



Charles River Watershed Association

EPA's new Stormwater Permit Program

Frequently Asked Questions

Q. Why has EPA decided to introduce new stormwater permits?

A. Stormwater – or runoff from rainfall and snowmelt – is the largest source of water pollution in the Commonwealth's rivers, lakes and harbors, many of which fail to meet water quality standards and are too polluted to fish, swim or sometimes even go boating in. Stormwater is also the main cause of flooding in the state, causing millions of dollars in damage every year, threatening the stability of dams and disrupting critical services. Current regulations that govern stormwater are not enough to solve existing stormwater problems, which will only get worse with climate change. New regulations are needed to address these growing problems.

EPA's program was developed specifically to address pollution problems in the Charles River, where recent studies have shown that excessive nutrient levels, specifically levels of phosphorus, are causing major pollution problems, such as the blooms of toxic blue-green algae that have developed the past three summers.

Q. Why do the new regulations in the Charles River watershed specifically target phosphorus?

A. Phosphorus is the primary nutrient in the river that controls plant and algae growth. When there is too much phosphorus, there is excessive growth of weeds and algae. In effect, the Charles is being vastly "over-fertilized." These weeds and algae cause major problems for aquatic life, restrict recreation, and threaten public health. Today, the Charles absorbs about twice as much phosphorus as it can sustain, and many sections of the river violate Massachusetts water quality standards as a direct result of phosphorus pollution.

The federal Clean Water Act requires that severe water pollution problems, like the phosphorus pollution problem in the Charles, be quantified and cleaned up by the responsible parties. Charles River Watershed Association (CRWA) and Conservation Law Foundation (CLF) worked together for six years to ensure that the science and the legal efforts behind the regulations were robust. EPA's work in the Charles mirrors work being done to clean up phosphorus and other nutrients across the country.

Q. Why is there so much phosphorus pollution in the Charles River?

A. The Charles River runs through an extremely dense and developed watershed. A majority of the phosphorus pollution in the Charles comes from stormwater runoff, especially from impervious surfaces like roads and parking lots. When rain lands on a parking lot, a building, roadway or other hard surface and cannot seep into the ground, it picks up whatever pollutants are on that surface (like sand, leaves, and the pollution from auto exhaust) and then goes into stormdrains and is flushed directly into the river.

Q. How can phosphorus pollution be cleaned up?

A. The most cost effective way to clean up phosphorus in the Charles is to stop stormwater runoff from flowing directly into the river, and to allow it instead to sink into the ground where it is broken down and absorbed by plants and soil microbes. Putting stormwater back into the ground has the added benefits of recharging groundwater and aquifers, and reducing flooding. CRWA's *Blue Cities™ Initiative* has demonstrated the effectiveness and beauty of using trees and urban vegetation to capture and treat runoff throughout the cities and towns of the watershed, reducing stormwater pollution and improving the urban environment.

Q. How does phosphorus pollution threaten public health in the Charles River?

A. Excessive phosphorus pollution in the Charles watershed has been documented to be causing toxic algae blooms (cyanobacteria). When these bacteria die, they secrete toxins that are dangerous to humans and fish.

Q. Hasn't a lot already been done to clean up the Charles?

A. CRWA has been working since 1965 to clean up the Charles River. In recent decades, cities and towns in the Charles River watershed have spent millions to clean up the river and reduce pollution. So has the Massachusetts Water Resources Authority (MWRA), which has invested heavily in efforts to reduce Combined Sewer Overflows (CSOs) which used to dump millions of gallons of untreated sewage and stormwater into the Charles every year. These investments have had a huge payback: the Charles is fishable and swimmable many days of the year, property values have gone up, and the river is at the heart of the region's environmental restoration.

However, CRWA's water quality monitoring programs identified phosphorus pollution as a critical problem in the 1990's. Since then, we have been working to construct demonstration projects, create watershed simulation models, and learn about what is being done in other areas around the country to solve this problem. Stormwater pollution remains a major problem, and the past several summers' toxic algae blooms are an indication of how serious this problem is. Cleaning up stormwater pollution is critical to protecting the investments that have already been made in the river, and helping us achieve a clean river.

Q. How will the new regulations help solve the problem?

A. This new program has been designed to tackle the biggest sources of stormwater pollution: large commercial and industrial properties. On a per-acre basis, these properties contribute the most stormwater runoff – and the most pollution. While commercial and industrial properties only make up 8% of the land in the Charles River watershed, they contribute 23% of all the phosphorus to the river every year. Currently, these properties are not required to manage their stormwater runoff unless they were built in the past several years. The new requirements call for all properties to comply with the rules, not just new ones.

Q. How will cities and towns be affected by these new requirements?

A. The new requirements will relieve cities and towns of some of the burden of cleaning up and controlling stormwater runoff. Almost all cities and towns are already required to clean up the pollution that comes from their community. They are responsible for the water at the end of the pipes, where stormwater flows out into rivers and harbors, regardless of where the

stormwater comes from. As a result, in addition to cleaning up stormwater pollution from roads and residential areas, towns have to clean up stormwater from large commercial and industrial properties. The new programs will require large commercial and industrial property owners to share in that responsibility, meaning that cities and towns will not have to shoulder the burden of cutting pollution in the Charles River alone.

Q. Why is there a difference between the requirements for facilities in the Charles River watershed and for everyone else in the state?

A. The requirements are designed to reflect actual conditions and the needs of the resource, so they are different in different areas across the state. A recent scientific study on nutrient pollution in the Charles River (a Total Maximum Daily Load or TMDL analysis) identified very specific pollution reduction needs in the Charles River. The study highlighted the significant and measurable role played by stormwater runoff from large impervious surfaces (hard surfaces where water cannot sink into the ground such as buildings, roads and parking lots). EPA's current program only applies to areas of the Charles right now, though it is likely it will be expanded as more information becomes available.

Q. Why does the new permit only apply to property owners in the towns of Milford, Bellingham and Franklin?

A. These three towns, at the headwaters of the Charles, are where the first pollution problems appear in the Charles. The river is fairly small in this area, and there are significant stormwater and pollution loads from commercial, industrial and high density residential developments that have been developed in the past decades following growth along the Interstate 495 corridor. Cleaning up phosphorus pollution in the headwaters will also have cumulative benefits in the rest of the river. EPA has stated they plan to learn from this first permit, and over the next several years aim to expand a stormwater permitting program across the entire watershed.

What will this mean for homeowners in the Charles River watershed?

A. EPA's requirements are good news for homeowners. First, it means that pollution levels in the Charles will go down, which is good for public health. Second, it means that as taxpayers, they will not be asked to pay for cleaning up the pollution that large commercial and industrial property owners contribute to the Charles. And third, because of the way that phosphorus pollution is reduced, these new rules may result in increased water supplies, as well as decreased flooding, in the very near future. As more large commercial property owners find ways to reduce pollution by redirecting stormwater runoff from parking lots back into the ground, pollution levels will go down and water supplies will go up. This will be welcome news for homeowners in the many communities in the Charles River watershed which regularly experience water bans in the summer months.

Q. What will this mean for commercial and industrial property owners?

A. Large commercial and industrial property owners will now have to take steps to reduce the amount of pollution they contribute. Specifically they will have to apply for a permit that shows they are taking steps to mitigate the pollution that flows from their properties. Fortunately, there are practical and cost-effective ways to do this. For example, significant

reductions can be achieved by placing tree planters in parking lot islands and redirecting water into the soil, instead of into a drain. These changes – so-called “greening” techniques for urban areas – have multiple benefits, and are in keeping with the federal and state efforts to promote “green infrastructure” and increase vegetation in urban areas. These changes impose a small cost on the individual property owner, while allowing the entire community to benefit from reduced pollution levels and increased water supply. CRWA’s work installing these kinds of retrofits in other areas show that the capital cost of these mitigation measures can be as low as \$10,000 - \$15,000 per acre.

For new construction projects, the costs of making these reductions will be negligible as many of these measures are already required for new building and parking lot designs. In fact, the new regulations will create a more level playing field, since older properties will now have to invest in cleaning up stormwater just as new properties do.



Background Information

Q. What is a TMDL?

A. TMDL stands for Total Maximum Daily Load. It is a scientific study, usually undertaken over several years and involving both data collection and computer modeling, to determine how much pollution can be discharged into a river or other waterbody without causing it to violate water quality standards. A TMDL compares existing water quality conditions to an accepted level of “clean:” not pristine but good enough for fishing and swimming, for example. The TMDL determines what sources are causing the water quality to be degraded, and how much each source contributes. The TMDL then allocates or assigns an acceptable and achievable reduction on each source, which, when implemented, will bring the river to the “clean” standard.

Q. What were the key findings of EPA's TMDL for the Lower Basin of the Charles River?

A. Specifically, EPA found:

- Phosphorus levels in the Charles River are far above allowable levels, resulting in toxic algae blooms which threaten public health and recreation.
- Phosphorus pollution washing into the Charles needs to be cut by more than half (54%).
- On a per acre basis, large commercial and industrial properties are the largest source of phosphorus pollution in the Charles River watershed.

Q. How much phosphorus pollution are commercial and industrial properties in the watershed contributing?

A. Commercial and Industrial land makes up only 8% of the Charles River watershed, but is responsible for 23% of the total phosphorus pollution to the river. On a per acre basis, commercial property is the biggest source of phosphorus pollution. Stormwater runoff from commercial and industrial properties contributes over 21,000 pounds of phosphorus to the Charles River every year, on average, more phosphorus than all wastewater treatment plants combined.

Q. What are the other sources of phosphorus pollution in the Charles River and how much do they contribute?

A. Stormwater runoff is the main source of phosphorus to the Charles River. While runoff from commercial and industrial land is the biggest source of phosphorus on a per acre basis, residential land uses, especially high density residential areas, contribute the most phosphorus to the Charles in total, partly because these land uses make up 38% of the land area in the watershed. Wastewater treatment plants are another sizeable source, contributing 17% of the phosphorus load to the river each year.

Q. How can phosphorus pollution be reduced?

A. One of the best ways to cut pollution in the Charles River is to reduce the amount of stormwater runoff that is flushed into the river by redirecting it back into the ground. The easiest way to do this is to install natural drainage areas and tree plantings in parking lots. Natural

plants and soils will absorb the water that collects in a parking lot and redirect it back into the ground. These technologies are practical and cost effective and once implemented, will result in significant reductions in pollution, while having the additional benefits of reducing floods, cooling parking lots in summer, and restoring groundwater levels.

For more information, go to CRWA's stormwater web page:
www.charlesriver.org/projects/stormwater/swregs.html