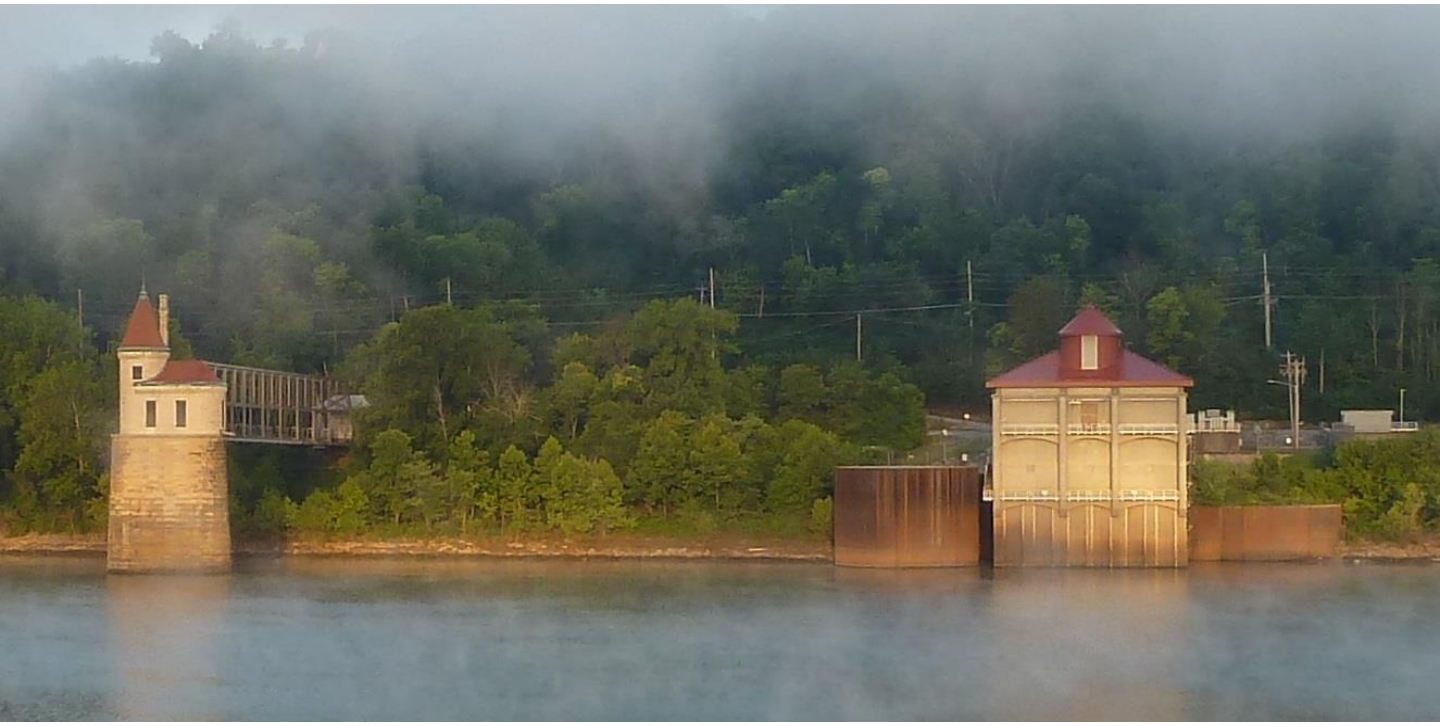
OHIO RIVER
Source Water Alliance
Prevent • Protect • Preserve

Source Water Protection Annual Report 2017



May 2018

GREATER CINCINNATI WATER WORKS

Northern Kentucky Water District

Introduction

The Greater Cincinnati Water Works (GCWW) and the Northern Kentucky Water District (NKWD) both use the Ohio River as their primary source of drinking water. Together, GCWW and NKWD provide safe, sustainable, and great tasting drinking water to a total of 1.4 million people and businesses throughout Southwest Ohio and Northern Kentucky. The utilities have joined forces to collaboratively build and implement a protection program for the Ohio River to safeguard the health and wellbeing of their customers. This report summarizes the Source Water Protection activities for 2017.

Source water protection is the initial barrier of a multi-barrier protection strategy employed by both utilities to protect the drinking water quality and safeguard public health. Consequently each utility operates treatment plants and monitors water quality throughout their systems and both utilities are in compliance with the respective state regulations.

The Ohio River is a robust water source steeped in history and serves as an economic catalyst for many communities and industrial areas. Much of the early industrial success and westward expansion of the nation can be tied to this valuable and often much maligned waterway. Due in large part to the importance of the Ohio River as a navigable waterway for the transportation of goods and materials by barge, there has been a sufficient quantity of water to meet the varied needs since the construction of locks and dams on the river.

While there are several positive aspects to the Ohio River as a water source, the varied uses require constant vigilance to ensure the water quality stays within a range that the GCWW and NKWD treatment plants remain capable of removing any stray contaminants. The Source Water Protection Program is designed to maintain or improve that water quality and to identify and mitigate as many water quality risks as possible.

While this report constitutes the first annual report specifically addressing source water protection, both GCWW and NKWD have been performing protection activities for decades. 2017, however, represents the first year that these programs have been “officially” grouped together under a single joint program. This report is limited to 2017 protection activities and does not include a historical recounting of previous activities.

Protection Program Goals

- Maintain or improve the quality of the water in the Ohio River upstream of the GCWW/NKWD intakes.
- Minimize the potential for accidental industrial releases to the Ohio River or major tributaries upstream of the GCWW/NKWD intakes.
- Ensure that GCWW and NKWD receive timely notification of upstream spills and releases and that the utilities' needs are met during spill response actions.
- Update and maintain an inventory of potential contaminant sources in the upstream watershed with a particular emphasis on the Zone of Critical Concern.
- Improve communication between GCWW/NKWD and upstream industries including barge and railroad companies.
- Educate the public, upstream industries, and civic groups of the importance of protecting the Ohio River as a source of drinking water for the greater Cincinnati/northern Kentucky region.
- Build a partnership between GCWW and the NKWD, with support from ORSANCO, to jointly develop and administer an interstate source water protection program.

ORSWA Background

The Ohio River Source Water Alliance (ORSWA) is a cooperative Source Water Protection Program that is dedicated to the preservation of the Ohio River as a source of drinking water for the citizens of the Greater Cincinnati and Northern Kentucky Area.

GCWW and the NKWD, with support and encouragement from the Ohio River Valley Water Sanitation Commission (ORSANCO), started to jointly address source water protection on the Ohio River in 2006, with a resurgence of interest in 2013. The partnership grew through the 2013 to 2017 period as the group came together to prepare a joint source water protection plan and laid the groundwork to jointly implement that plan.

In order to facilitate communication and bring greater awareness to the planning and protection efforts, the planning committee decided to develop a single image and, in 2017, the Ohio River Source Water Alliance was created!

ORSWA members met more-or-less monthly throughout 2017 and will continue to meet on an approximately monthly basis through the foreseeable future as the joint source water protection program transitions from the planning stages to full implementation.

The Treatment Plants - GCWW

The GCWW's Richard Miller Treatment Plant (RMTP) was constructed circa 1904 and brought into service in 1907. The original plant configuration included a brick intake structure in the Ohio River located near the Kentucky bank, a steam-driven pump station (Old River Station), two brick-lined off-channel reservoirs, coagulation and sedimentation basins, and rapid sand filters. Over the ensuing 110 years there have been numerous upgrades to the plant including: chlorination, installation of a second submerged river intake and pump station (Ohio River Pump), expansion of the filter gallery, enhanced coagulation and sedimentation methods (inclined plate pack settlers), post-filter granular activated carbon (with onsite regeneration) and, most recently, ultraviolet disinfection. The maximum treatment rate of RMTP is 240 million gallons per day (MGD) but currently averages approximately 100 MGD. GCWW operates two reservoirs of partially treated water at the RMTP. These reservoirs have a combined storage of approximately 340 million gallons of water. Water from these two reservoirs can be used to maintain operations at the plant through periods when raw water pumping from the Ohio River must be suspended due to maintenance or in response to spills.

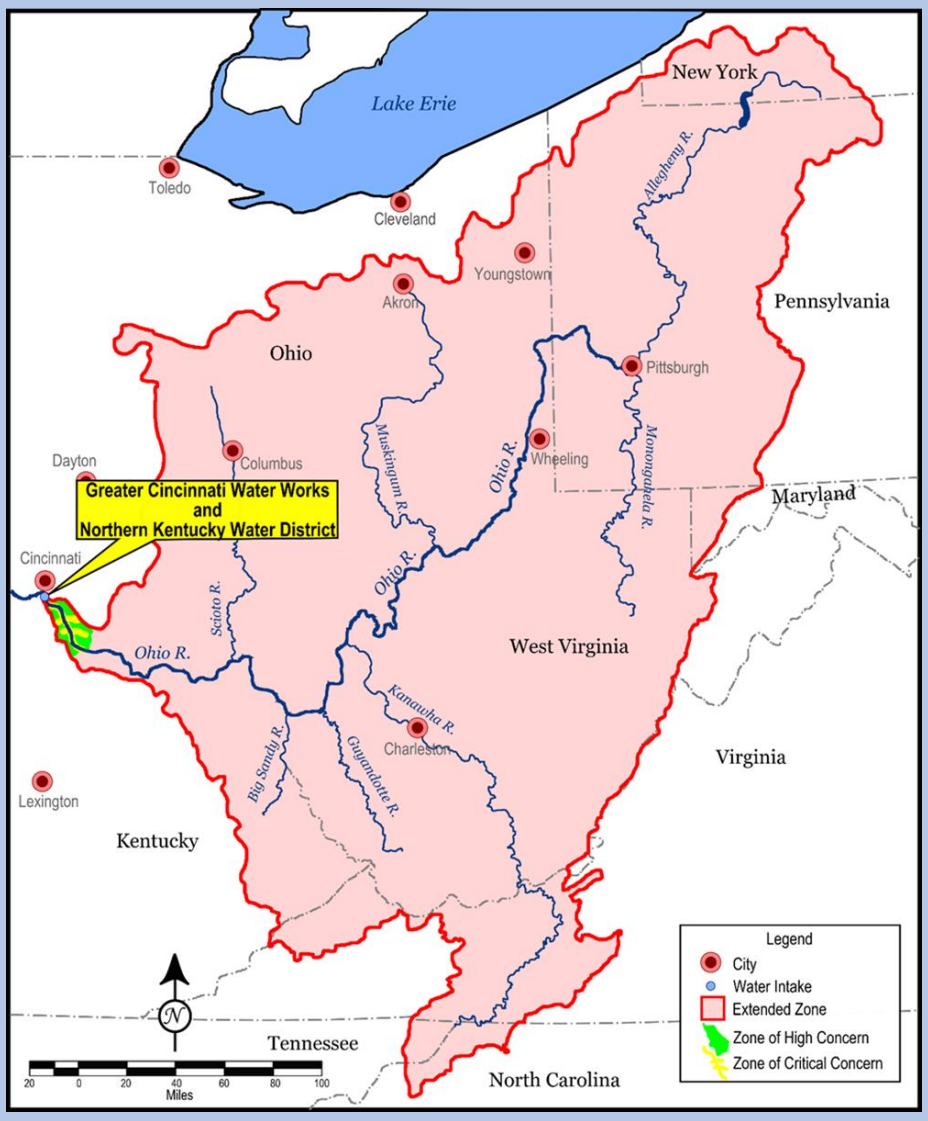
The Treatment Plants - NKWD

The Northern Kentucky Water District originally started out as the Covington Water Works in 1891 with the completion of an Ohio River pump station, a chemical building, and three reservoirs. The Ohio River water was pumped up to the chemical building where lime and alum were added as coagulants. The water then flowed by gravity into two of the reservoirs before flowing into the third reservoir where the water was drawn off by gravity to supply the water for the City of Covington. Chlorine was added as disinfection in 1927 as a result of a cholera epidemic. In 1936, a 20 MGD conventional coagulation, flocculation, and sedimentation water treatment plant was constructed including a new chemical building, two settling basins and conventional treatment filter building. The new plant was built on the site of the third reservoir. Over the following years many upgrades were made to the treatment process, including a 40 MGD upgrade, post-filter granular activated carbon and ultraviolet disinfection. A new Ohio River pump station increased the pumping capacity to 44 MGD. The two remaining reservoirs have a combined capacity of 72 million gallons of water. The reservoirs can be used to maintain operations at the plant in the event that the river intakes must be closed due to a spill on the Ohio River.

Where We Get Our Water

The Ohio River is formed by the confluence of the Allegheny and Monongahela Rivers in Pittsburgh, Ohio, 463 miles upstream of the GCWW and NKWD Intakes. The upstream watershed is approximately 71,000 square miles and touches portions of eight states including over half of Ohio and most of West Virginia.

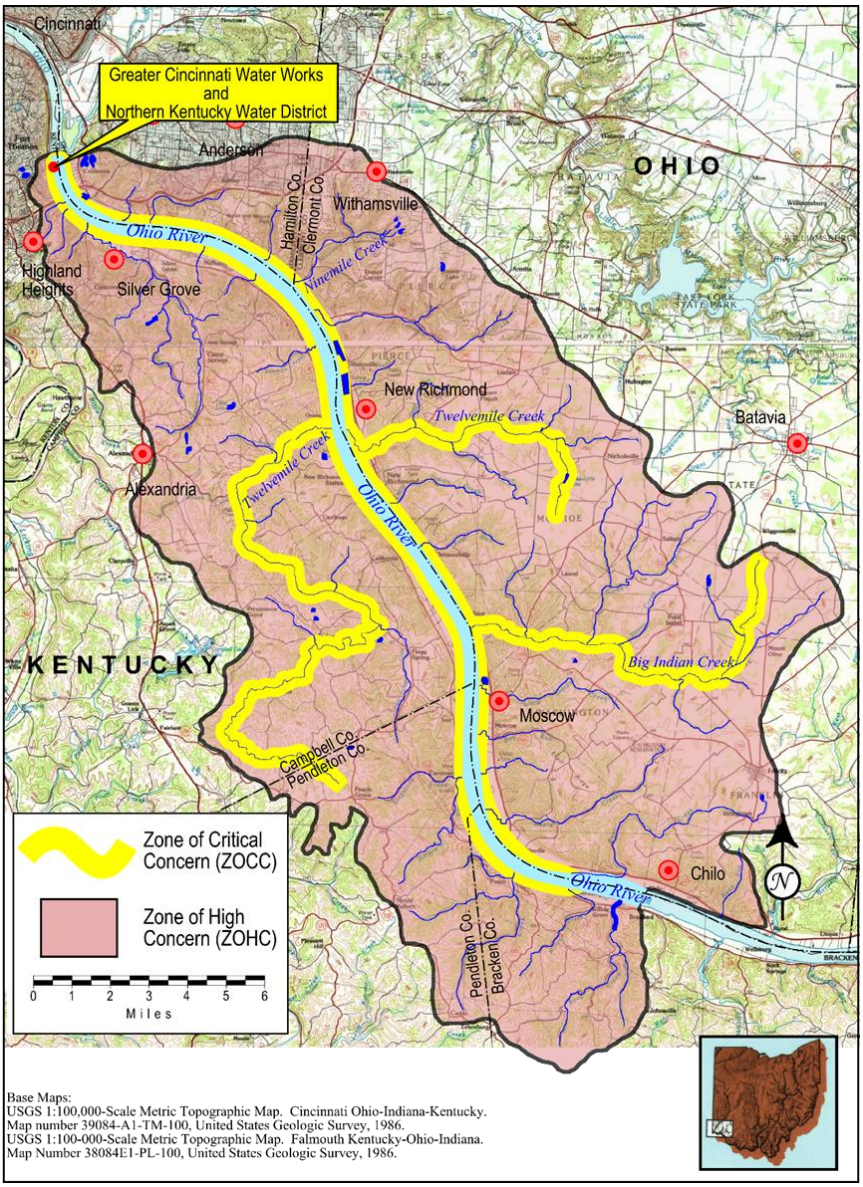
The upstream watershed includes portions 173 counties and is home to approximately 13.5 million people (total county population, 2010) and includes the cities of Pittsburgh, PA, Wheeling and Charleston WV, and Columbus, Ohio.



Inner Protection Zones

Three management zones have been defined as part of the Source water Protection Program to facilitate the prioritization of potential contaminant sources and to help guide the development and implementation of risk mitigation programs. These zones are:

- The Zone of Critical Concern (ZOCC)
- The Zone of High Concern (ZOHC)
- The Extended Upstream Watershed (Zone 3)



2017 By The Numbers

Potential Contaminant Source Inventory (PCSI)

- 127 High priority facilities identified in the ZOCC and ZOHC
- 343 Medium priority facilities identified in the ZOCC and ZOHC
- 866 Facilities in the PCSI
- 3 High priority facility reconnaissance and inventory updates

Raw Water Monitoring Program

- 3,249 Raw water analyses
- 365 Days of continual operation of the Organics Detection System (ODS)
- 4 Watershed surveillance events

Spills

- 174 Spills reported upstream
- 18 Spills that required implementation of the Spill Response Plan
- 1 Cessation of raw water pumping due to a spill
- 2 Spill response training events (GCWW)

Program Implementation

- 10 Planning committee meetings
- 4 Major milestones achieved

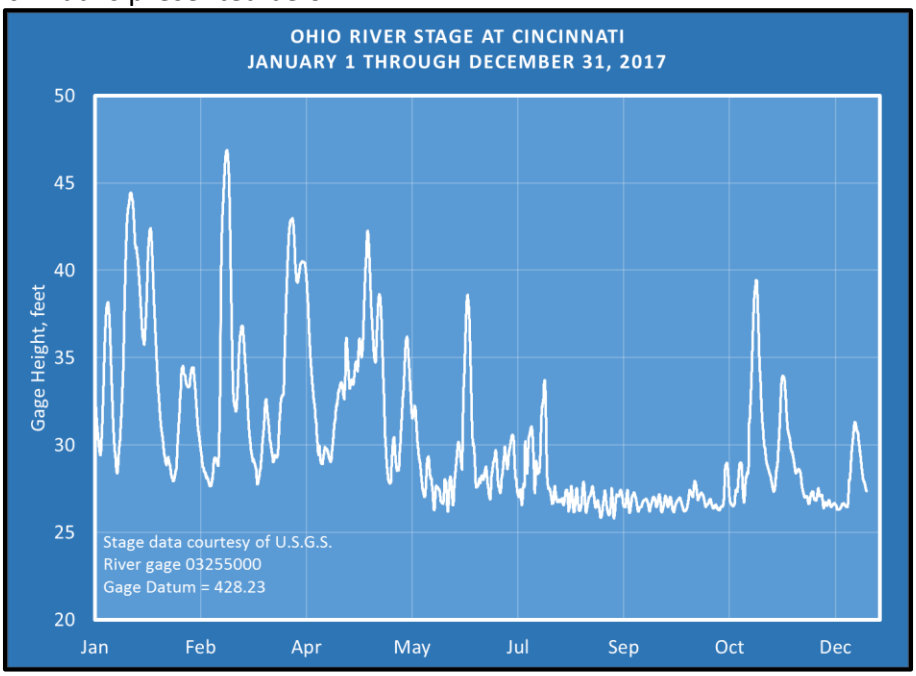
Highlights and Milestones

2017 was a very productive year for ORSWA. The list below summarizes some of the highlights and milestones achieved in 2017.

- The planning committee completed the joint Source Water Protection Plan and simultaneously submitted the document to both Ohio EPA and KDOW for review. Comments from the agencies were received in the summer/fall of 2017 and the document was revised and resubmitted in early 2018.
- In May 2017 GCWW had the opportunity to provide testimony to the Ohio Senate Finance Subcommittee in support of closing a chemical reporting loophole that jeopardizes GCWW's and NKWD's ability to effectively respond to spills from oil and gas sites upriver. A detailed summary and a copy of the testimony are provided in Appendix A.
- GCWW provided a letter of support to the West Virginia Environmental Quality Board supporting stricter discharge limits for 1,4-dioxane by a company named M&G Polymers in Apple Grove, WV. A copy of the letter is included in Appendix B.
- Rich Stuck, Amy Kramer and Mary Carol Wagner joined the WaterSuite Users Group to learn more about this data management tool and to provide feedback to the software developers.
- Rich Stuck joined the American Water Works Association Source Water Protection Committee.
- During the Summer of 2017 GCWW completed the revision of their in-house spill response guide and conducted staff training sessions.
- ORSWA hosted a second joint meeting with representatives of the Ohio Environmental Protection Agency and the Kentucky Division of Water to provide an update on the development of the joint source water protection plan and to discuss the review of the document by the two agencies.
- Rich Stuck and Amy Kramer presented highlights of the SWPP to the ORSANCO Technical Committee in February 2017.
- US EPA, GCWW, NKWD and ORSANCO formed a collaborative team to develop a comprehensive inventory of all potential contaminant sources near the Ohio River from the intakes to Maysville, Kentucky, using the WaterSuite^{tm} data management system. US EPA and GCWW contributed significant funding to get the project started.

River Conditions and Climate Summary

The Ohio River drainage basin above the intakes is 71,000 sq. mi. As a result there is significant variability in weather and climate trends. Generally speaking, however, there was sufficient rainfall throughout the year to maintain average to above average flows past the GCWW and NKWD intakes. Combined, the two utilities extract less than 1 percent of the water that passes the intakes each day. A hydrograph of the Ohio River stage at Cincinnati is presented below:



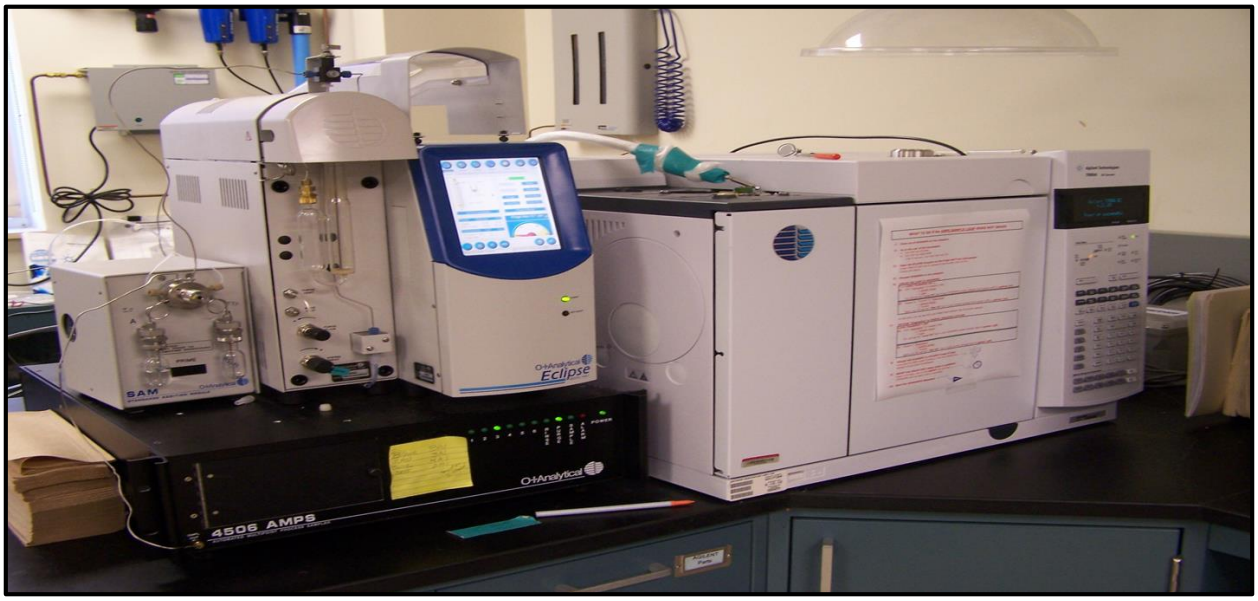
Rainfall in the Cincinnati area was plentiful in 2017 with a total of 48.9 inches of precipitation measured at Cincinnati, which is 7.6 inches above normal. July was the wettest individual month and a total of 27.2 inches of rain fell from March though the end of July. The annual average temperature in 2017 was 56.1 degrees F, which is 1.7 degrees higher than average, although most of the late spring and summer months were cooler than average. The annual average temperature was the third highest since 1996. Rainfall in the upper reaches of the Ohio River basin was also plentiful; the rainfall totals for selected upstream cities are presented below.

City	Rainfall Amount (inches)
Columbus, Ohio	46.4
Pittsburgh, Pennsylvania	42.2
Charleston, West Virginia	46.5
Cincinnati, Ohio	48.9

Water Quality Monitoring

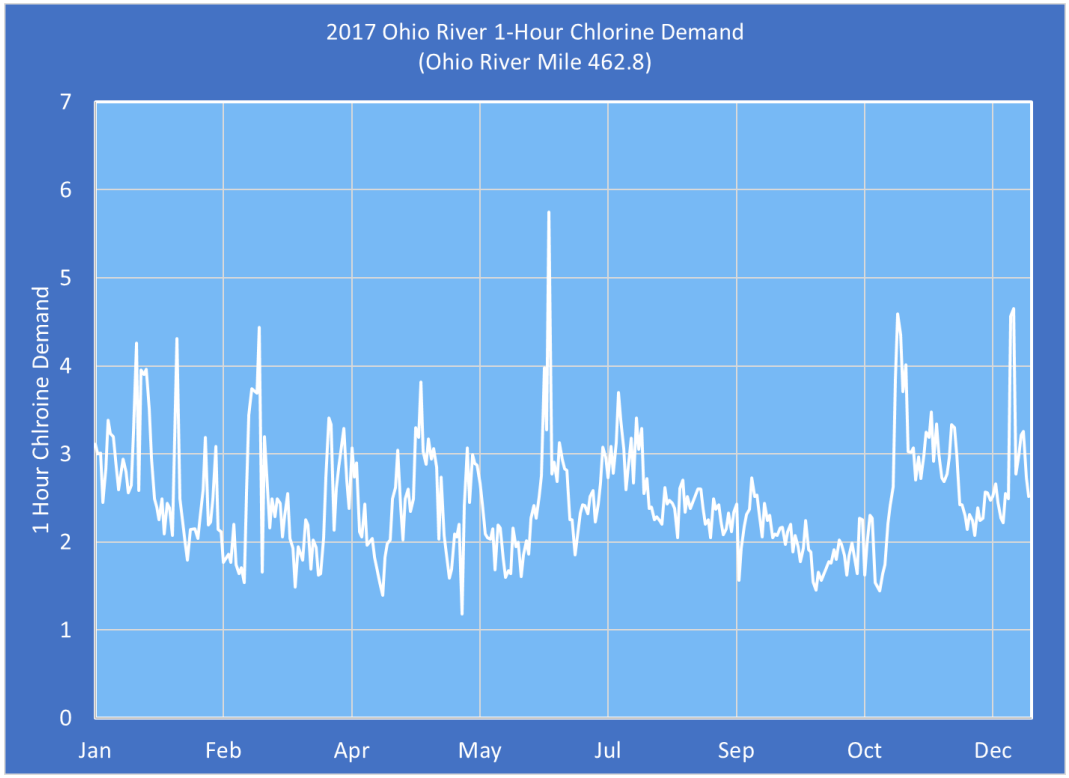
GCWW completed in excess of 3249 analyses of the Ohio River in 2017 as part of the raw water monitoring program. That number does not include the daily analysis of river samples for volatile organic compounds (VOCs) as part of ORSANCO's river-wide Organics Detection System (ODS). Additionally, GCWW screens the water for VOCs every two hours on a more-or-less continuous basis as part of an early-warning monitoring program, which is also part of the ODS. Upstream monitoring in 2017 included quarterly sampling of the river and critical tributaries for cryptosporidium and giardia.

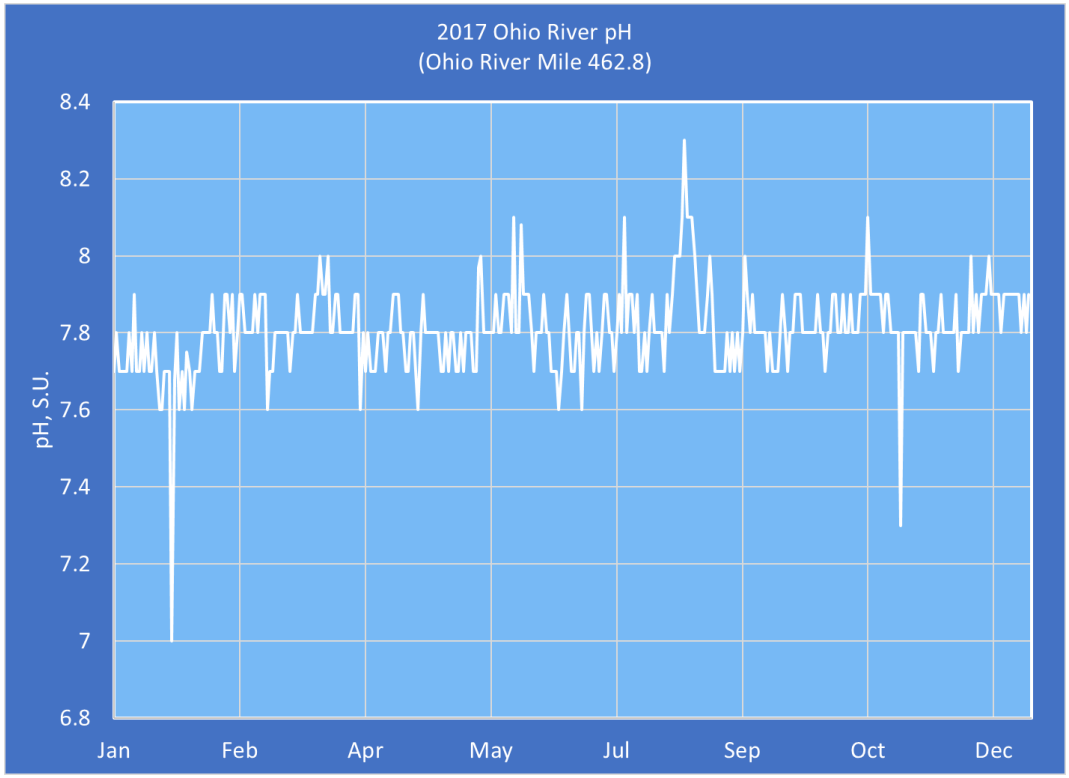
The Northern Kentucky Water District's Ohio River monitoring program includes, in addition to typical wet chemistry analyses, monthly bacteriological analysis, and bi-weekly chlorophyll and algae monitoring.



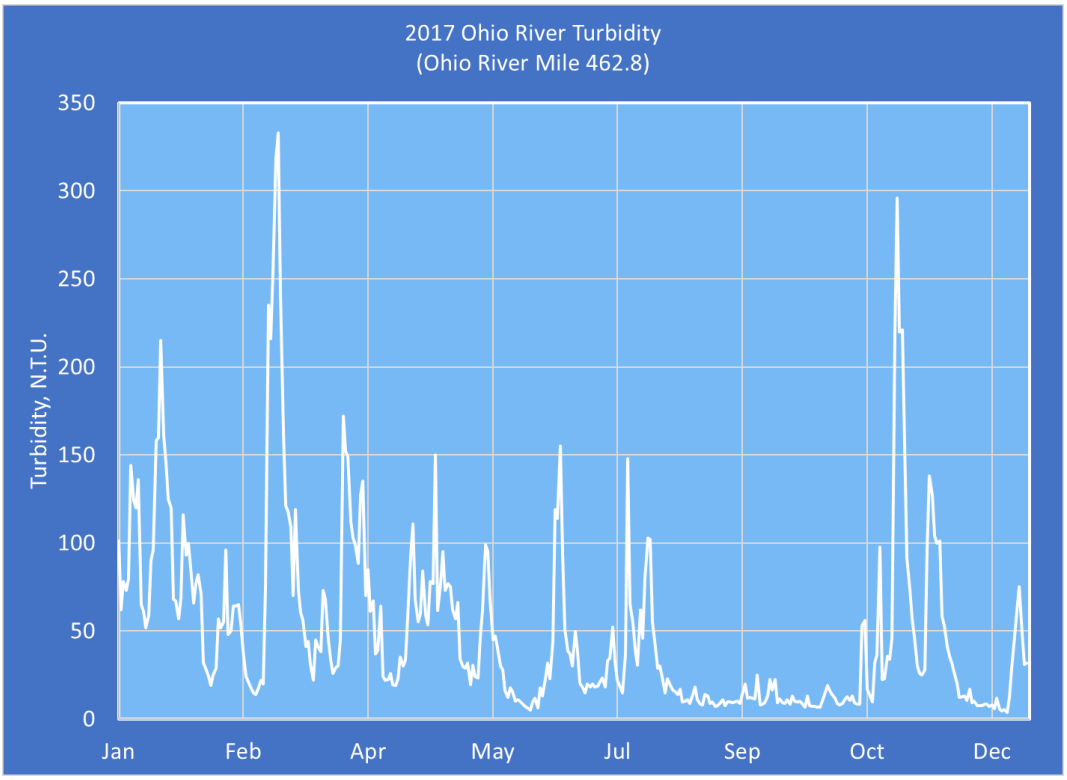
The graphs and table presented in the following pages summarize the analytical results and trends for several key water quality parameters in 2017.

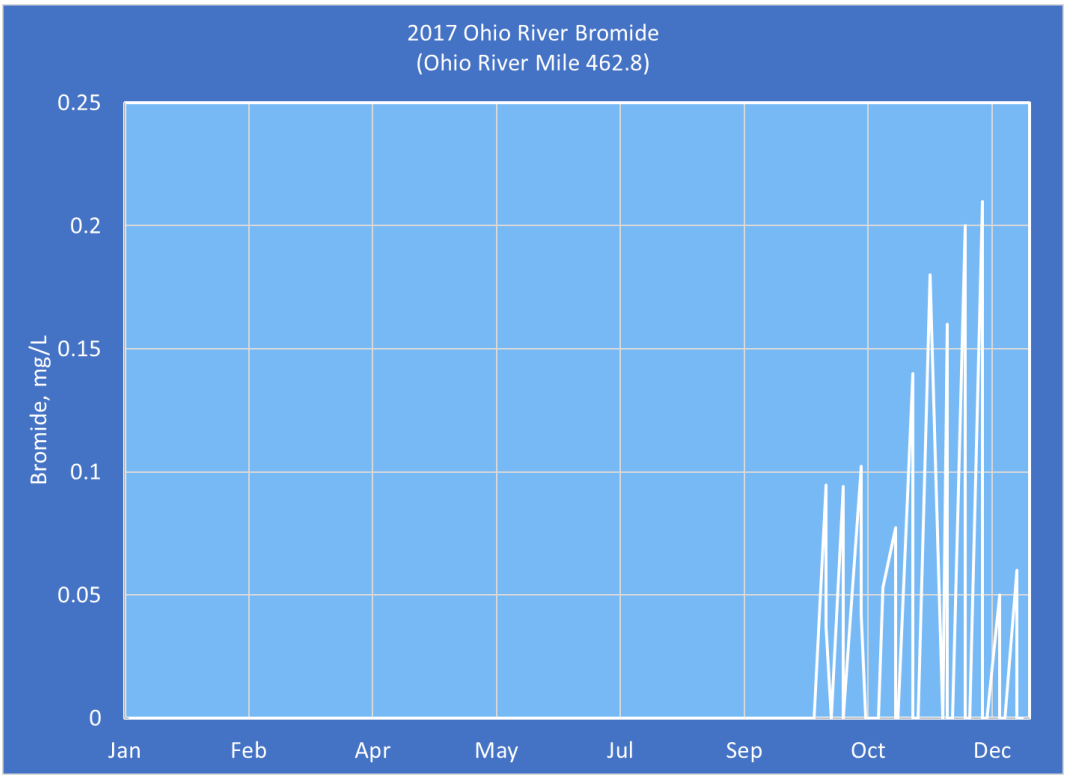
Water Quality Monitoring





Water Quality Monitoring





Water Quality Monitoring

Water Quality Monitoring

Table 1. Summary of Greater Cincinnati Water Works Raw Water Quality
(all parameters measured monthly)

	Calcium Hardness mg/L	Chloride mg/L	Conductivity us/cm	Dissolved Oxygen mg/L	Magnesium Hardness mg/L
January	80.0	20.0	226	9.1	22
February	77.0	21.0	236	8.6	22
March	95.0	22.0	270	8.3	17
April	85.0	NS	260	7.4	17
May	92.0	11.0	268	8.3	20
June	90.0	18.0	371	7.8	36
July	93.0	20.0	394	7.5	30
August	102.0	21.1	425	7.4	26
September	101.0	<30	400	5.9	29
October	109.0	32.7	438	6.9	38
November	111.0	44.9	412	7.7	51
December	103.0	<30	251	9.0	14
Minimum	77.0	11.0	226	5.9	14
Maximum	111.0	44.9	438	9.1	51
Average	94.8	23.4	329	7.8	27

	Ammonia mg/L	Nitrite mg/L	Nitrate mg/L	Odor t.o.n	Temperature Celsius
January	0.06	<0.1	<1.1	3	4.4
February	0.25	<0.1	1.1	4	6.7
March	0.16	<0.1	0.9	6	12.3
April	0.14	<0.1	0.8	3	12.5
May	0.14	<0.1	NS	3	18.3
June	0.03	NS	0.9	4	23.9
July	<0.01	<0.1	<1.4	3	27.0
August	0.16	<0.1	0.9	6	27.8
September	0.04	NS	0.4	4	24.8
October	NS	NS	0.8	4	23.3
November	NS	NS	0.8	17	19.3
December	0.07	NS	1.1	4	7.5
Minimum	0.03	BDL	0.4	3	4.4
Maximum	0.25	BDL	1.1	17	27.8
Average	0.12	BDL	0.8	NA	17.3

	Orthophosphate mg/L	Phosphate mg/L	Sulfate mg/L	Total Dissolved Solids mg/L	Dissolved Organic Carbon mg/L
January	0.03	0.18	41	168	2.8
February	0.02	0.17	40	136	2.5
March	0.10	0.08	47	186	2.7
April	NS	0.21	38	236	2.3
May	0.18	0.67	46	202	2.7
June	NS	<0.04	65	198	2.1
July	0.06	0.09	61	228	3.5
August	0.19	0.18	NS	208	4.1
September	NS	0.04	65	216	2.7
October	NS	NS	79	258	2.8
November	NS	0.12	98	282	2.0
December	NS	0.09	45	178	3.6
Minimum	0.02	0.04	38	136	2.0
Maximum	0.19	0.67	98	282	4.1
Average	0.10	0.18	57	208	2.8

NS= No Sample

NA = Not Applicable

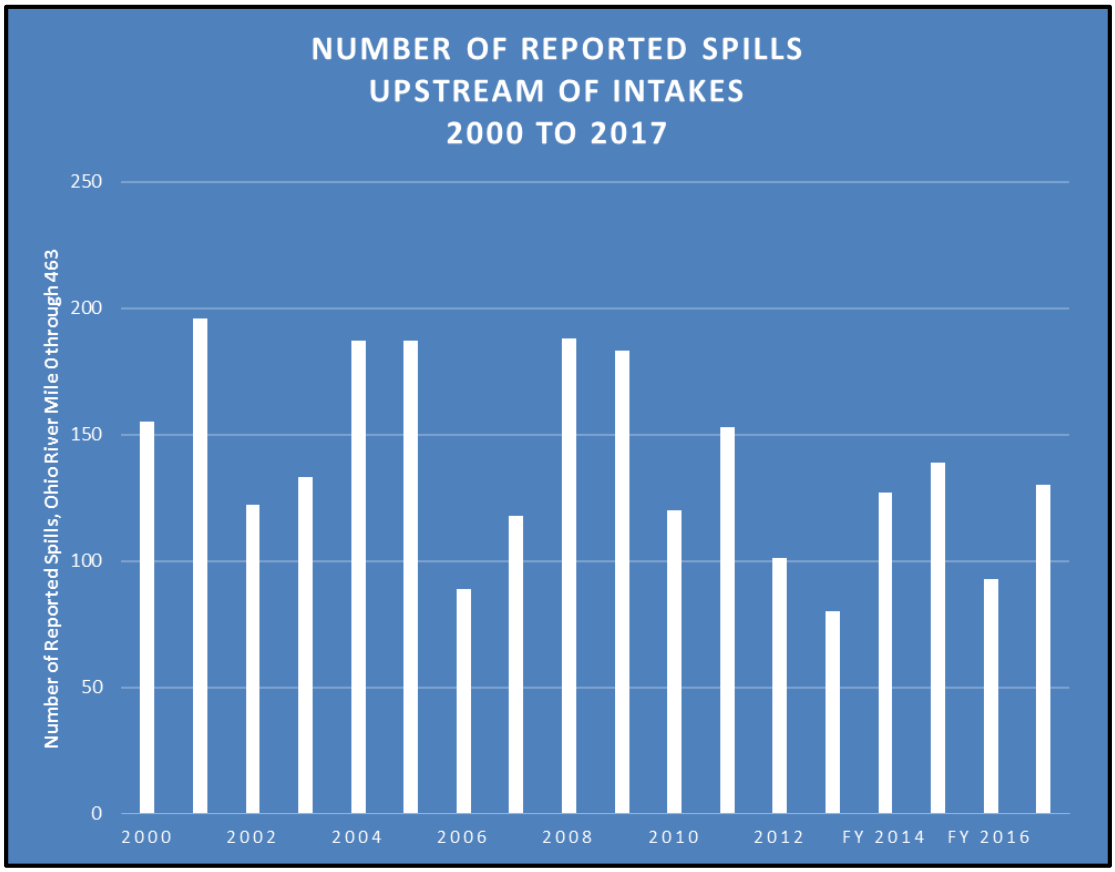
t.o.n. = threshold odor number

2017 Spill Reports

In addition to being a robust source of drinking water, the Ohio River is a "working river" and an engine for commerce and industry throughout a very large region. This leads to an unfortunate reality…..spills and discharges are very real possibilities.

Typically there are over 100 reported spills to the Ohio River upstream of GCWW and NKWD every year, meaning there is a spill reported approximately every 3 to 4 days. The overwhelming majority of these reported spills are very small and of relatively little consequence from a drinking water perspective and the GCWW and NKWD treatment plants are designed to deal with these everyday occurrences.

The chart presented below summarizes the number of spills reported on the Ohio River upstream from the GCWW intake since 2000 (since 2013 the spills have been tracked from July 1 through June 30 of the following year).



Spill data courtesy of ORSANCO

2017 Spill Reports (continued)

There were a total of 174 spills reported upstream of GCWW and NKWD during calendar year 2017. Based on the number of reported the spills, the top 5 materials released were:

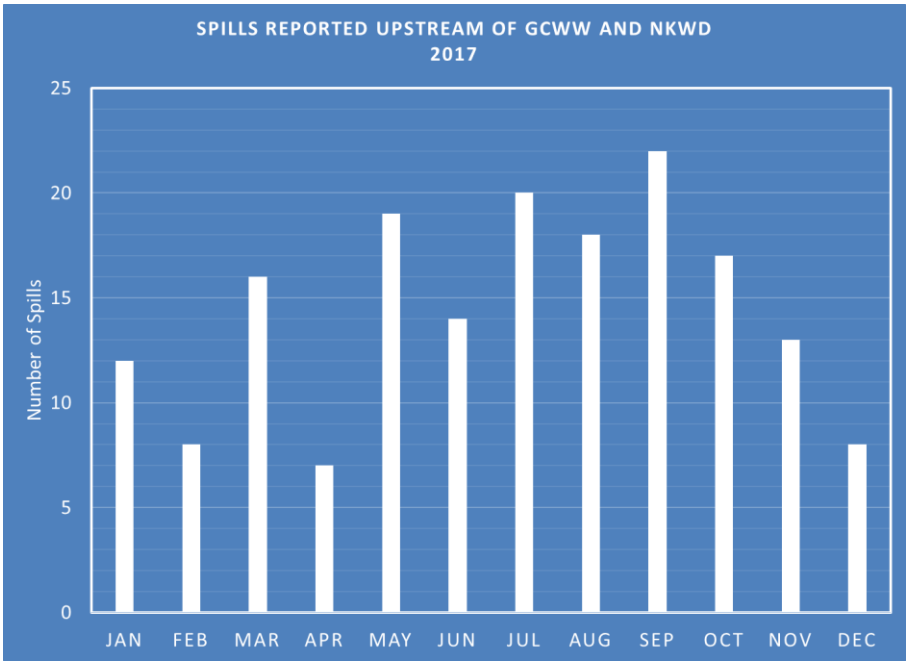
- Unknown Oil (63 reported spills)
- Diesel Fuel (28 reported spills)
- Hydraulic Oil (15 reported spills)
- Transformer Oil (12 reported spills)
- Fuel Oil (7 reported spills)

Eighty percent, or 140 of the total 174 upstream spills, were petroleum-based or hydrocarbon compounds. Coal Slurry, which was reported to have been spilled 3 times in 2017, was the highest spilled material by volume (210,000 gallons). It is worth noting, however, that the accidental release of acid mine drainage along the Monongahela River in January 2017 likely exceeded 500,000 gallons (mostly water).

The number of spills reported by river segment is presented below:

- ORM 000 to 100: 81 reported spills
- ORM 101 to 200: 17 reported spills
- ORM 201 to 300: 26 reported spills
- ORM 301 to 400: 45 reported spills
- ORM 401 to 462: 5 reported spills

The number of spills reported upstream per month is summarized below:



Spill data courtesy of ORSANCO

Top 3 Incidents of 2017

In addition to the variety of relatively small and insignificant spills, there are periodically larger events or spills of chemicals that pose additional water treatment challenges to drinking water providers. These spills are highlighted below and a more comprehensive summary of spills that required the utilities to implement some aspect of their contingency plans are listed on the following page.

Parkersburg Warehouse Fire

On October 21, 2017 GCWW and NKWD were notified of a massive warehouse fire in Parkersburg, WV. The contents of the warehouse contained plastic and many unknown chemicals. Significant quantities of water were used to extinguish the blaze over a 5 day period and much of that water drained to the Ohio River. GCWW and NKWD briefly ceased raw water pumping as a result

Racine Barge Incident

Three barges broke away from their tow on March 2, 2017 due to high water. The barges and tow were pinned against the Racine dam for several days and there was a possibility the barges, which carried a total of 3,000,000 gallons of natural gas liquids, would rupture. The barges were eventually secured without incident

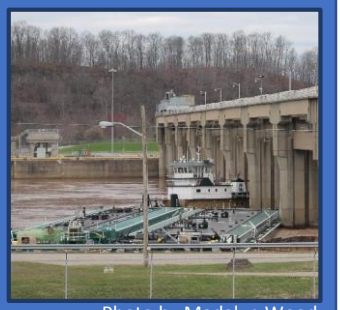


Photo by Madalyn Wood
Meigs Independent Press

New Martinsville Coal Slurry Release

In August 2017 the utilities were notified that a valve failure resulted in a 200,000 gallon release of water and coal slurry in New Martinsville, WV. Little was know about the coal slurry at the time. The utilities monitored the situation and prepared to sample the river but, due to clean samples upstream, it was not necessary.

Summary of Notable Upstream Spills

The table below lists the 18 spills or releases upriver of the intakes that required GCWW and/or NKWD to enact some portion of their spill response contingency plans. Due to the size of the spills, the nature of the contaminants, the distance to the intakes, or the river conditions the response were typically limited to gathering additional information, calculating arrival times, discussing with upstream utilities, and monitoring. In a few cases, however, detailed arrival times were calculated, samples were collected and the intakes were shut down for brief periods.

Date	Spill Location	Miles to the Intakes	Material	Quantity
1/20/2017	New Martinsville, WV	335	Coal Slurry	Unknown
1/29/2017	Monongahela, PA	493	Acid Mine Drainage	Unknown, release over several days
3/2/2017	Racine Locks and Dam	225	Diesel Fuel & Natural Gas Condensate	No release, potential based on towboat and barge accident
3/9/2017	Catlettsburg, KY	146	Benzene	2.5 mile sheen
5/16/2017	Hopewell Twp, PA	448	Fish Kill	Algal Bloom
5/22/2017	Beallsville, OH (Piney Creek)	367	Diesel Fuel	1000 gal
7/7/2017	Wellsville	415	Unknown	Drums dumped into the river
7/16/2017	Greenup	126	Molten Sulfer	2000 gallons
7/23/2017	Pittsburgh, PA	463	Polybutane and butane	1,000 gallons
8/3/2017	New Martinsville, WV	335	Coal Sediment/Slurry	200,000 gallons
8/7/2017	Cattletsburg, Ky	146	benzene	Sheen several miles long
8/20/2017	Cincinnati, Ohio	1 (downstream)	Unknown	Sheen on the Little Miami River
9/3/2017	Kenova, WV	147	Unknown	Sheen
9/5/2017	East Liverpool, Ohio	421	Unknown	White sheen
9/22/2017	Hancock, WV	416	Unknown	Sheen and oil sludge
10/10/2017	Wellsville, Ohio	417	Diesel Fuel	2,200 gallons
10/10/2017	Brilliant, Ohio	376	Rainbow sheen	Unknown, sheen was 3 miles long
10/23/2017	Parkersburg, WV (Ames Plant Fire)	278	Various due to fire and runoff	Unknown but likely substantial
12/20/2017	Silver Grove, Kentucky	3	Unknown	1 mile silver sheen

Regional Concerns

There are a number of regional and national issues that *could* have an impact on our source water quality. As part of the ongoing source water protection program, ORSWA monitored several of these issues in 2017 including the following:

Chemicals of Emerging Concern

There is an evolving awareness of the environmental distribution of sub-part per billion concentrations of a family of contaminants known collectively as chemicals of emerging concern (CECs). The CECs include compounds such as 1,4-dioxane as well as per- and polyfluoroalkyl substances (PFAS), including perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA). Regulation and other scientific information about these compounds is evolving at a rapid rate and will continued to be evaluated as part of the source water protection program.

Hydraulic Fracturing and Unconventional Hydrocarbon Extraction

Continued development in the Marcellus and Utica shales has resulted in booming oil and gas businesses in the upstream portion of our watershed. ORSWA will, along with our many partners, continue to comment on emerging regulations to ensure drinking water safety is considered in all new regulations related to this industry and the handling of the frac-related waste.

Bromide

Brominated compounds, which may originate from a variety of sources including wastewater from unconventional gas and oil wells and from coal-burning power plants, can generate potentially harmful disinfection byproducts in finished drinking water. Bromide will continued to be monitored so that, if needed, appropriate management strategies can be developed.

Ethane Cracker Plants

The success of the hydrocarbon extraction from the Utica shale may result in the development of two very large ethane cracker plants and possibly very large underground hydrocarbon storage in southeast Ohio and West Virginia along the Ohio River. Comments will be provided on discharge and operational permit applications related to these new industrial facilities to limit the risk to drinking water these new facilities may create.

New Pipelines

New pipelines throughout the region, especially those servicing the Marcellus and Utica shale regions of Ohio, Pennsylvania, and West Virginia are proposed or are currently being installed throughout the upstream area. ORSWA will evaluate each proposed pipeline project and provide comments as needed to safeguard the water supply.

Projects

As part of the source water protection program, GCWW and/or NKWD have embarked on several projects related to protection or improving the water quality in the Ohio River. Several of these projects are summarized below:

Fly Ash Treatability Study (GCWW In-house Study)

GCWW has started an informal project to study treatability of fly ash. The study will provide the basis of a specialized contingency plan in the event that materials are released from any of the fly ash impoundments located along the Ohio River, the closest of which are located 9 miles up river at the former Beckjord electrical generating station.

Reviewed and Updated AWWA Source Water Protection Guidance

GCWW participated in a project through the AWWA Source Water Committee to review and revise an online training module for the development of a Source Water Protection Program for Small Utilities. The training module will assist small, primarily rural, water systems fully utilize their source water assessments and to develop their own protection programs. There are several small utilities within the upstream watershed and supporting source water protection efforts throughout the region will result in water quality improvements throughout the basin.

Ohio River Potential Contaminant Source Inventory

The ORSWA members were approached by the US EPA in mid-2017 to develop a pilot project to use a commercially-available source water data management system (WaterSuite^{tm}) to develop an enhanced inventory of potential contaminant sources upstream of the intakes. The project will focus on a 50 mile stretch of the river from the intakes upriver to Maysville, Kentucky. The project will be used as a demonstration to show how a potential contaminant source inventory can be developed, maintained, and utilized to inform long-term water planning and the development of protection and treatment strategies. The project will likely commence in January 2018 and the data management system should be fully operational by July 2018.

Water Research Foundation Project 4748 “Risk Management Framework for Source Water Protection”

GCWW is part of a research team developing a risk-based approach to prioritize potential contaminant sources. Source water areas in and near heavily populated or industrialized area often generate a significant number of potential contaminant sources. It is often difficult for protection managers to transition from gathering and managing information about their watersheds and aquifer to using those data to develop and implement meaningful protection programs. If successful, this project will facilitate that transition and provide the framework necessary to quantify and communicate risks and develop appropriate protection strategies.

Staff and Stakeholders

The ORSWA Central Planning Committee Members are:

Mr. Rich Stuck – GCWW

Mr. Bruce Whitteberry – GCWW

Mr. Jeff Swertfeger – GCWW

Ms. Amy Kramer – NKWD

Ms. Mary Carol Wagner – NKWD

Mr. Sam Dinkins – ORSANCO

Ms. Lila Ziolkowski - ORSANCO

More information about the Source Water Protection Programs of GCWW and NKWD are available at:
https://www.cincinnati-oh.gov/water/about-greater-cincinnati-water-works/water-sources-resource-protection/
Or
http://www.nkywater.org/waterquality.html

More information about ORSANCO's Source Water Protection Program is available at:
http://www.orsanco.org/programs/source-water-protection/

General information about the Ohio River may be found at:
http://riverlearning.org/

Appendix A: Testimony on Ohio House Bill 49

On May 23, 2017, Rich Stuck of GCWW, working with the Ohio Environmental Council, had the opportunity to provide testimony to the Ohio Senate Finance subcommittee. The testimony supported the addition of language to the Governor's budget bill to close a chemical reporting loophole that allows companies in the oil and gas sectors to limit the information they are required to provide during an emergency. GCWW's position was that first responders and drinking water utilities are entitled to all available information about any spilled chemicals so that informed emergency measures can be instituted in the event of a spill. Ultimately the language was not added to H.B. 49 and currently "trade secret" information provided by the oil and gas companies to the Ohio Department of Natural Resources cannot be shared, even in the case of emergencies. The text of the testimony is provided below:

Senate Finance Subcommittee on
General Government and Agency Review
Am. Sub. HB 49
Richard Stuck, PG
Source Water Protection Manager
Greater Cincinnati Water Works

May 23, 2017

At Greater Cincinnati Water Works it is our mission to provide customers within our regional communities with a plentiful supply of the highest quality water and excellent services. GCWW supplies more than 48 billion gallons of water a year through 3,000 miles of water mains to about 1.1 million people. GCWW's service area includes the entire City of Cincinnati, most of Hamilton County and parts of Butler and Warren Counties in Ohio.

The general public and decision makers sometimes forget that surface water is the source of drinking water that comes out of many of our Ohio taps, and this is especially true for Cincinnati residents. Greater Cincinnati Water Works obtains water from two sources: the Ohio River and the Great Miami Aquifer. Our Miller Treatment Plant treats surface water from the Ohio River and supplies 88% of drinking water to our customers, including all of the City of Cincinnati.

The Ohio Environmental Protection Agency has classified the Ohio River as highly susceptible to contamination, as it has with all surface waters.
Because the river is open to the environment, pollution will contaminate and spread quickly through the flow of the river. The Ohio River and its tributaries cut across many counties in Ohio, including those with oil and gas development, before the river reaches Cincinnati.

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Nonetheless, we work tirelessly to protect our drinking water from contaminants present in the source water. One case of potential chemical contamination occurred during the summer of 2014 when a chemical fire erupted at the Eisenbarth gas well site in Monroe County. In the case of this disaster, information with the identity of chemicals released into the Ohio River did not come until several days later. The initial reports for the spill included a description of a massive fish kill in Opossum Creek, a direct tributary to the Ohio River, so we were justifiably concerned. Obtaining information on the spill was the result of substantial effort on our part and on the part of the Ohio River Valley Sanitation Commission (ORSANCO). When we did finally get the chemical information it was incomplete.

GCWW has a number of options to remove contaminants from the water or to cease pumping water from the river altogether for a period of time without service interruptions to allow contaminants to flow past our intakes. Although these options are available, GCWW cannot ensure removal for contaminants which are unknown, and simply ceasing pumping until contaminants pass puts the system at risk due to limited water storage. The absence of timely, complete, and accurate information limits our ability to make the informed decisions and preparations required to protect the health and wellbeing of the almost 1.1 million people who consume our water. We are very sensitive to this issue and the need to have the full picture of any chemicals which make their way into our waterways. We need this information immediately after any accident, spill or release which affects our source water to allow as much time as possible to evaluate the situation and prepare appropriate responses.

It has come to our attention that under current state law, the identity of some trade secret chemicals may remain hidden from drinking water operators even during accidents and releases into waterways such as the chemical fire at the Eisenbarth well pad.

Because of this trade secret loophole, even in the event of an emergency situation, first responders and public waterworks do not have access to the full list of chemicals from industry or the Ohio Department of Natural Resources- including chemicals protected under trade secret law.

We ask today that our lawmakers close this chemical reporting loophole which threatens public health and our key mission to provide our customers high quality potable water. Quickly providing the full list of chemicals and quantities spilled, including trade secret chemicals, during oil and gas emergencies is common sense legislation.

Please protect our sources of drinking water in Ohio and the health of millions of people who rely on those sources. Support our drinking water utilities by giving them the timely information needed to allow them to make the best decisions possible. You can do these things by supporting an amendment in the state budget bill to close this chemical reporting loophole.

Thank you for allowing me to speak to the committee. I'd be happy to try to answer any questions you may have.

Appendix B:
Letter of Support of 1,4-Dioxane Permit Limits

In November, 2017, GCWW sent a letter of support to the West Virginia Environmental Quality Board supporting NPDES discharge limits for 1,4-dioxane imposed on M&G Polymers by the WV DEP. Through a review of publically-available information it was determined that permitted discharges from M&G Polymers were contributing to 1,4-dioxane in the Ohio River. It is the position of GCWW and NKWD that there would be a measureable improvement in the Ohio River water quality relative to this compound if the discharges stopped or were drastically reduced. M&G Polymers appealed the more restrictive discharge limitation; this correspondence was intended as a letter of support of the tighter discharge limits during that appeal. M&G Polymers declared bankruptcy immediately prior to the hearing for that appeal.

Dr. Edward M. Snyder, Ph.D.
Chair, West Virginia Environmental Quality Board
601 57th Street SE
Charleston, WV 25304

RE: Letter in Support of 1,4-Dioxane Discharge Permit Limits
Appeal No. 16-02-EQB Appellant M&G Polymers USA, LLC

Dear Dr. Snyder and Board Members:

On behalf of Greater Cincinnati Water Works (GCWW), I am writing to express support for the NPDES permit limits on 1,4-dioxane discharge imposed by the West Virginia Department of Environmental Protection (WVDEP) on the M&G Polymers (M&G) facility in Apple Grove, WV. GCWW is a municipal water utility located on the Ohio River approximately 180 miles downstream of the M&G Facility. Because the Ohio River is the main source of drinking water for more than one million people in the Greater Cincinnati and tristate area, GCWW has a vital interest in protecting the river from upstream chemical discharges.

GCWW has detected 1,4-dioxane in Ohio River water samples and treated water samples since 2013. The United States Environmental Protection Agency's (USEPA) Unregulated Contaminant Monitoring Rule required GCWW to sample its treated water for 1,4-dioxane and other chemicals being considered by USEPA for future regulation. In addition, GCWW has continued to sample treated water as well as Ohio River. Through this testing, GCWW has detected 1,4-dioxane in most of the samples, with levels periodically exceeding the 0.35 ug/l level established by the USEPA Integrated Risk Information System (IRIS) as correlated with a 10^{-6} cancer risk level. USEPA has classified 1,4-dioxane as a "likely human carcinogen." and although it remains on USEPA's list of unregulated contaminants that may require future regulation under the Safe Drinking Water Act, it is critical to take action now to minimize its introduction into drinking water sources.

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Letter of Support of 1,4-Dioxane Permit Limits

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GCWW has determined that the M&G Facility is the largest registered source of 1,4-dioxane in the Ohio River upstream from GCWW's water intakes. In a recent evaluation of 2016 National Pollution Discharge Elimination System and 2016 Toxic Release Inventory data, GCWW identified 15 facilities with registered 1,4-dioxane discharges in the Ohio River Valley Basin upstream of Cincinnati, totaling 31,400 pounds of 1,4-dioxane per year. The M&G facility discharged 96% of this total (30,300 pounds). . This data also revealed that M&G discharged an average of 47 mg/l (i.e. 47,000 ug/L) in 2016. Lowering the discharge to the permit limit of 0.35 ug/l would reduce the total amount discharged upstream of Cincinnati from 31,400 pounds, to about 1,100 pounds per year While all discharges of 1,4-dioxane into the basin may not be included in these data, it is clear that the opportunity exists to make a very significant and meaningful improvement in water quality through the proposed 1,4-dioxane permit limits.

1,4-dioxane is difficult and extremely costly to treat; does not readily degrade in the environment; and most drinking water treatment plants do not have treatment systems which would remove this recalcitrant chemical. Preventing 1,4-dioxane from entering the Ohio River through the discharge permit is the best, most cost-effective way to protect downstream communities because the cost would be properly assigned to the discharger. The discharger's total cost to prevent the chemical from entering the water would be far less than the combined cost to local communities to remove the chemical from the water.

In conclusion, the City of Cincinnati and Greater Cincinnati Water Works support the permit limits on M & G's 1,4-dioxane discharge as necessary to protect the more than 6 million downstream drinking water users from the health risks of this potential carcinogen; and urge the West Virginia Environmental Board to uphold the WVDEP's limits on 1,4-dioxane discharge in the M&G permit. Furthermore, we encourage M & G to do all that it can to eliminate this discharge completely, or face potential lawsuits from water consumers who can point to this single source of over 96% of reported 1,4-dioxane discharges into the Ohio River. We believe this will help to ensure the health of the residents of Greater Cincinnati, West Virginia communities and the many other residents of downstream states who utilize the Ohio River as their source of drinking water.

Thank you for your attention to this matter. Please let me know if we can be of any assistance.

Sincerely,

Cathy Bailey
Director, Greater Cincinnati Water Works.

cc: Scott Mandirola, Director Division of Water and Waste Management, WVDEP

EPA. 2013. Integrated Risk Information System (IRIS). "1,4-Dioxane (CASRN 123-91-1)".
EPA. 2014. Technical Fact Sheet – 1,4-Dioxane. https://www.epa.gov/sites/production/files/2014-03/documents/ffrro_factsheet_contaminant_14-dioxane_january2014_final.pdf
Ibid.
In the Notice of Appeal of the discharge permit requirements dated August 18, 2017, M&G Polymers contend that they could not find a drinking water reference to the 0.35 ug/L level originally proposed by the West Virginia Department of Environmental Protection. However, on page 3 of the EPA Technical Fact Sheet for 1,4-Dioxane-- referenced in the M & G's appeal--the 0.35 ug/L is clearly stated as the 10^{-6} cancer risk level established through EPA's IRIS evaluation.