

INFORMATION PACKET for the
Old Croton Aqueduct State Historic Park
Management Plan

PUBLIC INFORMATION MEETING

Yonkers Library - July 23, 2013 - 6:00
Ossining Visitor's Center - July 25, 2013 - 7:00



Governor
Andrew M. Cuomo

Rose Harvey
Commissioner

Agenda

1. Introductions and Welcoming Remarks
2. Overview and Timeline of the Planning Process
3. History and Overview of the Park
4. Public Input
5. Next Steps

Introduction

The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) is preparing a management plan for the Old Croton Aqueduct State Historic Park (OCA.) The agency has developed three priority themes and initiatives that help guide its activities. These priorities are;

- Keep state parks and historic sites open, safe, affordable, and accessible,
- Increase, deepen, and improve the visitor experience.
- Fix our aging infrastructure and convert and transform New York's parks and historic sites into a welcoming, transformative, 21st Century parks system.

The management plan for the Old Croton Aqueduct State Historic Park will support these priorities and identify the best course of action to preserve and utilize park resources for this and future generations.

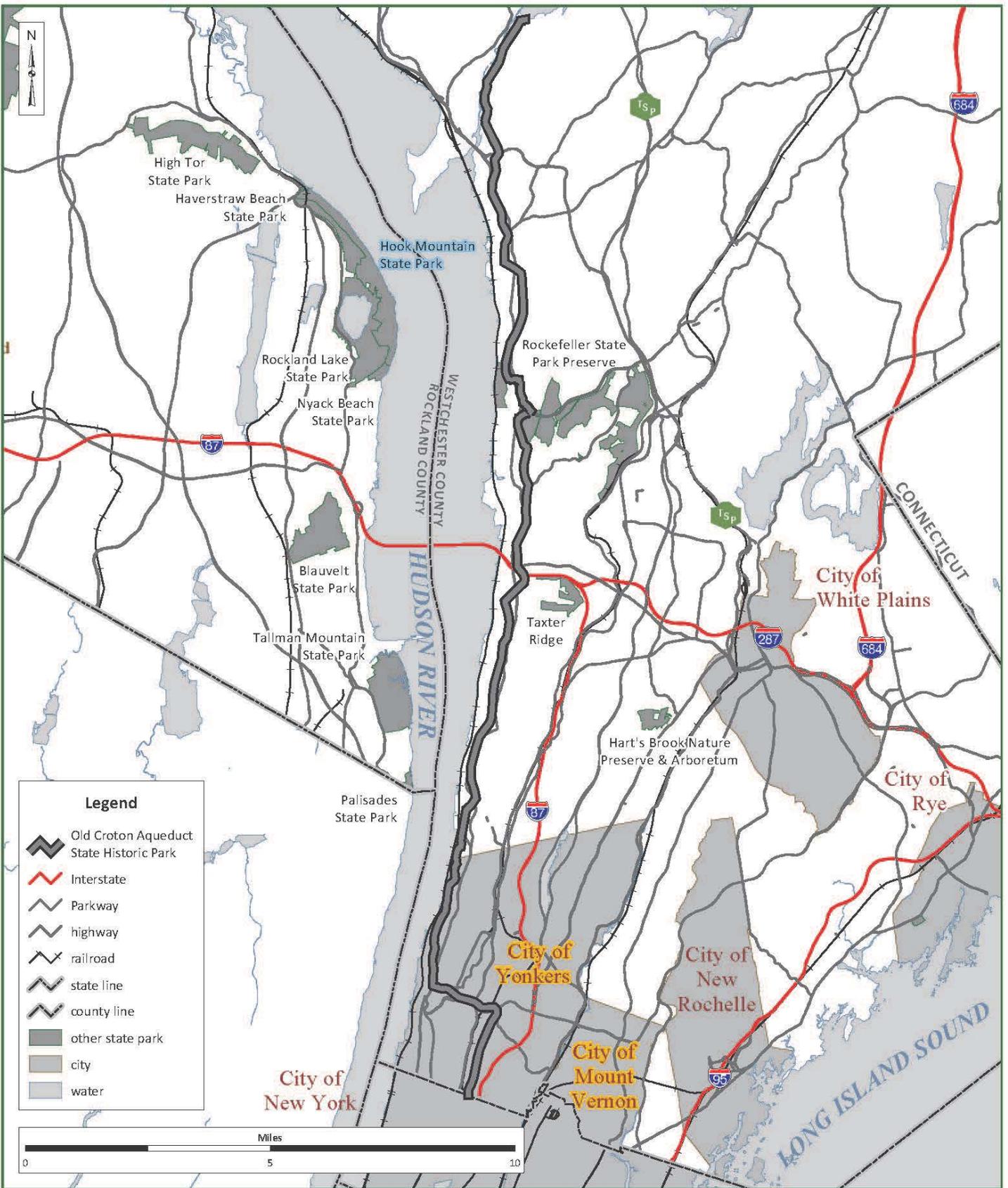
This park is operated by OPRHP and offers year-round recreational opportunities, cultural resources, the connection to natural areas, scenic vistas and provides pedestrian connections between communities. The purpose of this public information meeting is to actively invite public participation and involvement in the planning process. Public participation will help OPRHP in identifying issues, concerns and alternatives as well as determining the depth to which each of the topics is explored within the plan.

This information packet and the public information meeting are intended to provide the public with a concise overview of the park, the setting, the resources and the issues identified to this point. Additionally the meeting is designed to provide an opportunity for public input at an early stage in the planning process.

Additional information can be obtained from OPRHP at:

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Old Croton Aqueduct State Historic Park



Map produced by NYS OPRHPGIS Unit, March 16, 2011.

Overview

The Old Croton Aqueduct State Historic Park is 26.2 miles long. The aqueduct was purchased from New York City in 1968 by OPRHP for use as a recreational corridor. It sits atop a subterranean aqueduct system and offers many opportunities for trail enthusiasts in a unique historic setting. Activities such as hiking, biking, horseback riding, snowshoeing, cross country skiing and wildlife viewing are available to almost 1 million visitors annually.

Upon the completion of the “New Croton Aqueduct” the Old Croton Aqueduct was eventually removed from service as an aqueduct system. These names for the two distinct aqueduct systems were created upon the development of the New Croton Aqueduct in the mid 1880’s and have remained to the present day.

History and Development Timeline

1833 – The New York City Water Commission is established.

1836 – John B. Jervis is appointed as Chief Engineer of the Croton Aqueduct Project.

1837 – Construction begins on the aqueduct system.

1842 – The construction of the aqueduct is completed, including such structures as the Ossining Weir, Archville Bridge, Murray Hill Reservoir, Yonkers Weir, West Burnside Avenue Bridge, Sing Sing Kill Bridge, Ventilators, Clendening Valley Crossing, Nepperhan/Saw Mill River Bridge.

1842 – The aqueduct opens on October 14th. A daylong celebration culminates in a 50’ shower of water from Croton Fountain in City Hall Park. Attending the celebration is President John Tyler, former presidents John Q Adams and Martin Van Buren and New York State Governor William H Seward.

1848 – The High Bridge is completed.

1857 – The Dobbs Ferry Keeper’s House is completed.

1862 – Lake Manahatta (now Jacqueline Kennedy Onassis reservoir) constructed (decommissioned in 1993).

1862 – Central Park South Gatehouse constructed.

1867 – Central Park Keepers House constructed (demolished in 1935).

1869 – High Bridge Reservoir constructed (demolished in 1935).

1870 – Croton Fountain in City Hall Park demolished.

1870’s – Clendening Valley Crossing is demolished for conversion to a siphon.

1872 – The High Bridge Water Tower is constructed and a 90 inch diameter pipe is constructed on top of two existing 30 inch diameter pipes inside of the High Bridge. The existing pedestrian walkway is elevated to accommodate the new pipe.

1886 – Construction of a new weir in Ossining.

1917 – The New York City Water Commission shuts down the Croton Aqueduct as a precaution during WWI.

1924 – The Archville Bridge is demolished (reconstructed in 1998).

1927 – Five of the High Bridges original masonry arches are replaced with a single steel span making the Harlem River more navigable for large ships.

1968 – OPRHP purchases 26.2 miles of the original 41 miles from New York City for use as a linear park.

1972 – High Bridge Aqueduct and Tower placed on the National Register of Historic Places.

1973 – The site of the Old Croton Dam placed on the National Register of Historic Places.

1974 – The Westchester County portion of the OCA placed on the National Register of Historic Places.

1975 – The OCA is designated as a National Historic Civil Engineering Landmark.

1992 – The OCA is listed as a National Historic Landmark.

2013 – Waste weirs, ventilation shafts and the Ossining Bridge rehabilitated as part of the New York Works Program.

Existing Conditions

Location and Access

The OCA State Historic Park is located in OPRHP's Taconic Region, in Westchester County traversing communities beginning at the New Croton Dam in Cortlandt through Yonkers to the New York City (NYC) boundary where it continues under NYC ownership. It traverses a very diverse mix of areas, from forested parkland to a mix of heavily developed residential and commercial areas. Access to the OCA can be achieved at all street crossings and through most adjacent parkland. Due to the limited width of the OCA, designated parking lots are not readily available. On-street parking is available throughout all adjacent municipalities.

Cultural Resources

During the planning phase for the construction of the Old Croton Aqueduct, it was decided that due to the imperfect operational abilities of early 19th century steam engines, the water would flow by gravity. Therefore, the aqueduct's route, design and construction were determined by topographical considerations. In order to maintain sufficient water pressure to service New York City's fire hydrants and multi-story buildings, the gradual declination of the conduit had to be maintained. The engineers conducted careful surveys of the best route to avoid sudden variations in elevation. The terrain over which the aqueduct traversed, however, varied widely. Throughout most of its route, the aqueduct conduit was set as a shallow tunnel excavated through level ground. Where excavations were made in the side of hills, retaining walls were built on the lower side to support a covering of earth over masonry. In places where level ground was not available, the aqueduct was tunneled through hills or carried across valleys on bridges or earthen embankments. In both such cases, the cut and cover method of excavation had to be replaced with more expensive and time consuming methods which required more building materials and more complicated design and workmanship.

Aqueduct Features

Ventilators - To reduce the risk of creating irregular air pressure within the conduit, and to allow a certain "freshness" of the water during its forty-mile journey, Chief Engineer Jervis estimated that ventilation shafts should be incorporated at one-mile intervals. The ventilators are hollow stone cylinders, usually about 10 to 14 feet high, capped with an iron grate.

Waste Weirs – There are four waste weirs located in the park. These weirs were constructed to divert water to adjacent creeks allowing inspection of the aqueduct or for emergency release of water during a leak. The weirs also serve as a vent equalizing pressure within the conduit.

Culverts - The culverts were constructed of cut stone and were designed so that the stream could flow in its natural course without damaging the aqueduct. Cut stone lines the bottom of the waterway; there are stone side walls surmounted by an arch of stone.

Sing Sing Kill Bridge - The first major engineering feature south of the New Croton Dam, other than the Aqueduct conduit itself is the Sing Sing Kill Bridge at Ossining. At this site the Aqueduct crosses a valley 536 feet wide and 70 feet deep. While the Sing-Sing Brook itself would have required only a modest arch,

a much larger arch was required by state law to accommodate a 20 foot roadway bridge which crossed the line of the Aqueduct at an odd angle.

Mill River Culvert – The Mill River Culvert is located beneath an enormous constructed embankment across a valley 300 feet long and more than 80 feet deep. At the bottom of the valley, the Mill River passed through a 25 foot wide culvert arch. This massive structure featured a tall, dry-laid masonry foundation for the Aqueduct tunnel, flanked by massive earthen embankments

Jewells Brook Culvert - This 148 foot long, 60 foot tall embankment structure in Irvington is similar in construction to the Mill River culvert. A 14 foot wide, 12.5 foot high arch allows Station Road to pass below the massive embankment. A 6 foot wide, 6 foot high culvert allows Jewells Brook to flow unimpeded beneath the aqueduct.

Saw Mill River Culvert - The portion of the Aqueduct which crosses over the Saw Mill River and Nepperhan Avenue in Yonkers spans a valley approximately 300 feet wide. The embankment which carries the gradually declining Aqueduct conduit across this valley is punctuated by a 20 foot wide road culvert and a 26 foot double arch river culvert. During the 1980s, when Nepperhan Avenue was realigned, a large portion of the Aqueduct embankment immediately northwest (upstream) of the roadway arch was demolished. A new arch spanning the realigned roadway was designed to blend in with the remaining fabric. The earlier road arch was converted to pedestrian use.

Keeper's House and Barn - In the vicinity of each waste weir, a residence for the weir tender and area overseer was provided. Except for the one at Dobbs Ferry, they were all of frame construction and have not survived. The more substantial masonry residence at Dobbs Ferry was built in 1845 to house the Aqueduct's principal superintendent. Plans for this residence include housing the OCA park office, the Friends of the Croton Aqueduct and educational displays.

The culverts and dry laid masonry walls along the aqueduct were once kept clean of all vegetation to protect the aqueducts capacity to carry water. Through time, these structures have been left to natural succession. As a result, many mature trees are now growing on the aqueduct impacting the walls, culverts and possibly the aqueduct tube itself.

The northernmost twenty-six miles of aqueduct, from the New Croton Dam to the Westchester County/Bronx County line is listed in the National Register of Historic Places. Additionally, the site of the Old Croton Dam and the High Bridge are listed as individual National Register properties. (NPS 1991 - National Register of Historic Places Application)

Natural Resources

Geology and Topography

The topography of the OCA State Park begins at an elevation of approximately 195.55 at the Croton Dam's normal pool elevation, traversing undulating terrain dropping in elevation 13.25" per mile ending at 152' above sea level in Yonkers. From Yonkers into New York City, the OCA continues on under New York City Parks and Recreation ownership and management.

The geology along the trail is diverse. The main soil types in the OCA consist of a mix of well drained, sandy loams to moist, poorly drained soils and rock outcrops consisting of mainly of gneiss and granitic material. During the design of the OCA, these significantly different soil types and bedrock influenced decisions as to the construction practices implemented.

Flora, Fauna and Ecological Communities

Common mammals seen in and adjacent to the park include white-tailed deer, Eastern gray squirrel, and Eastern chipmunk. Many species of birds have been seen in the park, including migratory species like the broad-winged hawk that are seen soaring during fall migration, to species like the yellow warbler, to name a few. Reptiles and amphibians present in and around the park include species such as the common snapping turtle and painted turtle, to green frogs and Eastern red-backed salamanders found in adjacent wetlands and woodlands.

The Old Croton Aqueduct, while linear in nature, helps to support a varied assemblage of fauna typically found within the region. The flora along the trail is similar in composition to other larger natural areas of the Lower Hudson Valley and changes as it moves through various soil types and conditions. A variety of Ashes, Locust, Oaks, Willows, Maple, Hemlock, Cedar, Hickory, Birches among others can be found along the trail. During its use to transport water to New York City, the aqueduct was free of large trees. Since its decommissioning as an aqueduct, many trees have grown along much of the aqueduct structure.

Invasive plant species can also be found all along the trail. They include black swallow-wort, mile-a-minute weed, Japanese honeysuckle, shrub honeysuckle, bittersweet, Japanese barberry, Tree of Heaven, Garlic mustard and multi-flora rose. The NYS Natural Heritage Program (NHP) has not completed a field survey for significant ecological communities or rare plants and animals on the OCA. No populations of rare animal species are currently known to occur along the OCA, however, may exist upon further investigation.

Water Resources

The park's many culverts allow adjacent waterways and drainage to pass beneath the aqueduct to the Hudson River and Saw Mill. In some locations, the park is adjacent to small wetland areas.

Scenic Resources

Scenic vistas are becoming increasingly uncommon along the trail as vegetation grows and buildings are constructed. In certain areas though, vistas of the Palisades and the Hudson River remain giving patrons a hint of what many of the views along the trail looked like a century ago. Views of the trail itself and the historic structures along the way also significantly contribute to the scenic nature of the park.

Recreation Uses

The Old Croton Aqueduct has an informal recreational history dating back to the late 1800's. It provided, and continues to provide, a place for residents to walk, bicycle, snowshoe, cross country ski and ride horses in a safe environment away from street traffic. Guided accesses of the aqueduct weir and tunnel are available through the Friends of the Old Croton Aqueduct.

Emergency Services

The park falls under the jurisdiction of the New York State (NYS) Park Police - Taconic Region. In the event of an incident, the NYS Park Police are notified by the park office staff, dispatching the necessary emergency responders to the incident. The park is also served by the various local municipality police department. An Emergency Action Plan (EAP) is maintained on site to direct and assist staff in emergency situations.

Preliminary List of Potential Topics for the Plan to Consider

- Maintenance
- Connectivity to trails and public land
- Vegetation removal
- Cultural resource protection
- Scenic Vistas
- Security
- Utilities
- Partnerships
- Invasive species

Proposed Plan Timeline

Public Information Meetings – Yonkers - July 23 2013, Ossining - July 25, 2013

Comments due – August 23, 2013

Draft Management Plan - February 2014

Public Presentation of Management Plan – March 2014

Final Management Plan - April 2014

Next Steps

- The suggestions, issues and concerns identified at this public information meeting and through written comments will be summarized and made available.
- The Draft Management Plan will address these issues.
- Final Management Plan adopted.

Written comments may be sent to:

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