RECEIVED 2280
JUL 13 2012
NAT. REGISTER OF HISTORIC PLACES
NATIONAL PARK SERVICE

569

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. **Place additional certification comments, entries, and narrative items on continuation sheets (NPS Form 10-900a).**

1. Name of Property

Historic name Reservoir #3

Other names/site number Jersey City Reservoir #3, (part of) Jersey City Waterworks

2. Location

street & number Block bounded by Summit Avenue (west), Jefferson Avenue (south), Central Avenue (east), and Reservoir Avenue (north) ☐ not for publication

city of town Jersey City ☐ vicinity

State NJ code NJ county Hudson code 017 zip code 07307

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this **x** nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property **x** meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___ national ___ statewide __x__ local

Signature of certifying official — Date 4/10/12

Rich Boornazian, Assistant Commissioner Natural & Historic Resources/DSHPO
Title — State or Federal agency and bureau

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of commenting official — Date

Title — State or Federal agency and bureau

4. National Park Service Certification

I, hereby, certify that this property is:

✓ entered in the National Register

___ determined eligible for the National Register

___ determined not eligible for the National Register

___ removed from the National Register

___ other (explain:) _____

Signature of the Keeper

8/27/12
Date of Action

5. Classification

Ownership of Property
(Check as many boxes as apply)

- [ ] private
- [X] public - Local
- [ ] public - State
- [ ] public - Federal

Category of Property
(Check only **one** box)

- [ ] building(s)
- [X] district
- [ ] site
- [ ] structure
- [ ] object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
3	0	buildings
		district
		site
1	0	structure
		object
4	0	**Total**

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing)

N/A

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions)

GOVERNMENT: Public Works

Current Functions
(Enter categories from instructions)

VACANT: Not in Use

7. Description

Architectural Classification
(Enter categories from instructions)

MID-19th CENTURY: Exotic Revival:
Egyptian Revival
LATE VICTORIAN: Romanesque

Materials
(Enter categories from instructions)

foundation: STONE: Granite
walls: BRICK
STONE: Granite
roof:
other:

Narrative Description

(Describe the historic and current physical appearance of the property. Explain contributing and noncontributing resources if necessary. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, setting, size, and significant features.)

Summary Paragraph

Reservoir #3 is a surviving example of nineteenth century waterworks engineering. The monumental stone retaining walls and interior earthen berm covered with trees, weeds, and vines provides a placid oasis in the midst of Jersey City, one of New Jersey's most densely developed areas. The resource consists of the partially water filled reservoir itself, an original gatehouse (Gatehouse #1), an original screen house, and a later gatehouse (Gatehouse #2) constructed in conjunction with the opening of the Boonton Reservoir located in northeastern Morris County. Other elements of the resource include stone retaining walls, earthen berms, a standpipe, and two flights of granite steps leading down to surrounding streets. Reservoir #3 is located in the Heights neighborhood of Jersey City. North of the downtown and higher in altitude, the Heights sits atop a ridge known as Bergen Hill that is part of the Palisades and is characterized by sharp bluffs on either side dropping down to the rivers to the east and west of the city. Reservoir #3 occupies an entire city block, measuring approximately 835 feet long and 735 feet wide, and is bounded on each side by streets. To the north, across Reservoir Avenue, is Pershing Field Memorial Park, a recreational facility (located on land which was originally intended to be the developed as the second half of Reservoir #3).[1] On the other three sides, adjacent to Summit, Jefferson, and Central Avenues, land uses include a mixture of single family, wood-framed houses; multi-family, mid-rise masonry apartment houses; and multi-story office or light manufacturing buildings.[2]

[1] In actuality, Reservoir #3 is located on a slight northeast/southwest axis; for example Reservoir Avenue technically bounds the north-northeastern side of the reservoir. To simplify the narrative discussion, unless otherwise noted, the text within this nomination is using clear (north, south, east, and west) directional terminology. (Typically within the text, north-northeast will be identified as north.)

[2] Central Avenue is also identified as County Road 663.

Narrative Description

Battered stone perimeter retaining walls comprised of quarry-faced, basalt ashlars surround Reservoir #3 on three sides (Central, Summit, and Jefferson Avenues; Photographs 1 through 6). The walls, a prominent feature of Reservoir #3, rise significantly above the surrounding streets on three sides of the reservoir. The walls reach approximately 20 feet at their highest point in the southern most corner (Jefferson and Central Avenues). Constructed through excavation, the height of the reservoir wall directly corresponds with the topographical changes which existed in the Bergen Hill ridge.[3] The interior (water) side of the retaining wall abuts a sloped earthen berm on three sides of the reservoir; the berm has become obscured with trees, weeds, and vines. The bush has been roughly cleared to recreate an elevated path around the outer edge of the upper portion of the berm.

At the lowest level, in the northeast corner of the reservoir, the wall is approximately 6 feet high. On the north (Reservoir Avenue) side of the reservoir, an exterior berm slopes toward the street and terminates in a low bluestone retaining wall. Constructed during the twentieth century, ca. 1924, the low wall is of later vintage than the remaining basalt wall sections. A chain link fence has been installed inside this wall (Photograph 7).

There are three primary entrances to Reservoir #3. The 9 foot span of the Reservoir Avenue entrance, suggests that it would have functioned as a vehicular entrance.[4] The entrance features two stone piers built with stone ashlars and capped with exposed aggregate cast stone capstones. Currently the entrance is secured with a chain-link fence. A pedestrian entrance, located near the center of the western (Summit Avenue) wall, is set within an arched surround (Figure 1). This entrance provides access to a series of granite steps that rise along the interior side of the wall and lead to the top of the reservoir berm. Historical documentation suggests that this entrance was intended to be used by the public to gain access to the footpath that surrounded the reservoir (Figure 2).[5] Currently, this entrance is now located behind a locked metal screen (Photograph 8). The central portion of the southern (Jefferson Avenue) basalt retaining wall has been broken through; the ensuing breach is approximately 40 feet wide gap and is currently closed with a chain link fence.[6] A third entrance into Reservoir #3 is located at the northwest corner of the reservoir (Photograph 24). This pedestrian entrance features two stone piers with ashlar construction and exposed aggregate cast stone capstones. Retaining walls are continued behind the piers to form sides of a six foot wide granite stair (Photograph 22).[7]

There are three extant buildings associated with Reservoir #3. The first building, Gatehouse #1, serves as a focal point for the outer walls. Located approximately 160 feet north of the southwestern corner (on Summit Avenue); Gatehouse #1 rises above the top of the basalt retaining wall. Essential to the engineering of the reservoir, the gatehouse contained influent and effluent pipe lines.[8] It serves as an important relic of the nineteenth century waterworks technology that supplied water to Reservoir #3. The second structure is the screen house. Located inside the reservoir near the southeast corner, the screen house is surrounded by water. Also constructed in 1881, this tall, tower-like building was originally intended to filter the water before it left Reservoir #3 and was distributed into the city network. According to local historian Richard James, some of the screens used to filter the water are still intact within the interior of the screen

[3] During the first six months alone, a total of 40,000 cubic yards of earth and 3,100 yards of rock had been excavated (Board of Public Works 1871:14).

[4] Jersey City Bureau of Water drawing dated May 1, 1924 shows double iron gates with a rounded design were proposed to secure the opening (Figure 3). To date, photographic evidence documenting the installation of these gates has not been found.

[5] The footpath surrounding the reservoir was operable when Reservoir #3 opened in 1881.

[6] The breach in the Summit Avenue basalt retaining wall occurred after the end of Reservoir #3's period of active service (and after the Period of Significance).

[7] Bureau of Water drawings from September 10, 1923 detail the construction of double iron gates across this entrance; these gates are still extant (they are currently painted red) (Figure 4).

[8] Gatehouse #1 was served by four influent pipes and a drainage line. It is not clear how all five pipes contributed to the system but there is documentation that the 36 inch influent line was the main source.

house.[9] The third building, located closest to the northwestern corner of Reservoir #3, is Gatehouse #2. The additional gatehouse was constructed in 1907 to accommodate the new supply of water from the Boonton Reservoir in Boonton, New Jersey, when the Passaic water supply was deemed un-potable. With the construction of Gatehouse #2 and the new water supply, Gatehouse #1 became obsolete and was taken out of service.

The bottom of Reservoir #3 is concave-shaped. It varies in elevation between 100 feet and 110 feet and is 11 feet to 15 feet below surrounding street levels (Langan 1981:4). Currently the water in the reservoir itself, as noted, is substantially below its level during the time of active use (Photographs 18 and 19). In addition, past episodes of dumping (construction fill and debris) have resulted in the creation of several small "islands" in the reservoir. The largest of these islands is now covered with vegetation (Photograph 20).

Reservoir #3 has suffered from both lack of maintenance and incompatible alterations, but current plans call for the stabilization and rehabilitation of its historic elements. In its present appearance, it is still able to convey its significant historical associations, and this ability will be enhanced by the proposed rehabilitation activities.

Perimeter Retaining Walls

As mentioned previously, two types of construction are evident in the perimeter retaining walls of Reservoir #3. The first is associated with the original construction. Battered, quarry-faced, ashlar basalt retaining walls with quarried granite capstones extend along the Summit, Jefferson, and Central Avenue sides of Reservoir #3. The exterior (street side) of the retaining wall features quarry-faced stone sloped at a ratio of 1:12. The stone edges at the corners of the retaining walls are tooled with a chiseled finish.

The second type of retaining wall construction can be found along Reservoir Avenue and features random ashlar stone with an exposed aggregate cast stone cap. The exterior (Reservoir Avenue) side was originally intended to divide the two proposed basins of Reservoir #3 but only the southern portion was completed. Remnants of the original dividing wall sit 10 feet behind the newer retaining wall that is adjacent to the sidewalk. The width of the dividing wall tapers outward from 18 inches at the top to 5 feet at the exposed base. The majority of this wall is buried by an earthen berm. A small portion of the wall is exposed along the gate entrance approximately 440 feet from the corner of Reservoir and Central Avenues. The newer retaining wall along the sidewalk on Reservoir Avenue was likely constructed during the early 1920s when the unfinished half of the reservoir was converted into a recreational park, Pershing Field Memorial Park. The construction of this wall is identical to the wall surrounding the park.

Originally, plans for the construction of Reservoir #3 specified that a single berm with both sides sloped surround the reservoir. However, in 1872, the plans were changed to include a single berm on the interior (water) side of the reservoir and a battered rubble retaining wall on the exterior. The existing berm varies in height from approximately 6 feet to 20 feet. The interior of the berm is quarried stone riprap, 2 feet by 2 feet, overlaying a rubble base, approximately 2 feet thick. The wall is drained by 2 inch to 4 inch steel pipe weep holes extending to the walls exterior. Final specifications for the construction of the perimeter walls were included in an article in the November 27, 1880 issue of *Engineering News*:

> ...the embankment must be carried up to a level with the top of the present distributing reservoir and twenty-five feet in vertical height from the foot of the inside slope; the side of the bank to be cut down. The material of the bank to be well selected; free from lumps or stones more than three inches in diameter and put on in six-inch layers, dampened and rolled. The puddle to be made of the best material found on the ground, put on as shown in the drawings and worked as directed by the engineer. A foot-path on top, of Schrimshaw pavement, laid four inches thick. The slope wall to consist of a backing of clean, small stones, or spalls, twenty-four inches thick and well packed; on this to be a face wall eighteen inches thick, composed of a single course of stones laid dry, no stone to have less than fifteen inches bed, and no joint to be more than three-quarters of an inch. "In earth, stones of two feet square shall be

[9] Due to the unsafe condition of the bridge deck, connecting the screen house to the berm, interior access to the screen house is not currently possible.

used for the lowest course; and in rock, a face at right-angles to the slope shall be made on which to start the wall."

Cut stone for coping, stairways, etc. to be of the best Maine granite, double patent hammer dressed.

All rubble work to be of blue or brown stone laid in full beds of cement mortar. Concrete to be made of mortar with two parts of sand to one of cement, and such amount of clean, broken stone as may be directed by the engineer (as cited in Langan 1981:19). (See section of reservoir wall, Figure 5.)

The top and the interior of Reservoir #3 are accessible from the surrounding streets at several locations. A stairway entrance with a double iron gate is located at the corner of Reservoir and Summit Avenues. This pedestrian entrance currently functions as the primary entrance to Reservoir #3. The cast stone caps with exposed aggregate have spalled and are badly deteriorated. A stone-faced areaway with a steel gate enclosure is located on the Summit Avenue side adjacent to Gatehouse #1. This entrance features granite around the perimeter of the opening. At another pedestrian entrance located in the middle of the northeast wall, the original iron gates have been removed and the opening is currently gated closed with a chain link fence. A final access point is located on Jefferson Avenue where the berm was partially demolished to allow heavy vehicular access. This access point, approximately 40 feet in width, is located approximately 450 feet from Summit Avenue and is also, currently, secured with a chain link fence.

Gatehouse #1 (Original Gatehouse)

Near the southwestern corner of Reservoir #3 sits the original gatehouse (Photograph 12). Built in 1881, Gatehouse #1 was constructed as part of the basalt retaining wall, with the superstructure of the gatehouse rising above the band of granite coping stone at the top of the wall. The granite foundation blocks of the gatehouse measure approximately 2 feet 5 inches by 2 feet 5 inches by 16 inches in depth. One course of the granite foundation is visible on three sides of the building. The interior (water) side foundation is exposed a full story and features four openings. These four arched openings correspond to granite shafts and pipelines on the interior of the building.

Gatehouse #1 is constructed of common bond red brick with unreinforced multi-wythe brick walls and a running bond veneer. The building measures 45 feet by 20 feet in plan. Roman arch window openings are decorated with brownstone impost blocks with ornamental scrolled brownstone keystones featuring an abstract flower on the outer surface (Photograph 13). The arches themselves are constructed of two rows of projecting brick headers above alternating recessed and projecting brick headers. There are four arched openings spaced along the interior (water) side of the building. Five arched openings, now infilled with concrete blocks and plywood, are located on the western (Summit Avenue) elevation of the building. The southern (Jefferson Avenue) elevation of the building has two arched openings, both currently infilled with concrete blocks and plywood, while the opposite elevation features one infilled arched opening and an open entrance with an arched transom.

The original hipped roof of Gatehouse #1 has been replaced with a flat roof with aluminum sheet fascia supported by timber joists and covered with an asphalt and gravel membrane.[10] A recent field survey has identified fragments of red, blue, and clear window glass near Gatehouse #1.[11]

Though much of this area of Gatehouse #1 is in deteriorated condition, elements of this section of Reservoir #3 are particularly noteworthy. The outflow channel of the gatehouse is defined by the retaining walls with coursed, finished ashlar granite blocks aligned to form steps that taper down to the bottom of the reservoir (nearly all of these retaining walls were below water level when the reservoir was at capacity). Between the retaining walls are four outflow openings placed in the coursed stone wall and topped by Roman-arched heads (Photograph 13).

[10] Historic photographs and drawings indicate the roof was originally ripped with slate shingles. A ca. 1880 drawing indicates that the slates (typically 12 inch by 12 inch) were hung in a diagonal pattern (Figure 1).

[11] Local historian Richard James also reported finding colored shards of glass at the bottom of the reservoir (James, 2005). It is possible the remnants of glass could reflect a patriotic theme, since the building was erected near the time of the Centennial of the United States. See "Reservoir #3, Jersey City, New Jersey, Historic Structures Report / Cultural Landscape Report" (JMA 2011) for additional information regarding existing conditions and physical evidence.

The interior floor of Gatehouse #1 is penetrated by ten granite shafts that served as valve chambers (Photograph 15). Each chamber was served by metal sluice gates which were operated to control the water supply. Sluice gates were controlled by a series of iron wheels (the valve mechanisms) mounted on fluted pedestals imitative of classical columns. These pedestals, in turn, rested on metal bases mounted to tapered steel diamond-patterned plates inset into metal grates. The grates permitted the operator to view the water levels in the valve chambers.

Piping for Gatehouse #1 includes one 36-inch diameter influent line with one control valve connected to the aqueduct supply line aligned below Summit Avenue; two 20-inch diameter blind pipe stubs with two controlling sluice gates each; one 20-inch diameter pipe with two controlling sluice gates that acted as an equalizer line between Reservoir #2 and #3; and one 20-inch diameter drain line with two controlling sluice gates to a sewer (Langan 1981:4). By 1990, all pipelines were abandoned and the associated valves closed (Kao 1990).

A standpipe rises from the water in the center of the outflow channel of the gatehouse (Photograph 16). This standpipe, which regulated the pressure of the main influent line, is mounted on a rusticated granite block base with a stone slab and metal cap. The standpipe, currently only 13 feet high, consists of a single section of cast iron pipe with a flange at its top. The flange suggests, and historic photos confirm, that originally a second length of cast iron pipe was bolted to the top of the remaining section.

The painted brick interior walls of Gatehouse #1 are currently marred by graffiti. The original door is no longer intact and a replacement has been installed. Remnants of the original window casings are intact. Both wooden sashes of one window have been salvaged for replication.

Screen House

The upper portion of the 1881 screen house was originally slightly above the maximum water level of Reservoir #3 (Figure 2). Now much of the brick base and the shaft of the screen house are exposed due to the drop in water level (Photograph 16). Between the base of the building and the shaft, there is a corbelled brick water table. To the southwest, there is a brick influent pipe bulkhead with a stone cap at the base of the building that houses the inlet pipe from the reservoir to the screen house. The shaft of the building was constructed of brick but it has been covered with stucco in the recent past.

A granite band separates the shaft of the building from the brick upper portion. The upper walls are laid in common bond brick with the exterior veneer composed of running bond. The small, multi-wythe brick building, rectangular in footprint, has one segmental arched opening in each of the four walls. While the opening closest to the berm retains a wood door frame, the other openings sides have deteriorated down to the granite band. The exterior arch is similar in style to Gatehouse #1 and is formed by two rows of bricks above alternating projecting and recessed brick headers.

The southwest elevation has the same details as the other elevations but was constructed in a different configuration. On this side, the central bay with lintel projects from the building while the window frame and paneling detail remains in plane with the original wall resulting in a recessed effect. This recess is accentuated below the lintel with brick corbelling. The recess of the bay continues all the way down the shaft of the building creating two pilaster masses on either side. These two pilaster masses are an expression of the function of the structure on the inside of the shaft on this side. The south side of the shaft houses two vertical screens used for filtering the reservoir water that entered the structure from the influent pipe. These screens were made of a series of wood frames with metal mesh. The frames tracked on cast iron guides and were raised and lowered by pulleys. The screens were in place to filter the water from the inlet pipe that entered the building on the south side. The filtered water would then feed into the city's water system from the 36" diameter effluent pipe located on the east elevation. There were two screens so one could be raised up on the pulley for cleaning while the other was in use.

The upper wall is marked by brick header and stretcher courses, originally hidden by the wood cornice which is now only partially intact. The roof is a hipped structure in poor condition, it appears to have partially collapsed (or have been demolished) on two sides. The remaining sides feature wood sheathing and asphalt shingles.[12]

The interior floor of the screen house tower is in poor condition. The flooring consists of timber framing supported by exterior walls and steel framing. A portion of the floor is missing, and the original floor framing appears to have been replaced with plywood. The steel framing is rusted and pitted, and the screen guides have also experienced heavy corrosion. The wood-framed, wire mesh screens are reinforced by brass corner plates and slide in cast iron guide channels. The interior is not currently accessible.

The access bridge that connects the reservoir berm to the wall of the screen house consists of two steel I-beams spanning roughly 40 feet with horizontal steel angle and tie-rod cross bracing. The bridge decking consists of wooden planks but only 3 feet of planking is still intact. The bridge appears to be of more recent construction than the screen house given the use of welds between the steel members. Metal pipe handrails provided additional safety. Currently, only one of the two handrails is intact and it is no longer securely attached to the bridge.

Gatehouse #2

Gatehouse #2, also known as the Troy Street Gatehouse, was constructed in 1907. Currently obscured by overgrown vegetation, the building is clearly shown in a photograph from a 1929 publication (Figure 3). The single-story building measures 36 feet by 23 feet in plan. The exterior wall is constructed of quarry-faced basalt laid in random ashlar pattern. The stone masonry is toothed into brick back-up masonry. There is a 3 inch cavity between the two brick withes of the back-up masonry; its function is unknown. The interior wythe does not directly appear to support the floor framing. It is capped with an angle iron that serves as a track for a pulley rigging system. The stone façade is keyed into the brick back–up wall with intermittent brick headers. The exterior window surrounds, water table, and quoins are made with dressed granite. The quoins do not project from the wall but are distinguished from the wall plane because of the contrast of light gray granite against the dark basalt of the wall body.

The window surrounds are arched with a keystone that also does not project from the wall plane. Below the arch, the dressed granite stones alternate between long and short blocks flush with the wall down to the sill. The sills project from the wall plane and are chamfered at the opening to prevent water from pooling on the surface. There are five windows on the northern and southern elevations. Both the eastern and western elevations have two windows each; the western elevation also has a door. Although the original door is no longer intact, it appears that originally the opening would have featured a two-leafed door under a round-headed transom. The majority of the windows are currently infilled with concrete or plywood. The original windows were round-headed, double hung with single-light sashes.

The basement level, visible on the interior (water) side, contains a series of segmental arched overflow wiers and a segmental arched window. These rusticated stone arches are highlighted by keystones. Above the overflow weirs is a finished granite water table with slanted upper surface.

The roof structure consists of timber framing supporting a hipped, slate shingle roof. Until recently the roof junction was marked by a prominent copper gutter and two ashlar chimneys. The chimneys remain, although cracked and slightly displaced. Unfortunately, the cornice was stolen exposing the gutter framing (Photograph 10).

A view into the interior is provided through broken windows in the east wall. Floor framing appears to be 2 inch by 8 inch timbers with planking. There are several openings in the floor as well as areas of rot and fire damage. Additional steel framing, though deteriorated, supports the timber floor on the influent side of the valve chambers. Several bracing members have completely rusted through (Photograph 11). (See Figure 6 for a c. 1929 view of Gatehouse #2.[13]) The

[12] There is very little documentation on the materials of the original roof for the screen house. However, it is likely that the hipped roof was covered with slate, similar to Gatehouse #1 which was constructed during the same time period.
[13] It appears that rugs may have been used as a floor covering in Gatehouse #2 by 1928.

interior walls are constructed of brick; historical images show they may have been constructed of white glazed bricks. The tray ceiling follows the lines of the hipped roof framing and is constructed of painted beaded board.

As recently as 1981, instrumentation included four recording flow meters, a pressure gauge, and two recording pressure meters. Currently, remnant portions of the instrumentation remain as well as several iron control wheels for the valves. Water lines serving the gatehouse included five 16-inch diameter influent water lines connecting to a 42-inch diameter section of the Boonton Reservoir aqueduct below Summit Avenue, a 36-inch line connecting Jersey City Reservoir #3 with Reservoir #2, and a 24-inch diameter drain line from the influent wet wells to a sewer on Summit Avenue (Langan 1981:4-5). By 1990, only one of the 16-inch lines was operable (Kao 1990). Currently, all the lines have been closed.

Small Scale Features

Smaller scale elements associated with Reservoir #3 include a plaque commemorating the construction of the waterworks in 1874. Placed on the perimeter wall near Gatehouse #1, the plaque identifies city officials, engineers, and contractors involved in the project (Figure 7).

An additional historic marble plaque, bordered with water pipes and a hydrant, was originally placed on the High Service Engine House at Reservoir #2 in 1872. No longer extant, the High Service Engine House was adjacent to Reservoir #2. Gatehouse #1 was originally sited across from the High Service Engine House, located on the other side of Summit Avenue. This plaque has since been re-located to the offices of United Water (Figure 8).

A flagpole base, located near Gatehouse #2, features a hexagonal pedestal comprised of exposed pea gravel aggregate concrete with a molded line design. Lettering, etched into the pedestal reads "Isle of Safety." It is not clear who erected this monument or what function it served. The flagpole has been broken off and, although reportedly in use in the 1990s, it is not currently functional.

Potential traces of an original stone edging which lined the path encircling Reservoir #3 are located near Gatehouse #2. One cluster of four stones and a second cluster of thirteen stones appear to be similar in size and shape as those shown in the historical images are located along the trail just to the east of Gatehouse #2. The stones are placed directly adjacent to each other; this current placement is unlike the placement evident in an historic image where the stones appear to be at least two feet apart.

A painted red metal railing provides a barrier between the patio area of Gatehouse #2 and the sharp decline resulting from decreasing topography and the retaining wall around the gatehouse. The railing is visible in historic images. Several additional miscellaneous features exist on the Reservoir #3 site. Three large concrete manhole units, located close to Gatehouse #2, are likely remnants of road construction in the area. A painted metal eye bolt is located along the trail in the proximity of Gatehouse #1, although the purpose or origin of this feature is unknown. Two metal posts, of unknown purpose or origin, are also located along this section of the trail. A third metal post that appears to be a street sign remnant is located along the trail to the northeast of the screen house.

Other miscellaneous features around the site include a pile of wall cap stones, located just southeast of the Jefferson Avenue breach, and are likely historic wall caps removed during the construction of the breach sometime after Reservoir #3 was decommissioned in the 1980s. On the other side of the Jefferson Avenue breach, a metal standpipe filled with concrete emerges near the base of a tree. The purpose and origin of this pipe is not known. Similarly, a metal pipe runs along the top of the stone embankment around much of the reservoir. The pipe connects to Gatehouse #1 although its purpose is not known.

Near Gatehouse #2, there is a manhole and cover that is not marked with any text. Historically, Gatehouse #1 had five pipelines with the associated controls while Gatehouse #2 had seven pipelines with controls. It is possible that this unmarked manhole is associated with these pipelines and would have received water from the Boonton Reservoir. However, it is also possible that this manhole is associated with other utility systems, such as the Jersey City water and sewer lines.

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing)

- [X] A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B Property is associated with the lives of persons significant in our past.
- [X] C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply)

Property is:

- [ ] A Owned by a religious institution or used for religious purposes.
- [ ] B removed from its original location.
- [ ] C a birthplace or grave.
- [ ] D a cemetery.
- [ ] E a reconstructed building, object, or structure.
- [ ] F a commemorative property.
- [ ] G less than 50 years old or achieving significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

ENGINEERING
HEALTH/MEDICINE
COMMUNITY PLANNING AND DEVELOPMENT /
Politics/Government

Period of Significance
1871 to ca. 1924

Significant Dates
1871 - 1881, 1907 – 1908, ca. 1924

Significant Person
(Complete only if Criterion B is marked above)

Not applicable

Cultural Affiliation
Not applicable

Architect/Builder
1.) John W. Mitchell and David B. Bridgeford
(Mitchell & Bridgeford)
2.) Jeremiah B. "J.B." Cleveland

Period of Significance (justification)

The Period of Significance extends from 1871 to 1908; beginning with the commencement of construction of Reservoir #3, including the construction of Gatehouse #2, and ending with the introduction of chlorination.

Criteria Considerations (explanation, if necessary)

Not applicable.

Statement of Significance Summary Paragraph (provide a summary paragraph that includes level of significance and applicable criteria)

Historically an integral part of Jersey City's waterworks, a system which pioneered the utilization of the latest technological advances in water distribution, Reservoir #3 possesses significance under National Register Criteria A and C. The reservoir is associated with events that have made a significant contribution to the broad patterns of history (Criterion A) and the resource embodies distinct characteristics of a type, period, and method of construction (Criterion C). Under Criterion A, Reservoir #3 was a critical part of the nineteenth and twentieth century water supply infrastructure of Jersey City (New Jersey's second largest city), was one of the earliest public water supply systems, and is the only above-ground nineteenth century remnant still extant. Reservoir #3 was part of Jersey City's pioneering role in the adoption of water chlorination as a means of reducing the occurrence of waterborne diseases. Additionally, Reservoir #3 is significant for its role in the complicated machinations of nineteenth century Jersey City politics. Under Criterion C, Reservoir #3 is significant as an example of a notable nineteenth and twentieth water distributing reservoir. As a multi-faceted property, Reservoir #3 includes the distributing reservoir, associated piping, gatehouses, screen house, and machinery.

Narrative Statement of Significance (provide at least **one** paragraph for each area of significance)

The significance of Reservoir #3 under Criterion A rests with its role as a critical part of the nineteenth and twentieth century water supply infrastructure of Jersey City (New Jersey's second largest city); Reservoir #3 was one of the state's earliest public water supply systems and is the only above-ground nineteenth century remnant still extant. Reservoir #3 was constructed, beginning in the 1870s, as the Jersey City water system's second distributing reservoir, a facility to store and control the flow of water to residential and commercial customers in the water system service area.

Also in relation to Criterion A, Reservoir #3 possesses state significance due to the City's pioneering role in the adoption of water chlorination as a means of reducing the occurrence of waterborne diseases. The Jersey City water system, as a whole, received substantial publicity in the early twentieth century as the first large United States municipality to supply chlorinated water on a permanent basis. Although the chlorination apparatus was located at Boonton Reservoir in Morris County, Reservoir #3 possesses historical significance in public health history as an integral component of the first large U.S. water system to employ chlorine in water treatment and lead Jersey City to become the first major community in the United States to distribute disinfected water directly to people's homes.

Additionally, in relation to Criterion A, Reservoir #3 possesses historical significance for its role in the complicated machinations of nineteenth century Jersey City politics. The controversial construction of Reservoir #3 illustrates an early effort at community planning and development. In addition to the well documented municipal corruption, Jersey City, and specifically the history of Reservoir #3, illustrates some of the major socio-economic issues facing municipalities at the time, including immigration and class division.

Reservoir #3 possesses significance under National Register Criterion C as an example of a notable nineteenth and twentieth century water distributing reservoir. Although portions of the resource are in deteriorated condition, the resource retains the components of its property type. As a multi-faceted property, Reservoir #3 includes the distributing reservoir, associated piping, the gatehouse, the screen house, and machinery.

Due to unsafe conditions, the precise extent of surviving machinery and instrumentation in the various parts of the resource cannot currently be determined. The proposed restoration is expected to restore safe access to the three reservoir structures. The restoration process would enable an industrial archeologist, with a specialty in urban water system technology, to study and evaluate surviving portions of the machinery and instrumentation. It is expected that such an examination, involving industrial archeology, will yield valuable information concerning nineteenth and early twentieth century public water system technology. This potential for useful information about water works operations would further contribute to the significance of Reservoir #3 under National Register Criterion C.

The Period of Significance for Reservoir #3 dates from 1871 to ca. 1924. This period spans from the initial construction through the technological advances, involving the chlorination of public water, leading Jersey City to become the first major community in the United States to chlorinate its water system on a permanent basis and to distribute disinfected water directly to people's homes. The Period of Significance ends with the decision not to construct the northern half of Reservoir #3, the development of Pershing Field Memorial Park, and the construction of the low bluestone wall along Reservoir Avenue.[14]

Integrity Evaluation

The integrity of an historic site is related to its ability to convey its significance. Reservoir #3 retains sufficient historic fabric to convey integrity and to possess architectural significance. As noted, the Period of Significance for Reservoir #3 includes the initial phase of construction and extends through 1908, an important date associated with water chlorination technology.

Reservoir #3 retains all of its built components from the initial phase of development including the two original buildings (Gatehouse #1 and the screen house), remains of their mechanisms, and the reservoir structure including the berm and retaining walls. Reservoir #3 also retains built features from an early alteration, including an important building (Gatehouse #2) and gates and entries along the northeast wall (Reservoir Avenue). The integrity of the built components is strengthened by the fact that these original components remain in their original location, in their original configuration, and retain their original relationship to the site or can be restored back to the original condition. The integrity of the built components that remain within the site provides insight into the operations of the reservoir as well as the engineering technology of a reservoir that evolved and provided more than a hundred years of service.

Summary of Reservoir #3 Development

Reservoir #3 is part of an urban waterworks system that began in the nineteenth century and was continually developed throughout the twentieth century. As such, it has three distinct periods of development and use: 1871 to 1906, initial phase of construction; 1907 to 1924, second phase of construction (municipal improvements to reservoir and surrounding land); and 1925 to 1994, maintenance period.

The initial construction period of Reservoir #3 began in 1871, with the building of the retaining walls and the interior berm, and ended in 1874. By 1881, the waterworks pipelines were in place and Gatehouse #1 had been constructed on the west side (across the street from the High Service Station at Reservoir #2), to support the new infrastructure. At the same time, the screen house was completed at the southeastern corner to filter the water prior to distribution to the city's constituents.

By 1907, the second phase of development, changes in technology and water supply necessitated the construction of Gatehouse #2, located at the north corner. A cleaner water supply and the advent of chlorination made Gatehouse #1 obsolete and it was taken out of service.

By 1922, the land intended for the construction of the second half of the proposed reservoir (which was never completed) was converted into a city park. Around this time, Reservoir #3 underwent some improvements to the screen

[14] The construction of the bluestone wall signifies the decision not to develop the second half of Reservoir #3.

house and a new low, bluestone retaining wall was constructed along Reservoir Avenue (on the northeastern side of Reservoir #3).

The third period of development is the longest. During this time, Reservoir #3 was continually manned and maintenance was routinely performed to keep the operations going. It wasn't until the latter part of the twentieth century that the maintenance went into decline and new regulations and controls in water management outpaced the technology at Reservoir #3. During the early 1990's Reservoir #3 was seen as obsolete. By 1994 the reservoir was slowly drained and taken offline.

The Growth of Jersey City

Because of its proximity to the port of New York, Jersey City prospered as a transportation hub, an industrial center, and an immigration hotspot during the time that the Jersey City Waterworks was constructed in the mid-nineteenth century. In 1812 ferries began to transport people from Jersey City to Manhattan. The ferries served as the primary form of transportation to and from New York City until bridges and tunnels were constructed across the Hudson River in the early twentieth century.[15] By the 1830s, Jersey City had become a railroad center and its terminals connected the mainland states with shipping channels on the Hudson River. As a result, there was a rich trade of oil and coal from the western states and food and manufactured goods from the coastal states. With rapidly developing industry and excellent transportation, Jersey City attracted an influx of immigrants, particularly the German and the Irish, arriving at Ellis Island. This ready supply of labor propelled industrial development and Jersey City was forced to improve municipal services, including sewers, waterworks, and public transportation, in response to the prosperity of the region. By 1870 Jersey City absorbed the neighboring towns of Hudson City and Bergen into its municipal boundaries and by 1873 added Greenville, setting the city's current boundaries (Jersey City Online, 2007)

The growth of Jersey City prompted the initiation of numerous civil engineering works in and around Jersey City. The multiple projects competed with Reservoir #3 for land and resources. During the initial construction of Reservoir #3, which spans from 1871 to 1881, major construction projects included, railroad tunnels and passages, a streetcar elevator, an elevated trolley line, and an attempt to tunnel under the Hudson River to Manhattan. The amazing growth represented by these simultaneous engineering works was highlighted in an 1875 article from *Scientific American*.

> Towards the surmounting of this obstacle an aggregate of engineering skill and capital has been directed, which considering the small area upon which such vast operations have been conducted is perhaps without parallel elsewhere in the world...To these we add short reference to another important engineering work, the Jersey City Reservoir and its conduit pipes, which through not coming under any of the above heads, are nevertheless included within the narrow area over which the other operations have been carried on–a space measuring about two miles and a quarter...(*Scientific American* February 27, 1875).

Not coincidently, the planning of Reservoir #3 also coincided with the consolidation of the formerly independent communities into current Jersey City (Miller 1910). The original consolidation scheme was to unite all of Hudson County into one municipality. This failed to meet with the approval of some of the constituent municipalities, but a smaller consolidation (involving the uniting of Hudson City, Bergen City, and Jersey City into a larger municipality) did occur. With this consolidation came the need to increase the capacity of the city's water system, a need increased by the rapid population growth of the unified community.

[15] The development of reliable transportation options for commuters to Manhattan significantly contributed to the growth of Jersey City. In an effort to attract both manufacturing and private home owners, in 1911 Jersey City's Publicity Committee proclaimed that Jersey City "is nearer the New York City Hall, in point of time, than is either Fifty-ninth Street, New York City, or Borough Hall, Brooklyn" (Publicity Committee 1911:1).

The Technology of Municipal Water Supply

With the development of public water systems in the nineteenth century, urban distribution reservoirs became a part of many communities. For instance, the first distributing reservoir for New York's famed Croton Aqueduct was at 42nd Street and Fifth Avenue in Manhattan, the site of present Bryant Park.[16]

Historically, reservoir-based municipal water supply systems typically included three major elements: a collecting reservoir, usually constructed by damming a stream or river; an aqueduct or pipeline, extending from the collecting reservoir to the community it served; and a service or distribution reservoir. The purpose of the service reservoir was to equalize the water pressure and to accommodate fluctuating water use.

Distributing reservoirs, as is the case in Jersey City, were generally sited near the highest point in the municipality in order to use gravity to deliver water to the top floors of houses. They were equipped with one or more gatehouses to regulate the flow of water from the aqueduct into the reservoir. In some cases, as in Jersey City, standpipes and pumps provided an assist in raising the water to its required height. A screen house in the reservoir filtered debris from the water before it passed into the communitie's water mains (Folwell 1900: Chapter 9).

Public Water Systems of New Jersey

The first public water supply system in New Jersey was constructed in Trenton in 1783. By 1850, only four other communities, Morristown, Newark, Burlington, and Mount Holly, had constructed municipal water supply systems. During the 1850s, municipal water systems were constructed in Jersey City, Camden, Elizabeth, Hoboken, Bordentown, and Hackettstown. By 1882, the numbers of municipalities served by public water systems had increased to 31, while by 1900, 160 New Jersey municipalities were served by public water systems (Baldwin 1901:315).

In the nineteenth century, most of the water systems in the state either pumped their water from underground to a standpipe, as in the case of Asbury Park and Atlantic City, or pumped water from a nearby stream or river to a reservoir. Among the few that employed a supply and distributing reservoir linked by pipeline or aqueduct to a storage reservoir or reservoirs were Morristown, Newark, and Woodbury (Baker 1888:157, 158, 165).

The Development of the Jersey City Water Supply System

Prior to the construction of a large reservoir, early Jersey City depended entirely on wells and pumps for its water.[17] Although these sources adequately served much of the small population of the early city, even then, not all the city was served. Portions of the city were filled-in meadow and could not be served by wells due to underlying salt water and deep bedrock, in some places as deep as 300 feet (Ward 1856:3). In order to serve these areas, tanks were built and water conducted to the tanks by pipes from the upland areas. With a population of 11,473 in 1850 in the present Jersey City area, the water system was under substantial strain. Another water-related hazard was reported in a January 1853 *Evening Telegraph* article stating that twelve to fifteen buildings in the city's business district burned due, in part, to the lack of sufficient water to fight the fire.

The controversial development of the Jersey City water supply system illustrates the complicated machinations of nineteenth century Jersey City politics. This early effort at community planning and development provides a well documented case of municipal corruption. The contrasting political forces were particularly poignant during various stages of the planning and construction process for Reservoir #3. The complex political history of the development of Reservoir #3 illustrates some of the major issues which were facing municipalities during the latter half of the nineteenth century, including immigration and class division, with multiple factions ultimately accountable for the completed construction.

[16] This reservoir measured 420 feet square, was 36 feet deep, and had a capacity of 20 million gallons (White 1913:8).
[17] Reservoir #1, the first Jersey City reservoir, was constructed in 1854.

The first concerted attempt to establish a public water system in Jersey City occurred in 1830 with the formation of the Jersey City and Aharsimus Aqueduct Company (*New York Times* August 15, 1894). The new company proposed to raise $40,000 in capital and erect a reservoir to serve the city, the water was to be accumulated from a series of wells. This scheme proved impractical and was abandoned. In 1844, John D. Ward petitioned the Common Council to apply to the state legislature for authority to build a waterworks. His petition was referred to a committee (McLean 1895:56).

On May 14, 1846, a committee was appointed to investigate the feasibility of constructing a waterworks to serve Jersey City (McLean 1895:56). Consultants to the committee suggested the accumulation of water from a number of springs that fed a small reservoir that had been constructed on the west slope of Bergen Hill by the New Jersey Railroad and Transportation Company. Further investigation indicated that the supply would never exceed 250,000 gallons per day, an amount which was deemed inadequate (Ward 1856:4; Harrison 1909:2).

A second plan contemplated damming a nearby river, but it was established that the river water was unusable.[18] A lake, located 33 miles from Jersey City, was also considered as a source of water, but the amount available did not justify the distance for which piping would need to be laid.[19] Another plan contemplated reaching agreement with Paterson's Society for Establishing Useful Manufactures to provide the needed water from the Great Falls of the Passaic River. However, cost agreements could not be reached, and this plan was also dropped (Ward 1856:4-5; Harrison 1909:4-5). In 1851, several Jersey City residents succeeded in procuring legislation allowing them to formulate a plan to supply Jersey City, Hoboken, and the then independent community of Van Vorst, with pure and wholesome water (Harrison 1909:3).[20] This legislation led to the establishment of The Board of Water Commissioners.

Jersey City finally decided to take its water from the Passaic River, located between Belleville and Acquakanock, approximately seven miles from the city. An engineer was hired and survey work began on August 26, 1851 (McLean 1896:56).[21] A year later, on September 4, 1852, bids were sought for the construction of two reservoirs (Reservoir #1 and Reservoir #2) in the *Daily Telegraph*.[22]

The works, including the construction of Reservoir #1 and Reservoir #2, were completed on August 15, 1854, at a cost of $652,995. Water was conducted 460 feet to a receiving reservoir (Reservoir #1, measuring 200 feet square and with a depth of 8 feet) located at an altitude of 150 feet where a steam engine would force the water up to the reservoir.[23] From there the water would flow by gravity through pipes 6.2 miles to a distributing reservoir (Reservoir #2, located on Bergen Hill near Jersey City). Distributing pipes would then convey the water from the second reservoir to customers (Ward 1856:10-11).

The initial distributing reservoir, Reservoir #2, covered 11 acres of ground had a capacity of about 40 million imperial gallons. Reservoir #2 measured 897 feet in length and 722 feet in width.[24] It was described in an article chronicling the water celebration that took place in October 1854:

> The reservoir is a very beautiful object; oval in form, with sloping banks covered with green sod; and presents the appearance of a large lake. It is lined with a sloping wall of Bergen trap-rock, and will hold 40,000,000 or 50,000,000 gallons (*New York Times* October 5, 1854).

---

[18] Hackensack River at Snake Hill.

[19] Rockland Lake is located north of Jersey City (Valley Cottage, New York).

[20] City residents included Andrew Clerk, John D. Ward, Dudley S. Gregory, Edward Coles, and Abram L. Van Boskerck.

[21] Williams S. Whitwell, engineer.

[22] In early 1853, a contract was signed with Robert Parrott of the West Point Foundry to supply the steam pumping engine. The initial cost for the water supply system of the Jersey City Water Works was $640,828.04 (Harrison 1909:8; Ward 1856:13).

[23] Barbadoes Neck (Coppermine Ridge).

[24] Reservoir #2 was constructed by James and Charles Collins of Brooklyn, New York. James Collins, who superintended the work, also constructed two of the reservoirs of the Boston Water Works (*New York Times*, November 13, 1852).

By the early 1860s, concerns developed over a dwindling per capita reserve of water and a perception that the Passaic River water was growing increasingly cloudy and foul tasting. By 1862, the annual consumption of water had grown to 844 million gallons from only 516 million gallons four years earlier (Howson 2001:22).

Fortunately, the waterworks was designed to be expanded. The Belleville pumping station had been constructed to allow for the addition of a second engine. A second pipeline was also anticipated. The new engine was installed in the fall of 1861, and a new pipeline was in the planning stages during 1860 and 1861. The first delivery of pipe was in April 1862, and the pipeline was completed in 1863 (Howson 2001:23).

Less than ten years after the opening of the Jersey City Water Works, as early as 1863, the Commission's chief engineer was advocating for the construction of a second distributing reservoir. Because Reservoir #2 had not been constructed with a dividing wall, it could not be drained, half at a time, to be cleaned, and the water had a tendency to be discolored due to sediments and decaying vegetation. In addition, it was anticipated that increasing consumption would necessitate increasing the supply (Howson 2001:29).

Planning and Construction of Reservoir #3

The role of the Reservoir #3 construction in the nineteenth century evolution of Jersey City politics is cited by local historian Richard James:

> The reservoir was closely associated with an experiment in the near-abolition of Jersey City's self-rule by the State Legislature in 1871, and the imposition of State-appointed Boards granted sweeping powers. The scandals surrounding the reservoir's construction made it the nexus of sharp debate on the community's planning and development. Its failure to hold water, after nearly a decade of intermittent construction only intensified this debate. Following the decision to abandon the building of its northern segment, the debate over the disposition of the superfluous vacant land illustrates an early incident in community planning. Built as a solution to perceived water quality problems, by the end of the nineteenth century the quality of the water impounded in the reservoir itself became a pressing public health issue (James 2005:1).

In 1865, the Board of Water Commissioners initiated the purchase of 20 acres on Bergen Hill east of Reservoir #2 for the construction of a new reservoir. At $3,700 per acre the Commission deemed the property a good investment:

> All of the ground surrounding the old reservoir is laid out into building lots and had not the ground been secured now, a few years would undoubtedly have seen it covered with buildings, making it impossible to buy it for reservoir purposes without paying three or four times the present price for the land (Jersey City Water Commissioners, 18th report, July 1865, as quoted in Howson 2001:29).

The need for another reservoir was dramatically illustrated in January 1871 when the Board of Police Commissioners met to consider what actions could be taken to reduce the chance of catastrophe during a period of water shortage (*American Standard* January 10, 1870). This shortage resulted from the toppling of a 163 foot tall iron stand pipe at Belleville (*Evening Journal* January 3, 1871).

The original plans for Reservoir #3 would have approximately doubled the size of the existing reservoir. Only the southern portion ("south basin") of the reservoir was constructed. The northern half was filled in to later become Pershing Field Memorial Park.

While the construction of Reservoir #3 was being planned, the complex maneuverings of Jersey City ethnic and religious politics affected construction decisions as chronicled by Richard James:

> Reservoir #3...was both literally and symbolically the point of intersection of some of the most deeply felt social and political beliefs of residents during its siting, financing, construction and partial completion. The reservoir was the premier public work of the Jersey City Board of Public Works, a legislatively hand-picked body whose creation and tenure of office is only understood in the context of the bitter social and political rivalry that raged within Jersey City in the 1860s and 1870s. The social bifurcation in Jersey City was fundamental. The fledgling pre-industrial city had assumed certain aspects of a residential suburb, with an artisan admixture. The piercing of Bergen Hill by the railroads, coupled with the filling of Harsimus and South Coves and their conversion to railyards, had attracted a burgeoning "laboring" population. The violence attending the Erie tunnel strike in 1859, involving the deployment of the state militia, gave clear public notice of this social divide. The contestants were broadly grouped about two poles: Roman Catholic/immigrant/Irish/unskilled and "native born"/Protestant/merchant/professional (James 2005:1).

The first salvo in the political conflicts involving Reservoir #3 came with the gradual electoral ascent of individuals with Irish ethnicity during the 1860s. For the next decade Jersey City politics took dramatic turns as various parties gained and lost political power. On the eve of one such change, the Board of Water Commissioners (prior to being legislated out of office by incoming Republicans) reached contract agreement for the construction of the reservoir with the lowest bidders for $164,200.[25] According to a later *New York Times* article, it was understood that this figure was impossibly low and friends on the board would insure that the contractors did not lose money (*New York Times* June 20, 1875[26]). In January 1872, the contractors assigned the contract to J.B. Cleveland; brother of the mayor of the city, Orestes Cleveland. Before financial strain and other causes resulted in the stoppage of work, the contractors were paid $199,500 and Cleveland was paid $334,000 (McLean 1895:82).[27]

Work on Reservoir #3 began in late June 1871, under the supervision of Chief Engineer John P. Culver and continued until adverse weather conditions in December necessitated a work stoppage. Initially plans were to surround the reservoir basin with an earthen berm, but before the year was out, the decision had been reached to build an exterior rubble wall to encase the berm.[28] Additional land was acquired to increase the area of the reservoir to 26 acres with a storage capacity of about 167 million gallons. With this additional capacity, the city would have over 223 million gallons of water stored. The Board engaged Jeremiah B. Cleveland, brother of the former Democratic mayor, as the reservoir contractor (James 2005:5).[29]

In 1872, the city officials who participated in the negotiation and approval of the Reservoir #3 contract were indicted by a Hudson County grand jury on the charges that they illegally ordered and paid $84,500 for the construction of the reservoir. The former Chief Engineer (John P. Culver) was indicted for certifying the bills. Allegations against the vice president of the Board of Public Works, William Bumsted (appointed in April 1871) included working with a local real estate agent, Garret Vreeland, who was attempting to purchase the outstanding land needed for Reservoir #3. Vreeland had represented himself to property owners as the land agent of the Board of Public Works equipped with condemnation powers and had acquired the land below market value with much of the money provided by Bumsted.

---

[25] Contractors John W. Mitchell and David B. Bridgeford were the lowest bidders.

[26] *New York Times* "A Jersey City Job: The Participants Indicted by the Grand Jury" June 20, 1875 and "Again the People Arose" April 7, 1890. These newspaper articles are just two examples of numerous published accounts providing additional details regarding, what the paper terms, the "illegal construction" of the reservoir.

[27] On April 4, 1871, the new Board of Public Works, provided for by the charter reform effort, had its first meeting. Its vice-president was William Bumsted, one of the principal advocates in the charter reform effort (James 2005:4). Historic newspaper articles provide additional details regarding the claims and eventual payment of Mr. J.B. Cleveland (*New York Times* June 1, 1877 and February 17, 1878).

[28] During the first six months, a total of 40,000 cubic yards of earth and 3,100 yards of rock had been excavated; and 24,500 cubic yards of embankment, 6,240 cubic yards of concrete masonry, and 9,655 cubic yards of rubble wall had been constructed (Board of Public Works 1871:14).

[29] Worthington Duplex Pumping Engines were selected for the pump houses (Board of Public Works 1871:15).

Both Vreeland and Bumsted were convicted. The latter was sentenced to nine months in prison and died of typhoid at age 39 within a year of the end of his sentence (James 2005:5-6).

Early in 1873, there was optimism that the "south basin" of the reservoir might be completed that year.[30 and 31] A substantial portion of the southern half of Reservoir #3 was completed when financial and contractual problems resulted in the suspension of work in 1873 (Langan 1981:5).[32]

In March 1876, the unfinished reservoir developed a leak and water poured into the Delaware, Lackawanna and Western Railroad tunnel, then under construction, causing a 110 foot roof cave-in between shafts four and five (*New York Times* March 5, 1876). Paralyzed by contract disputes and changes in the political climate, work on Reservoir #3 was stalled but the leak renewed a sense of urgency to complete the project.

In March 1878, the Board of Public Works adopted a resolution calling for the City Corporation Counsel to draft a bill for the Legislature allowing the City to bond for the completion of the southern half of Reservoir #3, citing the necessity to have one-half of the reservoir completed at once. This act was quickly passed by the legislature. The newly appointed Chief Engineer, Levi Post, recommended that:

1) The eastern, southern and western embankments of the lower section be completed in accordance with the plan adopted May 14, 1872.

2) The "gap" in the eastern wall and the gap in the "division wall" be closed with rubble masonry.

3) The "division wall" be covered with an earthen embankment "having a width of say 12 feet on the top and slopes of 1 ½ to 1 on both sides."

4) The gatehouse be completed according to the original plan. The gates and fixtures, "which I believe to have been furnished" be installed.

5) The "division wall" be dismantled when the "upper section" should be completed, the material of the division wall to be incorporated into upper structure. Hence, the gate and gatehouse planned for the division wall need not be built.

Chief Engineer Post estimated that his plan would cost approximately $48,000.[33] The project was advertised, and 12 bids were opened on June 25, 1878. The lower bidder was awarded the work on June 25, 1878.[34] Work had commenced by August 20th. In July 1879, the contractor requested a two-month extension for the completion of the reservoir.[35]

The precise reason for the termination of planning for the incomplete portion of the reservoir is not known. Langan Associates suggested in their 1981 report that the shallow depth to bedrock in this area may have made the necessary

[30] John Culver was the chief engineer in early 1873.
[31] Figures concerning progress the previous year (1873) included 51,949 cubic yards of earth exaction, 3,601 cubic yards of rock excavation, 44,466 cubic yards of embankment, 1,406 cubic yards of concrete masonry, and 14,877 cubic yards of rubble wall (Board of Public Works 1873:38).
[32] At the time of the suspension work had included 118,981 cubic yards of earth excavation, 12,232.5 cubic yards of rock excavation, 80,958 cubic yards of embankment, 29,056.75 cubic yards of rubble wall masonry, 8,012 cubic yard of concrete masonry, and 1,056 cubic yards of granite masonry (Board of Public Works 1875:12).
[33] The plan proposed by Levi Post called for 34,000 cubic yards of rock excavation, 25,000 cubic yards of embankment, 8,000 cubic yards of rock excavation, 6,000 cubic yards of slope wall, and 4,000 cubic yards of spall backing.
[34] The contract was awarded to Hugh O'Neill.
[35] Throughout the fall a series of small payments were made, primarily for the gatehouse; among them were to a "D. Lenahan" for pointing granite, and a blacksmith for working on the screen house.

excavation cost-prohibitive (as cited in James 2005:11). Only the southern portion of Reservoir #3, with a capacity of 43,000,000 gallons, was built. The original plans called for a zone earth dam embankment with a double slope cross section and a central puddle core (see Figure 5 and associated footnote). Due to field conditions, the embankment design was modified to a single slope with an exterior rubble wall. The northern half of the reservoir site was later filled in (Howson 2001:30) (Figure 9).

The Acting Chief Engineer of the Board of Public Works of Jersey City recorded that in 1879 Reservoir #3 remained uncompleted, but indicated that the contractor could complete his contract in a short time. However, it was noted, that the screen house and gatehouse would need to be built before the reservoir could be considered finished (Board of Public Works 1881:17). In 1881 the remaining elements were still not completed and the cost of Reservoir #3, to that date, was calculated at $685,780.76 (Board of Public Works 1882:49).

In April 1880, the Board of Public Works called for proposals for the building of the screen house, the gatehouse (Gatehouse #1), and the bridge from the screen house to the bank of the reservoir. The same contractor who was working on the reservoir was awarded the contract for the additional work.

Water was let into Reservoir #3 for the first time in September 1880 but it leaked badly and neighborhood cellars were filled with water. *Engineering News* editors attributed the problem to the failure of the contractor to put in an 18-inch thick line of puddle (*Engineering News* June 4, 1881). The rubble wall did not reach to bedrock, and the water leaked through the intervening layer of coarse gravel (Howson 2001:30). W.W. Sites, Chief Engineer of the City described this leakage problem in his 1880 annual report:

> In September water was turned into Reservoir No. 3 for the purpose of testing the banks. Twenty feet of water was let in and the water turned off. The water oozed out through the east bank, and elsewhere, in such quantities it was thought best to draw off the water and make such repairs as might be necessary to prevent the outflow of water. Up to the present time (January 1, 1881) nothing has been done towards repairing the banks (Sites 1881:18).

To address the leakage problem, the City retained an eminent civil engineer. William J. McAlpine was retained to develop a plan for repair. Plans and specifications were prepared according to his direction, and on February 28, 1881, the contract for these repairs was awarded to a Jersey City mason (Sites 1882:17).[36] As Chief Engineer Sites reported in his 1882 annual report:

> The repairs of the West wall of the new Reservoir, which were commenced in 1881, were found to be much more extensive than it was at first supposed. On excavating along the side walls of the gate house, the water was found to be following the line of the walls in large quantities, and at varying depths of from five to twenty feet. After consultation with [engineer] Wm. J. McAlpine...it was determined to excavate along the line of the gate house walls, to a point below the leaks, and after cutting away the masonry to a depth of twelve inches, set in iron castings made for the purpose. These iron castings were so arranged as to project eighteen inches beyond the face of the wall, and were made so that the water in getting past them was obliged to turn a number of angles. After securely setting the castings in hydraulic cement they were connected with the old work by a strong puddle bank.

When the work was completed in March, water was again let into the reservoir, and on March 19th, the pumps were connected to Reservoir #3. Water was then shut off to Reservoir #2 so that it could be cleaned and inspected (Sites 1883:5-6). After modifications, Reservoir #3 was tested to full height in August 1881, but leaks were found at the west wall of the gatehouse on Summit Avenue. The wall of the gatehouse was buttressed with iron castings set in hydraulic cement, and the leakage apparently stopped (Howson 2001:32).

[36] Engineer, William J. McAlpine developed the plan for repair and the contract for repair work was awarded to mason J.V.W. Perine.

In addition to the reservoir, a pumping station was recommended to raise the water to the higher elevations of the surrounding area. Construction of the High Service Pumping Station on the east side of the distributing reservoir (Reservoir #2) began in 1870 and was completed in 1872. No longer extant, this imposing Italianate/Second Empire building had machinery to raise the water to a height of 13 feet above the reservoir's high water mark (Howson 2001:32).

The characteristics of Reservoir #3 (termed the Bergen Hill Storage Reservoir) were described in an 1888 entry in the *Manual of American Waterworks*:

> Built in '71-74 adjacent to distributing reservoir, with an area of 27 acres, and capacity then placed at 167,000,000 gallons. It has earth embankments, supported on the outside by masonry walls have a base of 12 feet, an outside batter of 1 inch in 1 foot, and rising by steps on the inside, the top being 3 feet wide. The banks are 27 feet wide on top, with inner slopes of 1 1/2, and 2 to 1, and having a puddle heart-wall 8 ft. wide at base. The bottom of the reservoir is puddle with clay and gravel and the slopes lined with rubble masonry one-third of the way down from the top, the remainder of the slope being unprotected. The reservoir is nearly rectangular, and is divided in the center by a masonry wall with gates (Baker 1888:154-155).

By 1880, Jersey City and Bayonne, also supplied by the City water system, had a combined population of 130,000 and had an average daily water consumption of 15.2 million gallons. The rate of increase in water usage in Jersey City was 100 percent from 1860 to 1870 and 46 percent from 1870 to 1880. Clearly, if trends continued, the city was going to need an additional source of water (Commissioners of State Water Supply 1884:5-7).

By the 1890s, the water supply provided by the works was no-longer adequate for the still-growing community nor was the water of the Passaic River at Belleville potable due to waste from industries in Paterson and Passaic. In 1891, the city's contaminated water supply resulted in a typhoid fever epidemic. Three years later, in 1894, a jury in the Hudson County Court of Oyer and Terminer found that sewage and refuge from Newark, Passaic, and Paterson contaminated the Passaic River above Belleville (Hudson County Court of Oyer and Terminer 1894:3). The same year the *New York Times* published a series of muckraking articles on the contamination of the city's water supply. The first of the articles stated that "few cities in the world...have viler drinking water than the cities in New Jersey which depend upon the Passaic River for their water supply" (*New York Times* August 5, 1894[37]). Another article reported that effluent from dye houses turned white paper sucked into the Jersey City Water Works intake in Woodside, NJ, black (*New York Times* August 26, 1894[38]).[39] A third article in the series reported the high bacteria count of the city's water supply and noted the presence of typhoid fever germs (*New York Times* September 29, 1894[40]). In an article in September 1894, the *New York Times* attributed the decision to use an alternative water supply to their previous reporting (*New York Times* September 11, 1894[41]). However, this change did not come immediately.

The characteristics of the system in 1888 are delineated in an entry in the *Manual of American Water Works* (Baker 1888). The system pumps had a capacity of 29 million gallons. Total reservoir capacity was 247 million gallons (Belleville: 10 million gallons, Bergen Hill Storage: 167 million gallons, Bergen Hill Distributing: 70 million gallons). There were three supply mains, each 22,300 feet long, and 175 miles of distribution mains serving 20,456 taps (Baker 1888:154).

---

[37] *New York Times* "Jersey City's Vile Water" August 5, 1894.
[38] *New York Times* "Turned White Paper Black" August 26, 1894.
[39] Two pump houses and a tall water tower for the Jersey City Water Works were located on the west bank of the Passaic, just above Woodside, NJ (*New York Times* "Jersey City's Vile Water" August 5, 1894).
[40] *New York Times* "Water Filled with Bacteria" September 29, 1894.
[41] *New York Times* "Rejoicing in Jersey City" September 11, 1894.

In 1896, a temporary supply from the Pequannock watershed was tapped. A contract was signed for a new water supply system to be supplied from the Rockaway River at Boonton in 1899.[42] As part of the proposed Boonton Water Works, plans for the construction of a Boonton reservoir were prepared. The new reservoir had an initial capacity of 50,000,000 gallons per day and had the potential to be increased to 70 million gallons per day. The dam was 300 feet above the high water mark in Jersey City (*New York Times* October 25, 1899). The waterworks, including the Boonton Dam, reservoir, and Aqueduct opened in 1904. The waterworks consisted of the upper dam, the lower dam, the upper gatehouse, the lower gatehouse, the ice house, the reservoir, and a bridge. The upper dam, of solid gravity masonry construction, is built of large blocks of irregular shaped quarried stone embedded in and surrounded by concrete is 114 feet long and 2,150 feet long between abutments.

The original waterworks pipeline continued in use and the reservoirs were modified to accommodate in the new supply. Alterations to Reservoir #3 included construction of a new gatehouse (Gatehouse #2) at the northwest corner in 1907.[43] Water lines connected Gatehouse #2 to the Boonton Reservoir aqueduct. Water lines also connected Reservoir #3 with Reservoir #2.

In 1908, another technological advance occurred at the Boonton Water Works, chlorination. Dr. John Leal drew upon his earlier experimentation with disinfecting livestock water supplies in Chicago's Union Stockyards with chlorine. He proved that filtration only improved the clarity of the water while adding chlorine reduced bacterial levels. Bacteria levels in municipal water supplies were particularly high after flooding and high water. Together with George Warren Fuller, Leal developed a system to disinfect Jersey City's water supply with low concentrations of chlorine as it left the Boonton Reservoir. Jersey City became the first major community in the United States to chlorinate its water system on a permanent basis and distribute disinfected water directly to people's homes. By the 1920s, "chlorination was well established as the primary means of disinfecting drinking water and it had been adopted by most American cities" (American Chemistry Council 2009). Between 1906 and 1926, the typhoid fever death rate in Jersey City fell by more than 92%.

With the first half (the south basin) of Reservoir #3 completed, the community started to look into the possibilities for development of the second half. During the 1880's, the unfinished portion of Reservoir #3 was walled and partially excavated. Requests were made to the Board of Public Works to consider a skating park or a cricked field (James 2005:7-19). There was some trepidation for developing this land for another use as it was unclear if demand would require expansion of the reservoir in the near future. However, problems with the water supply from the Passaic meant costly renovations would need to be made to the existing reservoir and the Board of Public Works needed more capital to make improvements. The Board tried to sell off the land for profit only to have the city object to their right to sell the land. In response to community activists the city gained control of the property in 1886 for use as, "a public pleasure ground and place of recreation" (James 2005:7-20). The Board was allowed to sell the masonry from the surrounding wall for a profit. The walls currently surrounding the park are much smaller than the original wall and they are constructed with different materials, indicating that the wall was, in fact, disassembled.

The public park was not fully developed until the 1920's due to financing problems with the city and difficulties associated with the advent of World War I. It was during this time (early twentieth century) that playgrounds were gaining widespread acceptance across the country (Rainwater 1922).

[42] General plans for the Boonton Reservoir were prepared under the direction of Edlow W. Harrison, Consulting Engineer of the Jersey City Water Supply Company. Detailed plans for the dam and reservoir were prepared by William B. Fuller. Joseph F. Qualey & Company of Brooklyn was the contractor for the project.

[43] Gatehouse #2 is located at the corner of Summit Avenue and Reservoir Avenue (previously known as Troy Street).

Current condition of Reservoir #3

Viewed as obsolete, Reservoir #3 was slowly drained and taken offline in 1994. Currently the water in the reservoir itself, as noted, is substantially below its level during the time of active use (Photographs 18 and 19). In addition, past episodes of dumping have resulted in the creation of multiple islands in the reservoir. The largest of these islands is now covered with vegetation (Photograph 20).[44]

There are three extant buildings that are associated with the historic waterworks at Reservoir #3, Gatehouse #1, the screen house, and Gatehouse #2. Other elements of the resource include stone retaining walls, a standpipe, and two flights of granite steps (leading down to surrounding streets). The buildings and structures at Reservoir #3 retain most of their original materials continue to possess integrity. Many of the materials are still able to be repaired, while a few elements have reached a point that requires rebuilding or replacement.[45]

Current physical conditions prohibit access to and a detailed survey of the machinery and instrumentation in the various parts of the resource. It is expected that the proposed restoration would restore safe access to all three of the reservoir structures. The restoration process would also enable a specialized industrial archeologist (specializing in urban water system technology) to study and evaluate surviving portions of the machinery and instrumentation. It is anticipated that this type of examination would yield valuable information concerning nineteenth and early twentieth century public water system technology.

The reservoirs on Bergen Hill remained in service for much of the twentieth century. Reservoir #2 was drained in 1978 and #3 in 1994. The High Service Pumping Station became an auxiliary station in 1904 and was later turned into a meter testing laboratory. It was demolished in the 1950s (Howson 2001:44). Reservoir #2 has been redeveloped but a capped tank remains at the rear of the Jersey City Emergency Medical Systems offices.

Other Distributing Reservoirs

Few other urban distributing reservoirs still exist. Among those nineteenth and early twentieth century reservoirs that remain are the Chestnut Hill Reservoir in the Boston area (currently the Chestnut Hill Reservation) (MDCR n.d.), the Jerome Park Reservoir in the Bronx (Howe 2000), Pittsburgh's Highland Park Reservoir (Reservoir #1) (Pittsburgh Parks n.d.), the McMillan Reservoir in Washington, D.C. (D.C. Preservation League 2005), the Crescent Hill Reservoir in Louisville (Crescent Hill Community Council n.d.), the Eighth Avenue Reservoir in Nashville (Nashville Metro Water Services n.d.), and the Mount Tabor Park and Washington Park reservoirs in Portland, Oregon (Portland Water Bureau c. 2006). Most of these reservoirs are now surrounded by park land and are listed in the National Register of Historic Places.

Within New Jersey, two other nineteenth century distribution reservoirs existed well into the twentieth century: the Belleville Reservoir and the Morris Reservoir. The Belleville Reservoir in Belleville, Essex County, was erected in 1869 as part of the City of Newark water system, and it included the reservoir itself, a gatehouse, a building used in later years as a chlorinating house, and a superintendent's residence. As with Reservoir #3, the Belleville Reservoir was drained in the 1980s and one wall was partially demolished. The Belleville site currently remains vacant. The Morris Aqueduct Distribution Reservoir, constructed in 1819, stood in the block bounded by Ann and Court Streets in Morristown, close to the Morris County governmental complex. The northeast portion of the block is occupied by a parking deck, but

[44] In 1996, the wall at Jefferson Avenue was breached by the Department of Public Works to allow vehicular access into Reservoir #3. During this time, this area was allowed to be used for storage of construction debris and excavated soils from various construction projects around the city. The subsequent debris piles constitute the current islands located within the Reservoir #3 basin.

[45] A complete assessment of the existing conditions of the buildings, structures, and utilities on the grounds of Reservoir #3 is included within the "Reservoir #3, Jersey City, New Jersey, Historic Structures Report / Cultural Landscape Report" (JMA 2011). Additional information on the historic context, building chronology, and operations of Reservoir #3 is also included in this document. This Historic Structures Report documents the details necessary to proceed with the planned rehabilitation of Reservoir #3.

remnants of the reservoir walls remain in the undeveloped southwestern portion of the parcel. The Morris reservoir is listed in the New Jersey Register of Historic Places.

Conclusion

Reservoir #3 possesses significance under National Register Criteria A and C. Historically the reservoir is an integral part of Jersey City's waterworks, a system which pioneered the utilization of the latest technological advances in water distribution. Reservoir #3 is associated with events that have made a significant contribution to the broad patterns of history (Criterion A) and the resource embodies distinct characteristics of a type, period, and method of construction (Criterion C).

Developmental history/additional historic context information (if appropriate)
Not Applicable.

9. Major Bibliographical References

Bibliography (Cite the books, articles, and other sources used in preparing this form)

American Chemistry Council
2008 A Giant Step for Public Health. Website: http://www.americanchemistry.com/100years/CityHistory.html. Accessed September 28, 2009.

American Standard. January 10, 1870.

Baker, Morris Nelson, Editor
1888 *[The] Manual of American Water-Works.* Engineering News Publishing Co., New York.

Baldwin, Henry B.
1901 New Jersey's Public Water Supply. Document in the "water supply" file, Jersey City Public Library.

Board of Public Works of Jersey City, N.J. [Board of Public Works]
[Annual] Report of the Chief Engineer. Various years. Available at: www.books.google.com.

Commissioners of State Water Supply
1884 *Report of the Commissioners of State Water Supply of New Jersey.* Courier Publishing Company, Camden.

Crescent Hill Community Council
n.d. A Community Rich in History. Available at: http://www.crescenthill.us/index2.php?option=com_content&do_pdf=1&id=36. Accessed October 1, 2009.

D.C. Preservation League
2005 McMillan Reservoir Sand Filtration Plant. Available at: http://www.dcpreservation.org/endangered/2005/mcmillan.html. Accessed October 1, 2009.

Engineering News. New York City.
November 27, 1880.
June 4, 1881

Evening Journal. January 3, 1871.

Evening Telegraph. January 1853.

Folwell, Amory Prescott
1900 *Water Supply Engineering: the design, construction and maintenance of water-supply systems.* John Wiley, New York.

Harrison, Edlow Wingate
1909 The Public Water Supplies of Hudson Co., N.J. Particularly with reference to the Jersey City supply. *Papers Read Before the Historical Society of Hudson County* (1): 1909.

Hopkins, G.M.
1928 *Plat Book of Jersey City, Hudson Co., N.J.: From Official Records, Private Plans and Actual Surveys.* G. M. Hopkins Co., Philadelphia.

Howe, Kathleen
2000 National Register of Historic Places Registration form for Jerome Park Reservoir, the Bronx, New York. Accessed through the New York State OPRHP-Field Services Bureau website. September 24, 2009.

Howson, Jean
2001 *Cultural Resources Survey of the Jersey City Water Works Pipeline, 1851-1873.* RBA Group, inc., Morristown, New Jersey.

Hudson County Court of Oyer and Terminer
1894 *Grand Jury Presentment on the Condition of the Water Supply of Jersey City.* Evening Journal Print, Jersey City.

James, Richard
2005 Draft National Register of Historic Places nomination form for Reservoir #3. Manuscript copy.

Jersey City Department of Streets and Public Improvements
1930 "Scraps of Information: Report on New 72" Pipe Line, Reprint from February and March 1925, issues of "Aquafax," the Magazine of Water Conservation." Photo caption: "Water gate house, Troy St. and Summit Ave., Jersey City." April 1, 1930. From the Jersey City Water Supply vertical file, Jersey City Public Library (JCPL).

Jersey City Online
2007 "Jersey City: America's Golden Door." Website: http://www.jerseycityonline.com/history/jc_jistory.htm. Accessed August 2009.

Jersey City Reservoir Preservation Alliance
Vertical files. Jersey City, New Jersey.

Jersey City Public Library (JCPL)
Vertical files. Jersey City, New Jersey.

JMA
2010 "Reservoir #3, Jersey City, New Jersey, Historic Structures Report / Cultural Landscape Report." Interim Draft. JMA, Inc., Alexandria, Virginia.

Kao, Shoon-Rong
1990 Inspection report for Reservoir #3. Department of Water, City of Jersey City. On file at the Dam Safety Office, Trenton.

Langan Engineering Associates [Langan]
1981 *Engineering Study: Jersey City Reservoir No. 3.* Langan Engineering Associates, Inc., Saddle Brook, New Jersey.

Massachusetts Department of Conservation and Recreation [MDCR]
n.d. Chestnut Hill Reservation History. Website: http://www.mass.gov/dcr/parks/metroboston/chesHistory.htm. Accessed October 1, 2009.

McLean, Alexander
1895 *History of Jersey City, N.J.: A Record of its Early Settlement and Corporate Progress.* Press of the Jersey City Printing Company, Jersey City.

Miller, Edmund W.
1901 *Bergen : Jersey City, An Historical Souvenir of the 250th Anniversary of the Founding of Bergen.* The Free Public Library, Jersey City.

Millington, John
1839 *Elements of Civil Engineering: Being an attempt to consolidate the principles of the various operations of the civil engineer into one point of view, for the use of students and those who may be about to embark in the profession.* J. Dobson, Philadelphia.

Nashville Metro Water Services
n.d. Water System History. Website: http://www.nashville.gov/water/subHistory.asp. Accessed October 1, 2009.

New York Times
Articles from various cited issues. Downloaded from *New York Times* article archives (http://www.nytimes.com/ref/membercenter/nytarchive.html); articles also accessed through the public library.

Picasa Web Albums
2007 "Jersey City Reservoir 3 Historic Photos, Maps & Drawings." Website: https://picasaweb.google.com/jcreservoir/JerseyCityReservoir3HistoricPhotosMapsDrawings#. Site posted July 7, 2007; accessed July 17, 2011.

Pittsburgh Parks
n.d. Highland Park Entry Garden. Website: http://www.pittsburghparks.org/highland. Accessed October 1, 2009.

Portland Water Bureau
c. 2006 Mount Tabor Park Reservoirs. On-line brochure. Website: http://www.portlandonline.com/shared/cfm/image.cfm?id=149337

[The] Publicity Committee
1911 *Jersey City: Its superb advantages as a manufacturing and business center and place of residence.* Jersey City Board of Trade. Downloaded from Rutgers University Special Collections, website: http://mapmaker.rutgers.edu/HUDSON_County/JerseyCity_back_1911.gif. Accessed January 5, 2010.

Rainwater, Clarence E.
1922 *The Play Movement of the United States: A Study of Community Recreation.* University of Chicago Press, Chicago.

RBA Group, Cultural Resource Unit
2006 New Jersey Department of Environmental Protection, Historic Preservation Office, Forms: "Jersey City Water Works Historic District" (Attachment Forms for Jersey City Reservoir Nos. 2 and 3). Forms completed April 2006.

Scientific American. February 27, 1875.

Sites, W.W.C. (Chief Engineer of the City of Jersey City)
various *Annual Reports of the Chief Engineer for the Year Ended December 31, 1881-1884*. The Jordan Stationery Company, New York.

Ward, J.D.
1856 *A Short, Historical and Descriptive Account of the Jersey City Water Works*. Van Benthuysen, Printer, Albany.

White, Lazarus
1913 *The Catskill Water Supply of New York City*. John Wiley & Sons, New York.

Previous documentation on file (NPS):

___preliminary determination of individual listing (36 CFR 67 has been Requested)
___previously listed in the National Register
_x_previously determined eligible by the National Register
___designated a National Historic Landmark
___recorded by Historic American Buildings Survey #_____
___recorded by Historic American Engineering Record #_____

Primary location of additional data:

___State Historic Preservation Office
___Other State agency
___Federal agency
_x_Local government
___University
___Other
Name of repository:

Historic Resources Survey Number (if assigned): _____

10. Geographical Data

Acreage of Property 13.801
(Do not include previously listed resource acreage)

UTM References
(Place additional UTM references on a continuation sheet)

	Zone	Easting	Northing		Zone	Easting	Northing
1	18	579744	4510262	3	18	579899	4510173
2	18	579893	4510201	4	18	579794	4509979

Verbal Boundary Description (describe the boundaries of the property)

The boundary of the resource includes the entirety of Jersey City Tax Block 835, Lot S. The block bounded Summit Avenue, Jefferson Avenue, Central Avenue, and Reservoir Avenue; the boundary extends to the curb line of the streets (to include the sidewalks).

Boundary Justification (explain why the boundaries were selected)

The boundary for Reservoir #3 includes the entirety of the historic and present-day property.

11. Form Prepared By

name/title Kirstin Falk and Doug McVarish
Organization JMA (John Milner Associates, Inc.) date July 2011
street & number 5250 Cherokee Avenue, Suite 300 telephone 703-354-9737
city or town Alexandria state VA zip code 22312
e-mail kfalk@johnmilnerassociates.com (email contact for Kirstin Falk)

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** (7.5 or 15 minute series) indicating the property's location.

  A **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.

- **Continuation Sheets**

- **Additional items:** (Check with the SHPO or FPO for any additional items)

Photographs:

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map.

Name of Property: Reservoir #3

City or Vicinity: Jersey City

County: Hudson County **State:** New Jersey

Photographer: Douglas McVarish and Alfonso Narvaez, John Milner Associates, Inc.

Date Photographed: 9/2009

Description of Photograph(s) and number:

Photo	Description of View	Camera Direction
1.	Detail of retaining wall, Summit Avenue side.	SW
2.	Detail of retaining wall and Gatehouse #1, Summit Avenue side.	S-SE
3.	General view of Summit Avenue retaining wall.	S
4.	West end of Jefferson Avenue retaining wall.	N-NW
5.	Detail of stonework on Central Avenue retaining wall.	N-NW
6.	Detail showing granite coping on Central Avenue retaining wall.	NW
7.	Detail of Reservoir Avenue wall.	SW
8.	Detail of Summit Avenue wall showing repointing and former entry.	SE
9.	Southwest exterior wall of Gatehouse #2.	NE
10.	Detail of Gatehouse #2 showing brackets for former copper cornice.	SE
11.	View of interior of Gatehouse #2 through southeast window.	W
12.	View of southeast façade of Gatehouse #1.	N
13.	Detail of Gatehouse #1 window opening. Note brownstone detailing.	SE
14.	Detail showing outflow openings and standpipe, Gatehouse #1.	SW
15.	Interior of Gatehouse #1 showing gate machinery.	NW
16.	Detail showing standpipe near Gatehouse #1.	W
17.	View showing screen house and deteriorated bridge.	NW
18.	General view of Reservoir #3, toward screen house.	SE
19.	General view of Reservoir #3, Empire State Building in background.	NE
20.	General view of Reservoir #3, showing large, central island.	SE
21.	View of northwest (pedestrian) entrance gate.	S-SW
22.	View of northeast corner, Reservoir and Summit Avenues.	S-SW
23.	View of Gatehouse #2, through trees.	N
24.	View of Reservoir Avenue entrance.	S-SW

Project #11-1269-5
HPO-
G2012-085O

RECEIVED
JUL 13 2012
NAT REGISTER OF HISTORIC PLACES
NATIONAL PARK SERVICE

State of New Jersey

MAIL CODE 501-04B
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
HISTORIC PRESERVATION OFFICE
P.O. Box 420
Trenton, NJ 08625-0420
TEL. (609) 984-0176 FAX (609) 984-0578

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

April 10, 2012

Paul Loether, Chief
National Register of Historic Places
National Park Service
Department of the Interior
Washington, D.C. 20240

Dear Mr. Loether:

I am pleased to submit for the Jersey City-Reservoir #3, Hudson County, New Jersey for National Register consideration.

This application has received majority approval from the New Jersey State Review Board for Historic Sites. All procedures were followed in accordance with regulations published in the Federal Register.

Should you want any further information concerning this application, please feel free to contact Daniel D. Saunders, Acting Administrator, New Jersey Historic Preservation Office, P.O. Box 404, Trenton, New Jersey 08625 or call him at (609) 633-2397.

Sincerely,

Rich Boornazian
Deputy State Historic
Preservation Officer

Figures:

Figure 1. Ca. 1880 rendering; pedestrian entrance on Summit Avenue ("New Jersey, -New Reservoir on Bergen Heights, for the supply of Jersey City," Jersey City Reservoir Preservation Alliance, Vertical Files).

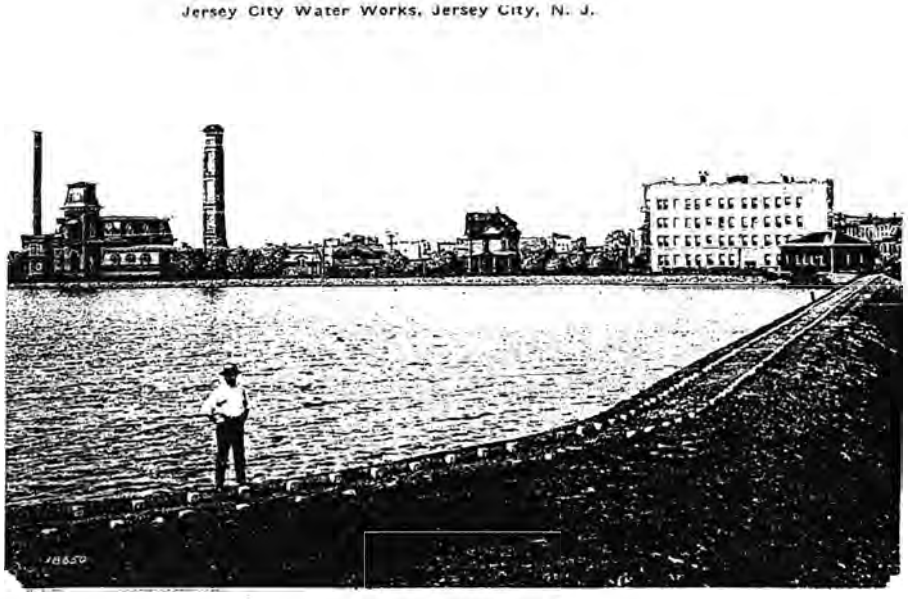

Figure 2. Ca. 1920 postcard of Reservoir #3 (image available online at: Picasa Web Albums, https://picasaweb.google.com/jcreservoir/JerseyCityReservoir3HistoricPhotosMapsDrawings#).

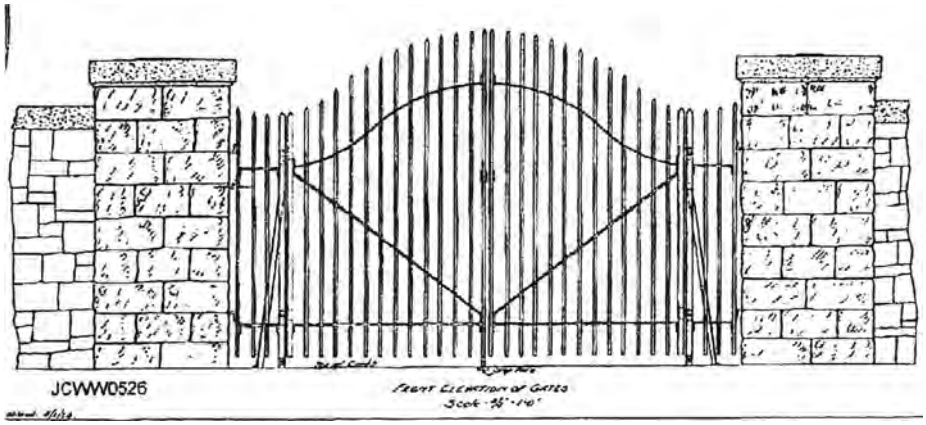

Figure 3. Drawing of double iron gates at the Reservoir Avenue entrance (Jersey City Bureau of Water, May 1, 1924).

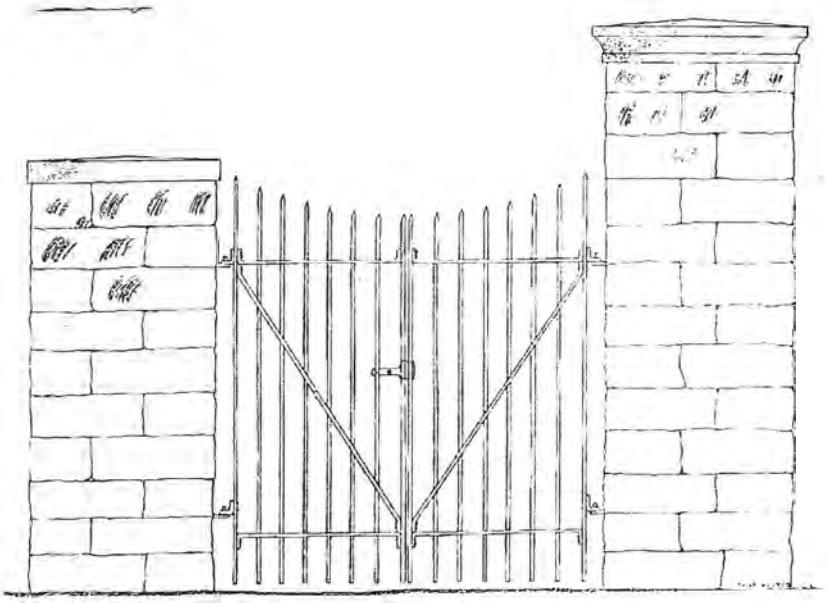

Figure 4. Drawing of iron gates at the northwest corner pedestrian entrance (Jersey City Bureau of Water, September 10, 1923).

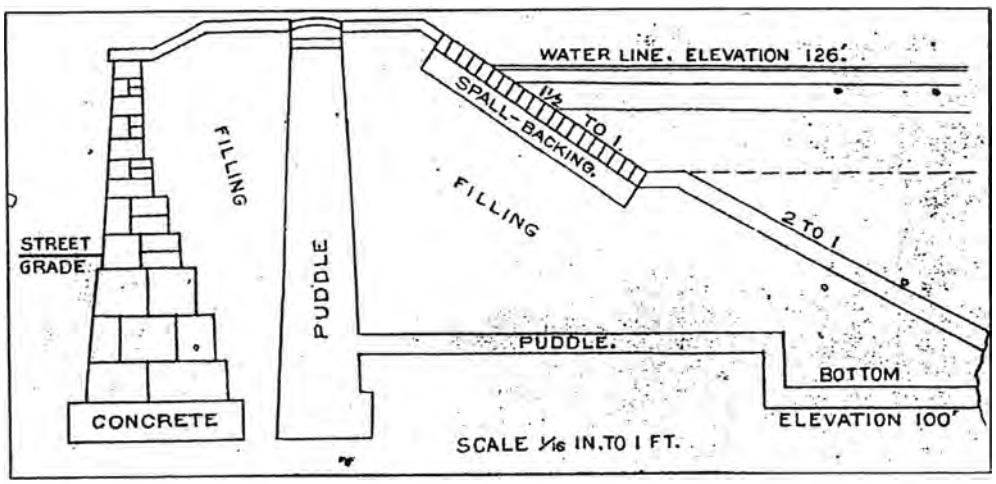

Figure 5. Section of reservoir wall ("Plan of Jersey City Reservoir," *Engineering News*, November 27, 1880).[46]

WATER GATE HOUSE, TROY ST. AND SUMMIT AVE., JERSEY CITY

Figure 6. Ca. 1929 photograph, Gatehouse #2 (Jersey City Reservoir Preservation Alliance, Vertical Files; "Scraps of Information," Jersey City Department of Streets and Public Improvements).

[46] Regarding the puddle:

> "If the excavation or embankment is intended to hold or retain water, another process, called Puddling, may be requisite... No cheap and common material is found to oppose the filtration and passage of water so effectually as a soft loamy clay when it is well worked or kneaded into a soft paste with water, and is not permitted to get dry again...Puddling is nothing more than covering the surface of ground, or of embankments, with this prepared clay or loam so as to enable them to hold water effectually ....Using a puddle lining effectually, is to enclose it within the bank in such manner that it is supported by earth on both sides, is kept constantly moist, is never exposed to the sun or external air, or indeed to disturbance of any kind, and then it will last and be effective for ever..." (Millington 1839:208&209).

Figure 7. Photograph of builder's plaque, commemorating the construction of the waterworks in 1874. Located on the perimeter wall near Gatehouse #1 (JMA photograph, February 2009).

Figure 8. Photograph of builder's plaque originally placed on the High Service Engine House at Reservoir #2 in 1872. This plaque has since been re-located to the offices of United Water (RBA Group, Cultural Resource Unit, photograph, April 2006).

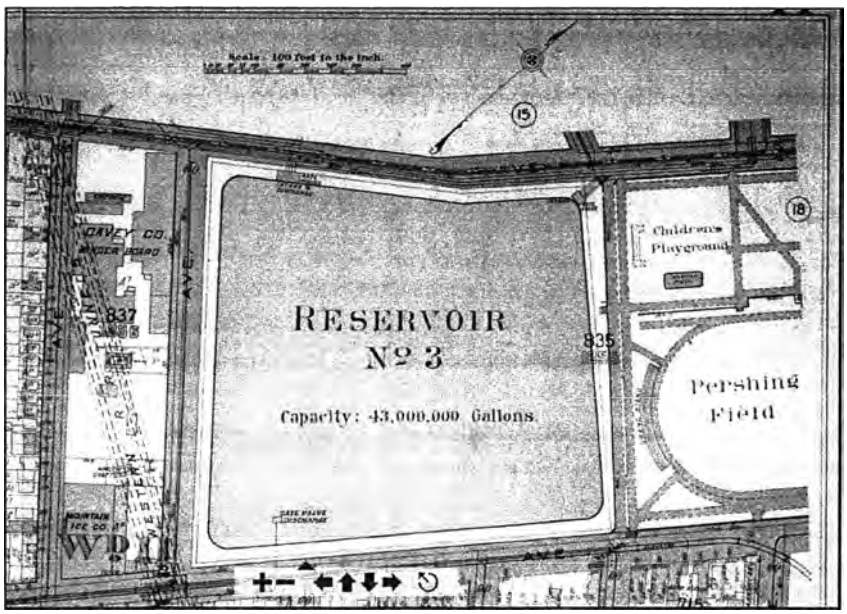

Figure 9. Ca. 1928 plat (Hopkins 1928; Plate 14).

Property Owner:

(complete this item at the request of the SHPO or FPO)

name City of Jersey City

street & number 280 Grove street telephone

city or town Jersey city state NJ zip code 07302

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C.460 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Office of Planning and Performance Management. U.S. Dept. of the Interior, 1849 C. Street, NW, Washington, DC.

Historic Preservation Plan
Project for

Reservoir 3

City of Jersey City, NJ

and

Jersey City Reservoir
Preservation Alliance

JMA
John Milner Associates,
Architects, Archeologists, Planners PC

New Jersey
&
National Registers
of Historic Places

Reservoir # 3

City of Jersey City
Hudson County, NJ

Photograph Locations

FOR PLANNING
PURPOSES ONLY

NOT FOR
CONSTRUCTION

project: RESERVOIR3
drawn: LFN
checked: LLK
phase: field documentation
date: 11 November 2009
revised:

Existing
Conditions

1 inch = 50 feet
50 0 50 100

Copyright 2009 John Milner Associates, Inc.

Mar 16, 2010 - 2:14pm G:\PROJECTS\Reservoir 3\Planning\AutoCAD\ACTIVE\PROJECTS RES3rev-1.dwg

Gatchouse #1

Retaining Walls

Gatchouse #2

Screen house

Boundary

SUMMIT AVENUE

CENTRAL AVENUE

JEFFERSON AVENUE

TROY STREET

CARLTON AVENUE

VAVERLY STREET

OSPECT AVENUE

SERVOIR STREET

N.

Historic Preservation Plan
Project for

Reservoir 3

City of Jersey City, NJ

and

Jersey City Reservoir
Preservation Alliance

JMA
John Milner Associates,
Architects, Archeologists, Planners PC

New Jersey
&
National Registers
of Historic Places

Reservoir # 3

City of Jersey City
Hudson County, NJ

Site Plan

FOR PLANNING
PURPOSES ONLY

NOT FOR
CONSTRUCTION

project:	RESERVOIR3
drawn:	LFN
checked:	LLK
phase:	field documentation
date:	11 November 2009
revised:	

Existing
Conditions

1 inch = 50 feet

Copyright 2009 John Milner Associates, Inc.

Mar 16, 2010 - 2:44pm G:\PROJECTS\Reservoir 3\Planning\AutoCAD\ACTIVE\PROJECTS RES3rev1-2.dwg

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY NAME: Reservoir No. 3

MULTIPLE NAME:

STATE & COUNTY: NEW JERSEY, Hudson

DATE RECEIVED: 7/13/12 DATE OF PENDING LIST: 8/10/12
DATE OF 16TH DAY: 8/27/12 DATE OF 45TH DAY: 8/29/12
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 12000569

REASONS FOR REVIEW:

APPEAL:	N	DATA PROBLEM:	N	LANDSCAPE:	N	LESS THAN 50 YEARS:	N
OTHER:	N	PDIL:	N	PERIOD:	N	PROGRAM UNAPPROVED:	N
REQUEST:	Y	SAMPLE:	N	SLR DRAFT:	Y	NATIONAL:	N

COMMENT WAIVER: N

✓ ACCEPT ___ RETURN ___ REJECT 8/27/12 DATE

ABSTRACT/SUMMARY COMMENTS:

Area of Significance — engineering, politics/ Community Planning & Health/Medicine.
Period of Significance 1871 - c.1924

RECOM./CRITERIA A & C

REVIEWER Lisa Deline DISCIPLINE Historian

TELEPHONE _____ DATE 8/27/12

DOCUMENTATION see attached comments Y/N see attached SLR Y/N

If a nomination is returned to the nominating authority, the nomination is no longer under consideration by the NPS.


NO
TRESPASSING

Reservoir #3

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

JERSEY CITY QUADRANGLE
NEW JERSEY—NEW YORK
7.5 MINUTE SERIES (TOPOGRAPHIC)

NJ + National Registers of Historic Places
RESERVOIR #3
City of Jersey City
Hudson County
New Jersey

LOCATION MAP
1. 18ES79758N4510512
2. 18ES79945N4510415
3. 18ES79833N4510173
4. 18ES79621N4510306

Mapped, edited, and published by the Geological Survey
Revised in cooperation with New York Department of Transportation

Control by USGS, NOS/NOAA, USCE, New Jersey Geodetic Survey, and City of New York Board of Estimate and Apportionment

Planimetry by photogrammetric methods and from NOS charts T-5111, T-5277, T-5332, T-5450, T-5453, T-5454, T-5460, T-5461, T-5466, T-5468, T-5469, and T-5470

Topography by photogrammetric methods from aerial photographs taken 1954 and planetable surveys 1955. Revised from aerial photographs taken 1966. Field checked 1967

Selected hydrographic data compiled from NOS charts 285, 287, 541, and 745 (1966). This information is not intended for navigational purposes

Polyconic projection. 10,000-foot grid ticks based on New Jersey coordinate system, and New York coordinate system, Long Island zone. 1000-meter Universal Transverse Mercator grid ticks, zone 18, shown in blue. 1927 North American Datum. To place on the predicted North American Datum 1983 move the projection lines 6 meters south and 35 meters west as shown by dashed corner ticks

There may be private inholdings within the boundaries of the National or State reservations shown on this map

UTM GRID AND 1981 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOW WATER
THE RELATIONSHIP BETWEEN THE TWO DATUMS IS VARIABLE
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS APPROXIMATELY 4.4 FEET IN UPPER BAY AND 4.8 FEET IN NEWARK BAY

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Revisions shown in purple compiled from aerial photographs taken 1976 and other sources. This information not field checked. Map edited 1981

Purple tint indicates extension of urban areas

ROAD CLASSIFICATION
Primary highway, all weather, hard surface
Secondary highway, all weather, hard surface
Light-duty road, all weather, improved surface
Unimproved road, fair or dry weather
Interstate Route
U. S. Route
State Route

QUADRANGLE LOCATION

JERSEY CITY, N. J.—N. Y.
N4037.5—W7400/7.5

1967
PHOTOREVISED 1981
DMA 6165 II NE—SERIES V822

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1982

ISBN 0-607-36774-1
9 780607 367744