

# **Historic Significance of Hoopes Reservoir in Wilmington, Delaware**

Gerald J. Kauffman  
University of Delaware  
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## **Introduction**

The purpose of this research is to assess the historic context, significance, and integrity of the 70-year old Hoopes Reservoir near Wilmington, Delaware. The City of Wilmington built the 135 feet-high dam for the reservoir in 1932 during the Great Depression to provide a reserve water supply for the City's expanding population. Hoopes Reservoir functions as Delaware's largest water storage reservoir. The engineering design incorporates a concrete gravity dam structure which is unique in the State and is by far the highest dam in Delaware. The designers incorporated architectural elements such as trails, monuments, and park benches for recreation as part of the surrounding Valley Garden Park system. Given the dam is over 50 years and is a unique engineering structure in the State of Delaware, we will determine whether Hoopes Reservoir would be eligible for the National Register of Historic Places based on its historic context, significance and integrity.

## **Description**

In August 1932, the City of Wilmington Board of Water Commissioners completed Hoopes Reservoir as a public works project. The City owns the dam, reservoir, and much of the surrounding 2.5 square-mile watershed as park land. The capacity of the reservoir is 2 billion gallons and the reservoir covers 191 acres. The concrete masonry gravity dam is 135 feet high, 970 feet long, 90 feet wide at the base and 19 feet thick at the crest, making it the largest and only concrete gravity dam in the State of Delaware. The primary source of water for the reservoir is drawn through a 42-inch concrete pipeline from Brandywine Creek at the Wills Pumping Station situated just upstream from the Van Buren Street bridge. Hoopes Reservoir provides three functions for the citizens of Wilmington and New Castle County:

1. The primary and original function of the reservoir is to provide normal and emergency storage of raw (untreated) water for the City of Wilmington during drought or spills along the Brandywine Creek.
2. The second function results from an agreement for the City to release water from Hoopes Reservoir into Red Clay Creek during drought for use by United Water Delaware, an investor owned utility serving customers in unincorporated New Castle County.
3. The reservoir serves a third function by releasing water to maintain a minimum flow in the Red Clay and White Clay Creeks for stream habitat, fisheries propagation, and salt front maintenance purposes. Since Hoopes Reservoir is the only major reserve storage facility in Northern Delaware, it was utilized quite heavily for the three functions most recently during the droughts of 1995 and 1999.

## **History**

In 1923, the City commissioners acquired the riparian water rights to utilize the full flow of the Brandywine Creek at the City dam. In 1924, the Wilmington Water Commission started drawing plans for the project. In 1926, the City conducted studies at various sites for an off-stream reservoir to retain sufficient water to augment flow in the Brandywine Creek in the event of drought or upstream emergency. Wilmington Water Department engineers conducted reservoir surveys at possible locations on the

Brandywine Creek, White Clay Creek, Christina Creek, and the old Mill Creek valley. The old Mill Creek, a tributary to Red Clay Creek, was chosen as the preferred site due to lower costs, less railroad infrastructure conflicts, and ease of obtaining water rights given existing claims on the other streams by industries.

On October 25, 1929, just days before the stock market crash that led to the Great Depression, the City let 6 major contracts to build the reservoir. By January 1930, construction was underway with removal of 70,000 cubic yards of soil, placement of 105,000 cubic yards of concrete, and clearing of 480 acres of land making this one of the largest and most significant public works projects in Wilmington and Delaware history.

The City's contractors completed the work on June 4, 1932, the date of the dedication ceremony "with a huge crowd on hand to view one of Wilmington's greatest civic triumphs". The "Old Mill dam" was filled to overflowing by April 17, 1933, during the nadir of the depression. The City named the project "Hoopes Memorial Reservoir" in the memory of Colonel E. M. Hoopes, member of the City water commission who died in 1931 after construction had started. The construction cost of Hoopes Reservoir was \$3,000,000 (\$30 million in 2001 dollars) and took 3 years to complete.

The City later designed Valley Garden Park adjacent to the reservoir. The reservoir was opened to the citizens as a public park with a foot trail and steps that lead to a war memorial and monument at the viewing platform at the crest of the reservoir dam. Hoopes Reservoir dam and impoundment became the largest lake in the hilly Piedmont of Delaware and is widely regarded as Delaware's one of most peaceful and picturesque spots. In 1983, the city rehabilitated the Hoopes Reservoir dam by drilling 54 post-tensioned steel anchors to meet the stability requirements for a 500-year flood and a Class I earthquake.

During the droughts of 1995 and 1999, Hoopes Reservoir achieved statewide significance in the electronic and print media as the sole source of reserve water supply to augment the City of Wilmington, United Water Delaware, Artesian Water Company, and City of Newark water systems. These five water purveyors provide drinking water for 400,000 people in New Northern New Castle County, 60% of Delaware's population.

Today, Hoopes Reservoir is no longer open to the public where it is managed for its primary purposes as a reserve water storage reservoir. Public tours of the dam and access to recreational trails to the top of the dam and the viewing platform are available by contacting the City of Wilmington Commissioner of Public Works.

## **Evaluation Methodology**

According to the U.S. National Park Service, a property may qualify for the National Register of Historic Places provided it meets the following criteria:

- Association with an important historic context, and
- Retaining historic integrity of those features necessary to convey its significance.

Using these criteria, we evaluate Hoopes Reservoir in the following sequence:

1. Categorize the reservoir property for inclusion on the National Register in accordance with the following classifications:
  - Building

- Structure
  - Object
  - Site
  - District
2. Determine the historic context of the reservoir property based on significance in engineering within the context of a relevant geographic area (Delaware) from one of the following:
    - Criterion A - Event relevant to an areas development
    - Criterion B - Association with the life of an important person
    - Criterion C - Building form or engineering technique that shaped the historic identity of an area
    - Criterion D - Property contributing to understanding of human history.
  3. Determine whether the reservoir is significant under the criteria of associative value (Criteria A and B), Design or Construction value (Criteria C) or Information Values (Criteria D) by identifying the link to important engineering design or construction features.
  4. Determine whether the reservoir dam and associated structures retains integrity based on aspects of:
    - Location
    - Design
    - Setting
    - Workmanship
    - Materials
    - Feeling
    - Association
  5. Determine if the reservoir appears to qualify for the National Register of Historic Places and if so fill out the registration form.

### **Category of Historic Property**

Hoopes Reservoir and dam and associated pump station are classified as engineering "structures" that do not provide human shelter. The City of Wilmington owns Hoopes Reservoir and therefore the category of ownership is "public-local".

### **Historic Context**

Hoopes Reservoir is significant in an historic context because it represents a significant part of historic engineering in the State of Delaware during the Great Depression of the early 20<sup>th</sup> Century. In the framework of historic context elements, the 1930's depression era reservoir dam and pump station buildings are part of the architecture and engineering historic theme from the chronological period of 1880 - 2040, the time of early urbanization and suburbanization.

Defined by Piedmont geology and geography, Hoopes Reservoir was formed by a concrete masonry gravity dam, an engineering form rare in the mid-Atlantic region and the only one of its kind in Delaware. Hoopes Reservoir dam utilized the same concrete dam construction methods as the much larger Hoover Dam in near Las Vegas, Nevada out west. Using the construction techniques of the depression era, laborers poured concrete in mass blocks and allowed these monolithic forms to cool in ice baths to prevent thermal cracking. Historic significance is framed by the construction statistics: removal of 70,000

cubic yards of soil, placement of 105,000 cubic yards of concrete, and clearing 480 acres of land. Hoopes Reservoir is one of the largest and most significant public works projects in City of Wilmington and Delaware history.

The urbanization and suburbanization of greater Wilmington during the early 20<sup>th</sup> Century directly led to the construction of Hoopes Reservoir. From 1900 to 1930, Wilmington grew from a population of 76,508 to 106,597 people. During the 1920's and 1930's, the population of Wilmington reached it highest point in history accounting for close to 50% of the State's population. During this period close to half of Delaware's population lived in Wilmington making the City the dominant population center in the First State.

The rising population of people living in the largest city of the First State increased the demand for drinking water. This increasing thirst for more water led the Wilmington Water Commissioners to build Delaware's first and only reservoir. During the 1930's, Hoopes Reservoir served over 100,000 people, almost half the state's population.

Hoopes Reservoir is also significant in its historic context of the Piedmont Physiographic Province of Delaware. The character of the Piedmont hill country accommodated the efficient construction of the reservoir by simply damming the narrow old mill Creek valley. The topography dictated the construction of the 135 feet high concrete gravity dam, the only one of its kind in Delaware. Since the hilly Piedmont occupies only 3 percent of the land mass in Delaware, there are few locations in the state that could accommodate a reservoir of Hoopes's magnitude. In a geographic context, Hoopes Reservoir is significant because the rugged Piedmont was ideal for the construction of Delaware's largest and only concrete gravity dam in a physiographic province that is rare in Delaware (only 3 percent of the area). The reservoir also created Delaware's largest Piedmont lake with an aesthetic beauty unequaled in the state.

Hoopes Reservoir is significant in a State of Delaware historic context because:

- The site is characteristic of depression era engineering.
- The project is one of the largest public works engineering projects in Wilmington and in Delaware during the 20<sup>th</sup> Century.
- The impoundment is the only major water supply reservoir and the largest and only concrete gravity dam in the State of Delaware.
- The project resulted from increased water demand from a rapidly urbanizing and urbanizing City of Wilmington which during the 1930s at the time of construction accounted for half of Delaware's population.
- It is Delaware's largest Piedmont lake with incomparable aesthetic appeal.

## **Significance**

Based on this analysis, Hoopes Reservoir is significant from the perspective of Criteria C, Design or Construction value. The reservoir is "significant as representative of the manmade expression of culture or technology". Hoopes Reservoir has distinctive characteristics that make it significant from a State historic context. The unique concrete dam structure is representative of 1930's era engineering and construction techniques. The reservoir is created by the highest and only depression era concrete dam of its kind in Delaware. Because it is the most prominent and sole example of this engineering form in Delaware, Hoopes Reservoir possesses distinctive characteristics which make this structure historically significant from a State perspective.

## **Integrity**

The National Register Bulletin defines integrity as the ability of a property to convey its significance. To be listed on the NRHP, the property must be significant and have integrity as defined by seven aspects:

- Location
- Design
- Setting
- Workmanship
- Materials
- Feeling
- Association

**Location:** The place where Hoopes Reservoir was constructed in the Piedmont province. The reservoir was constructed in the Old Mill Creek stream valley in the Piedmont physiographic province, one of the few places in Delaware that could accommodate a 2-billion-gallon reservoir with a surface area of 190 acres. The topography of the Piedmont stream valley dictated the construction of a tall, narrow concrete arch dam, a unique structure in the State of Delaware. The Piedmont occupies only 3 percent of Delaware. Hoopes Reservoir retains its integrity by location as the tallest dam and only major water supply reservoir at one of the few sites in the Piedmont that could accommodate such as broad engineering structure.

**Design:** The combination of elements that create the form, plan, space, and structure, and style of Hoopes Reservoir. The growing population of Wilmington in the 1920's and 30's required a large reservoir to meet drinking water demands. The Wilmington Water Commissioners commissioned the construction of a large, graceful concrete arch dam to retain the waters of Old Mill Creek and form the reservoir. The dam and reservoir have been described as "one of Delaware's most picturesque spots, quiet, restful, beautiful." The engineered structure is now a prominent symbol of a depression era public works project in Delaware. It arguably is one of the largest and well-known engineered public works structures in the State of Delaware.

**Setting:** The physical environment of the Hoopes Reservoir property. The reservoir was constructed in the rolling hills of the DuPont Chateau country, one of the most desirable places in the mid-Atlantic region. Hoopes Reservoir is often mentioned as one of the physical landmarks in a setting that embodies the rural, gentrified past of large estates and mansions of Delaware's moneyed elite. While Hoopes Reservoir is primarily a drinking water reservoir, it also serves as a physical landmark in a setting of the rolling, rural hills where the elite from Delaware's industries and corporation live. The reservoir is in many ways, a private lake in the backyard of Delaware's upper income class.

**Materials:** The physical elements used during a particular time to form the historic Hoopes Reservoir. The reservoir was constructed using concrete. The 1930's were the era of concrete dams in America, one of the largest being Hoover Dam. Hoopes Reservoir, in microsm, symbolizes the use of concrete as a material during the glory days of dam building in the US. Physically, the massive concrete Hoopes dam is a unique and significant landmark in Delaware. The concrete dam still retains its physical integrity after 70 years.

**Workmanship** The physical evidence of the crafts exhibited during a given period. The engineering construction methods of the 1930's where concrete was laid in lifts in ice baths are examples of the engineering workmanship that was in place during that era. Workers poured and formed the concrete in large monolithic dam structures. Once completed, the concrete was shaped into a tall, flowing structure

that was the product of 1000's of concrete masons. Hoopes Reservoir was the first and probably last example of massive concrete workmanship of this magnitude in the State of Delaware.

**Feeling:** The property's expression of the aesthetic or historic sense of a particular period of time. Hoopes Reservoir dam oozes with the big, depression era, public works project feeling of the time.

**Association** The link between an important event. Hoopes Reservoir is a physical link between the water supply demands of the present and the big public work solutions of the past. The massive concrete dam is associated with the Works Progress Administration days of the depression. When one hikes the now closed trail and walks up the steps to the monument at the crest of the 100 feet high dam, one is walking back through time, to the depression when big projects like this put people to work. It is a physical structure, looming, and one can not help but associate it with the 1930's and the depression.

## **Conclusions**

Based on the criteria of historic context, significance, and integrity; it seems that Hoopes Reservoir is potentially eligible for placement on the National Register of Historic Places. The reservoir dam is an historic engineering structure that was commissioned during the 1920s and completed in the 1930s to provide reserve water supplies for the City of Wilmington that was home to half of the State's citizens. The dam is Delaware's tallest (by far) and the only concrete masonry gravity dam in the state, emblematic of the big dam building era in the USA during the Great Depression. The reservoir formed by the dam is the only major water supply dam in Delaware. The reservoir existence dates to a chronological theme of escalating urbanization and suburbanization in the early 20<sup>th</sup> century.

Hoopes Reservoir is close to 70 years old and its concrete dam structure is unique in Delaware and is significant and historic and still retains its historic integrity. Therefore, the Colonel E. M. Hoopes Reservoir Memorial Reservoir, circa 1932, ought to be eligible for placement on the National Register of Historic Places from a position of statewide significance.

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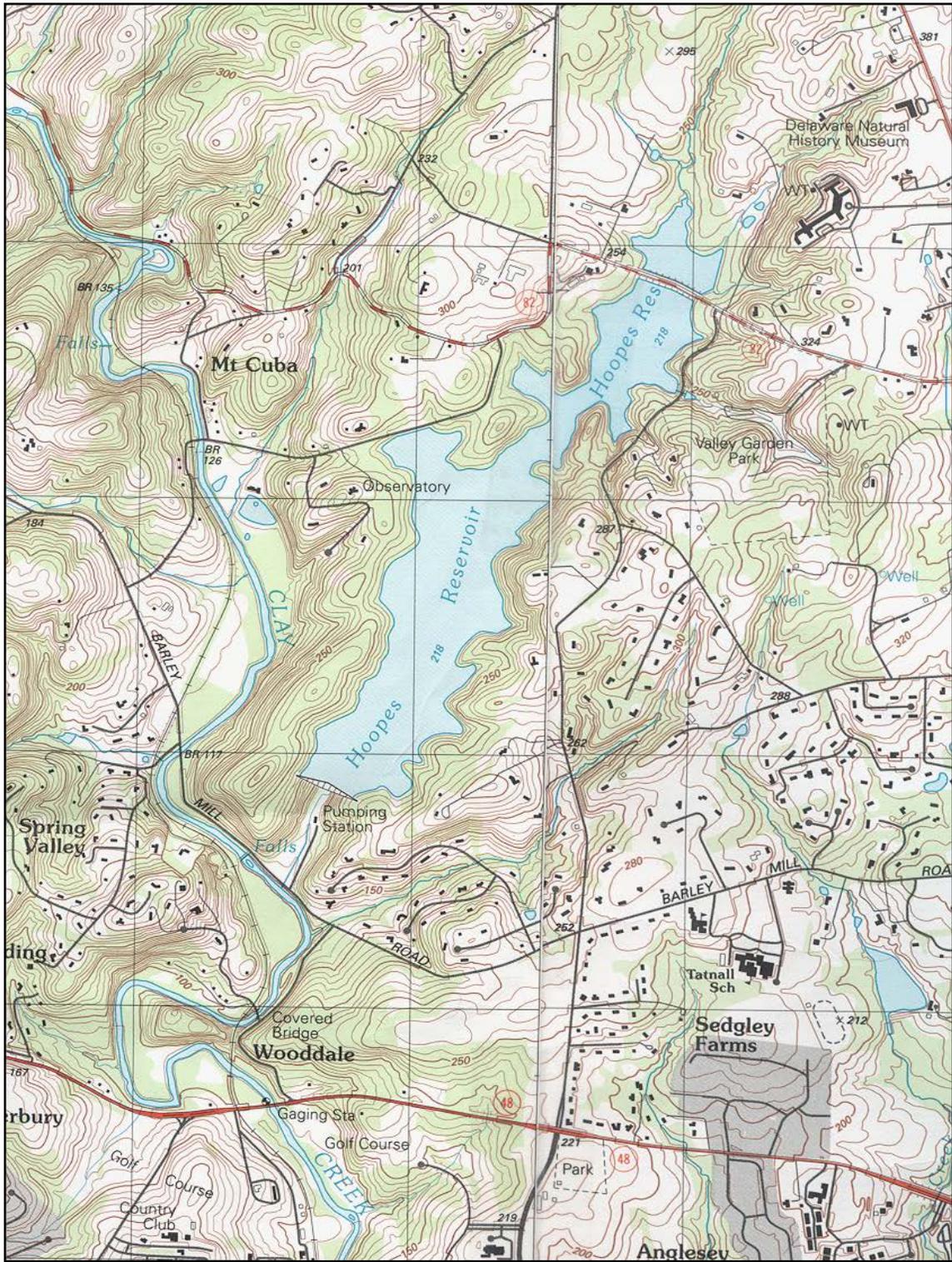
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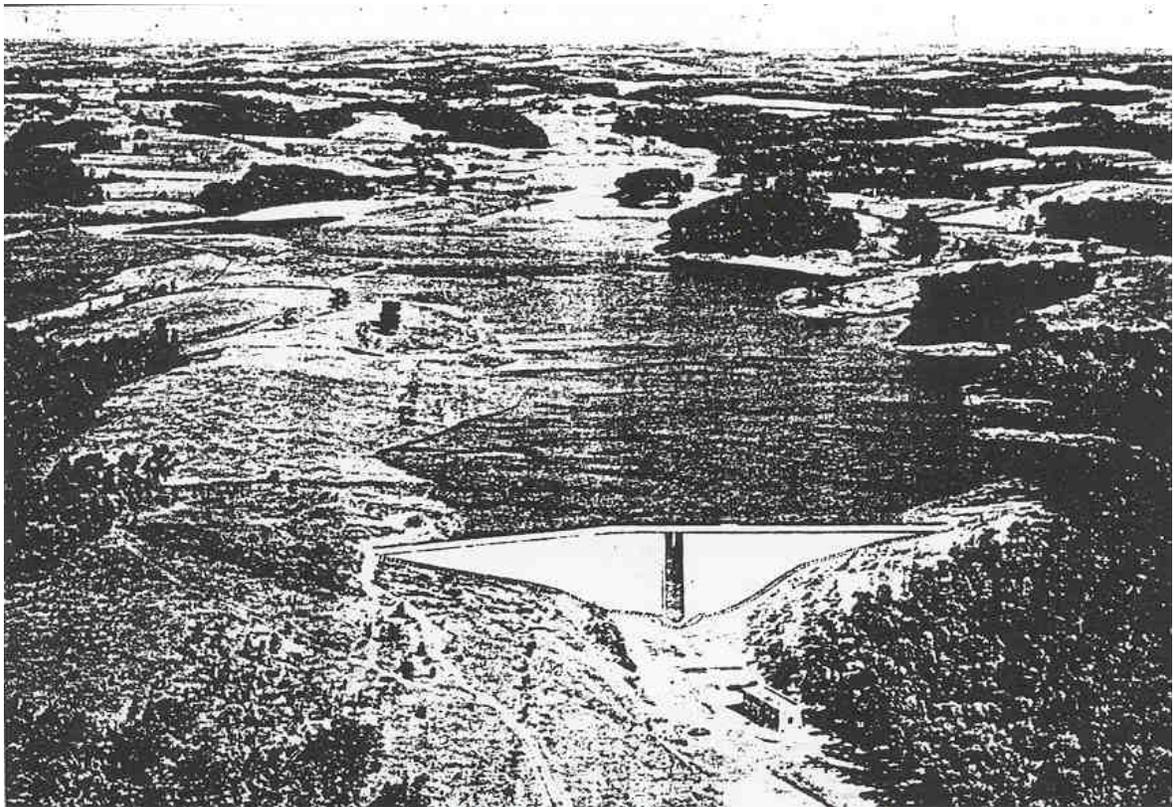
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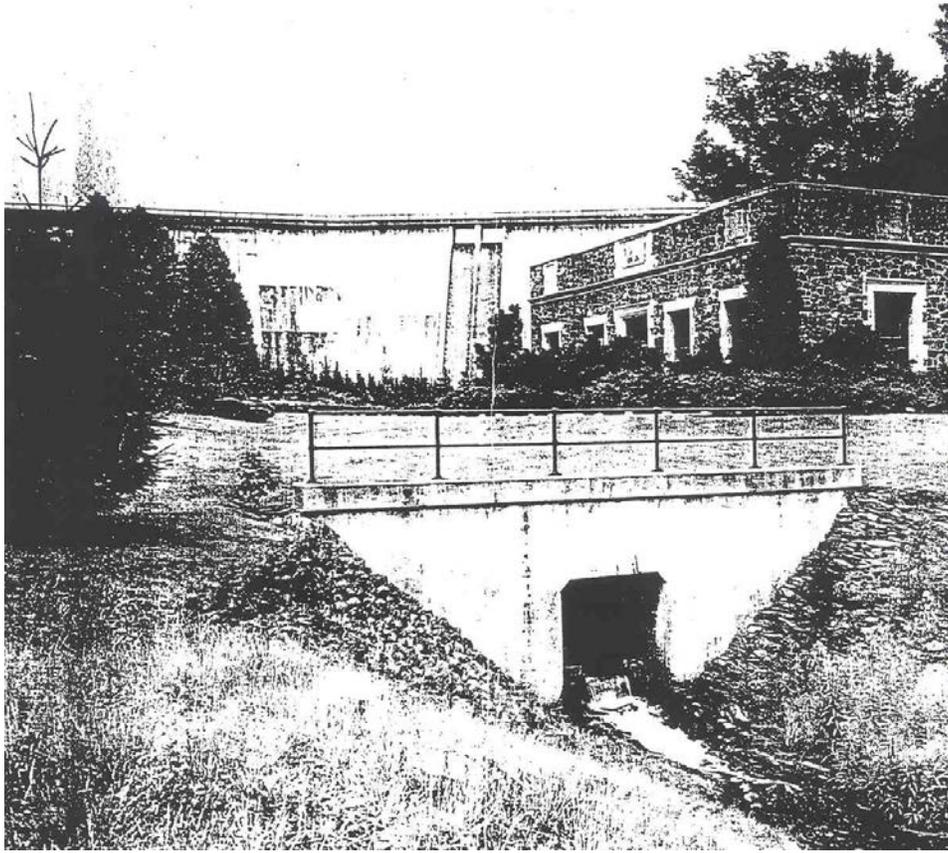
**Figure 1.** Hoopes Reservoir in the Piedmont Physiographic Province near Wilmington, Delaware.



**Figure 2.** Hoopes Reservoir 1983



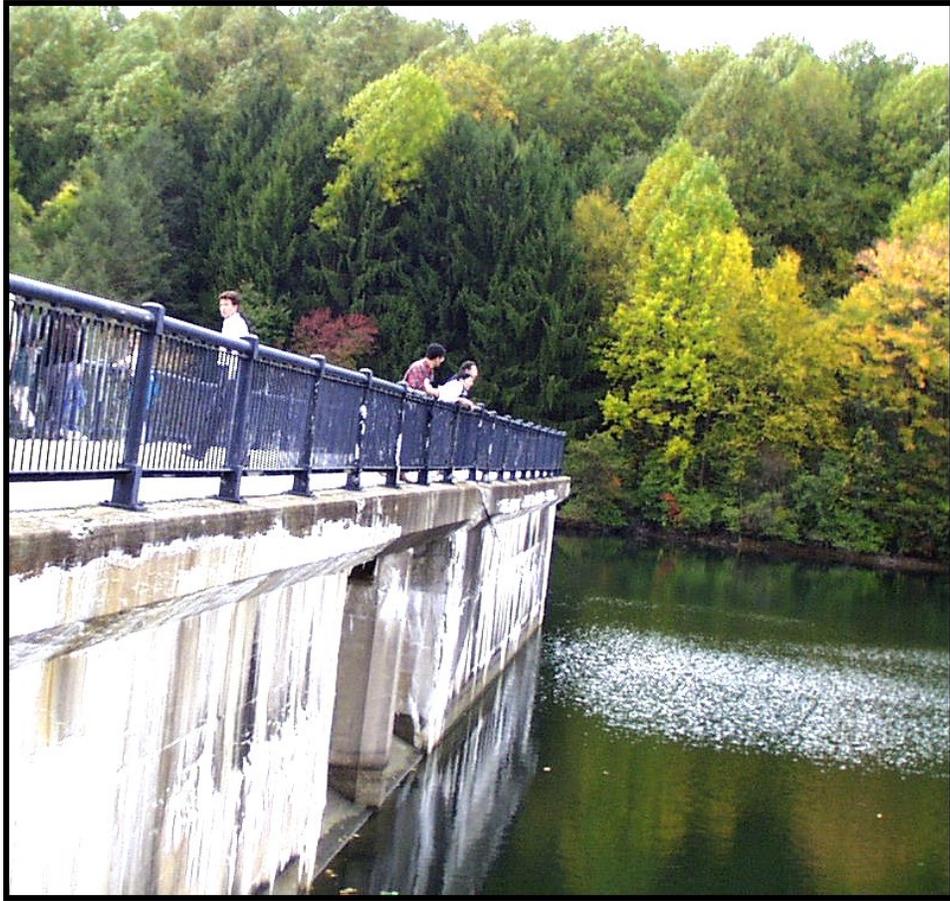
**Figure 3.** Hoopes Reservoir 1933



**Figure 4.** Hoopes Reservoir and Pumping Station 1985



**Figure 5.** Hoopes Reservoir late 1980's



**Figure 6.** Upstream face Hoopes Reservoir Fall 1999



**Figure 7.** Hoopes Reservoir looking upstream from dam crest Fall 1999