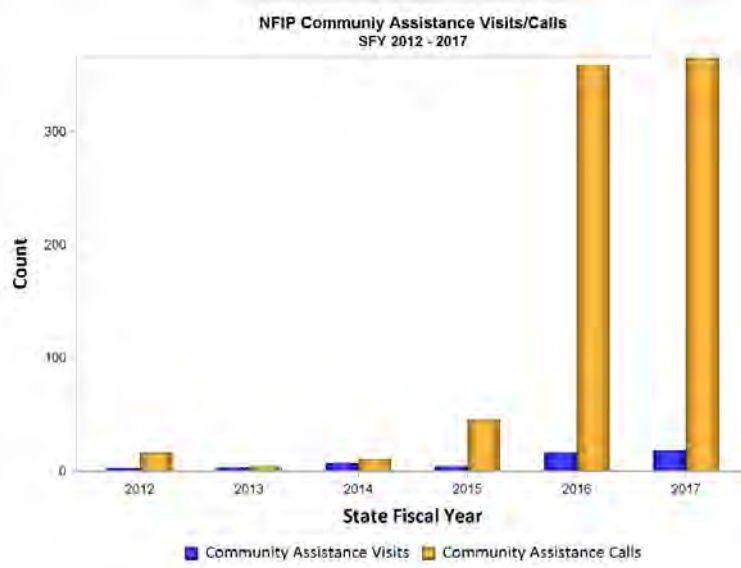
DOW recently received an invitation to submit an application to the US Department for Homeland Security Science & Technology Directorate for a pilot project to develop dam instrumentation monitoring and flood warning systems. The project, now approved, will research flood warning and instrumentation monitoring activities being conducted at dam locations throughout the country, determine which systems are most applicable to Kentucky dams, and develop a Kentucky-specific implementation plan. Future opportunities may be identified based on the outcomes of the initial research and implementation plan.

There are approximately 120 miles of USACE-built levees in Kentucky. These levees protect billions of dollars in assets and range in size from several hundred feet, to almost 40 miles in the Louisville metro area. With few exceptions, these levees are owned, operated, and maintained by local sponsors and overseen by USACE to ensure functional soundness. However, many levees protect residential and non-residential structures, community areas, and agricultural land across the Commonwealth but lack information regarding how they were constructed, so their potential protection or risk has not yet been quantified. States are uniquely positioned to work with communities and land owners to better understand previously unknown levee systems, and federal legislation recently authorized state-led levee programs. DOW is utilizing process improvements, regulatory authority, and best practices from its current Risk MAP, Dam Safety, and Floodplain Management programs to potentially expand its levee safety program and achieve its goal of aligning levee and dam safety.

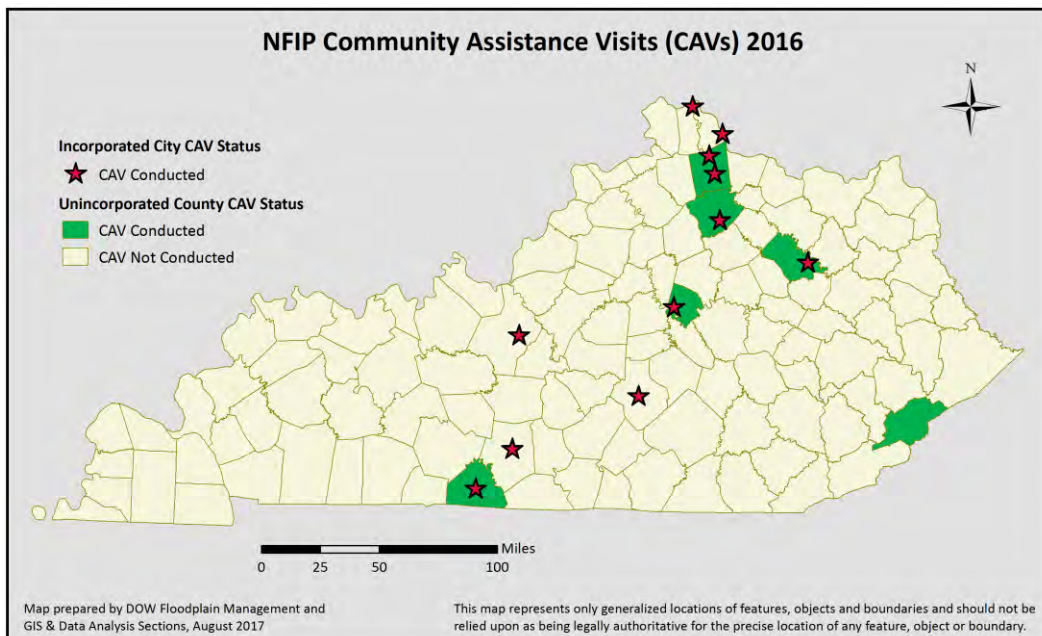
Floodplain Management

Flooding poses a significant risk to Kentucky's citizens and critical infrastructure. DOW regulates floodplain development activities including dams, levees, bridges, culverts, fill, residential and non-residential structures, and stream alterations, and its Floodplain Management program promotes public safety through regulatory actions, technical assistance, and regular communication with stakeholders.

The number of floodplain permits issued by DOW has steadily increased over the last few years which may be partially attributable to considerable outreach and the availability of better data for more accurate and expedient flood hazard assessment.



DOW also oversees the National Flood Insurance Program for over 350 participating communities across the Commonwealth, and supports local floodplain management by providing outreach and technical assistance. Local officials receive monthly updates on available floodplain management-related training, funding opportunities, and mentoring. DOW also partnered with KYEM to offer training webinars for stakeholders across the Commonwealth.



WATER RESOURCES PLANNING

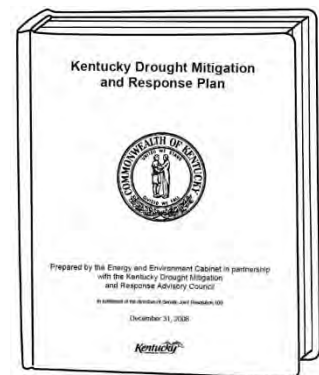
Water Resources Board

House Bill 529 created the Water Resources Board (WRB) during the 2016 legislative session. The WRB is charged with assisting the Energy and Environment Cabinet (EEC) in conducting research and developing recommendations regarding water resources, especially in relation to agricultural and rural uses.

Water resources monitoring in the long-term is critical to manage current usage and ensure that water is available for future agricultural and rural water development. The WRB assisted the EEC in identifying priorities and the need for an expanded statewide groundwater monitoring program focused on areas with high agricultural water demands. In July, the EEC requested an increase in federal funds to support expansion of existing water quality and quantity monitoring networks.

The WRB recommended facilitating viable projects or technologies that enhance farm and rural water availability as priorities in the coming year. DOW will continue developing data and studies to create a long-term, comprehensive state water plan by collaborating with the Kentucky Farm Bureau Water Management Working Group, which has already collected relevant data, reviewed policies, and developed recommendations for enhancing the quality and quantity of water resources in the Commonwealth.

In the coming year, the WRB will make recommendations for updates to the Kentucky Drought Mitigation and Response Plan which serves as a framework to guide local, state, and federal collaboration during times of drought. While agricultural impacts have long been a primary indicator to track drought development, the incorporation of agricultural drought response and mitigation, as well as new data and technologies that were not available when the plan was initially developed, may be recommended.



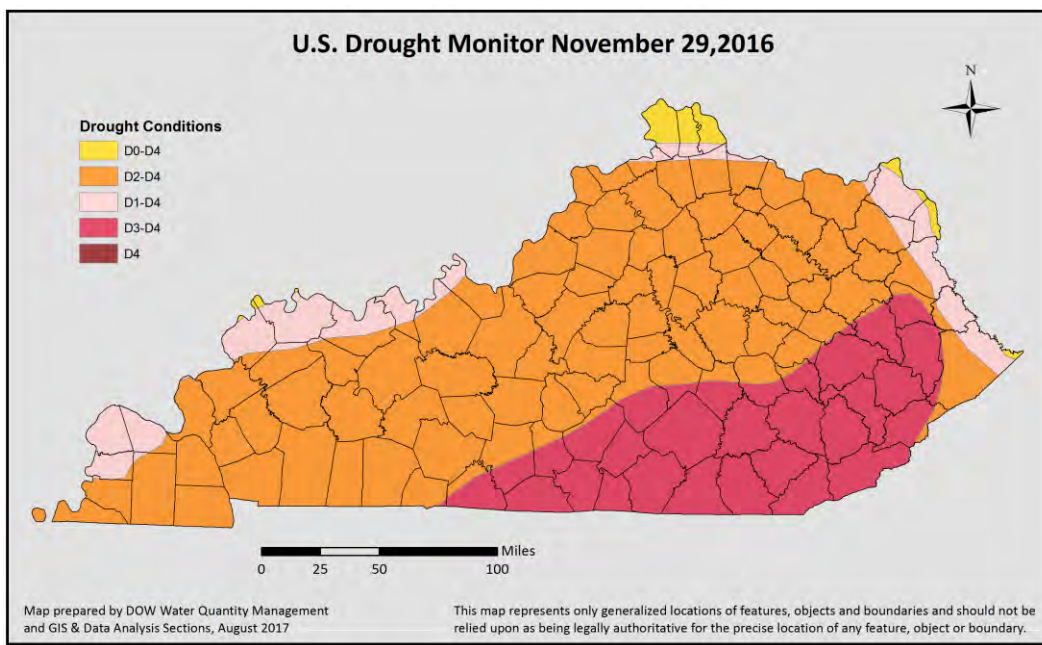
Drought Response in 2016

Drought is a natural and recurring feature of Kentucky's climate, and successful response requires the collaborative efforts of multiple local, state and federal partners. Guided by the state Drought Mitigation

and Response Plan (http://water.ky.gov/wa/Documents/State%20Plan_Final.pdf), these partners engage in a continuous process of climate monitoring and impact assessment to keep the public informed about the severity and location of emerging drought impacts.

In 2016, Kentucky experienced some of the most unique conditions ever recorded in its 122-year weather history. Temperatures during the heart of the growing-grazing season (June-November) were the warmest overall since records began in 1895. Kentucky's 4th wettest summer (June-August) was followed by its 6th driest fall (September-November). The combination of record heat coinciding with an abrupt reversal in rainfall patterns led to rapid drought development across the Commonwealth, with the most severe conditions in southcentral and southeastern Kentucky. The US Drought Monitor noted drought conditions in eastern Kentucky on October 11, 2016, and on November 10, 2016, the state issued a Level 1 drought declaration for all but three Kentucky counties. A Level 1 drought indicates moderate to severe dry conditions that primarily affect soil moisture and vegetative health. By November 29 the US Drought Monitor indicated that nearly 90 percent of the state was experiencing either severe or extreme drought.

DOW staff closely monitored conditions and coordinated with the US Drought Monitor and the Kentucky Drought Mitigation Team. DOW launched a Drought Viewer on the Water Maps Portal (<http://www.watermaps.ky.gov/drought>) to help keep the public up-to-date with current drought conditions.



Drought development occurred late enough in the growing season that most crop impacts were minimal. Out of nearly \$123,000,000 in crop insurance payments in 2016, only 5% covered crop losses from drought and heat. However, farm ponds and pastures also suffered, which forced producers to find alternative water supplies and begin using winter hay reserves exceptionally early. Small lakes that supply some of Kentucky's public water systems reached levels low enough that water use restrictions were considered and even implemented. The most serious impact from the 2016 drought conditions were wildfires that burned a 10-year high of 71,000 acres.

As conditions deteriorated in October 2016, DOW began routine assessments of drinking water supplies with a history of drought vulnerability issues. DOW staff provided assistance to systems with emerging water supply problems to determine the status of their water sources, drought response plans, and treatment or distribution problems. DOW hosted weekly teleconferences with federal and state agencies including the Kentucky Departments of Agriculture and Forestry, the Governor's Office of Agriculture Policy, the Kentucky State Climatologist, the National Weather Service, and the US Department of Agriculture to stay apprised of developing conditions and disseminate accurate information.

The 2016 drought hit the City of Olive Hill in Carter County particularly hard. Early in November 2016, DOW staff concluded that the city's water supply reservoir had reached critically low levels due to low rainfall and to a loss of service from two pumps on nearby Tygarts Creek that provide additional water to the reservoir.



Addressing these issues and avoiding a major water crisis required significant collaboration and daily communication between the City of Olive Hill Water System and DOW. This included daily monitoring and reporting of the reservoir level, purchasing water from interconnections with adjacent water systems, and expediting repairs for the intake pumps. DOW also issued a floodplain construction permit to build a small, low head dam in Tygarts Creek to impound sufficient water to operate the pumps and delay the drawdown of the reservoir.

The US Geological Survey (USGS) was also a critical partner during this time. As a partner in the Kentucky Drought Mitigation Team, the USGS volunteered to assist with critical streamflow monitoring in key locations across the Commonwealth, including the site near Olive Hill.

The 2016 drought emphasized the value that collaborative relationships bring to the Commonwealth's drought management capabilities. In addition to the invaluable assistance received from the USGS, other essential partners involved in monitoring and managing the 2016 drought conditions included the Kentucky Division of Forestry, Kentucky Emergency Management, Kentucky Department of Agriculture, UK Agricultural Weather Center, WKU Kentucky Climate Center, Kentucky Farm Bureau, National Weather Service, US Department of Agriculture, US Army Corps of Engineers, and National Drought Mitigation Center.

Drought conditions in Kentucky began retreating in December, and by June 2017 the City of Olive Hill had a full reservoir. DOW continues to assist Olive Hill to increase its level of drought preparedness. Additional steps that have been or will be taken include replacing downtown water lines to substantially reduce finished water loss, bathymetric (waterbody floor depth) analysis of the reservoir to determine its useable volume, and revising the City's drought plan to improve utilization of water from the reservoir and river system by developing triggers for pumping and for implementing local water conservation measures.

Source Water Protection Assistance Program (SWPAP)

Kentucky's Source Water Protection Assistance Program helps public drinking water systems protect drinking water sources. Implementation of community-based management plans, within defined water supply protection areas, assist in safeguarding against potential contamination. The SWPAP program developed a story map entitled "Source Water Protection in Kentucky" (<http://watermaps.ky.gov>) to explain program elements and benefits, and to describe projects to advance this goal.

Using the federal Environmental Protection Agency (EPA) Drinking Water State Revolving Fund set asides administered by DOW, the SWPAP provides communities with funding to develop and implement projects to protect public drinking water sources. The SWPAP has provided financial assistance for thirteen projects since 2014, and funding requests continue to increase every year.

The SWPAP announced total project funding of \$150,000 for six projects in FY17, with a single project maximum of \$60,000. These include construction of a water education center, development of a

community source water education program, and analysis of aquifer flow. The projects that received funding in 2016 were:

City of Georgetown, Scott County



Georgetown used SWPAP funds for the design and construction of a rain garden in Suffoletta Park, based in its Wellhead Protection Area. The rain garden is located in a sinkhole that drains directly to the city's drinking water supply spring. This project will reduce stormwater runoff, promote public

education and outreach regarding the benefits provided by rain gardens, and establish a visually appealing location to host field trips and community events.

Hardin County Water District #1

Hardin County Water District #1 collaborated with the Kentucky Geological Survey to install a continuous monitoring station at Head-of-Rough-Spring, which supplies water to multiple counties. The monitoring station will collect near real-time data regarding flow rates, water temperature, pH, specific conductance, and turbidity. This project also facilitates public outreach and education to local schools relating to the importance of groundwater resources.



City of Hawesville, Hancock County



Hawesville plugged four unused drinking water supply wells within its Wellhead Protection Area. This action eliminated potential sources of contaminants and provided additional aquifer protection.

Louisville Water Company, Jefferson County

Louisville Water Company (LWC) continued its collaboration with the US Geological Survey and Louisville Metropolitan Sewer District to implement and expand management strategies outlined in its Wellhead Protection Plan. As part of a phased-in approach, LWC and its partners are providing homeowners with technical assistance to properly abandon unused wells, septic systems, and heating oil



tanks that pose the highest potential risk to the aquifer. Additionally, LWC hosted a public meeting to educate homeowners about groundwater protection related to preventative maintenance of residential septic systems and heating oil tanks.

WATER QUALITY



EPA Approval of Kentucky's Revised Criteria for Selenium

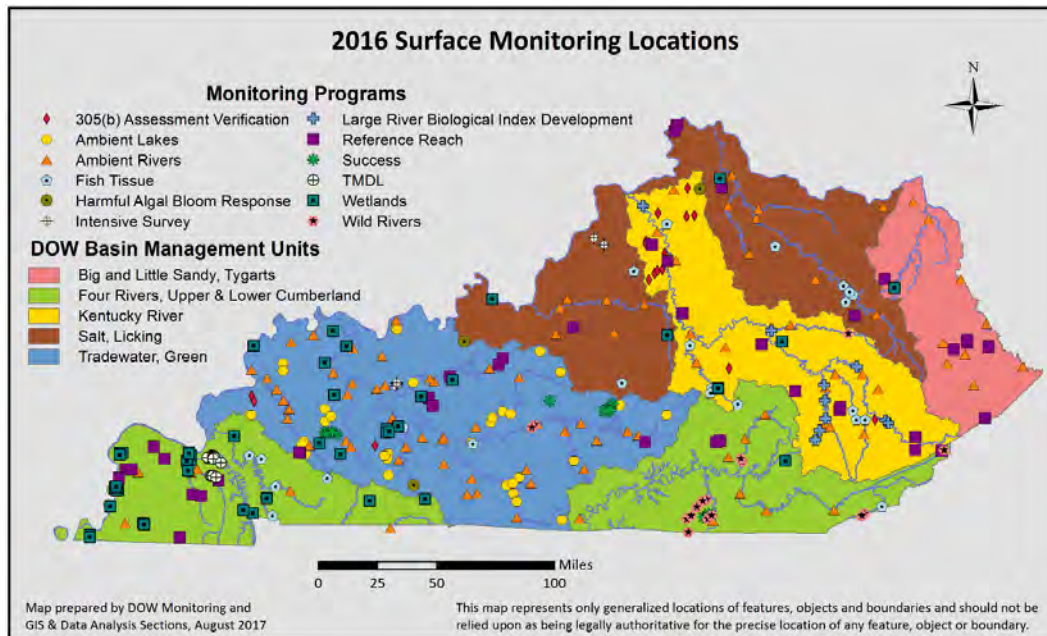
Selenium is a naturally occurring substance that is released during strip mining, and in large amounts can be toxic to both aquatic life and humans. Selenium is “bioaccumulative,” which means that it increases in the bodies of fish which eat other aquatic organisms that are lower in the food chain. Prior to 2013, Kentucky set water column limits for selenium at 20 µg/L acute and 5 µg/L chronic to protect aquatic life from its toxic effects. DOW worked on replacing these limits with a more biologically-relevant standard in which levels of selenium in the water column trigger fish tissue testing.

The EPA's initial approval of Kentucky's revised selenium water quality criteria in November 2013 was challenged through litigation. In January 2016, the court stayed the case to allow the parties to carry out settlement negotiations, which included an agreement by the EPA to complete its consultation with the US Fish and Wildlife Service (USFWS) required by the Endangered Species Act, and to either affirm or disapprove Kentucky's selenium criteria. In July 2017, the USFWS and EPA concurred with the EPA's biological opinion regarding the revised selenium criteria. EPA subsequently approved Kentucky's whole body fish tissue standard of 8.6 µg/g of selenium and the removal of Kentucky's acute selenium standard of 20 µg/L. EPA did not approve the proposed egg/ovary standard for selenium.

As a result of EPA approval, Kentucky's chronic criteria for selenium is 5.0 µg/L in the water column and 8.6 µg/g dry weight in whole fish tissue. If fish tissue is available, the fish tissue data has precedence. Kentucky utilizes the 5.0 µg/L water column value as a threshold for screening purposes. If the water column threshold of 5.0 µg/L is not exceeded, then the water body meets the selenium criterion. If selenium exceeds 5.0 µg/L in the water column, fish tissue sampling and analysis is triggered. If the results of the selenium tissue concentrations do not exceed the 8.6 µg/g dry weight criterion, then the water body's designated use of aquatic life is protected for selenium. If fish tissue has a selenium concentration that exceeds the 8.6 µg/g dry weight tissue criterion, the site is considered in non-attainment of the water quality standard.

Surface Water

During the calendar year 2016 sampling season, DOW completed approximately 950 monitoring site visits to collect samples from the Commonwealth's streams, rivers, springs, wetlands, lakes, and reservoirs to assess water quality.



DOW sampling assists in a greater understanding of the condition of Kentucky's water resources through four broad strategies:

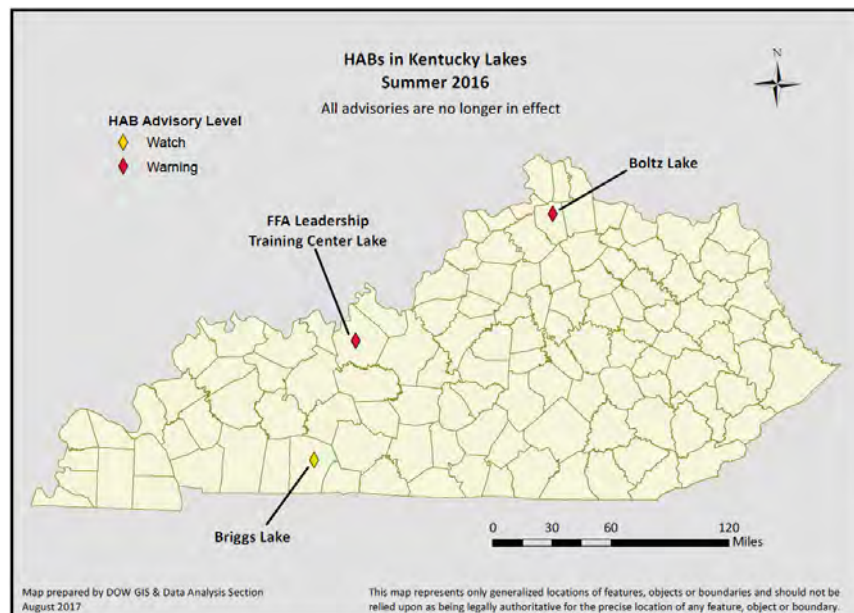
- 1) Targeted monitoring of streams with high-quality aquatic habitats, watersheds with emerging water quality concerns or issues, and watersheds with projects designed to improve water quality to determine program effectiveness;
- 2) Probabilistic monitoring of streams and wetlands using randomly selected sites to project current aquatic conditions across the state or a particular river basin. Kentucky participated in the National Wetland Condition Assessment, which occurs every five years, and through which the EPA can project current wetland condition for targeted basins in Kentucky and across the nation;
- 3) Monitoring for potential advisories regarding fish consumption, drinking water, and recreational activities through fish tissue collection and response to harmful algal bloom reports; and
- 4) Focused water quality monitoring in watersheds that require development of a Total Maximum Daily Load (TMDL) for pollutants. TMDL monitoring identifies sources of pollutants that cause a stream to be "impaired", i.e., it does not meet one or more of its designated uses. The data

enables DOW to determine the maximum amount of a pollutant a waterbody may receive, or the amount of pollutant reduction necessary, in order for the waterbody to meet its designated uses.

Harmful Algal Blooms (HABs)

Cyanobacteria (blue-green algae) occur naturally and are a vital component of ecosystems. A variety of factors, such as excess phosphorus and nitrogen (also called “nutrients”), sunny conditions, warm temperatures, and low flows, can result in toxin-producing cyanobacteria multiplying excessively and creating a health hazard for humans and animals through contact with or ingestion of contaminated surface water.

In FY17, DOW and its partners responded to 17 reports of algal blooms or illnesses possibly related to HABs, and three reservoirs received recreational advisories. Briggs Lake (Logan County) was placed under a recreational public health watch due to microcystin, and Boltz Lake (Grant County) and the lake at the Future Farmers of America (FFA) Leadership Training Center (Breckinridge County) were under recreational public health warnings due to high concentrations of cylindrospermopsin and microcystin toxins, respectively. The advisories for Briggs Lake and the FFA Lake ended in December 2016. The warning for Boltz Lake was lowered to a watch in April 2017, and was finally removed in June 2017 once the algal toxin concentrations fell below the advisory thresholds.

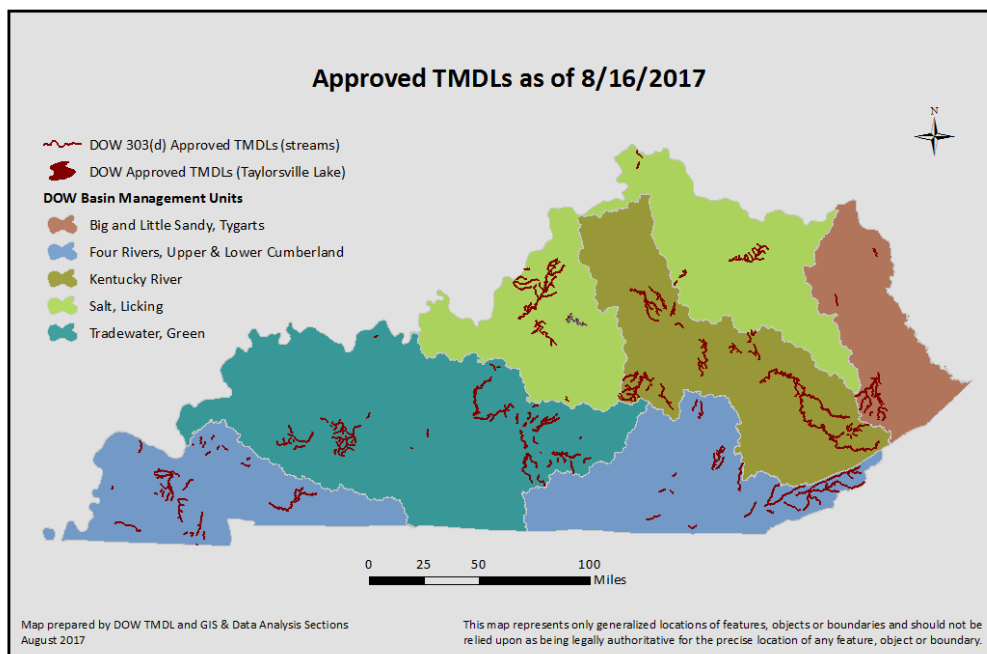


Federal Clean Water Act, Section 305(b) Assessments / Total Maximum Daily Loads (TMDLs)

Every two years DOW must submit its Integrated Report (IR), regarding the condition of Kentucky's water resources, to the US Congress pursuant to the Clean Water Act, Section 305(b). The IR contains a list of all the Kentucky waterbodies that have been monitored, data utilized to assess or evaluate the quality of water and, pursuant to Section 303(d), a list of impaired waterbodies that require the development of a TMDL.

The TMDL is a calculation of the maximum amount of a pollutant a waterbody may receive and still meet its designated uses, such as swimming and fishing, and must be developed for each pollutant that impairs a lake, reservoir, or specific reach of a stream. The TMDL reports undergo internal preliminary review and a 30-day public comment period before approval by the EPA. The reports contain load allocations for both point and nonpoint sources of the pollutant so that a waterbody can return to full support of its designated uses.

In FY17, DOW staff monitored 30 stations to verify the necessity of TMDL development, including an ongoing study to assess the Cypress Creek watershed. The EPA approved TMDLs for 54 pollutant-waterbody combinations on stream segments in the Pond Creek watershed impaired by pH, metals, and bacteria. Currently under development are TMDLs for Ohio River bacteria, statewide bacteria, and Floyds Fork nutrients.



In October 2016, the EPA approved Kentucky's 2014 Section 303(d) list which included 62 waterbody/pollutant combinations for removal from the impaired list. The draft 2016 303(d) list went to public notice on May 2, 2017, and includes a request for the removal of 63 waterbody/pollutant combinations from the impaired list. Waterbodies removed from the 303(d) list may indicate improved water quality due to facility upgrades, changes in land use, or successful pollutant abatement projects within a particular watershed.

Clean Water Act, Section 401, Certification of USACE Nationwide Permits

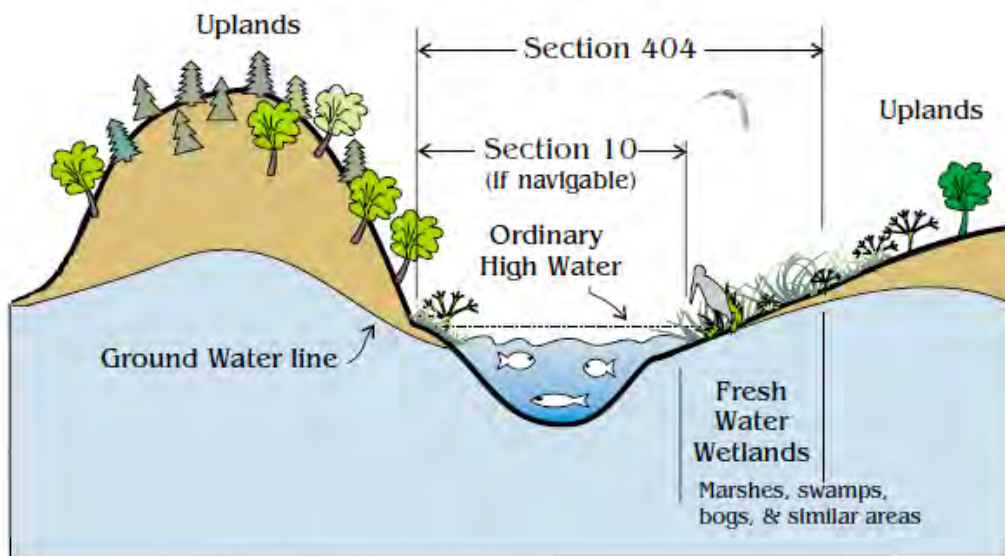
Every five years the US Army Corps of Engineers (USACE) issues a series of general Nationwide Permits (NWP) that authorize activities under the Clean Water Act, Section 404, and the Rivers and Harbors Act of 1899, Section 10. These NWPs are for projects that will have minimal environmental impact and allow a streamlined permitting process. DOW issues water quality certifications (WQCs) pursuant to the Clean Water Act, Section 401, which authorizes states and tribes to certify that the NWPs will comply with state water quality standards.

The Commonwealth has three options for NWPs:

- 1) certify "as is" which means that the NWPs meet Kentucky's water quality standards
- 2) certify "with conditions" which means that additional conditions must be implemented to meet Kentucky's water quality standards, and
- 3) deny an NWP, meaning that individual WQCs are necessary for the project.

The previous NWPs issued by the USACE expired on March 18, 2017. The new NWPs became effective on March 19 and will expire on March 18, 2022. When the proposed NWPs were published in the Federal Register in 2016, DOW spent considerable time reviewing the proposals and developing WQCs, then sent the proposed general WQCs to public notice for 30 days. The general WQCs became effective on March 19, 2017.

CORPS OF ENGINEERS REGULATORY JURISDICTION in Fresh Waters



Typical Examples of Regulated Activities

Section 404

Disposal of Dredged or Fill Material
(all waters of the U.S.)

All filling activities, utility lines, outfall structures, road crossings, beach nourishment, riprap, jetties, some excavation activities, etc.

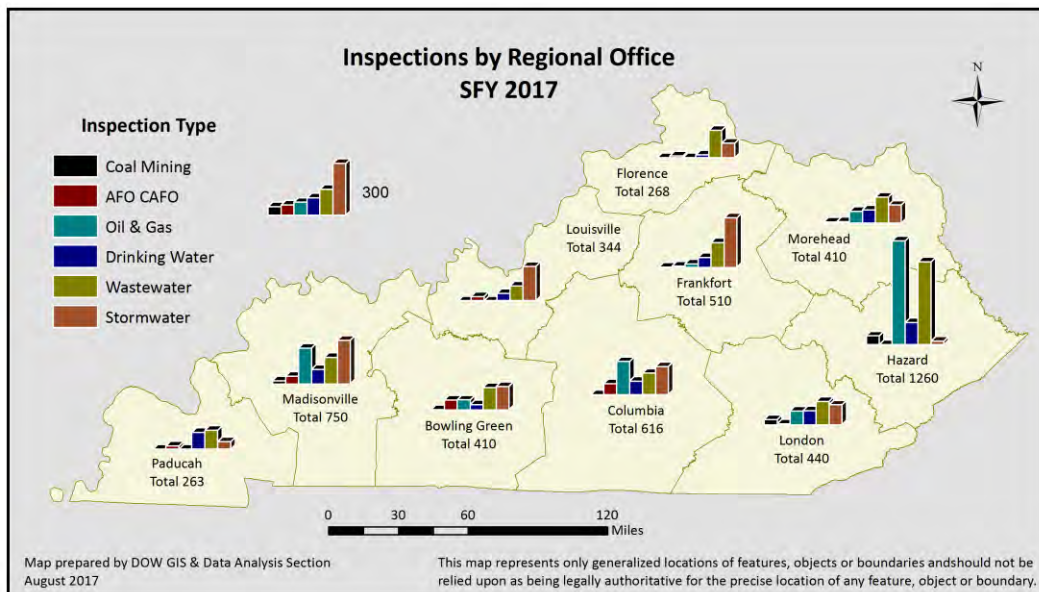
Section 10

All Structures and Work
(navigable waters)

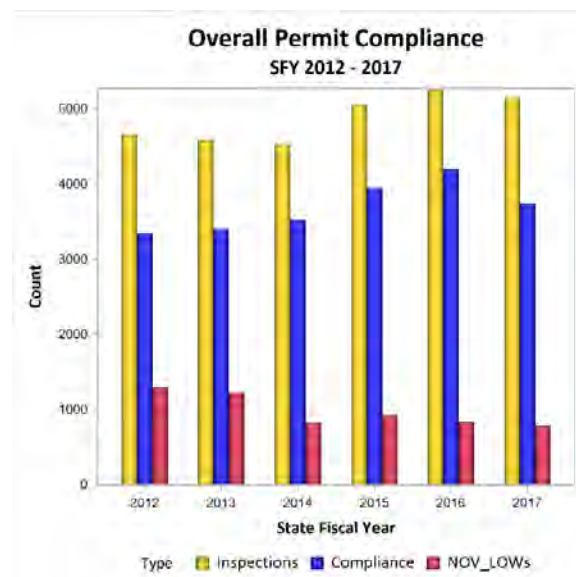
Dredging, marinas, piers, wharves, floats, intake/outtake pipes, pilings, bulkheads, ramps, fills, overhead transmission lines, etc.

COMPLIANCE AND INSPECTIONS

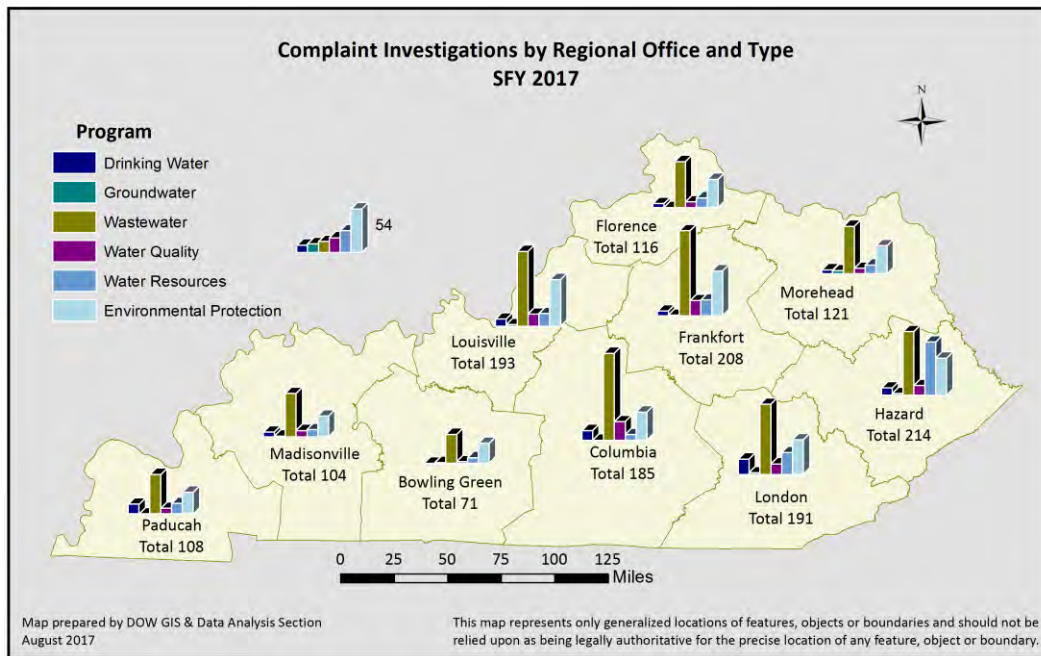
Compliance inspections ensure that wastewater, stormwater, and drinking water facilities are meeting federal and state regulatory requirements and permit conditions, and are a primary mechanism for DOW to provide technical assistance to facility operators through its ten regional offices and central office personnel.



In FY17, DOW conducted 5,271 inspections of which approximately 58% were conducted for wastewater and stormwater permits, with the remaining 42% comprised of drinking water, oil and gas, agriculture, and coal mining sectors. Continuing an upward trend since 2010, compliance inspection results show that permitted facilities, excluding coal, had an overall compliance rate of 80%.



During FY17, DOW received approximately 1,511 complaints. The declining number of citizen complaints received, combined with high compliance rates, may indicate the effectiveness of DOW strategies to assure and promote compliance. While enforcement action is sometimes necessary, cooperative relationships between DOW and the regulated community facilitate technical assistance and support to prevent violations, resolve existing problems, and optimize the performance of wastewater and drinking water facilities. Ultimately there is a direct correlation between compliance rates and water quality, which are primary objectives of DOW.

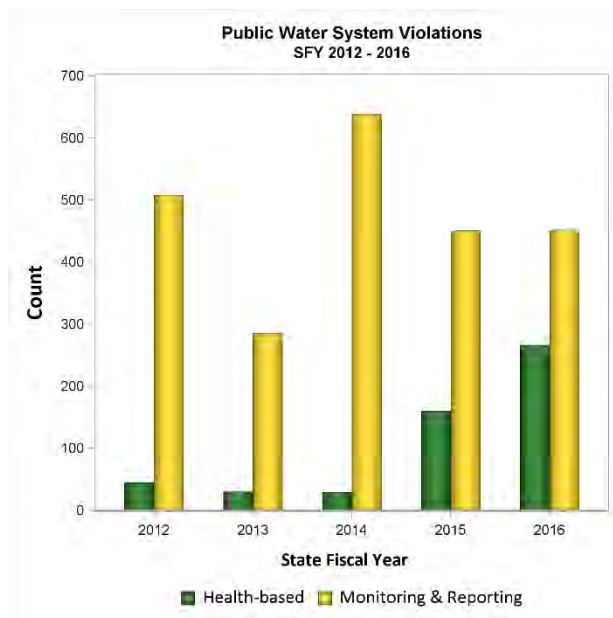


Public Drinking Water Systems

Kentucky is served by 434 public water systems, most of which are small systems that each serve fewer than 3,300 customers. These small systems face significant challenges in keeping water affordable while operating effectively and maintaining an extensive, aging infrastructure. Despite these challenges, Kentucky's public water systems continue to provide safe, reliable drinking water to more than 95% of Kentuckians. The federal Safe Drinking Water Act (SDWA) requires public water systems to regularly test produced water for more than 100 contaminants such as bacteria, nitrates, and other chemicals. When a water system exceeds contaminant limits for a required sample, it must take corrective action and notify its customers.

Data from Kentucky's 434 public water systems in FY2017 demonstrates consistent production of excellent quality water, a decline in monitoring and reporting violations, and very high rates of compliance with the SDWA. Data reported by water systems in calendar year 2016 shows that none of Kentucky's 434 public water systems exceeded federal limits for metals, including lead, or cancer-causing volatile organic compounds.

As anticipated, the number of health-based violations at public water systems have continued to increase since 2014 with implementation of the federal "Stage 2 Disinfection Byproduct Rule". Disinfection byproducts (DBPs) are a class of contaminants that result from the interaction of disinfection chemicals, such as chlorine, with other chemicals in the water. The Stage 2 rule requires public water systems that purchase water from other systems to monitor and meet established standards for DBPs, from which they were previously exempt. This increase in health-based violations does not reflect a change in water quality.



The trend with DBPs continued in calendar year 2016 with 226 violations which constituted 97% of all health-based drinking water violations. DOW remains committed to targeted technical assistance to individual systems to resolve a variety of issues, and its partnership with the Kentucky Rural Water Association to provide additional resources focused on reducing disinfection byproducts (DBPs) throughout the state. These resources include Distribution System Optimization training which teaches systems how to reduce water age in pipes and holding tanks which contributes to DBP formation, and the voluntary Area Wide Optimization Program (AWOP) which challenges water systems to produce drinking water of greater quality than that required by regulation. The AWOP historically focused on reducing turbidity in finished drinking water which results in higher quality drinking water and reduces the potential for other types of violations due to extra effort in producing optimized water. Kentucky's AWOP participants provide optimized water to more than 2.5 million citizens across the Commonwealth, and in May 2017 the EEC recognized 36 surface water treatment plants for meeting or exceeding AWOP standards.

Drinking Water Advisory Council (DWAC)

The DWAC is a group of representatives of public and private sector stakeholders who play a role in providing safe drinking water to Kentucky citizens. Some of the issues that DWAC subcommittees addressed in FY17 included DBP-related issues, the availability of certified drinking water system operators, lead in drinking water, infrastructure sustainability, and DOW and EPA policies and regulations.

The DWAC Compliance subcommittee developed and hosted three DBP symposia at key locations throughout the Commonwealth. 140 representatives of 40 water systems attended the day-long training which included detailed presentations regarding the regulation, formation, and treatment of DBPs.

Prompted by national issues regarding lead in drinking water, DOW and DWAC formed its Lead in Drinking Water workgroup in 2016 to engage in a proactive, coordinated effort to examine the status of lead in Kentucky's drinking water, whether and what future action might be needed, and develop recommendations if appropriate. The Lead in Drinking Water workgroup includes representatives from the Kentucky Department of Public Health, Kentucky Rural Water Association, the University of Louisville, and public utilities. The workgroup researched and presented information on lead-related issues including the complexity of water chemistry, corrosion control, infrastructure, regulations, financing, and health effects. Through the collective effort of the workgroup, Kentucky is taking a proactive approach to maintain public health and the confidence of its public water system customers.



EPA Office of Water Visit to Kentucky

In January 2017, Kentucky hosted staff from the EPA Office of Ground Water and Drinking Water, including Peter Grevatt (Director), Anita Thompkins, and Ellen Tarquinio. The visit included stops at four drinking water systems, meetings with EEC leadership and stakeholders, and provided an opportunity to demonstrate the positive results of DOW partnerships in improving compliance and infrastructure sustainability throughout the Commonwealth. A group of representatives from the DOW, Kentucky Rural Water Association, and the EPA visited the cities of Butler and Williamstown, the Danville Water Treatment Plant, and the Lake Village Water Association, to hear success stories from systems that received technical assistance and funding from various sources to meet compliance goals and prepare for the future. Additionally, presentations highlighted Mercer County Sanitation District extension and improvements, and efforts to protect the source water of Herrington Lake.

The EPA representatives also met with stakeholders from across Kentucky to hear concerns from the state and its regulated community. The highly successful visit resulted in the EPA's recognition and praise for the work done through DOW public and private partnerships that fund, train, and support Kentucky's public water systems.



L to R: Donna McNeil (KRWA), Brent Tippy (HDR Engineers), Peter Goodmann (Director, DOW), Joe Burns (KRWA), Peter Grevatt (EPA), Gary Larimore (KRWA), Anita Thompkins (EPA), Andy Tompkins (Danville), Ellen Tarquinio (EPA), Earl Coffey (Danville), and Sarah Gaddis (DOW).

WATER MAPS PORTAL (watermaps.ky.gov)

The management and dissemination of data to meet the mission of the DOW continues to be a challenge, but collaboration between DOW, Division of Environmental Program Support (DEPS), and General Administration and Program Support (GAPS) continues making great strides in improving the delivery of this information and expanding the maps available for users. In addition to providing data transparency, DOW realized cost savings from decreased staff time spent releasing data for individual requests and explaining information to the public, which in turn improves relationships between DOW and the citizens and businesses that it serves.

Positive reviews received include:

“This is an example of state government getting something right.” (Page One Kentucky)

“I cannot thank your team enough for listening to our concerns and needs up front to get this project right the first time. This truly will be a tool that businesses of all sizes will utilize across the state.”

(Kentucky Chamber of Commerce)

The Environmental Systems Research Institute (Esri) selected DOW and the Department for Environmental Protection out of 100,000 candidates to receive its 2017 Special Achievement in GIS Award at the annual Esri User Conference. This award recognizes the innovative application of technology, data collection, geospatial information visualization, and thoughtful leadership through GIS in local and state government.



When state officials issued a Level 1 Drought declaration in early November 2016, DOW launched its Drought Viewer (<http://www.watermaps.ky.gov/drought>) to provide citizens of the Commonwealth updated and easily accessible information. This interactive application allows users to view drought conditions by county, detailed down to street level, including which areas of the state are under watches or warnings, and potential impacts to populations affected per water system and local communities.

DOW and DEPS continue developing and publishing more portals and viewers to provide further assistance and data transparency to the public.

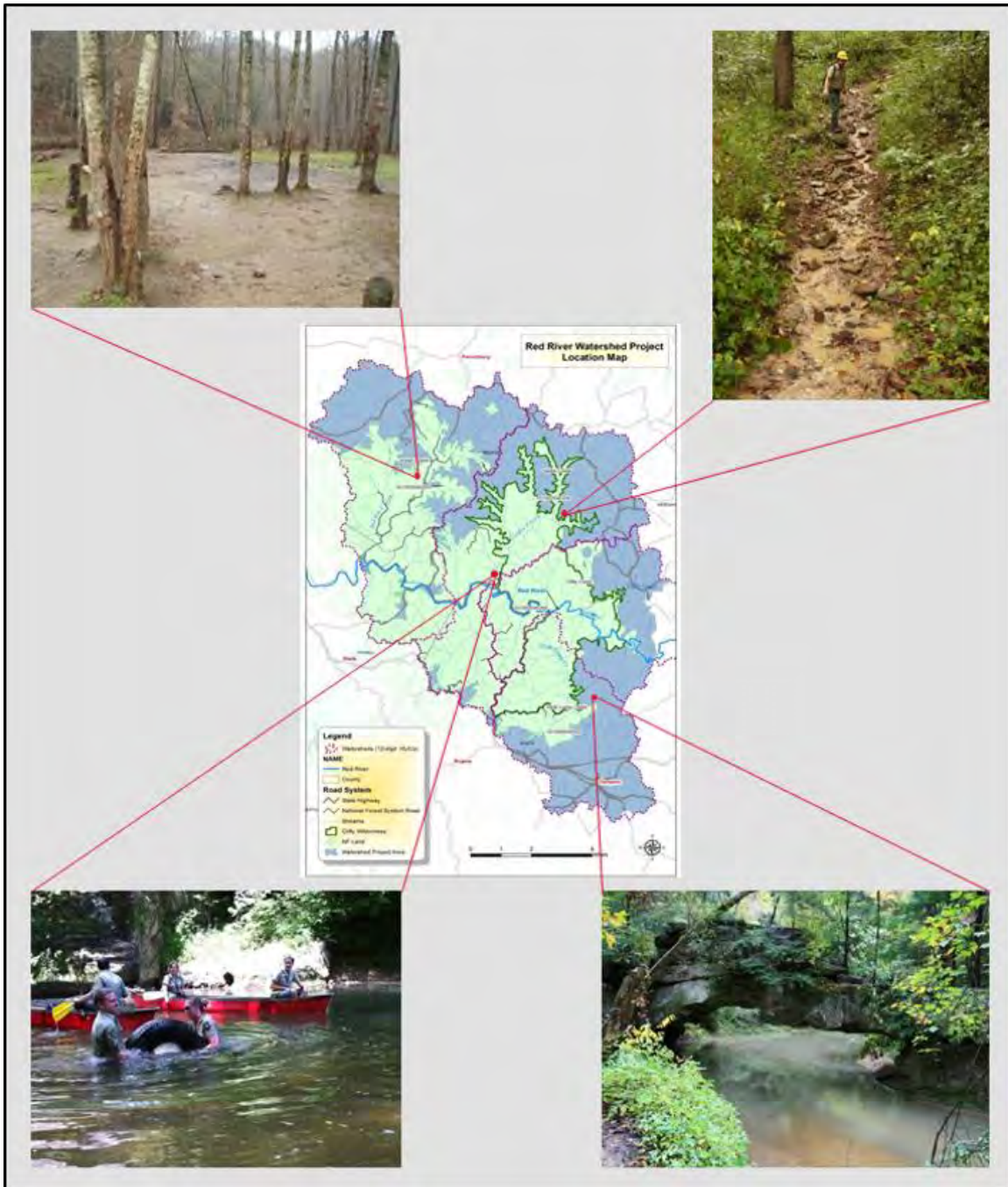
WATERSHED IMPROVEMENT EFFORTS



Nonpoint source runoff is the primary source of pollution affecting water quality in Kentucky. DOW receives Clean Water Act Section 319(h) grant funds from the US EPA to address problems associated with nonpoint source pollution, and works at both a watershed level and on a statewide scale to protect surface water and groundwater from nonpoint source pollution, abate pollution threats, and restore degraded waters. Watershed plans describe conditions in the watershed, identify causes and sources of impairment, and explain how best management practices (BMPs) can improve water quality conditions and ultimately meet water quality standards and designated uses.

The Red River Gorge (RRG) is a scenic natural area located in the Daniel Boone National Forest, known for free-flowing streams, abundant natural stone arches, unusual rock formations, and spectacular sandstone cliffs. Because of its outstanding beauty and accessibility, RRG draws an estimated half million visitors from around the world each year, placing a heavy burden on its natural resources. The US Forest Service (USFS) maintains a network of trails, but users have added almost 200 miles of unauthorized trails and have created hundreds of campsites, vistas, and rock climbing routes. Since these user-developed features are not maintained by the USFS, they are very susceptible to erosion and contribute to high sediment loads in the streams. Additionally, the gorge is located downstream of privately owned land, small towns, and farms, and therefore water quality is also threatened by pollution from illegal dumps, runoff from towns, agriculture, and rock quarries, as well as loss of streamside vegetation.

The USFS sought help from DOW to improve the quality of this valuable state resource. The USFS created a watershed plan to identify causes and sources of pollution in the Red River Watershed, and determine strategies to address issues identified in the plan. To help with the watershed planning process, the USFS created strong partnerships with DOW, the Kentucky Department of Fish and Wildlife Resources (DFWR), and conservation entities and outdoor enthusiasts such as Kentucky Waterways Alliance (KWA), Friends of the Red River, Student Conservation Association, RRG Trail Volunteers, and RRG Climbers Coalition, the Wolfe County Solid Waste Coordinator, the Campton Catholic Church, and other local agencies and citizen groups. These interested parties formed the Red River Watershed Team and were instrumental in helping with RRG cleanup efforts.



The Red River Watershed Team identified problems with pathogens primarily from absent or failing septic systems, particularly in the Swift Camp Creek watershed, and phosphorus and sediment from various recreational activities and minor agricultural practices. To work on water quality improvement in the watershed, DOW awarded CWA Section 319(h) funds to the USFS to work with local partners on public education and outreach, erosion control, trash pickup, and implementation of septic BMPs, such as system installation or repair.

The USFS and its partners began addressing erosion and sedimentation by reclaiming and replanting user-developed campsites and trails, placing materials to deter further use, installing water bars and lead-off ditches on trails to slow runoff, and removing garbage in the streams. A seasonal trail crew and Student Conservation Association volunteers helped recover eroding trails and sites within the gorge. In addition to the trail crew, USFS also worked with DOW, DFWR, Trout Unlimited, and AmeriCorps to reclaim areas by planting new trees. KWA led outreach efforts by engaging the public in stream cleanup activities and educating visitors and local students on how to reduce impacts to Kentucky streams through personal actions. Eastern Kentucky PRIDE assisted USFS in reducing pathogens and other household pollutants through a septic repair or replace program available to homeowners with improperly functioning or absent septic systems. This collaborative effort resulted in the rehabilitation of 157 user-developed campsites, reduced erosion on over 32 miles of trail, eliminated 416 tons of stream sedimentation per year, and removed trash from over 75 miles of stream.



Kentucky River from River View Park

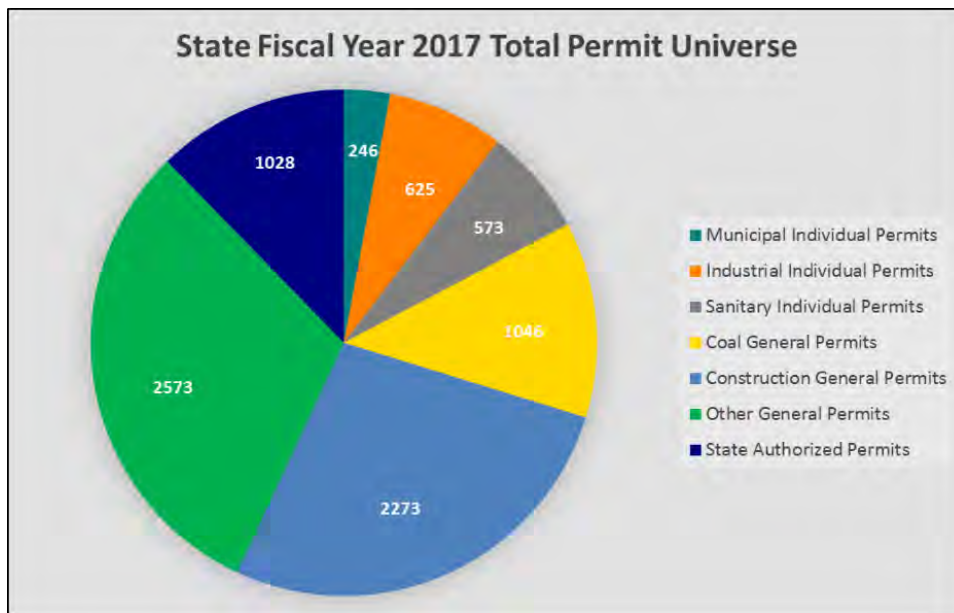
DOW Staff Photo

PERMITTING

The Clean Water Act prohibits the discharge of pollutants from a point source into waters of the Commonwealth without a Kentucky Pollutant Discharge Elimination System (KPDES) permit. The KPDES permit contains provisions to ensure that wastewater discharged from industrial facilities, publicly owned treatment works, and other sources is not harmful to human health and the environment. The permit places limitations on what can be discharged, identifies monitoring responsibilities, and establishes reporting requirements.

Permit Issuance

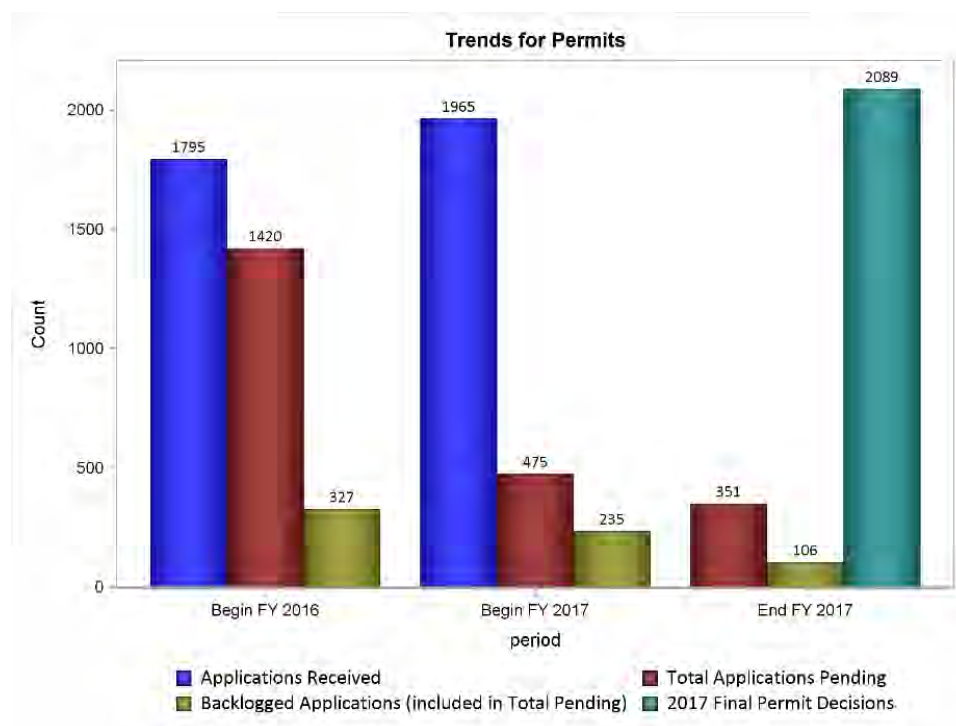
DOW issues three types of permits: individual, general, and state-authorized.



An individual permit is issued to a single entity and reflects site-specific information submitted by the discharger in the permit application. General permits provide coverage to facilities with similar operations that file a Notice of Intent requesting coverage under the general permit. Kentucky has general permits for fifteen categories of dischargers. State-authorized permits include Inter-System Operational Permits (KISOP) for facilities that collect and transfer wastewater to a treatment system owned by another party, and No Discharge Operational Permits (KNDOP) for facilities that dispose of generated wastewater by

means other than a point source discharge. There are approximately 1,450 individual permitted dischargers, more than 5,800 facilities covered by general permits, 50 KISOPs, and 980 KNDOPs in Kentucky.

Most permits must be renewed every 5 years, and DOW receives an average of 1,800 new and renewal permit applications each year. FY17 began with 475 pending applications, including 235 backlogged applications, and received an additional 1,965 applications during the year. Of a total 2,440 applications, DOW issued final decisions on 313 individual and 1,776 general permits.



Pending applications decreased by 79% in the last two years, and backlogged applications decreased by 68%. Permitting program improvements can be attributed to DOW vision and diligence in making the issuance of permits a priority. DOW also achieved its commitment to the US EPA Office of Wastewater Management to resolve 20% of applications on a federal list of prioritized permits. The Priority Permits Initiative ensures that Kentucky addresses the most environmentally or programmatically significant permits in a timely fashion.

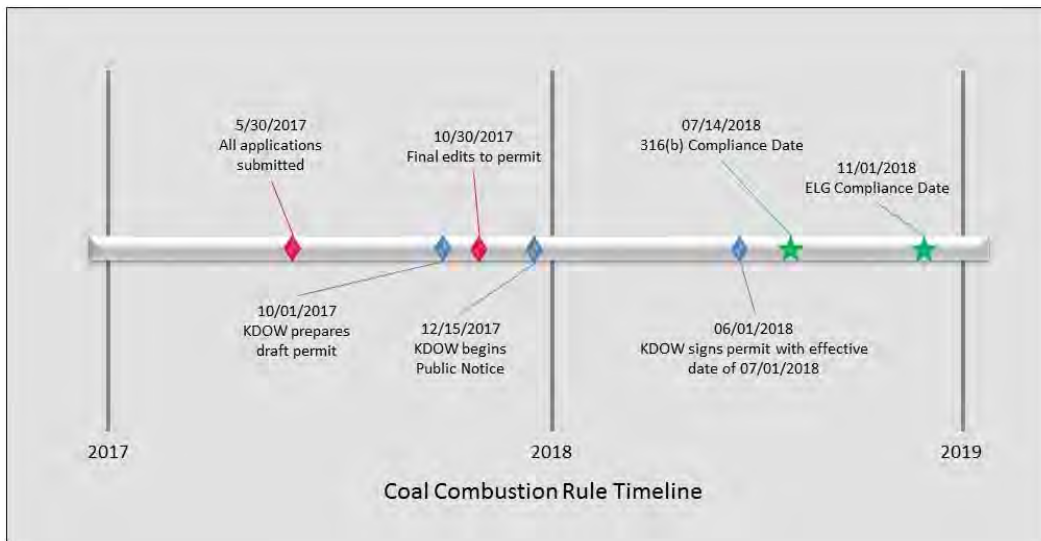
New Rules and Challenges

Three new US EPA regulations affected Kentucky's 17 electric-generating plants and required those facilities to upgrade water intake structures, meet more stringent environmental standards for discharging scrubber wastewater, and eliminate wet handling of fly ash and bottom ash.

The amendments to Section 316(b) of the federal Clean Water Act required facilities with cooling water intake structures to use the best technology available to minimize environmental impacts. Intake structures pull fish and shellfish into a power plant's cooling system (known as "entrainment") which may then be killed or injured by heat, physical stress, or chemicals used to clean the cooling system. Larger organisms may be killed or injured when they become trapped against screens at the front of an intake structure (known as "impingement"). The new rule placed a deadline of July 14, 2018 for facilities to obtain a KPDES permit that identifies the technology and site-specific controls implemented by the facility to comply with the new rule.

The US EPA amended the effluent limitations guidelines (ELG) for steam electric power generating plants in 2015, and required facilities to comply with the best available technology requirements for flue gas desulfurization wastewater, gasification wastewater, fly ash transport water, flue gas mercury control wastewater, and bottom ash transport water. The ELG changes necessitate substantial modifications to power plant processes. Facilities must undertake physical, chemical, and biological treatment of scrubber wastewater by November 1, 2018, and obtain a KPDES permit with the new ELG limitations.

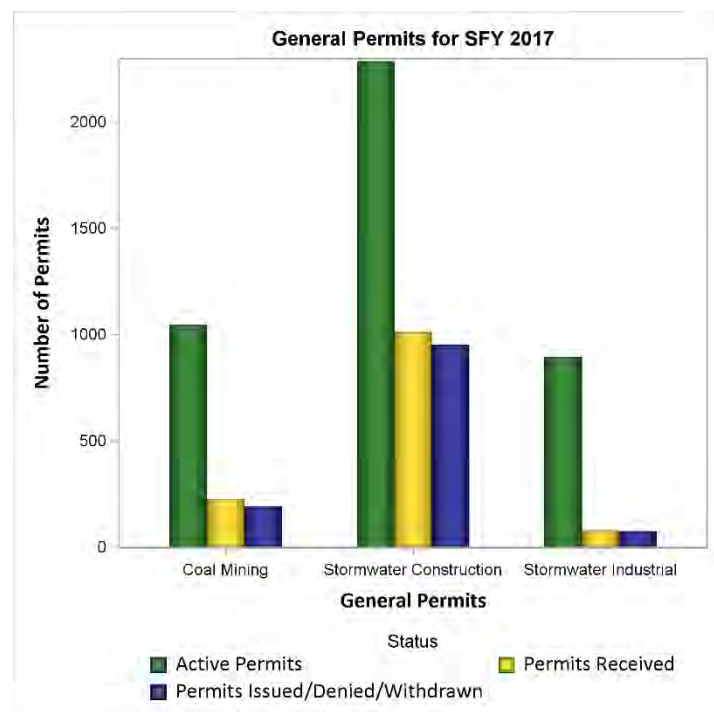
The new Coal Combustion Residual (CCR) rule requires power plants to cease wet handling of fly ash and bottom ash, and to close surface impoundments of these substances, within five years. Pond dewatering affects KPDES permits in two ways: managing the discharge of wastewater from the pond, and managing the wastewater being rerouted from the pond to other equipment. DOW worked with electric power plants and the Utilities Information Exchange of Kentucky to ensure timely issuance of permits to comply with new regulatory deadlines. Permittees received a timeline for submitting applications which allowed DOW staff to meet the regulatory schedule. DOW conducted a workshop for the power plants and resolved issues such as transition of wastewater flow during construction, dewatering and closing ash ponds, start-up of new equipment, and new effluent limitations. DOW will continue to collaborate with power plants until the transition is complete.



General Permits

Coal Mining

The *Coal Mining, Processing, and Associated Activities General Permit* authorizes discharge of wastewater from surface mining operations in Eastern and Western Kentucky coal fields. The number of mines requesting coverage under the general permit continued to decline, and by the end of FY17 there were 1046 active permitted sites. In FY17, DOW made final decisions on 193 of the 226 renewal applications and modification requests it received.



Stormwater from Construction Sites

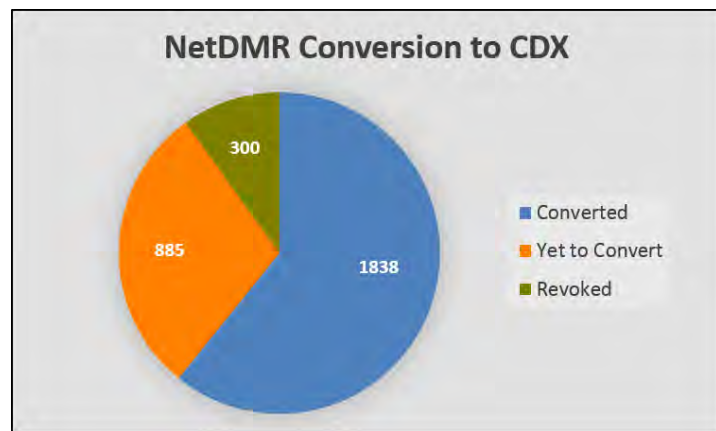
The *Stormwater Construction General Permit* authorizes discharge of stormwater from construction activities that disturb more than one acre of land. Permit coverage is granted for two years, and the average number of active permits exceeds 2,200. In FY2017, the DOW received more than 1,000 requests for general permit coverage and made final decisions to issue or deny the permits within seven days.

Stormwater Associated with Industrial Activities

The *Stormwater Industrial Activity General Permit* authorizes discharge of stormwater runoff associated with industrial activity. This permit is valid for 5 years and available to facilities that would normally be required to have an individual KPDES permit for stormwater coming into contact with industrial activities, but is unavailable to facilities that must meet national effluent limitations guidelines. There are approximately 900 active industrial stormwater general permits, and the DOW received 77 requests for new or expanded discharges in FY17.

NetDMR Conversion to CDX

During FY17, DOW collaborated with regulatory agencies in other states and the US EPA to convert account management functions of NetDMR (Discharge Monitoring Reports) into the US EPA's Central Data Exchange (CDX). Benefits of this conversion include improved account creation, maintenance, and password reset functionality, upgraded performance to



allow one account for reports to the US EPA even if the user has facilities in multiple states, enhanced security, and increased access speed. During the conversion process, permit access was revoked for approximately 300 users who no longer represented a facility. The NetDMR conversion to CDX is ongoing.

Combined and Separate Sewer Systems

Many older cities in Kentucky have sewer systems designed to transport both sanitary wastewater and stormwater. During high rainfall events, the flow of combined wastewater and stormwater may become too much for a wastewater treatment system to manage, and the excess water discharging from an outfall is referred to as a Combined Sewer Overflow (CSO).

Some cities have sewer systems designed to collect and transport only domestic, commercial, and industrial wastewater, while stormwater is transported through separate pipe systems. Periodically, the sewer systems overflow due to blockages, disrepair, or excessive flow from precipitation. The discharge of sanitary wastewater from a sewer collection system is known as a Sanitary Sewer Overflow (SSO).

DOW collaborates with federal, state, and local governments to bring communities into compliance with the Clean Water Act and eliminate sewer overflows in Kentucky. Sixteen Kentucky communities are working to eliminate SSOs and to mitigate CSOs to the extent economically feasible. These communities implement projects to reduce overflows, manage capacity, and develop long term control plans. The projects often include repairing sewer lines and increasing the storage capacity in the sewer system, which allows additional processing time for wastewater treatment. Final completion dates of these projects vary depending on the scope of work and financial considerations.

SSO elimination and CSO mitigation projects in Kentucky			
Community/Entity	Expected Completion Date	Community/Entity	Expected Completion Date
Ashland	12/31/2025	Northern KY SD1	12/31/2025
Catlettsburg	12/31/2014	Owensboro RWRA	12/31/2026
Frankfort	12/31/2023	Paducah JSA	12/31/2038
Harlan	12/31/2020	Pikeville	Completed 07/01/2014
Henderson	3/31/2015	Pineville	9/5/2017
Lexington LFUCG	12/31/2026	Prestonsburg	Completed 10/01/2015
Louisville MSD	12/31/2024	Vanceburg	Completed 12/31/2012
Loyall	10/31/2017	Winchester	12/31/2025
Maysville	12/28/2015	Worthington	12/31/2015
Morganfield	12/28/2018	-	-

In FY17, the City of Lexington constructed two large tanks to store excess wastewater during high precipitation events. The Wolf Run storage tank has a capacity of 1.8 million gallons and was completed in the fourth quarter of 2016. The Lower Cane Run storage tank was completed in the first quarter of 2017, adding an additional 22 million gallons of capacity. After high precipitation events, wastewater stored in the tanks is slowly released to the treatment plant.



Also in FY17, the Louisville Metropolitan Sewer District (MSD) completed construction of its Bells Lane Wet Weather facility. The project included building a 50 million gallon per day high-rate treatment facility and a 25 million gallon storage basin; it also involved increasing the capacity of the pump station to 160 million gallons per day. The new capacity allows MSD to manage all dry weather flow and up to 100

million gallons per day of wet weather flow. This project greatly reduces recurring overflows and the amount of untreated sewage discharged to the Ohio River.

There are 230 Kentucky communities that have varying degrees of aging infrastructure that cause bypasses and overflows at wastewater treatment plants. DOW personnel inspect approximately 10% of the systems in these communities, focusing on systems with frequent and recurring incidents and complaints. During inspections, DOW staff educate communities on identifying causes of overflows, prioritizing corrective actions, finding funding resources, and returning collection systems to compliance with the Clean Water Act. Greater awareness of the seriousness of CSOs and SSOs, and completion of remedial projects, results in fewer overflows of raw sewage into public streets, parks, yards, and streams. Kentucky communities continue making progress to minimize discharges of untreated wastewater with long-term planning and assistance from DOW.

Municipal Separate Storm Sewer Systems (MS4s)

Stormwater runoff from developed urban and suburban areas contributes significant pollution to Kentucky waters and increases downstream flooding. The purpose of the Municipal Separate Storm Sewer System (MS4) program is to minimize urban stormwater pollution runoff from entering the waters of the Commonwealth. The MS4 program requires communities and entities with significant population density to obtain a permit and develop a stormwater management program.

There are three MS4 categories based on population: large, medium, and small. Kentucky's two Phase 1 permits provide coverage to large MS4 areas and contain site specific requirements for the individual permittee. Phase II permits contain general conditions and are issued for medium and small MS4s. Currently, there are 49 permits for small MS4s, but no permits for medium MS4s.

CATEGORY	CRITERIA	NO. OF PERMITS
Large	250,000+ population	two Phase I permits
Medium	100,000 - 249,999 population	no Phase II permits
Small	10,000 - 99,999 population, or 1,000 population/square mile, or contiguous to another MS4	49 Phase II permits Covering 105 MS4s

The MS4 program also requires communities to develop an ongoing program to control stormwater discharges. DOW personnel provide technical assistance to MS4 communities, monitor program compliance by reviewing annual reports and inspecting approximately 20% of MS4s each year, and evaluate MS4 programs to verify they meet the Six Minimum Control Measures (MCM).

MS4 MINIMUM CONTROL MEASURES

1. Public education and outreach
2. Public participation and involvement
3. Illicit discharge detection and elimination
4. Construction site runoff controls
5. Post-construction site runoff controls
6. Facility good housekeeping and pollution prevention

In November 2016, the US EPA issued a rule requiring states to choose one of three options for implementing Phase II general permits. Kentucky chose Option 1, which reflects a traditional approach, requiring the general permit to include all requirements necessary to meet the MCMs. Kentucky's draft of its Phase II MS4 permit was public noticed in July 2017 and is nearly final. DOW also finalized the Phase I permit for Louisville MSD.



Kentucky Horse Park

DOW Staff Photo

Commonwealth of Kentucky

Matthew G. Bevin, Governor

Energy and Environment Cabinet

Charles G. Snavely, Secretary

Kentucky Department for Environmental Protection

Aaron B. Keatley, Commissioner

Kentucky DOW

Peter Goodmann, Director

Thomas Gabbard, Assistant Director

Branch Managers

Compliance and Technical Assistance Branch

Sarah Gaddis

Resource Planning and Program Support Branch

Kristie Graham

Surface Water Permits Branch

Sara Anderson

Water Infrastructure Branch

Jory Becker

Watershed Management Branch

John Webb

Water Quality Branch

Andrea Keatley