

July 29, 2015

## **DEPARTMENT OF ENVIRONMENTAL PROTECTION PROVIDES UPDATE ON REPAIRS AND MONITORING AT CANNONSVILLE DAM**

The New York City Department of Environmental Protection (DEP) today provided the following update on the ongoing monitoring and repair efforts related a turbid discharge below Cannonsville Dam.

Late last week, construction crews and geotechnical engineers arrived at the site to begin repairs below the dam. The first step involves drilling a series of relief wells that will provide an alternate path for the groundwater that's under pressure, and prevent that water from moving up through the original bore holes. These relief wells will also end the mobilization of fine sediments that are causing turbidity in the West Branch Delaware River. The relief wells will be cased, screened and filtered to ensure only clear water is pumped from them.

As of Wednesday, four of these relief wells were at some stage of production. One relief well was finished and pumping, and two more were expected to be pumping within the next 24 hours. Engineers at the site noted a reduction in the turbid flow from the rock embankment once the first well began pumping – a sign that it had successfully tapped into the pressurized groundwater. The flow from the rock embankment below the dam is monitored around the clock and measured on a set of staff gauges, or large rulers, that were installed in that area. Engineers are prepared to install as many as 8-10 relief wells, but they expect it may take fewer to end the turbid discharge.

Once the relief wells are installed, engineers will then seal shut the original bore holes using a technique known as compaction grouting. This involves injecting high-pressure grout around the circumference of the original bore holes until they are completely sealed off from the underlying ground water. Engineers believe all this work could be done in the next several weeks.

In the meantime, DEP has continued its 24-hour monitoring of the dam, the worksite, and the flow from the rock embankment.

Over the past several days, two rounds of testing have confirmed that sediment reaching the West Branch Delaware River is coming from the immediate area around the original bore holes, and not from the earthen embankment of the dam itself. The tests were performed at an independent lab that specializes in material testing. To perform these tests, water samples were taken from the area of turbid discharge, and the sediment was screened out of the water. That sediment was then compared to samples taken from different depths along the original bore holes. The testing confirmed that sediments reaching the river are identical to very fine silts located 25-35 feet below the rock embankment, in the immediate area of the original bore holes. This is not the material that comprises the dam.

As noted previously, DEP has also observed a reduction in the flow from the rock embankment area since the pumping of the first relief well began. The size of the silt particles

creating the turbidity has not changed. All other metrics and monitoring points remain within normal and expected ranges.

DEP also continues to monitor the storage of cold water in Cannonsville Reservoir. This cold water is vital to the downstream fishery in the West Branch and main stem of the Delaware River. There is approximately 32 billion gallons of cold water remaining in the reservoir. That cold water would be expended about Aug. 17. Once the relief wells end the turbid discharge below the dam, DEP plans to extend the life of that cold water by taking more of its drinking water from the warmer top layer of the reservoir. This operational change requires a two-hour shutdown of the drinking water intake. DEP expects to make that change sometime in the next several days.

DEP has also continued to provide the public with information as the work progresses. On Tuesday, DEP posted photos of the worksite, including an aerial image. These photos can be found on the DEP's watershed Facebook page at [www.Facebook.com/NYCWatershed](http://www.Facebook.com/NYCWatershed), or on the Cannonsville Reservoir page by [clicking here](#). Daily updates related to Cannonsville Reservoir storage and releases are also posted on that website.

## **Background**

Two weeks ago, DEP increased drinking water diversions and downstream releases from Cannonsville Reservoir to facilitate necessary repairs in response to an ongoing turbid discharge from a rock embankment below Cannonsville Dam.

DEP, its regulators, and consulting experts do not believe the turbid flow represents any imminent threat to the safety of the dam. The dam's safety was further confirmed by recent testing that showed the sediment was coming from the immediate area around the bore holes that were drilled early in July. DEP began drawing down the reservoir out of an abundance of caution to prioritize public safety while the condition is repaired. Reducing reservoir storage at Cannonsville does not pose a risk to the city's water supply.

The turbid flow below the dam was discovered when workers were drilling borings in preparation for design and construction of a hydroelectric facility that is planned to be built there. All drilling work ceased when the workers noticed the flow of turbid water coming from a rock embankment near the release chamber.

An investigation indicated that the drilling released ground water under natural pressure, known as an artesian condition, several dozen feet below surface level. This caused an upward flow of water and sediment that is reaching the West Branch Delaware River.

Since then, DEP has taken several steps to minimize any potential risks. These include 24-hour monitoring by employees at the site, regular analysis of dam-safety instrumentation, and testing of the turbid sediment to identify its origin. Federal, state, county and local officials – including officials from New Jersey and Pennsylvania – have been regularly updated since the condition at Cannonsville Dam was first discovered.

Placed into service in 1964, Cannonsville Reservoir was the last of New York City's 19 reservoirs to be built. Water diverted from Cannonsville Reservoir for drinking water enters the West Delaware Tunnel and travels 44 miles to the upper end of Rondout Reservoir. From there, it is carried in the 85-mile-long Delaware Aqueduct. Water is released downstream from Cannonsville Reservoir under the terms of the 1954 U.S. Supreme Court Decree, and a flow

program, known as the Flexible Flow Management Program, agreed upon by New York City and the states of Delaware, New Jersey, New York and Pennsylvania. All other reservoirs in the city's Delaware System have continued to meet their downstream release requirements under the Flexible Flow Management Program while the condition at Cannonsville is repaired.

DEP manages New York City's water supply, providing more than one billion gallons of high quality water each day to more than 9 million New Yorkers. This includes more than 70 upstate communities and institutions in Ulster, Orange, Putnam and Westchester counties who consume an average of 110 million total gallons of drinking water daily from New York City's water supply system. This water comes from the Catskill, Delaware, and Croton watersheds that extend more than 125 miles from the City, and the system comprises 19 reservoirs, three controlled lakes, and numerous tunnels and aqueducts. DEP has nearly 6,000 employees, including almost 1,000 scientists, engineers, surveyors, watershed maintainers and other professionals in the upstate watershed. In addition to its \$70 million payroll and \$157 million in annual taxes paid in upstate counties, DEP has invested more than \$1.7 billion in watershed protection programs—including partnership organizations such as the Catskill Watershed Corporation and the Watershed Agricultural Council—that support sustainable farming practices, environmentally sensitive economic development, and local economic opportunity. In addition, DEP has a robust capital program with nearly \$14 billion in investments planned over the next 10 years that will create up to 3,000 construction-related jobs per year. For more information, visit [nyc.gov/dep](http://nyc.gov/dep), like us on Facebook at [facebook.com/nycwater](https://facebook.com/nycwater), or follow us on Twitter at [twitter.com/nycwater](https://twitter.com/nycwater).

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