



United States Department of Agriculture
Natural Resources Conservation Service

Dam Rehabilitation Fact Sheet

Lake Barton Dam, Fairfax County

Pohick Creek Watershed

August 2009

Pohick's Short Story:

In the late 1960s, Fairfax County officials needed a way to protect a rapidly urbanizing watershed from flooding and soil erosion. The USDA NRCS (then Soil Conservation Service) was asked to strategically plan and fund construction for several dams throughout the 23,000-acre Pohick Creek Watershed. Construction for the first dam began in 1969 and the sixth and final dam was built in 1985.

Just two years after the first structure was completed in 1970, the largest storm ever in Fairfax County tore through the area. Hurricane Agnes produced massive amounts of rainfall, but the dam protected local residents from Agnes' severe floodwaters. In June 2006, a deluge of rain caused major flooding in and around the Nation's Capital. These Pohick dams held back millions of gallons of water that would have otherwise contributed



Lake Barton

to local flooding.

The county has done an excellent job maintaining these dams.

However, dam safety regulations have changed, requiring modifications to five of the six dams.

The County rehabilitated Lake Braddock using local funds. Royal Lake was rehabilitated using federal and local funds. Three more dams will have federal assistance with rehabilitation: Royal Lake, Woodglen Lake, Lake Barton, and Huntsman Lake.

Purpose: Rehabilitating Lake Barton will reduce risks to downstream residences and commuters, comply with current dam design and safety standards, and maintain the present level of flood control and recreation benefits.

Benefits:

- Reduce threat to loss of life and property for approximately 1,585 people who live and work downstream of the dam;
- Protect 192 single family homes and town houses, approximately 38 business sites, and three public buildings;
- Protect major roads used by 73,800 vehicles per day, railroad lines used by approx 9,000 passengers per day, and two bridges.

Rehabilitation Plan Details:

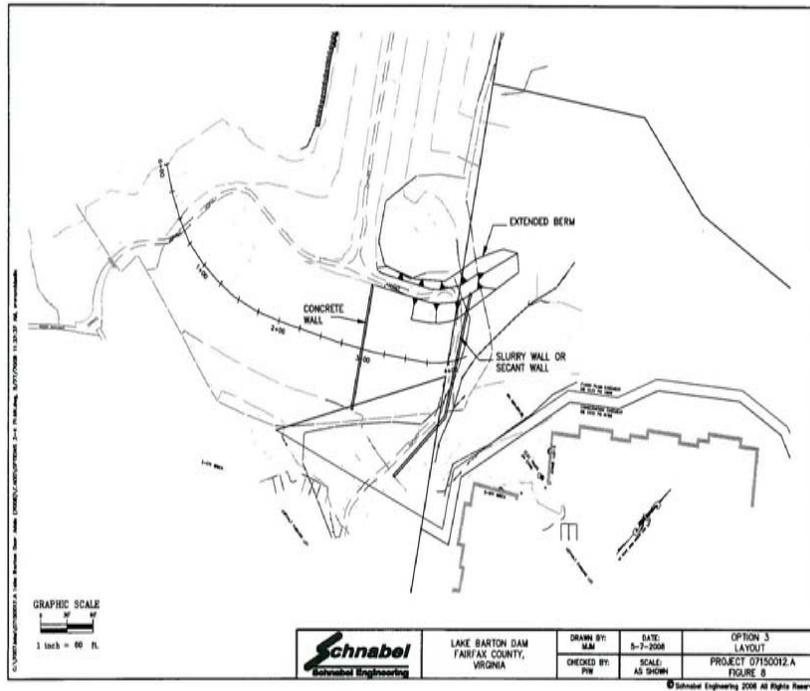
- Install a concrete cutoff wall at the downstream end of the level section and a concrete secant cutoff wall at the end of the outlet section.
- Raise the water level in the lake by 0.8 feet to achieve 50 years of sediment storage.
- Raise the auxiliary spillway crest by .5 feet to maintain the design value of floodwater storage.
- Raise and extend the training dike to better protect the toe of the dam.

The plan does not require draining the lake or raising the dam height. Approximately 0.4 acres of trees will have to be removed. Most of the trees will be replanted upon project completion.

Estimated Project Cost: \$2,555,000 total. The USDA Natural Resources Conservation Service will provide \$1,814,000 and Fairfax County will cover the remaining \$741,000.

Sponsors: The Fairfax County Board of Supervisors and the Northern Virginia Soil and Water Conservation District.

Dam Rehabilitation Schedule: The rehabilitation plan for Lake Barton is scheduled for completion in mid-2009 with design in 2009 and construction in 2010. Once modifications for Lake Barton are completed, the dam's flood protection, recreation, and water quality benefits will continue for the next 50 years.



Flood control dams such as Lake Barton are designed to store flood water during storm events and to gradually release it into the stream over several days through the principal spillway pipe. This principal spillway pipe regulates the water level in the dam on a daily basis and controls the rate at which the detained storm water is released from behind the dam. At the present time, Lake Barton can store the runoff from about 9 inches of rain in 24 hours.

Excess water that cannot be stored in the reservoir will exit through the grassy area at the end of the dam that is known as the auxiliary spillway. Presently, there is a problem with Lake Barton that is likely to occur with a storm that delivers more than about 19 inches at one time. The soils in the auxiliary spillway will erode and could cut completely through the auxiliary spillway which would cause the dam to breach and lose all its storage capacity.

The picture above is a computer-generated rendition of the proposed solution to this problem. The plan includes the following rehabilitation items for the auxiliary spillway:

- Build two concrete cutoff walls across the auxiliary spillway.
- Raise and extend the training dike to better protect the toe of the dam.
- Raise the end of the dam about 4 inches on the end near the auxiliary spillway.

After construction, the access road and other areas that are not covered with grass will be planted with trees.

Flood control dams also serve to trap sediment and keep it from moving downstream. As of 2007, Lake Barton had trapped 27.8 acre-feet of sediment, of which 10.3 acre-feet were removed by dredging. Since the watershed is now built out, there is enough room in the reservoir to retain sediment for the next 42 years. Under the federal dam rehabilitation program, there must be a minimum of 50 acre-feet of available sediment storage after the rehabilitation is complete. There are two ways to achieve this:

- * Dredge 7.5 acre-feet of sediment from the lake. Cost: \$760,000.
- * Increase the sediment pool volume by raising the water level by 0.8 feet. Cost: \$20,000.

NRCS is required to choose the least cost alternative. Therefore, in the plan, the required sediment storage volume will be achieved by raising the water level in the lake. The paths around the lake will not be affected and the dam will still have sufficient capacity to completely detain the 100-year frequency storm event. However, Fairfax County has initiated a plan for dredging the entire lake. This would make it unnecessary to raise the water level.