



Rough Waters Ahead

**The Impact of the Trump Administration's
EPA Budget Cuts on the Delaware River Basin**



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Written by:

Elizabeth Ridlington and Katherine Eshel, Frontier Group

Megan DeSmedt, Environment America Research & Policy Center

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Executive Summary

The Delaware River is critical to the health and welfare of our families, our communities, and wildlife. The longest undammed river east of the Mississippi, the Delaware traverses four states – New York, Pennsylvania, New Jersey and Delaware – and its watershed supplies drinking water to more than 15 million people, including residents of New York City and Philadelphia.¹

Today, much of the Delaware River is clean enough for fishing and swimming. But, it wasn't always that way. In the 1950s, the urban portion of the Delaware River was one of the most polluted stretches of river in the world. It took the dedicated work of local, state and federal governments – along with local residents – to turn the tide and begin the long process of restoring the Delaware to health.

The U.S. Environmental Protection Agency has been essential to those efforts – supporting and working with state and local efforts to keep pollution out of our waterways, hold polluters accountable, restore degraded waterways to health, and study and monitor the Delaware River Basin to ensure its future health and safety.

That progress is now in jeopardy. The Trump administration has proposed deep and devastating cuts to the EPA's budget. Even if the president's proposed cuts are scaled back by Congress, they would still have profound negative impacts on the agency's ability to deter pollution from industrial facilities, agriculture, sewage treatment plants, runoff and other sources, while undercutting efforts to restore iconic waterbodies such as the Delaware River.

America can't go back to the bad old days. We need a strong EPA with sufficient resources to support local cleanup efforts and partner with states and communities to protect and restore the Delaware River Basin.

The Delaware River Basin is being protected and restored to health with funding and effort from the EPA. The EPA has worked to:

- **Keep pollution out of our waterways:** Decades of industrial activity polluted the Delaware River and its tributaries with polychlorinated biphenyls (PCBs), cancer-causing chemicals that also affect the reproductive and immune systems. Since the 1980s, officials in Delaware River states have warned residents to limit their consumption of fish caught in some sections of the river due to PCB contamination. The EPA and state agencies have worked for more than a decade to establish new standards for PCB discharges to the river. Thanks to those standards and cleanup efforts at former industrial sites, the 10 largest polluters **reduced PCB pollution by 71 percent between 2005 and 2013.** To continue cutting PCB pollution in the Delaware River, the EPA's regional offices are working with local agencies to update PCB limits.²
- **Hold polluters accountable:** The EPA is charged with ensuring that the nation's environmental laws are properly enforced, acting as a deterrent to would-be polluters. DuPont's Titanium Technologies facility near Wilmington, Delaware, used millions of pounds of chlorine to process ore into white pigment—and generated toxic

wastes including a 500,000-ton pile of dioxin-laced waste at the site. In the course of addressing the pile of waste, EPA discovered the facility had failed to report its pollution and had committed numerous Clean Water Act violations. The EPA and the Delaware Department of Natural Resources reached an agreement with DuPont in which DuPont agreed to **pay a \$500,000 penalty and seal the waste pile**, reducing the chances that harmful pollution will reach the waterway. The EPA is assisting Delaware state agencies as they oversee cleanup of the pile.³

- **Restore waterways to health:** The Christina River supplies drinking water to 60 percent of Delaware’s population. As with all rivers, the quality of the water often depends on what happens upstream. In 2003, a \$1 million grant from the EPA’s Watershed Initiative enabled

the Christina Basin Clean Water Partnership to **undertake restoration of multiple tributaries to fishable, swimmable and drinkable status**.⁴ For every federal dollar invested in the project, the Partnership leveraged more than two dollars from local sources, which allowed them to expand beyond their original restoration plans, such as reforesting 9,000 feet of streambanks instead of the planned 6,000 feet.⁵

- **Conduct research and educate the public:** EPA-funded research provides the data and tools local officials, scientists and the public need to protect waterways and human health. An EPA-funded research team at Drexel University, for example, is developing a web-based simulation tool that would help **give water utilities and facilities managers the information they need to keep drinking water safe**.⁶

Table ES-1. How Clean Water in the Delaware River Basin Depends on the EPA

The Delaware River Basin Is Cleaner Because the EPA:	The EPA Continues to Protect Clean Water by:
Reduced PCB pollution in the Delaware River	Implementing and updating PCB limits
Funds efforts to cut pollution from abandoned mines along the Schuylkill River	Funding projects to reduce legacy pollution across the basin
Reduced pollution from raw sewage in the Delaware River and Chester and Ridley creeks in Pennsylvania	Ensuring compliance with planned infrastructure upgrades to limit releases of raw sewage
Spurred action to protect the Delaware River from dioxin in industrial waste near Wilmington	Supervising state permitting programs to regulate discharge by industrial and municipal polluters and correcting violations
Is leading cleanup of a Superfund site contaminated with heavy metals to protect groundwater in New Jersey	Leading or overseeing cleanup of 307 Superfund sites in the Delaware River Basin states
Funded restoration of streambanks along the Brandywine, White Clay, Red Clay and Christina creeks in Pennsylvania and Delaware	Funding restoration of streams and creeks across the region
Funded work by local groups to restore habitat for oysters in the Delaware Estuary	Supporting local partnerships that restore the health of the Delaware River Basin’s waterways
Supported research to identify plumbing that might foster disease	Supporting research into new pollution control methods
Supported education to reduce stormwater pollution	Funding installation of “green infrastructure” in Philadelphia and across the region

The Trump administration’s proposed cuts to the EPA budget put these and other critical functions in danger – threatening the future health of the Delaware River.

- Under the administration’s proposal, water-related programs run directly by the EPA would be slashed by 34 percent, hobbling efforts to prevent runoff pollution, monitor water quality, establish pollution limits, protect watersheds and wetlands, and pursue polluters.
- In addition, many federal grants from the EPA to state governments for clean water would be slashed by 30 percent or more – making it more difficult for already cash-strapped state agencies to do their jobs and delaying important locally led cleanup efforts.⁷ For example, the proposed budget would end grants to state governments and tribal agencies to address pollution from farms, stormwater runoff and other dispersed sources.⁸
- Research and development funding would be cut by 47 percent, limiting support for scien-

tists, residents and local communities trying to understand the ever-changing threats facing their waterways.⁹ For instance, the EPA’s Safe and Sustainable Water Resources research program, which supports science and technology research to protect drinking water, would be cut by more than a third.

- Overall, the EPA budget would be reduced by 31 percent.¹⁰

Even if Congress makes some of these budget cuts less drastic, the Delaware River Basin will still suffer without full funding of EPA programs.

The job of cleaning up and protecting the Delaware River basin is not done. Continuing pollution from sewer systems, industrial facilities and runoff – along with the emergence of new pollution threats from new classes of industrial and household chemicals – call for continued vigilance and action. Only a well-funded EPA can continue the region’s legacy of progress in cleaning up the Delaware River Basin and ensure that its streams and rivers are healthy and safe for us and future generations to enjoy.

Table ES-2. Estimated EPA Grant Funding Losses to Delaware River Basin States if Trump Administration’s Proposed Budget Is Enacted (table shows selected programs)¹¹

State	Estimated Lost Funding for Water Pollution Control Grants	Estimated Lost Funding for Nonpoint Pollution Control Grants	Estimated Lost Funding for Drinking Water Protection and Enforcement Grants
Delaware	\$391,800	\$1,119,000	\$164,400
New Jersey	\$1,104,600	\$2,495,500	\$581,100
New York	\$1,220,400	\$5,799,513	\$1,320,600
Pennsylvania	\$410,100	\$4,653,006	\$1,226,100
TOTAL	\$3,126,900	\$14,067,019	\$3,292,200

Note: Estimates are calculated assuming EPA budget cuts affect all states by the same percentage. Reductions are based on grants from most recent fiscal year. “Water pollution control grants” are Section 106 grants, slated for a 30 percent cut. “Nonpoint pollution control grants” are Section 319 grants, cut entirely in the administration’s proposed budget. “Drinking water protection and enforcement grants” are Public Water System Supervision grants, cut by 30 percent.

The Delaware River Provides Drinking Water for Millions of Americans

The Delaware is the longest undammed river east of the Mississippi, spanning four states – New York, Pennsylvania, New Jersey and Delaware – as it flows from the Catskills in New York to the mouth of the Delaware Estuary.¹² The watershed is both a national historic and recreational treasure and a vital water supply for more than 15 million people, including residents of New York City and Philadelphia.¹³

Millions of people visit the Delaware River watershed to fish, hunt, watch birds, canoe, raft, boat and enjoy recreation areas.¹⁵ Waterfalls and river recreation opportunities draw visitors to national protected areas like the Delaware Water Gap National Recreation Area and the Upper Delaware Scenic and Recreational River, and to state and local parks and campgrounds.

The Delaware River is home to more than 200 fish species and significant recreational and commercial fisheries, like the eastern oyster, blue crab and American horseshoe crab fisheries. Delaware Bay is also one of the most important shorebird migration sites in the world, making it an internationally important resource that provides \$21 billion in ecosystem goods and services per year, including recreation, commercial and water quality benefits.¹⁶

The beauty and importance of the Delaware have not kept polluters along its banks from fouling the river in ways that harm wildlife and human health. For centuries, waterways in the Delaware River Basin were severely polluted.¹⁷ The first survey of pollution in the river, conducted in 1799, recognized that tanneries, slaughterhouses and harbor areas were sources of pollution that caused disease, like typhoid outbreaks in the 1860s.¹⁸ Intense development and use of the river system, population growth and industrial expansion all further contributed to pollution, leading to the collapse of the historic shad fishery, among others.¹⁹

Figure 1. The Delaware River Basin Spans Four States and Supplies Water to More Than 15 Million People¹⁴





A waterfall on Dingmans Creek in the Delaware Water Gap National Recreation Area.

By the 1930s, residents and local decision-makers began to act to clean up and protect the Delaware basin. A commission created in 1936 to clean up stream pollution facilitated construction of new sewage treatment plants and began to remove coal silt from the Schuylkill River to tackle pollution from coal mining and processing. But by the 1950s, the urban reach of the Delaware River was one of the most polluted stretches of river in the world.²⁰ In response, state and federal leaders created the Delaware River Basin Commission in 1961 to address land use, water use and water quality as part of one interconnected system.

The creation of the EPA in 1970 and the passage of the Clean Water Act in 1972 enabled efforts to protect the Delaware to reach a new level of effective-

ness – creating additional enforcement authority and new tools and funding sources to support restoration of waterways across the country, including the Delaware River.

The EPA, state agencies and local partners have made important progress toward cleaning up and restoring the Delaware River. But the Delaware River Basin still faces serious pollution threats, including from urban and agricultural runoff, sewer system overflows during heavy storms, leaks from abandoned mines, and discharge from wastewater treatment plants.²¹ Some of the effects of this pollution can be seen in the health problems of aquatic animals in the Delaware River Basin:²²

- Some species of fish are contaminated with copper, chlorinated pesticides, PCBs and dioxin, making them unsafe for human consumption.
- The Atlantic sturgeon, which ranges from Maine to Virginia and spawns in the Delaware River, was listed as federally endangered in 2011.²³
- Freshwater mussels, used as indicators of freshwater system health because of their sensitivity to water quality and contaminants, continue to decline.²⁴

The EPA budget proposal put forward by the Trump administration would cut funding for protection, enforcement, restoration and research in the Delaware River Basin, impeding the ability of local, state and federal officials to prevent pollution and return the basin to health.

Trump Administration Budget Cuts Would Hobble the EPA's Work to Protect Our Waterways

The Trump administration's proposed fiscal year 2018 budget, released in May 2017, cuts funding for the Environmental Protection Agency by 31 percent, from \$8.2 billion in fiscal year 2017 to \$5.7 billion in fiscal year 2018.²⁵ That would return the agency's budget to 1970s levels, adjusted for inflation, despite the EPA's vastly expanded congressionally mandated responsibilities and the continued severe threats facing our waterways.²⁶ Congress will likely modify the administration's budget, but even if proposed cuts are scaled back they would still have disastrous impacts on the EPA's ability to protect our waterways.

The EPA plays a vital role in ensuring that the nation has clean water for drinking and recreation, and for sustaining fish, plants and wildlife. The EPA works directly to ensure the requirements of the Clean Water Act, the Safe Drinking Water Act and other laws protecting water quality are met, and also supports the work of states in implementing and enforcing those laws. The budget cuts proposed by the Trump administration would weaken the EPA's efforts on both fronts.

Cuts Would Affect Human Health and Hamper Scientific Research

Dramatic budget cuts mean that the EPA would be less able to protect clean water and hold polluters accountable across the country. The Trump administration's proposed budget indicates that the EPA would need to reduce its staff by nearly one quarter.²⁷

Environmental programs run by the EPA and related to water are slated for a 34 percent reduction.²⁸ This would make it harder for the EPA to reduce runoff pollution, monitor waterways for contamination, and protect watershed lands and wetlands that are critical to keeping our waterways clean and healthy. The EPA's resources for pursuing polluters and enforcing water quality protections would also be slashed, with a proposed 24 percent budget cut.²⁹

Funding for research and development by the EPA is slated for a 47 percent reduction, a larger research and development cut than for any other agency.³⁰ Budget cuts proposed for the Office of Science and Technology that would harm water quality include:

- A 33 percent budget cut for the Safe and Sustainable Water Resources program, which provides the science and technological research to protect water for drinking and wildlife.³¹
- A 40 percent cut in funding for the Human Health Risk Assessment program, which seeks to understand how environmental contaminants affect human health.
- A 31 percent cut for the Chemical Safety for Sustainability program, which studies the potential health and environmental impacts of manufactured chemicals throughout their lifecycle and seeks to develop faster analytical tools to more quickly identify risks.

- A 61 percent cut to the Sustainable Healthy Communities program’s research in support of better cleanup technologies for Superfund sites.
- A 38 percent cut to the Homeland Security Research Program that includes understanding how to decontaminate water supplies in the event of a chemical, biological or radiological attack.³²
- A 23 percent cut to the Forensics Support program, which documents sources and types of pollution to help EPA’s enforcement actions against polluters.
- End grants to state governments and tribal agencies to address pollution from farms, stormwater runoff and other dispersed sources.³⁴
- End grants that help local governments identify and clean up underground storage tanks that may be leaking oil or other hazardous pollutants into groundwater.³⁵
- End EPA-funded regional programs that engage multiple states to address pollution problems in the Great Lakes, the Gulf of Mexico, Chesapeake Bay and other large water bodies.³⁶

Cuts Would Slow Efforts to Prevent Pollution and Clean up Contamination

The budget cuts would also limit the EPA’s support for the work that state and tribal governments do to protect water quality. Many state and tribal assistance grants for clean water are slated to be reduced by 30 percent or more.³³

The proposed budget eliminates entire programs that have helped states to protect water quality. The budget would:

Other aspects of EPA’s budget that affect water quality are also slated for cuts. For example, funding is in jeopardy for efforts to clean up hazardous waste sites that have the potential to pollute water. Table 1 shows estimated state-level funding losses for selected programs.

These budget cuts to EPA’s national work and its support of state action would harm water quality in the Delaware River Basin.

Table 1. Estimated EPA Grant Funding Losses to Delaware River Basin States if Trump Administration’s Proposed Budget Is Enacted (table shows selected programs)³⁷

State	Estimated Lost Funding for Water Pollution Control Grants	Estimated Lost Funding for Nonpoint Pollution Control Grants	Estimated Lost Funding for Drinking Water Protection and Enforcement Grants
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Note: Estimates are calculated assuming EPA budget cuts affect all states by the same percentage. Reductions are based on grants from most recent fiscal year. “Water pollution control grants” are Section 106 grants, slated for a 30 percent cut. “Nonpoint pollution control grants” are Section 319 grants, cut entirely in the administration’s proposed budget. “Drinking water protection and enforcement grants” are Public Water System Supervision grants, cut by 30 percent.

Delaware River Basin Water Quality Is Threatened by the Trump Administration's EPA Budget Cuts

The EPA plays a critical role in protecting clean water in the Delaware River Basin. Working with state agencies, the EPA establishes and enforces limits on pollution, helps support pollution cleanup and restoration of damaged streams and rivers, and pursues research to better understand threats to clean water. The budget cuts proposed by the Trump administration will greatly weaken the EPA's ability to ensure water in the Delaware River Basin is clean enough for drinking, swimming and fishing.

More Pollution in the Delaware River Basin

The most important task to protect and restore the Delaware River is preventing pollution from reaching and contaminating the waterway. Sometimes that means setting limits on what polluters can release to waterways. Other times, it means taking decisive action to eliminate longstanding threats. The EPA plays a critical role in protecting water quality in the Delaware River Basin. Proposed budget cuts will limit the EPA's ability to protect clean water in the region.

The EPA Has Helped Reduce PCBs in Delaware River Basin Waterways

Since the 1980s, officials in Delaware River Basin states have warned residents to limit their consumption of fish caught in many sections of the basin, including the Schuylkill River, Neshaminy Creek, White

Clay Creek, Brandywine Creek, the Christina River, and the Cooper River, due to high levels of polychlorinated biphenyls (PCB) in fish.³⁸ PCBs, typically found in electrical transformers and capacitors, are capable of causing cancer. Although they were banned in the 1970s, equipment containing PCBs is still in use, and PCBs can enter the environment, where they persist and build up in fish and other wildlife.

In 2004, the EPA funded the Delaware River Toxics Reduction Program (DelTRiP) to develop protections against PCBs.³⁹ The EPA and state agencies collaborated to estimate PCB levels from contaminated sites throughout the basin and to set limits on PCB pollution into the tidal portion of the Delaware River Basin.⁴⁰ The EPA funded the first half of the program, which identified contaminated sites and quantified amounts of PCBs being released or potentially being released from those sites. After pinpointing more than 260 contaminated sites along the Schuylkill, Lehigh and Delaware rivers, DelTRiP partners established a Total Maximum Daily Load (TMDL), which is the maximum amount of pollutant that may be discharged into the river in a day, and set permit levels to limit PCBs in industrial runoff.⁴¹ In many cases, reducing PCB pollution required cleaning up polluted former industrial sites.⁴²

Thanks to the new standards, the 10 largest polluters reduced PCB pollution by 71 percent from 2005 to 2013.⁴³ The health of the river has improved to the

point that a fish consumption advisory has been relaxed in the Chesapeake and Delaware Canal in Delaware.⁴⁴ The EPA's regional offices continue to collaborate with the states of Delaware, Pennsylvania and New Jersey to implement protections against PCB discharges in the basin and to update PCB limits in order to continue progress to a healthier river.⁴⁵

The EPA Has Helped Reduce Toxic Mining Pollution in the Schuylkill River

Drainage from abandoned mines is the primary cause of pollution in the headwaters of the Schuylkill River, as old mines in eastern Pennsylvania leak acid and heavy metals into the river.⁴⁶ One waterbody that suffered from abandoned mine drainage was Silver Creek, a tributary of the Schuylkill River south of Hazleton, which received pollution from the former Silver Creek Mine.⁴⁷

Acidic discharge can have disastrous impacts on river wildlife. A study conducted in western Pennsylvania shows that iron deposits have been linked to a 95 percent reduction in fish populations, particularly in bottom-feeders like sculpin and suckers,

Photo: courtesy of Schuylkill Action Network



Drainage from the former Silver Creek Mine was polluting Silver Creek and the Schuylkill River with acidic water laden with heavy metals.

in water closest to the mine discharge site compared to downstream where the pollution is diluted.⁴⁸ Pollution from mines can coat and clog fishes' gills, smother eggs, and kill plants that provide food for fish.⁴⁹

The EPA granted the Schuylkill Headwaters Association and its partners \$858,402 to treat drainage from the abandoned Silver Creek Mine. In 2010, the groups installed passive limestone treatment systems con-

Photo: Google Earth ©2017



The Silver Creek acid mine drainage treatment system is a passive system that does not require electricity or pumping to cleanse the water as it flows from the first pond (top) to the outfall (bottom) through a series of ponds.

sisting of five successive pools that slow the water down, allowing the heavy metals to precipitate before the water flows through two artificial wetlands that balance acidity.⁵⁰ The pools treat 1,200 gallons of water per hour, remove heavy metals, and improve the water acidity from low to neutral, before the treated water is discharged into the Schuylkill River in Port Carbon.⁵¹

The same EPA grant program that enabled the work in Silver Creek granted the Schuylkill Headwaters Association another \$458,772 in 2015 to address acid mine drainage from the Reevesdale South Dip mine project.⁵² The program would be eliminated in the administration's current budget proposal, slowing efforts to control the flow of pollution from abandoned mines.⁵³

Photo: courtesy of Schuylkill Action Network



Treated water exiting the Silver Creek acid mine drainage treatment system.

Impacts of Budget Cuts

The Trump administration has proposed cutting funding for programs like those that have helped protect water quality in the Delaware River Basin. The administration has proposed to cut grants to states by 23 percent.⁵⁴ Grant programs for pollution prevention, such as helping industries figure out how to use less toxic materials or helping farmers reduce synthetic fertilizers and pesticides, also would be

cut. The grant program that supported upstream restoration to protect the Schuylkill River from acid mine drainage would be eliminated.⁵⁵

Funding cuts will also impede the EPA's ability to address new threats to water quality in the Delaware River Basin. Runoff pollution, in which rainwater and melting snow pick up and carry fertilizers, pesticides, oil residue, sediment and road salt to nearby waterways, remains a problem. For example, sodium concentrations at a Philadelphia drinking water treatment plant that draws from the Delaware River have been rising over the years, and are now higher than what the EPA considers acceptable for drinking water.⁵⁶ New measures to control runoff pollution will be important to limiting sodium levels and keeping drinking water safe. Reduced funding for the EPA's own programs and for grants to support the work of state and local partners means there will be a slower response to these new threats to drinking water quality.

In addition to budget cuts that would limit the ability of the EPA and its state partners to protect water quality, parallel programs in other agencies are scheduled for cuts. The Department of Agriculture's Water and Waste Disposal Program – similar to EPA's Clean Water State Revolving Fund and Safe Drinking Water State Revolving Fund, which offer loans to communities and landowners to invest in water and wastewater infrastructure – has been targeted for elimination. In 2016, rural communities in Pennsylvania received \$55 million for clean water infrastructure from the Department of Agriculture's program.⁵⁷

Less Accountability for Polluters

Protecting clean water requires holding polluters accountable when they violate the law. Strong enforcement serves as a deterrent by convincing would-be polluters to engage in safer practices from the start. The EPA and state agencies work together to enforce clean water laws and keep

communities and the environment safe from harm. Reducing the number of environmental “cops on the beat” will encourage polluters to test the limits of the law, potentially putting the health of the Delaware River and the people who use it at risk.

EPA Enforcement Is Stemming the Flow of Raw Sewage into the Delaware River Basin

DELCORA, a wastewater treatment utility serving communities in the Greater Philadelphia area in Delaware and Chester counties, dumped raw sewage from its antiquated system during heavy rainstorms, and also during dry spells, averaging 739 million gallons per year from 2009 to 2014.⁵⁸ The sewer overflows exposed people who came into contact with the water to health risks, such as stomach cramps, diarrhea, hepatitis, gastroenteritis and norovirus.

EPA determined DELCORA’s plan to improve its antiquated sewage infrastructure was inadequate,⁵⁹ and joined forces with the Pennsylvania Department of Environmental Protection to sue DELCORA for raw sewage discharges into the Delaware River and Chester and Ridley creeks. Reaching a settlement in August 2015, DELCORA agreed to pay a \$1.375 million penalty and spend as much as \$200 million over 20 years to end routine releases of raw sewage.⁶⁰ As that work is completed, people will be able to use the Delaware River with less risk of becoming ill.

The EPA has worked to address untreated sewage overflows across the Delaware River Basin, inspecting wastewater treatment plants and sewer systems to ensure compliance with clean water standards. The EPA has uncovered major violations of the Clean Water Act at several other major wastewater treatment plants and sewer systems in the Delaware River Basin, including Camden in 2013, Trenton in 2015, and Bethlehem, Pennsylvania, in 2016.⁶¹

Though the EPA’s enforcement actions have already begun to reduce pollution from sewage treatment facilities, continued funding for the EPA is essential

for the agency to ensure settlements and cleanup plans are enforced. In addition, aging infrastructure throughout the basin raises continued concerns about potential pollution of streams and rivers with disease-causing pathogens, requiring additional action by the EPA. The EPA has a critical role to play in enforcing pollution limits and requiring utilities to reduce releases of raw sewage.

EPA Enforcement Forced Action on a Longstanding Toxic Waste Problem

For decades, DuPont Titanium Technologies manufactured titanium dioxide, a “super-white” pigment used in products like paint and sunscreen, at its Edge Moor facility, located on the banks of the Delaware River near Wilmington, Delaware. To process the titanium dioxide ore into usable products, DuPont used millions of pounds of chlorine, generating toxic wastes including dioxin – one of the most toxic substances known to science.⁶²

Some of that dioxin contaminated a 500,000-ton waste pile DuPont created at the site.⁶³ EPA declared the waste pile to be hazardous in 2001.⁶⁴ During a 2011 site inspection, EPA discovered that the plant had also systematically failed to report pH levels that violated Clean Water Act standards for years, potentially altering the river’s chemistry and threatening fish in the downstream fishing area.⁶⁵ For its numerous Clean Water Act violations at the plant, DuPont agreed to pay a \$500,000 penalty and seal the hazardous waste pile,⁶⁶ and to identify the pH contamination source and study corrective measures.⁶⁷ Chemours, a DuPont spinoff, closed the Edge Moor Plant in the summer of 2016, but will continue to maintain the impermeable cap on the waste pile and monitor water quality.⁶⁸

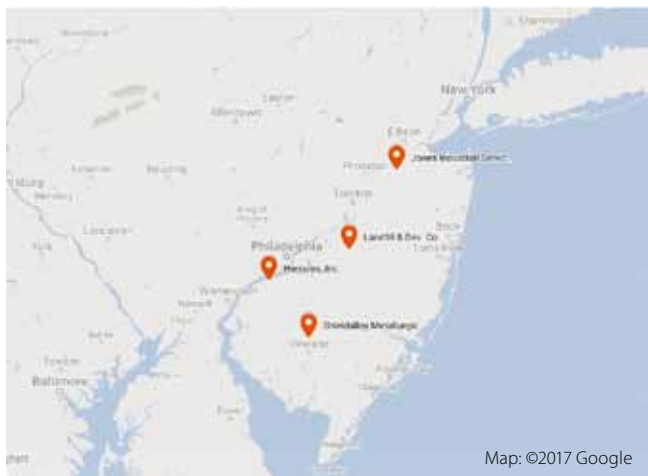
The EPA Took Over Cleanup of New Jersey Superfund Site

EPA took over the cleanup of the Shieldalloy Superfund site, located in Newfield, New Jersey, in 2008 after New Jersey failed to make progress on clean-

ing up the site for more than 20 years.⁶⁹ Shieldalloy Metallurgical Corporation produced chromium alloy and other products in Newfield, New Jersey, from 1955 to 2006. When the company vacated the site, it left behind a pile of radioactive waste and a plume of chromium in groundwater.⁷⁰

The site was placed on the EPA's Superfund list of national clean-up priorities in 1984, but after 20 years New Jersey had yet to draw up a plan to clean up the site. In a 2008 report assessing management of Superfund site cleanups in New Jersey, the EPA Office of Inspector General found that, "as lead agency, New Jersey did not take steps to ensure progress" for remediation of state-led Superfund sites, and recommended that "[EPA] Region 2 should assume lead status from New Jersey for those sites where both agencies agree it would be beneficial."⁷¹ EPA assumed the lead role in cleaning up 14 Superfund sites in New Jersey, four of which are located in the Delaware River Basin (see Figure 2). EPA reached a \$5.6 million agreement with Shieldalloy to clean up contaminated soil, sediment, surface water and groundwater in November 2016.⁷² Continued funding for the EPA is critical to ensuring it can enforce cleanup plans and oversee remediation work.

Figure 2. The EPA Took Over Cleanup Activities for 4 New Jersey Superfund Sites in the Delaware River Basin in 2008



Map: ©2017 Bing



The DuPont Edge Moor Plant was located next to the Delaware River near Wilmington.

The EPA Is Supervising Cleanup of New York's Cortese Landfill Superfund Site

Located 800 feet from the Delaware River in New York's Sullivan County, the Cortese Landfill Superfund site is contaminated with paint thinners, petroleum products, solvents, dyes and other pollutants.⁷³ One hotspot of groundwater pollution created a plume of volatile organic compounds that empties into the Delaware River.⁷⁴

Since the early 1990s, the EPA has overseen cleanup of the site by the 27 companies and the local government it identified as responsible for the polluted landfill. The parties responsible for the cleanup excavated contaminated sludge and soil from the site, removed 5,000 drums that contained chemicals, and placed a cap over the landfill.⁷⁵ When testing in the early 2000s revealed the pollution plume and extended the cleanup timeline to 150 years, the EPA revised the site remediation plan to speed cleanup.

The new, 15-year plan calls for pumping air into the ground to release volatile chemicals that can be captured and treated, reducing water contamination. After that approximately seven-year effort, the EPA expects an additional five years of monitoring and less intensive treatment.⁷⁶ The EPA's effective oversight of this groundwater remediation work at the Cortese Landfill Superfund site requires that the agency have sufficient funding. However, the Trump administration's proposed budget for the EPA cuts funding for the Superfund program by 30 percent, curtailing the EPA's ability to oversee and guide cleanup efforts.⁷⁷

Table 2. Facilities in the Delaware River Watershed that Hold Pollution Permits⁸¹

Watershed	Number of facilities
Schuylkill	1,077
Lower Delaware	1,046
Middle Delaware-Musconetcong	578
Crosswicks-Neshaminy	391
Lehigh	305
Cohansey-Maurice	264
Brandywine-Christina	253
Middle Delaware-Mongaup-Brodhead	165
Upper Delaware	90
East Branch Delaware	36
Lackawaxen	33
Broadkill-Smyrna	29
Great Egg Harbor, Mullica-Toms	<10

Impacts of Budget Cuts

The Trump administration has proposed slashing a quarter of the EPA's environmental enforcement activities, severely curtailing the EPA's ability to enforce the law and to investigate and address violations that threaten drinking water and aquatic environments in the Delaware River Basin.⁷⁸ Though pollution from industrial facilities, wastewater treatment plants and other identified sources has fallen sharply from its peak, if the EPA has less funding for monitoring pollution levels and enforcing limits, unscrupulous actors may choose to violate their permits, believing that state environmental agencies will not take action without the EPA.

Overall, there are 307 Superfund sites being cleaned up in the four Delaware River states (though not all are in the Delaware River Basin itself), and more than 4,000 facilities with permits to discharge pollutants into waters of the Delaware River Basin (see Table 2), any of which have the potential to increase pollution if oversight is scaled back due to budget cuts.⁷⁹ Compounding the problem, the Trump administration has shown that even when its EPA does take action against a polluter, it collects smaller civil penalties than did previous administrations.⁸⁰

The EPA will not be able to carry out its critical monitoring and enforcement responsibilities as effectively with a fifth of its enforcement budget slashed, preventing it from taking decisive action against polluters and cleaning up the watershed.

Stalled Restoration of Polluted Waterways

Restoring the Delaware River Basin's waterways following centuries of pollution and development is essential to providing communities with safe drinking water, and ensuring the health of fish and wildlife. Restoration can include strength-

ening eroded streambanks, dredging polluted sediment, replanting native vegetation, or restocking populations of aquatic animals that help filter the water. The EPA helps water quality in the Delaware River Basin by funding and assisting local and regional groups, such as the Partnership for the Delaware Estuary and the Christina Basin Clean Water Partnership. More restoration work remains to be done, and proposed budget cuts will limit the ability of the EPA and local organizations to bring back clean water and healthy aquatic environments.

EPA-Backed Partnership Supported Restoration of the Christina River

In the 1990s and early 2000s, agricultural and residential runoff polluted the Christina River Basin, which stretches across the Pennsylvania/Delaware state line and supplies drinking water to 60 percent of Delaware's population.

The Christina Basin Clean Water Partnership, formed to restore the Brandywine, White Clay, Red Clay and Christina Creeks in Delaware and Pennsylvania to fishable, swimmable and drinkable status by 2015, received a \$1 million grant from the EPA in 2003 to boost restoration work in the Christina Basin.⁸² The Partnership used the grant to fence and reforest streambanks, implement agricultural best management practices, help homeowners to adopt ecologically beneficial landscaping practices, purchase rain barrels, and conduct annual tours of the watershed. For every federal dollar invested in the project, the Partnership leveraged more than two dollars from local sources, which allowed them to expand from their original plan by 150 percent, such as reforesting 9,148 feet of streambanks instead of 6,000 feet.⁸³

Restoration of the Christina Basin is well under way, but there is more work left to do, with 72 miles of stream still too polluted for drinking water, fishing or recreation.⁸⁴ Proposed cuts to the EPA's budget will stall cleanup of polluted streams.

EPA-Supported Partnership Helped Bring Oysters Back to the Delaware Estuary

When a series of diseases wiped out oyster populations in Delaware and New Jersey, the EPA-funded Partnership for the Delaware Estuary and local industry, academic and state partners teamed up to plant millions of bushels of clam and oyster shells onto reefs in the Bay, creating habitat for oysters. This restoration project stabilized the supply of oysters and increased harvests, with an estimated benefit of more than \$40 for every federal dollar invested in FY 2007.⁸⁵ The administration's budget proposal eliminates the program that funds the Partnership for the Delaware Estuary, which conducts research, works with local government, community and private partners, and carries out vital restoration work in the Delaware Estuary.

Impacts of Budget Cuts

President Trump's budget proposal eliminates funding for geographic watershed programs. This has several implications for the Delaware River Basin. First, the National Estuary Program that supports the Partnership for the Delaware Estuary would not be funded, eliminating a key source of funding and impeding the Partnership's ability to coordinate local stakeholders and promote conservation in the estuary.⁸⁶

Second, it means that work by groups such as the Christina Basin Clean Water Partnership will be more difficult. Without funding from the EPA as leverage, the Christina Basin Clean Water Partnership would not have been able to raise as much money from local sources or implement such extensive and successful restoration work.

Less Research and Education on Threats to Water Quality

Although the EPA and states have made substantial progress in protecting and restoring the Delaware River, emerging problems – such as new kinds of

pollutants, failing water infrastructure, and climate change – pose new challenges. Research generates knowledge and tools that help toxicologists, water agency managers and officials understand the impacts of various threats to water; set drinking water and wastewater treatment standards that protect public health; and establish new land use, discharge and wastewater management rules that safeguard our most precious natural resource.

Public education campaigns then help spread information about threats and solutions to empower local communities to act. The EPA has helped fund research on emerging threats to water quality at prominent institutions in the Delaware River Basin.

EPA-Funded Research Is Providing New Tools to Ensure Safe Drinking Water

Legionnaire’s disease was identified in hot water at Kennett High School in Chester County near Philadelphia in April 2017. The school closed for a day and shut down all showers after a positive sample was taken from the boiler room spigot during routine testing.⁸⁷ While there were no documented cases of illness, the incident was inconvenient and disruptive to learning for the school’s 1,300 students.⁸⁸

The EPA is funding the work of a Drexel University-led research team that is developing a web-based simulation tool to help water utilities and facilities managers identify high-risk conditions in plumbing, even before water becomes contaminated.⁸⁹ The researchers will build a database of building plumbing conditions (such as age of the plumbing, water flow rate, disinfectant type and concentration) and concentrations of contaminants to develop statistical models that predict the risk that water will fail quality standards. The resulting tool will predict where plumbing is most likely to fail and help facility managers engage in remedial actions before any contamination occurs.

Such a tool could enable facility managers at buildings like Kennett High School to understand when a part of the water system has a high risk of incubating Legionnaire’s disease, leading them to schedule regular water treatments to avoid its development. The EPA grant program supporting this research project would no longer be funded under the administration’s proposed budget.

EPA-Funded Research Seeks to Identify and Remove Barriers to “Green Infrastructure”

Thanks in part to EPA funding, a University of Pennsylvania research team is working to understand what’s stopping people from investing in green infrastructure and how to encourage regular citizens to become stewards of their own urban environment.⁹⁰

Stormwater pollution, or urban runoff, is a major threat to surface water quality in the Delaware River Basin. There are many solutions on the market that can reduce stormwater pollution, including permeable pavement, bioswales, grass strips alongside roads, rain gardens, rain barrels, green roofs and urban wetlands. However, communities have been slow to develop this “green infrastructure,” despite the many benefits for the environment and quality of life. An EPA grant supports Philadelphia’s “Green City, Clean Water” program that is working to reduce stormwater pollution by 85 percent over 25 years. The program has deployed more than 4,100 rain barrels and implemented nearly 1,000 stormwater regulation and retrofit projects in parks, playgrounds, offices, buildings, schools, parking lots and more across the city since it started in 2011.⁹¹ The University of Pennsylvania-led project is working to develop web-based tools that the City of Philadelphia, as well as other cities, can use to further engage the community and spur investment to

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Examples of green infrastructure include permeable pavement (left), a rain barrel connected to a gutter downspout (middle), and a bioswale for water retention (right).

improve stormwater management.⁹² The Trump administration's budget proposal eliminates the EPA grant program that funds this University of Pennsylvania research project.

Impacts of Budget Cuts

The administration's proposed budget cuts the EPA's overall research and development budget by nearly half. The Safe and Sustainable Water Resources research program would lose a third of its funding, as its budget decreases from \$106 million to less than \$69 million.⁹³ Under the proposed budget, the key grant program under which the EPA supports university research programs for better environmental science and management, called Extramural Science to Achieve Results and which has disbursed an average \$100 million a year since its inception, would not receive any funding.⁹⁴

The EPA's research programs and its support for state-led and academic programs is critical to developing a response to both old problems,

like bacteria in water systems, and new threats. Synthetic chemicals, like pharmaceuticals, pesticides, flame retardants, microplastics and personal care products, are increasingly appearing in waterways and can threaten the health of humans and wildlife, even at low concentrations. These contaminants are relatively new, and water monitoring networks do not all test for them yet, but they have already begun to affect fish in the Delaware River, where male fish have been found carrying eggs, likely the result of exposure to hormones in water.⁹⁵ Full funding for the EPA's research work is important for helping to identify new pollutants, understand their impact on health, develop testing methods that drinking water providers can use, and create new technologies for removing these contaminants from drinking water.

The administration's budget proposal risks jeopardizing water quality and Americans' health by delaying the development of new water quality standards and innovative tools to meet them.

The Health of the Delaware River Basin Depends on a Strong EPA

Water quality in the Delaware River Basin has greatly improved since the middle of the 20th century. The EPA – along with state and local government, citizens, academics, and philanthropic and business partners – has been critical to this effort. The EPA has established and enforced limits on pollution, helped to restore waterways, and supported research and education about the threats to the Delaware River Basin and solutions that can return it to health.

The job is not done, however. Existing sources of pollution – from industrial facilities to sewage pipes to urban and farm runoff – continue to require vigilance and comprehensive efforts to address. New sources of pollution, meanwhile, may add to the region's water quality problems.

Now is not the time to hobble the EPA's essential work to protect the Delaware River Basin. For the EPA to build on the progress of recent decades and ensure that the Delaware River Basin is safe for swim-

ming, fishing and other uses, funding for the EPA and the state and local efforts it supports should be *increased*, not cut. For example, aging drinking water and sewage infrastructure nationally are in need of replacement, at a cost of \$600 billion over the next 20 years.⁹⁶

Continued progress at cleaning up existing sources of pollution and addressing new sources of contamination requires full funding for the EPA's clean water efforts. The agency needs resources to establish pollution limits that protect human health, and to make sure that polluters abide by those pollution standards. The agency needs money to continue its critical role in supporting cleanup of past pollution, and restoring damaged rivers and streams so that they can provide clean water. The EPA also needs funding to help it identify and respond to future threats to clean water. Ensuring that people who live in the Delaware River Basin have continued access to clean water requires full funding for the EPA.

Notes

1. Delaware River Basin Commission, *Basic Information*, accessed 3 June 2017, available at <http://www.nj.gov/drbc/basin/>.

2. U.S. Environmental Protection Agency Region 3 Water Protection Division, *Turning the Tide in the Delaware: Reducing a Legacy Pollutant*, 3 June 2017, available at www.epa.gov/de/turning-tide-delaware-reducing-legacy-pollutant.

3. U.S. Environmental Protection Agency, *Hazardous Waste Cleanup: Chemours – Edge Moor Plant in Wilmington, Delaware*, accessed 31 July 2017, archived at web.archive.org/web/20170731174655/https://www.epa.gov/hwcorrectiveaction/hazardous-waste-cleanup-chemours-company-fc-llc-edge-moor-plant-wilmington-de.

4. Delaware River Basin Commission, *Christina River Basin Clean Water Partnership*, 25 October 2016, archived at web.archive.org/web/20170620235120/http://www.nj.gov/drbc/programs/subbasin/christina-basin.html.

5. Jan Bowers, Chester County Water Resources Authority, and Jerry Kauffman, University of Delaware, *Christina Basin EPA Targeted Watershed Grant in Delaware and Pennsylvania* (powerpoint presentation to Delaware River Basin Commission), 6 May 2009, archived at web.archive.org/web/20170621035130/http://www.nj.gov/drbc/library/documents/ChristinaBasinPPT5-06-09.pdf.

6. U.S. Environmental Protection Agency, *Water Conservation and Water Quality: Understanding the Impacts of New Technologies and New Operational Strategies*, accessed 16 June 2017, available at cfpub.epa.gov/ncer/abstracts/index.cfm/fuseaction/display.abstractDetail/abstract/10735/report/0.

7. U.S. Environmental Protection Agency, *FY 2018 Budget in Brief*, May 2017.

8. Ibid.

9. Office of Management and Budget, *Appendix: Budget of the U.S. Government, Fiscal Year 2018*, 2017.

10. Office of Management and Budget, *Budget of the U.S. Government: A New Foundation for American Greatness, Fiscal Year 2018*, 2017.

11. Estimated losses to individual states are based on the assumption that EPA budget cuts will affect all states by the same percentage. That percentage cut was applied to grant funding for each state in the most recent fiscal year for which data were available. “Water pollution control grants” are Section 106 grants, slated for a 30 percent cut. “Nonpoint pollution control grants” are Section 319 grants, cut entirely in the administration’s proposed budget. “Drinking water protection and enforcement grants” are Public Water System Supervision grants, cut by 30 percent. Information on proposed cuts comes from U.S. Environmental Protection Agency, *FY 2018 Budget in Brief*, May 2017, 39 and 43. Lost funding by state is based on most recent funding levels for each program: FY 2016 for Section 106, per U.S. EPA, *FINAL Section 106 FY2016 Funding Targets with Rescission*, 29 December 2015, archived at web.archive.org/web/20170727210615/https://www.epa.gov/sites/production/files/2017-04/documents/final_fy_16_section_106_with_rescission_standard.pdf. FY 2016 for Section 319, per U.S. EPA, Grants Reporting and Tracking System, accessed 9 August 2017, at ofmpub.epa.gov/apex/grts/f?p=109:9118::NO::. NJ Section 319 grant data are not on the EPA’s website, and instead come from New Jersey Department of Environmental Protection, Division of Water Monitoring and Standards, *Water Quality Restoration Grants for Nonpoint Source Pollution*, accessed 13 August 2017, available at <http://www.state.nj.us/dep/wms/bears/npsrestgrants.html>. FY 2017 for PWSS grants, per Memo-

randum from Anita M. Thompson, Director, Drinking Water Protection Division, U.S. Environmental Protection Agency, to Regional Drinking Water Programs Managers, *Final Allotments for the FY2017 Public Water System Supervision (PWSS) State and Tribal Support Grants*, 30 May 2017, archived at web.archive.org/web/20170727210933/https://www.epa.gov/sites/production/files/2017-06/documents/wsg_202_pwss_fy17_allotments.pdf.

12. See note 1.

13. Ibid.

14. Delaware River Basin Commission, *Watersheds of the Delaware River Basin*, accessed 3 June 2017, available at http://nj.gov/drbc/library/documents/maps/BasinPlan_watershedsmmap.pdf

15. G. J. Kauffman, University of Delaware, *Socioeconomic Value of the Delaware River Basin in Delaware, New Jersey, New York, and Pennsylvania: the Delaware River Basin, an Economic Engine for over 400 Years*, 11 October 2011, available at <http://nj.gov/drbc/library/documents/SocioeconomicValueDRB-UDEL-FinalRpt.pdf>.

16. Ibid.

17. Delaware River Basin Commission, *State of the Delaware River Basin Report*, December 2008, available at <http://www.state.nj.us/drbc/library/documents/SOTB/waterquality.pdf>

18. Ibid.

19. Ibid.

20. Ibid.

21. Philadelphia Water Department, *Delaware River Source Water Assessment*, January 2002.

22. Partnership for the Delaware Estuary, *Executive Summary: Technical Report for the Delaware Estuary & Basin*, 2012, archived at web.archive.org/web/20170621040559/https://s3.amazonaws.com/delawareestuary/pdf/TREB/Exec%20Summary.pdf.

23. Jeff Montgomery, "Sturgeon Killed at Salem in 'Shocking' Numbers," *The News Journal (Delaware)*, 20 June 2014, <http://www.delawareonline.com/story/news/>

[local/2014/06/20/sturgeon-killed-salem-shocking-numbers/11203449/](http://www.delawareonline.com/story/news/local/2014/06/20/sturgeon-killed-salem-shocking-numbers/11203449/).

24. Partnership for the Delaware Estuary, *Executive Summary: Technical Report for the Delaware Estuary & Basin*, 2012, archived at web.archive.org/web/20170621040559/https://s3.amazonaws.com/delawareestuary/pdf/TREB/Exec%20Summary.pdf.

25. See note 10.

26. Environmental Protection Network, *Analysis of Trump Administration Proposals for FY2018 Budget for the Environmental Protection Agency*, 22 March 2017.

27. Office of Management and Budget, *Analytical Perspectives: Budget of the U.S. Government, Fiscal Year 2018*, 2017, Table 7-1.

28. See note 9.

29. Office of Management and Budget, *Major Savings and Reforms: Budget of the U.S. Government, Fiscal Year 2018*, 2017.

30. See note 27, Table 18-1.

31. See note 7.

32. 38 percent represents the budget cut for all homeland security activities in the Office of Science and Technology. See note 7.

33. See note 7, p. 43.

34. Section 319 grants. See note 7, p. 43.

35. Underground Storage Tank funding. See note 7, p. 43.

36. Geographic area programs. See note 7, p. 33.

37. See note 11.

38. Delaware River Basin Commission, *Water Quality Information: Toxic Pollutants: PCBs*, accessed 15 June 2017.

39. Delaware River Basin Commission, *Delaware River Toxics Reduction Program (DelTRIP)*, accessed 3 June 2017, available at <http://www.state.nj.us/drbc/about/public/deltrip.html>

40. Delaware River Basin Commission, *Delaware River Toxics Reduction Program Annual Report*, January 2006, available at http://www.state.nj.us/drbc/library/documents/deltrip/Jan2006_annualreport.pdf

41. U.S. Environmental Protection Agency, *EPA Establishes Plan to Clean up PCBs in Delaware River* (news release), 16 December 2003, available at yosemite.epa.gov/opa/admpress.nsf/93216b1c8fd122ca85257018004cb2dc/e56b021b299a15f7852570d60070fe4d!OpenDocument.

42. Jeff Montgomery, "New Push to Make River Fish Safe to Eat," *The News Journal (Delaware)*, 16 September 2016, accessed at <http://www.delawareonline.com/story/news/local/2015/09/15/delaware-river-pcbs/72339106/>.

43. See note 2.

44. *Ibid.*

45. *Ibid.*

46. U.S. Environmental Protection Agency, *Silver Creek Mine Treatment Is Golden in Protecting Schuylkill River*, accessed 1 July 2017, archived at web.archive.org/web/20170701053440/https://www.epa.gov/pa/silver-creek-mine-treatment-golden-protecting-schuylkill-river.

47. *Ibid.*

48. Raymond D. Letterman and William J. Mitsch, "Impact of Acid Mine Drainage on a Mountain Stream in Pennsylvania," *Environmental Pollution*, 17(1):53-73, September 1978, [doi.org/10.1016/0013-9327\(78\)90055-1](https://doi.org/10.1016/0013-9327(78)90055-1).

49. Trout Unlimited, *Abandoned Mine Drainage: Formation, Impacts, Treatment and How You Can Help!*, accessed 21 June 2017, archived at web.archive.org/web/20170622043805/http://www.patroulintheclassroom.org/docs/default-source/resources/amd-fact-sheet.pdf?sfvrsn=2.

50. Schuylkill Action Network, *Silver Creek AMD Treatment System*, accessed 1 July 2017, archived at web.archive.org/web/20170701053959/http://www.schuylkillwaters.org/projectsDetail.cfm?pid=40.

51. *Ibid.*

52. Pennsylvania Department of Environmental Protection, *Growing Greener Watershed Protection, EPA 319, AMD Set-Aside, and Surface Mining Conservation & Reclamation Grants Announced April 25, 2015*, accessed 31 July 2017 at <http://files.dep.state.pa.us/GrantsLoans/Growing%20Greener/GrowingGreenerPortalFiles/2015%20Growing%20Greener%20Watershed%20Protection-%20AMD%20Set%20Aside-319%20%20Grant%20Recipients%205-13-16.pdf>.

53. The Non-Point Source Management Program, established by Section 319 of the 1987 amendments to the CWA to support nonpoint source management programs, would be eliminated. See note 7.

54. See note 27, Table 14-2.

55. See note 53.

56. Philadelphia Water Department, *Moving from Assessment to Protection: The Delaware River Watershed Source Water Protection Plan*, June 2007, archived at web.archive.org/web/20170817160643/http://www.phillywatersheds.org/doc/Delaware_SWPP_2007.pdf.

57. U.S. Department of Agriculture, *USDA Rural Development Pennsylvania 2016 Progress Report*, 2016, available at www.rd.usda.gov/files/ProgressReport_WorkingCopy-Opt.pdf

58. Vince Sullivan, "DELCORA Forks over \$1.375 Million in Settlement with EPA over Alleged Untreated Sewage Discharge," *Delaware County Daily Times*, 22 August 2015, available at <http://www.delcotimes.com/article/DC/20150822/NEWS/150829895>.

59. *Ibid.*

60. U.S. Environmental Protection Agency, *Delaware County Regional Water Quality Control Authority Clean Water Act Settlement*, accessed 6 June 2017, available at www.epa.gov/enforcement/delaware-county-regional-water-quality-control-authority-clean-water-act-settlement.

61. U.S. Environmental Protection Agency, *ECHO (Enforcement and Compliance History Online)*, accessed 12 July 2017. Camden information available at echo.epa.gov.

gov/enforcement-case-report?id=02-2014-3037, Trenton information available at echo.epa.gov/detailed-facility-report?fid=110000760329, Bethlehem information available at echo.epa.gov/detailed-facility-report?fid=110000575155.

62. Jeff Montgomery and Jeff Mordock, "Future Unclear for Sometimes Troubled Edge Moor Site," *The News Journal (Delaware)*, 20 August 2015, accessed at <http://www.delawareonline.com/story/news/local/2015/08/20/edgemoor-plant-baggage/32084755/>, and World Health Organization, *Dioxins and Their Effects on Human Health* (factsheet), October 2016, archived at web.archive.org/web/20170621233429/http://www.who.int/mediacentre/factsheets/fs225/en/.

63. See note 3.

64. "Chemours Edge Moor Plant Site History," *The News Journal (Delaware)*, 21 August 2015, available at <http://www.delawareonline.com/story/money/business/2015/08/20/edge-moor-plant-history/32091529/>.

65. U.S. Environmental Protection Agency Enforcement and Compliance History Online, *Detailed Facility Report*, accessed 7 June 2017, available at echo.epa.gov/detailed-facility-report?fid=110000338830, and Stuart M. Levits, Nature Conservancy, *A Literature Review of the Effects of Ammonia on Fish*, November 2010.

66. Jeff Mordock and Xerxes Wilson, "Chemours Edge Moor Plant Closing Is 'Ominous' Sign," *The News Journal (Delaware)*, 20 August 2015, available at <http://www.delawareonline.com/story/money/business/2015/08/20/chemours-edge-moor-plant-close-workers-impacted/32039879/>, and Joseph DiStefano, "A DuPont Legacy: Pile by the Delaware (Updates)," *Philadelphia Inquirer*, 21 September 2015, archived at web.archive.org/web/20170621225655/http://www.philly.com/philly/blogs/inq-phillydeals/DuPonts-unfinished-business-A-big-pile-of-toxics-at-Chemours-Edge-Moor.html.

67. See note 3.

68. See note 66.

69. U.S. Environmental Protection Agency, *Superfund Site: Shieldalloy Corp. (Newfield Borough, NJ)*, accessed 4 June 2017, available at cumulis.epa.gov/supercpad/Cursites/cs-itinfo.cfm?id=0200203&msspp=med

70. U.S. Environmental Protection Agency, *EPA Secures \$5.6 Million Worth of Cleanup for Shieldalloy Superfund Site in Newfield and Vineland, N.J.* (press release), 16 November 2016, available at www.epa.gov/newsreleases/epa-secures-56-million-worth-cleanup-shieldalloy-superfund-site-newfield-and-vineland.

71. Carolyn Copper et al., U.S. Environmental Protection Agency Office of the Inspector General, *Evaluation Report No. 08-P-0169: Improved Controls Would Reduce Superfund Backlogs*, 2 June 2008, available at www.epa.gov/sites/production/files/2015-11/documents/20080602-08-p-0169.pdf

72. See note 70.

73. U.S. Environmental Protection Agency, Region II, *Record of Decision: Amendment to the Record of Decision, Cortese Landfill Superfund Site, Town of Tusten, Sullivan County, New York*, October 2010, available at semspub.epa.gov/work/02/109516.pdf.

74. *Ibid.*, p. 6.

75. *Ibid.*, p. 3

76. *Ibid.*, p. ii.

77. See note 7.

78. The proposed cut is 23.5 percent.

79. National Pollutant Discharge Elimination System (NPDES) facilities from the Facility Registry Service (FRS) of the EPA.

80. Eric Schaeffer, Environmental Integrity Project, *Environmental Enforcement under Trump: Records Show 60 Percent Drop in Civil Penalties against Polluters During President's First Six Months*, 10 August 2017, archived at web.archive.org/web/20170816173622/http://www.environmentalintegrity.org/wp-content/uploads/2017/08/Enforcement-Report.pdf.

81. See note 79.

82. See note 4.

83. See note 5.

84. U.S. Environmental Protection Agency, *Watershed Quality Assessment Report*, accessed 31 July 2017 at ofmpub.epa.gov/waters10/attains_watershed.control.

85. Partnership for the Delaware Estuary, *Delaware Bay Oyster Restoration Project*, accessed 20 June 2017, archived at web.archive.org/web/20170621035454/https://s3.amazonaws.com/delawareestuary/pdf/Oyster%20Publications/2008_fact_sheet.pdf.

86. Coalition for the Delaware River Watershed, *Conservation in the Delaware at Stake in Trump Administration Budget Proposal*, 23 May 2017, archived at <http://www.delriverwatershed.org/news/2017/5/23/trump-administration-budget-proposal-harms-conservation-in-the-delaware>.

87. "Legionnaire's Bacteria Found In Pennsylvania School's Water," *CBS Philly*, 7 April 2017, available at <http://philadelphia.cbslocal.com/2017/04/07/legionnaires-found-pennsylvania-schools-water/>.

88. Kennett High School, *School Profile*, accessed 21 June 2017, archived at web.archive.org/web/20170621234723/https://khs.kcsd.org/school-information/school-profile/.

89. See note 6.

90. U.S. Environmental Protection Agency, *Enabling Citizens and Owners to Invest in Green Infrastructure in Philadelphia*, accessed 16 June 2017, available at cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.abstractDetail/abstract/10205.

91. Philadelphia Water Department, *Green Stormwater Infrastructure Projects* (ArcGIS online map), accessed 12 July 2017 at <http://bit.ly/BGM2016>.

92. See note 90.

93. See notes 7 and 29.

94. See note 29.

95. Maya Srikrishman, "Intersex Fish Found in Pennsylvania Rivers Spur Search for Chemicals," *Los Angeles Times*, 4 July 2014, available at <http://www.latimes.com/nation/la-na-intersex-fish-20140705-story.html>.

96. U.S. Environmental Protection Agency, *About the Water Infrastructure and Resiliency Finance Center*, accessed 27 July 2017, archived at web.archive.org/web/20170727232236/https://www.epa.gov/waterfinancecenter/about-water-infrastructure-and-resiliency-finance-center.