



DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
BIANNUAL REPORT OCTOBER 2014

COMBINED SEWER OVERFLOW (CSO) CONTROL ACTIVITIES

CLEAN RIVERS PROJECT NEWS

Construction of the First Street Tunnel *All four staging areas are under construction*

Basement or street flooding during a rainstorm is a major concern for many DC residents. In portions of the District with combined sewer systems, the system is designed to overflow to the nearest waterway during rainstorms to keep combined sewage out of streets and buildings. However, in large storm events the Bloomingdale and LeDroit Park neighborhoods experience flooding when the combined sewer system capacity is exceeded, as shown in the photo below.

One of the goals of DC Water's Clean Rivers Project is to reduce chronic flooding for the Bloomingdale and LeDroit Park neighborhoods. DC Water is putting in place several engineering measures to bring relief to the community. The heart of this local flood prevention effort is the construction of the First Street Tunnel, a 20-foot in diameter, 2,900-foot long tunnel running under First Street, NW beginning at the McMillan Sand Filtration site and ending at First Street, NW and Rhode Island Avenue, NW.

The First Street Tunnel Project requires four surface construction staging areas in this well-established and densely populated community. All four areas are now actively under construction. Sewer diversion chambers and associated structures are being built to direct stormwater and wastewater flows into a new storage tunnel. Construction activities are located at the following intersections: First and Thomas Streets, NW; First and V Streets, NW; Adams Street, NW and Flagler Place, NW; along with the main mining shaft located at the southwest corner of the McMillan Sand Filtration site at First and Channing Streets, NW (shown in the photo above).



(Above) Construction staging area at the SW corner of the McMillan Sand Filtration site at First and Channing streets, NW.

(Left) Flooding along Rhode Island Avenue (2012)

Photo courtesy of Boundary Stone

DC Water brings CSO relief to Anacostia River first



Base slab construction at Blue Plains Tunnel shaft

The Anacostia River can be picturesque in the summer, especially with the return of wildlife like great egrets and blue herons, but it is also slow moving and shallow, and collects pollutants from upstream that take weeks to move through the river.

Add the combined sewer overflows (CSO) that occur

during heavy rains, and it is easy to understand why the Anacostia is one of the District's most impaired waterways. DC Water began its CSO mitigation efforts on the Anacostia first with a plan for a 13.1 mile tunnel system that is made up of four distinct portions. The first, the Blue Plains Tunnel, is already underway with a tunnel boring machine (TBM) named Lady Bird. She is halfway through her journey from the plant at Blue Plains to near Nationals Stadium.

A second large tunnel boring machine (TBM) will make its way from RFK Stadium to Poplar Point. This second TBM will work simultaneous to Lady Bird. Just as large, this TBM was built in Schwanau, Germany at the Herrenknecht factory. Testing went well earlier this year and the TBM is slated for delivery to DC this month. She will begin her journey in 2015.



Anacostia River Tunnel Boring Machine



Lady Bird soars up the river

Lady Bird, the tunnel boring machine launched by DC Water last year, has been chewing towards the Anacostia River on her way to Main Pumping Station near Nationals Stadium. She achieved a milestone in September as she broke through into a drop shaft on Joint Base Anacostia Bolling. There, she rested briefly while her engineer caretakers performed maintenance and minor repairs on her cutter wheel as shown in the adjacent photo. Lady Bird is nearly halfway through the 4.5 mile journey and should complete her leg of the tunnel system in 2015. Her record for one day of mining and tunnel-building is 132 linear feet. To follow her progress, please visit dcwater.com/ladybird.

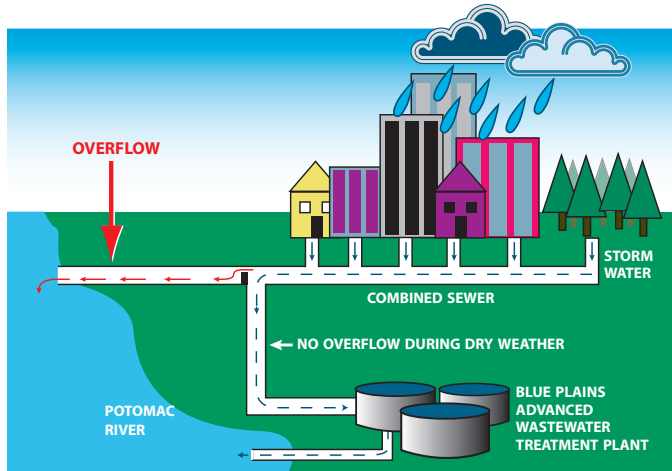
In addition to the tunnel system, crews have been busily building the facilities that will be necessary to treat the additional wastewater once the system is operating. The shaft that was built to lower Lady Bird underground is now being converted to a "dewatering shaft" that will house a 15(+) story underground pumping station that will be used for the treatment process. The concrete shaft base is 25 feet thick and approximately 138 feet in diameter, which required about 12,000 cubic yards of concrete.

Front view of Lady Bird. Here, she breaks through the earth and the cutterhead face receives maintenance and repair.

FAQs About the Combined Sewer System

What is a Combined Sewer?

A combined sewer is a single pipe that carries both sanitary wastewater and stormwater runoff. Many older cities in the United States are served by combined sewers. In the District, the combined sewer system was designed and built by the U.S. Army Corps of Engineers. Modern practice is to build two pipes in the street—one for stormwater runoff, and one for wastewater from homes and businesses.



What is a CSO and why does it occur?

A CSO is a combined sewer overflow. During dry weather, sewage from homes and businesses is conveyed to the District's wastewater treatment plant at Blue Plains, where the wastewater is treated to remove pollutants before being discharged to the Potomac River. During certain rainfall conditions, the capacity of a combined sewer may be exceeded. When this occurs, the excess flow, a dilute mixture of wastewater and stormwater runoff, is discharged to the Anacostia River, Potomac River, Rock Creek and tributary waters. The Federal Clean Water Act allows CSOs, but the Environmental Protection Agency (EPA) requires communities to develop a plan to address overflows. There are 53 CSO outfalls listed in DC Water's existing discharge permit from the EPA.

When do CSOs occur?

CSOs occur during wet weather and are more frequent in wet years than dry years. During years with average rainfall, DC Water estimates that combined sewers overflow into the Anacostia and Potomac rivers about 75 times annually, spilling nearly 1.5 billion gallons into the Anacostia and 850 million gallons into the Potomac. Rock Creek averages 30 CSO events and 52 million gallons of overflow a year.

Where are CSO Outfalls?

There are 10 CSO outfall locations on the Potomac River, 15 on the Anacostia River and 28 along Rock Creek and its tributaries. DC Water has posted signs for each outfall location.

What are the possible public health impacts of CSOs?

CSOs may pose a danger to the public because of the rapid flow of water exiting the outfalls and the potentially harmful substances it may contain. The public is advised to stay away from any sewer pipe discharge. CSOs could affect the receiving waters for up to 24 hours during small rainstorms and for up to three days when it rains one inch or more.

What are the environmental impacts of CSOs?

CSOs can adversely affect the quality of rivers and streams by contributing to high bacterial levels and low dissolved oxygen levels, which is harmful to fish and other aquatic life.

What is a Dry Weather Overflow (DWO)?

In dry weather, sanitary wastewater normally flows to the Blue Plains Advanced Wastewater Treatment Plant through pipes with regulators. During wet weather, regulators are designed to let the excess flow discharge directly to a river or creek. If regulators become blocked by debris or trash, wastewater can also overflow during dry weather. This is called a dry weather overflow (DWO). DC Water has an intensive maintenance and inspection program to prevent DWOs from occurring. If you see a CSO outfall discharging during dry weather, call DC Water at (202) 612-3400.

Where can you get more information?

You can learn more by visiting DC Water's website at dcwater.com/cleanrivers. You may also contact DC Water's Office of External Affairs at (202) 787-2200.

The complete text of the Long Term Control Plan for Combined Sewer Overflows can also be found at the following public libraries: Capitol View, Mount Pleasant, Northeast, Woodridge, Southeast, Shepherd Park, Tenley-Friendship and Washington Highlands.

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DC Water Greens Fort Reno Reservoir

DC Water has retrofitted several facilities with green infrastructure. Incorporating greenery on previously paved surfaces allows rainwater to seep into the ground instead of entering the sewer or stormwater system. The largest green project is a green roof the Authority installed at its Ft. Reno Reservoir. Pervious pavement was also installed there.



In addition, the Authority retrofitted several other water and sewer facilities. DC Water covered the East Side Pumping Station, a wastewater pumping station near RFK Stadium, with a 6,600 square foot green roof. At the Anacostia Water Pumping Station, green projects capture and treat runoff, including pervious pavers (that allow water to run through) and a rain garden with native plantings.

training in all aspects of green roof maintenance – planting and weeding, irrigation system operation, pest and invasive species control, and plant identification. The program included both classroom and hands-on learning at Ft. Reno.

DC Water also provided funding to DC Greenworks to create the Growing Futures Program, which provided local residents with

DC Water continues to move forward on its green infrastructure design challenge, currently identifying which projects to fund construction. For more information on green infrastructure, please visit: dcwater.com/green or dcwater.com/giatdcwater.com.

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This construction will be a temporary disruption to the residents; however DC Water has been working with the local community through regular meetings to minimize the construction impacts. A 24/7 hotline, alternative parking areas and a shuttle service have been established to lessen impacts to residents. DC Water is committed to collaborating with the community throughout construction. The project is slated for completion in spring 2016. When the tunnel is complete, it will hold more than eight million

gallons of combined stormwater and sewage. A temporary pumping station will carry wastewater to the sewer system once rains subside. Eventually, the First Street Tunnel will connect into the 13.1 mile new tunnel system conveying wastewater to the Blue Plains Advanced Wastewater Treatment Plant. This important public health and environmental project will reduce the impacts of local flood events as well as protect the health of the Anacostia River.



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