

## Section 2.0 Existing Conditions

The Croton River watershed (Figure 2-1) encompasses the Croton River, its tributaries and 12 reservoirs constructed by New York City. The perimeter of the watershed extends through Putnam County and into Dutchess County on the north, into Fairfield County, Connecticut on the east and to a basin divide line that extends east/west across Westchester County (just north of Chappaqua) on the south. The natural discharge point is to the west where the Croton River flows into the Hudson River at the Village of Croton-on-Hudson.

The study area for Indian Brook-Croton Gorge Watershed Conservation Action Plan, (the plan), is limited to the portion of the Croton River watershed within Westchester County that is downstream of the New Croton Dam. This portion is identified as the Croton Bay Watershed and serves as an important tributary to the Hudson River.

### 2.1 Physical Setting

The Croton Bay Watershed, (the watershed), encompasses approximately 3,400 acres (5.3 sq. mi.) within portions of the Towns of Cortlandt (2 sq. mi.), Ossining (0.90 sq. mi.) and New Castle (0.8 sq. mi.), and the Villages of Croton-on-Hudson (1.4 sq. mi.) and Ossining (0.16 sq. mi.). The watershed is made up of two sub-watershed areas: Croton Gorge and Indian Brook, see Figure 2-2. The Croton Gorge Subwatershed totals 2,040 acres (3.2 sq. mi.) and is the larger of the two sub-watersheds. It lies within of the Towns of Cortlandt, Ossining and New Castle, and the Villages of Ossining and Croton-on-Hudson. The Croton Gorge Subwatershed includes the Croton-on-Hudson drinking water aquifer and the Croton River, which begins at the New Croton Dam and terminates at the Croton Bay. The Indian Brook Subwatershed totals 1,369 acres (2.1 sq. mi.) and lies within the Towns of Cortlandt, Ossining and New Castle and the Village of Ossining. The Indian Brook Subwatershed includes the Indian Brook and the Indian Brook Reservoir, a drinking water source for the Town and Village of Ossining.

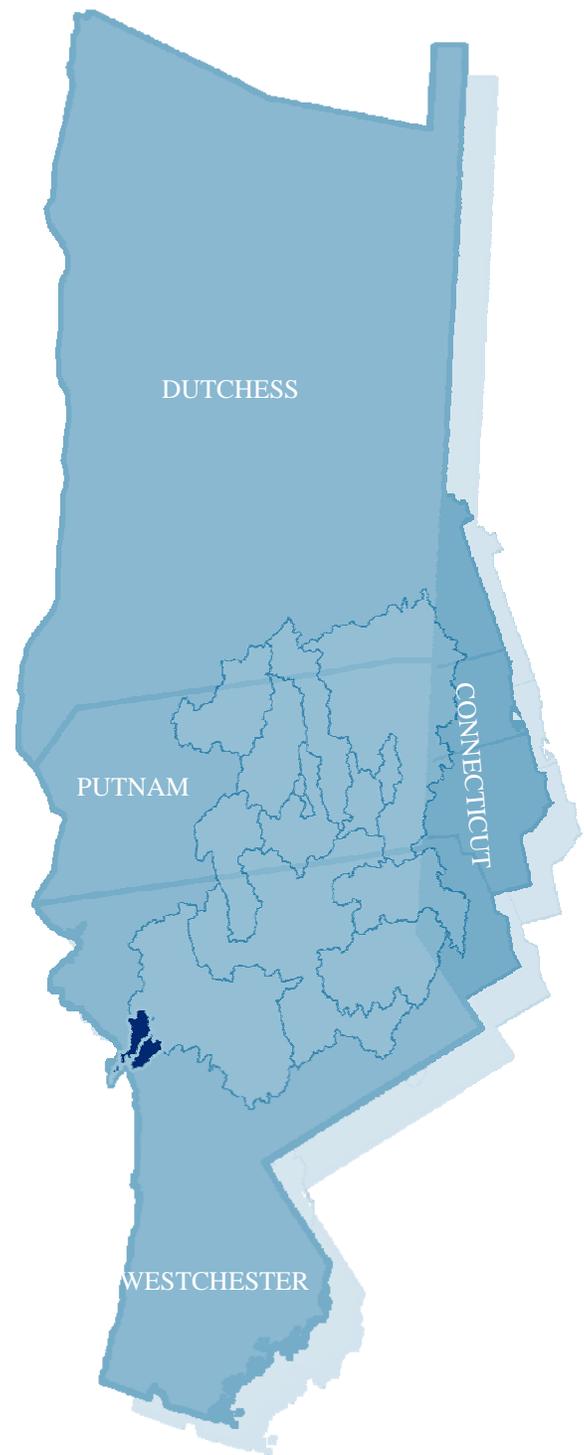


Figure 2-1. Croton River Watershed

Figure 2-2: Aerial photo and municipal boundaries of the Croton Bay Watershed



## 2.2 Bedrock and Surficial Geology

The topography and bedrock of the watershed are the result of complex geologic processes that began more than 1.3 billion years ago. Rocks found in Westchester County record at least three episodes of mountain building and two major periods of volcanic activity (McGuire, 1991). The bedrock found in the watershed is a result of millions of years of continual erosion of the original mountain chains by wind, water and glaciers so that only the base of these mountains now remains. The bedrock primarily consists of metamorphic (altered) rock of both sedimentary (sediments) and igneous (volcanic) origin. Croton Point Park is the only area of the watershed that does not consist of metamorphic rock. Instead, the composition consists of glacial and alluvial (river) deposits left by the most recent ice age and river system erosion.

The surficial geology in Westchester County is a result of glaciers advancing and receding from the area during the last ice age (~ 12,000 years ago) leaving various sized sediments and rocks, known as till, on top of the underlying bedrock. The surficial geology of the watershed consists mainly of glacial deposits including till and lacustrine (lake) silt and clay from proglacial lakes (lakes that existed during the last glacial period). Some areas in the watershed glacial deposits do not exist on the surface and only the underlying bedrock can be found.

The local geology of the watershed has played an important role in the economic development of the area. Inwood marble, which is found throughout Westchester County and in the watershed, was the largest source of quarried marble in the United States until about 1850. Prisoners at the Sing Sing Correctional Facility quarried the marble in the Village of Ossining. The quarry at Sing Sing also uncovered a number of interesting minerals in the marble, including graphite, pyrite, quartz, rutile, calcite, diopside (malacolite), dolomite and tremolite (McGuire, 1991).

Emery, which is a mixture of two minerals, corundum and magnetite, can be found in Cortlandt. It is an extremely hard substance and not very common in the United States. Emery was quarried in Cortlandt and one of the quarries was located near the watershed boundary on Mount Airy Road near the Village of Croton-on-Hudson (McGuire, 1991).

Clay was also excavated extensively at Croton Point Park where at one point in time there were at least five brick making factories. In addition, Croton Point was excavated for its sand and gravel to use in road building and other construction projects (McGuire, 1991).