

Attachment D

New York City Landmark and National Register Eligibility Assessment of the Tallman Island Water Pollution Control Plant for the Tallman Island Plant Upgrade Project

D.1 Historic Context

Introduction

The Tallman Island Water Pollution Control Plant (WPCP) was constructed between 1937-39 according to designs prepared by the New York City Department of Sanitation (NYCDOS), Bureau of Sewage Disposal and Intercepting Sewers. The facility, originally known as the Tallmans Island Sewage Treatment Works, was built on a sparsely developed island situated in the East River, west of Powell's Cove, in the College Point neighborhood of Queens (Figure 1).

Historic maps indicate that during the late 19th and early 20th century, the island was developed with a small hotel, including dancing and dining pavilions and sleeping quarters (USGS, 1891; Sanborn, 1916). The south side of the island consisted of marshland, fed by a creek. Access to the island was gained via a causeway that extended from the mainland via an alignment similar to present-day Lax Avenue (USGS, 1891). By the mid-1930s, the hotel buildings no longer survived; the site had only scattered building foundations and dirt roads (NYCDOS, 1937).

During the 1930s, the New York City government, under the leadership of Mayor Fiorello LaGuardia, embarked on a wastewater treatment plant construction program to build a system of facilities citywide that would provide biological treatment of sewage. Under his leadership, plants at Coney Island (1935) and Wards Island (1937) were completed; 28 additional plants were projected to be built throughout New York City, but only 14 were eventually constructed (NYCDEP, c. 1998).

In September 1937, the Borough of Queens began installation of collecting sewer lines, a necessary prelude to the construction of a sewage treatment plant in Queens. That same year, NYCDOS began preparing plans for the design and construction of the Tallmans Island Sewage Treatment Works, the first sewage treatment plant in Queens. The facility was to be constructed with city funds, with no assistance from New York State or the federal government. As initially conceived, the plant would have the capacity to treat 40 million gallons per day (MGD) of sewage. Encompassing over 30 ac (12.2 ha), the plant was also designed for future expansion as the population along the north shore of Queens grew throughout the 20th century (Anonymous, April 23, 1939).

Dedication of the Tallman Island Plant

The Tallman Island plant was completed and dedicated by Mayor Fiorello LaGuardia in April 1939, in time to treat the sewage flow from the 1939 World's Fair located southwest of the site in Flushing Meadows Park. Newspaper accounts of the dedication ceremony cite that the plant was designed along "modified modernistic lines" similar in style to many of the Art Moderne buildings at the World's Fair exposition grounds (Anonymous, April 23, 1939). A landscaped, rectangular fountain, similar to the World's Fair structures, was located on the site northwest of the Pump and Blower Building, but was removed during the 1940s or 1950s.

As constructed, the \$3.8 million Tallmans Island Sewage Treatment Works consisted of ten major facilities that worked as a unit to process and treat raw sewage (*The New York Times*, April 23, 1939). To accommodate the structures, the island was filled on its north, east, and northwest corner, and bulkheads were erected in these areas to stabilize the fill. At the time of opening, the west side of the island remained intact, forming a U-shaped cove, and the south side of the island remained marshland, but plans were in place to fill the marsh and construct a road atop it.

Sanborn maps (1943), as shown in Figure 2, indicate that the complex originally included:

- Pump and Blower Building;
- Pumping Station;
- Preliminary Settling Tank Nos. 1-3;
- Aeration Tank Nos. 1 and 2;
- Final Settling Tank Nos. 1-4;
- Four Digester Tanks;
- Two Sludge Thickener Tanks;
- Two Sludge Storage Tanks;
- Grit Tank House; and
- Pier.

The principal building on the site, the Pump and Blower Building, was a buff-colored brick building with Air Moderne details. The high-bay building was originally pierced by industrial steel casement windows. The principal entry had double bronze doors flanked by black granite columns and polished pink granite blocks indicating “City of New York” and “Department of Public Works.” The building had a “1938” pink granite date block and nickel bronze New York City seal set in granite, affixed above the entry. The Pump and Blower Building originally contained eight gas-powered engines that powered the machinery for the sewage treatment process. The building has been reconstructed over time.

Other original features included the Pumping Station and various tanks. The Pumping Station, no longer extant, was a small rectangular fireproof building located north of the Pump and Blower Building. Four attached, round, concrete sludge Digester Tank Nos. 1-4 were constructed north of the Pump and Blower Building, and are still extant. The tanks rest atop a rectangular plan structure that provides access to them. The base of the tanks is embellished with Art Deco detail consisting of three continuous, parallel sunk-fillet moldings along their bottom edge. Preliminary Settling Tank Nos. 1-3, were constructed northwest of the Digester Tanks, are still extant and consist of large, rectangular open-air tanks with reinforced concrete ramps dividing the tanks into three sections. The two, large rectangular Aeration Tank Nos. 1-2 were constructed northwest of the Preliminary Settling Tank Nos. 1-3, and are still extant. They consist of open-air, multi-pass concrete tanks, each divided into four channels. The tanks are further subdivided into three rectangular sections by two concrete ramps that span the width of the tanks.

Four Final Settling Tank Nos. 1-4 were constructed northwest of the Aeration Tanks, are still extant, and consist of four open-air tanks. The two northwestern-most tanks are subdivided into five rectangular sections by four concrete ramps. The tanks are further subdivided by two longitudinal concrete ramps. The two northeastern-most tanks are similar to the two northwestern tanks but lack the longitudinal ramps.

Two open-air Sludge Thickener tanks were constructed west of the Final Settling Tanks, and are still extant. Two concrete Sludge Storage Tanks were constructed northwest of the Final Settling Tanks and are still extant.

A Grit Tank House was constructed at the southeastern edge of the complex, southeast of the Pump and Blower Building. The tank house consisted of a rectangular-plan, brick garage pierced by a concrete-frame brick silo. The Grit House had rounded, streamlined corners typical of Art Deco-style buildings, and has been highly altered over time. A wood pier on wood piles was located at the northwestern edge of the property in the original location of the recreational pier from the island's prior recreational use. The pier facilitated removal of sludge from the plant via scows.

Innovations in Sewage Treatment at Tallman Island

The Tallman Island complex processed sewage via the activated sludge process, a ca. 1914 British technology, and was the first plant in New York City and the US to apply the step aeration process. (Sawyer, 1965). In the activated sludge process, microorganisms break down sludge by using it as a food source in an aeration tank. Oxygen and nutrients are required by microorganisms to break down the sludge. The conventional activated sludge process is known as plug flow, where fluid particles pass through the aeration tanks and are discharged in the same order they enter.

At Tallman Island, New York City sanitary engineer Richard H. Gould developed the step aeration process to overcome some of the problems inherent in the conventional activated sludge process and conserve aeration tank capacity. Gould's design, which was first implemented at Tallman Island, is based on a system of multi-pass aeration tanks with four channels. The first pass is reserved for reaeration of returned sludge to regenerate its absorptive properties. Sewage is then added in incremental steps to the aeration tanks along the course of flow of the returned sludge to keep the oxygen demand at uniform levels. Step aeration capitalizes on the absorptive power of rejuvenated activated sludge to remove organic pollutants, with stabilization occurring in the sludge reaeration tank. The primary advantages of step aeration is that it allows for more flexibility in operation, produces well-settled sludge and saves tank volume (Sawyer, 1965; Carrio, June 12, 2000; Reardon, June 12, 2000).

Plant Operations

The Tallman Island plant originally operated as follows:

Raw sewage, or influent, would enter the plant at the underground screen chamber at the southwest corner of the Pump and Blower Building. Sewage would then be pumped to Preliminary Settling Tanks via eight gas-powered engines in the Pump and Blower Building. In the Preliminary Settling Tank Nos. 1-3, the sewage would separate into solids and grit, with the grit pumped to an underground grit chamber east of the Pump and Blower Building. Grit would be removed from the Grit Tank House silo via truck. Degritted primary sludge would be pumped to the plant's sludge handling facilities for further processing.

Settled sewage in the Preliminary Settling Tank Nos. 1-3 would flow to the aeration tanks where it would be distributed and mixed with return sludge in all four passes of each tank using the step aeration process. Aeration effluent would then be clarified in the Final Settling Tank Nos. 1-4 and be discharged into the East River via above-ground pipes affixed along the pier.

Settled sludge would be returned to the aeration tanks or flow by gravity to the two Sludge Thickener Tanks. Thickened sludge would be pumped to Sludge Digester Tank Nos. 1-4. Digested sludge would be pumped to Sludge Storage Tanks where it would then be pumped into a sludge vessel for disposal at sea.

Access to Tallman Island

Maps from the 1930s-40s indicate that sometime between the opening of the plant in 1939 and the World War II/post-World War II-era, Powell's Cove Boulevard was created on fill over the creek that ran along the south side of Tallman Island. The boulevard provided access to the plant and joined the island to mainland Queens (NYCDOS, 1937; Sanborn 1941; 1943). The Sanborn map of 1943 indicates that Powell's Cove Boulevard was constructed along the south side of the Tallman Island, west of 127th Street, the principal access route to the plant at that time. During this period, Powell's Cove Boulevard was slated for construction atop the creek that still existed along the south side of the island, east of 127th Street, but had not yet been built in 1943 (Sanborn, 1943). Most likely, Powell's Cove Boulevard was extended eastward sometime after World War II.

Other Features

The 1943 Sanborn map also reveals that a portion of land on the west side of the plant was designated "Tallman Island Park." The park consisted of a swath of green space situated between the East Battery and a U-shaped cove. Because bulkheads did not retain the west side of the island, the park provided direct, unimpeded access to the cove, including a truncated jetty at the northwest corner of the island. Park users shared the cove with a privately owned boat storage yard, improved with a wood pier on wood piles.

Tallman Island, 1950s-60s

During the 1950s, operations at the Tallman Island facility were improved through the addition of the South Sludge Thickeners in 1957 (NYCDEP, 1978). The South Sludge Thickeners, were constructed west of the Preliminary Settling Tank Nos. 1-3, and are still extant. They consist of four round open tanks set upon a rectangular base. The surface of the tanks is embellished with a sunken fillet design. A brick-enclosed Art-Deco-style spiral staircase on the west façade provides access to the upper deck of the tanks. The staircase is illuminated by rectangular-shaped, glass-block windows that span the length of the staircase. The walkway from the staircase to the tank deck is protected by a reinforced concrete overhang, supported by metal poles. The South Sludge Thickener tanks increased the sludge-thickening capacity at Tallman Island from two to six tanks, thereby enabling the facility to process sludge from the waste sludge sump where waste sludge from Preliminary Settling Tank Nos. 1-3 was collected.

In 1959, Tallman Island was further improved through the addition of a Chlorine Building and Chlorine Contact Tank No. 1 (NYCDEP, 1978). The Chlorine Building was originally a rectangular-shaped building constructed of buff-colored brick south of the main pier, and has been highly altered over time. The contact tank, which remains extant and relatively unchanged, is an open-air, rectangular tank divided into four sections by concrete ramps. The tank is bisected in the center by a single concrete ramp. The chlorination facilities were added to disinfect treated effluent from Final Settling Tank Nos. 1-4 during the bathing season.

In 1961, further improvements were made to Tallman Island when the engineering firms Havens & Emerson and Hazen & Sawyer were engaged to prepare designs for the first major expansion of the facility. Completed in 1964, the expansion increased the capacity of the plant to 60 MGD and resulted in the construction of a West Battery to complement the 1939 section, which became known as the East Battery. In addition, other major work included revising the flow pattern for Final Settling Tank Nos. 1-4; converting one sludge Digester Tank to a storage tank and changing the remaining three digesters to fixed

cover-type tanks; and replacing a pump and engine and adding a pump and engine to accommodate the new 60 MGD flow.

The improvement initiative also upgraded the plant, allowing it to run a modified aeration process during emergencies (NYCDEP, 1978). Modified aeration is similar to the conventional activated sludge process, but with a high rate of wasting of return sludge to keep the solids concentrations of the aeration tanks low. Air requirements are only three to four tenths of that required by the activated sludge process, with sufficient oxygen required to maintain aerobic conditions (NYCDEP, 1978).

The expansion included the addition of the following buildings and structures located west of the central plant road:

- Preliminary Settling Tank Nos. 4-5;
- Aeration Tank No. 3;
- Final Settling Tank Nos. 3-4;
- Storage Building; and
- One Gas Holder Tank.

The Preliminary Settling Tank Nos. 4-5, Final Settling Tank Nos. 3-4, and Aeration Tank No. 3 were similar in design to the East Battery structures, with the Aeration Tank equipped with four passes. These facilities remain relatively unaltered today.

The Storage Building was originally a rectangular-plan, buff-colored brick building located northwest of the Pump and Blower Building. It was pierced by glass-block and industrial window bands, and has been altered over time.

The Gas Holder Tank, which has remained intact since the 1960s, was a large metal tank located south of the Digester Tanks in the East Battery. It was erected to store methane gas, a by-product of the sludge digestion process, which is burned by the plant for energy.

According to aerial photographs, other changes were also implemented during the 1960s, including extension of the pier northward to augment vessel access (NYC Department of Public Works, 1964).

Tallman Island, 1970s-90s

In 1969, the engineering firm of Camp, Dresser & McKee was hired to design the second major upgrade to the Tallman Island facility (NYCDEP, 1978). Completed in the mid-1970s, the upgrade increased the capacity of the plant to 80 MGD, capable of treating sewage of 16,860 ac (6,823 ha) in the northeast section of Queens. The second major upgrade included the construction of the following facilities:

- Office Building, Boiler Room, and Storage and Bar Screen Facility additions to the Pump and Blower Building;
- Grit Building (located north of the South Sludge Thickeners);
- Four North Sludge Thickeners (located north of the Grit Building);
- Mix Flow Pumping Station (located west of Final Settling Tank Nos. 1-4 in the East Battery);
- Sludge Storage Tank (located east of the 1939 Sludge Storage Tanks);
- Chlorine Contact Tank No. 2 (located west of the 1959 Chlorine Contact Tank);
- Final Settling Tank Nos. 5-6 (located west of the Final Settling Tank Nos. 3-4);
- Aeration Tank No. 4 (located west of Aeration Tank No. 3);

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- Preliminary Settling Tank Nos. 6-7 (located west of Preliminary Settling Tank Nos. 4-5);
 - Storage Building addition; and
 - Reconfigured park.

New mechanical additions to the plant included the Bar Screen Facility, Grit Building, and Mix Flow Pumping Station. The addition of a Bar Screen Facility enabled the plant to remove screenings from the sewage with raked bar screens via a belt conveyor in the screenings room. Screenings would then be transported by truck for disposal at sanitary landfills. The remaining sewage would be processed at the facility.

The Grit Building received sewage solids from the Preliminary Settling Tanks where it was then pumped to cyclone degritters to improve the grit removal process. The Mixed Flow Pumping Station received settled sludge from the waste sludge sump and enhanced the sludge removal process.

Buildings and structures erected during the 1970 expansion had a commonplace, utilitarian design, with the primary building material either reinforced concrete or brick. During this improvement campaign, major changes were made to the Pump and Blower Building, originally the most architecturally elaborate edifice on the site. The upper story was sheathed in black glass obscuring the 1930s windows. A modern triangular-shaped office building and rectangular-shaped Storage and Bar Screen Facility were also added to the south corner and northeastern facade of the Pump and Blower Building, respectively. These additions further compromised the historic character of the building. In addition, the Pump and Blower Building's original double bronze doors, granite columns, date block, "New York City" block, "Department of Public Works" block, and "New York City" seal were also removed. The building elements were relocated to the entry on the west facade of the office building and the granite columns were installed off-site in the park located northwest of the West Battery.

During this period, the Storage Building was also altered. Fenestration was bricked-in and a white brick addition was appended to its west facade, thereby compromising the historic feel of the building.

Upgrade plans prepared by consulting engineers Camp, Dresser & McKee in 1970 indicate that the park was also slated for improvement as part of construction campaign. According to landscape plans, the park would be reduced in size to accommodate new West Battery structures that were to be built west of those constructed in the early 1960s. Asphalt-paved paths that formed an elongated figure-eight shape were constructed for pedestrians. In addition, a concrete bulkhead was constructed along the northwest portion of Tallman Island that eliminated some of the irregular coastline on the west side of the island. The jetty that extended from the northwest corner of the island was further compromised, but remained slightly intact outside, or west of, the newly bulkheaded area. A small portion of the park's coastline was unimproved and retained its irregular shape. A paved path that extended northwest from northernmost tip of the figure-eight-shaped park path provided access to the bulkheaded north and west perimeter of the island (CDM, August 1970).

According to plans and construction photos, topography within the reconfigured park was formed from excavated construction spoils. (Affiliated Photo Services, March 20, 1974; NYCDEP, February 1976). Upon completion, the northern portion of the park received more fill than the southern portion, resulting in a gently undulating landscape. In addition, electrical systems and water pipes were laid in the park area, resulting in the installation of lampposts and hydrants in the park. Furthermore, rip-rap and chunks of concrete remained in the unimproved portion of the park along the cove.

Within the past twenty years, the original Grit Tank House has also been altered by the conversion of the facility for use as Collections Systems North. The conversion resulted in the installation of modern

fenestration at the Grit Tank House and silo, and construction of a rectangular-plan office addition and enclosed parking space. These alterations compromise the historic feeling and character of the building.

In 1991, a large concrete-panel and glass Dewatering Building was added to the facility, southwest of the pier. The Dewatering Building enables Tallman Island to reduce the liquid volume of sludge by 90% in preparation for transport, as sludge cake, to landfills. During the 1990s, the pier was deactivated and sludge cake began to be transported from Tallman Island to landfills via truck. Chlorinated effluent continues to be discharged into the East River.

During the mid-1990s, the NYCDEP began to retrofit many of its water pollution control plants for biological nutrient removal (BNR). The BNR process was implemented in an effort to mitigate degradation of surface waters and protect aquatic resources in compliance with federal water pollution control standards. In New York City, Tallman Island was one of the first plants slated to be retrofitted for step feed BNR. At that time, baffles, mixers and a froth control system was installed in Aeration Tank Nos. 3 and 4, with minor upgrades to Aeration Tank Nos. 1 and 2 (NYCDEP, 1998). Figure 3 depicts the development phases at the plant between the 1930s-90s.

As noted previously, of the 14 New York City WPCPs, Tallman Island was the first to incorporate the step aeration process for treating wastewater. With the exception of Newtown Creek in Brooklyn, which is currently being upgraded for step aeration, the remaining 13, including Tallman Island, process wastewater via step aeration (Olivieri, June 19, 2000).

D.2 New York City Landmark and National Register Eligibility Assessment

Portions of the 1939 East Battery at the Tallman Island WPCP appear to be New York City Landmark and National Register-eligible resources under Criteria A and C for their historic and engineering importance. Portions of the original plant appear to be eligible under Criterion A for its association with biological treatment of sewage in New York City in the late 1930s. Dedicated in 1939, the plant was completed in time to treat sewage flowing from the site of the New York World's Fair of 1939, and continues to treat the sewage of northern Queens today.

Portions of the plant are also eligible under Criterion C for its engineering design. Tallman Island was the first plant in the US designed by New York City sanitary engineer Richard H. Gould to treat sewage with the step aeration process. Under this process, air pumped into large aeration tanks mixes wastewater and sludge, stimulating the growth of oxygen-using bacteria and other tiny organisms that are naturally present in sewage. These beneficial microorganisms consume most of the remaining organic materials that pollute water, and this produces heavier particles that will settle later in the treatment process. Since its introduction at Tallman Island, step aeration has become the standard method for treating wastewater in New York City.

Nine of the ten structures originally constructed within the East Battery survive from 1939 and are over 50 years old. One structure, the Sludge Thickening Tanks, have been removed and replaced by the Mixed Flow Pumping Station in 1970. Five of the nine surviving structures have been upgraded, but retain adequate architectural integrity to contribute to the significance of the Tallman Island WPCP as shown in Figure 4 and noted below.

- Preliminary Settling Tank Nos. 1-3;

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- Aeration Tank Nos. 1 and 2;
 - Final Settling Tanks Nos. 1-4;
 - Four Digester Tanks; and
 - Two Sludge Storage Tanks;

Together, these resources were integral to the original operation of the Tallman Island WPCP, the first plant in New York City and the US to process sewage via the step feed aeration process.

The four resources listed below were constructed in 1938-39; however, they have been altered and no longer retain adequate integrity to qualify as New York City Landmarks or National Register-eligible resources:

- Preliminary Sludge Pumping Station;
- Pump and Blower Building;
- Pier; and
- Former Grit Tank House.

The remaining structures Tallman Island WPCP, constructed between 1957-91, are less than fifty years old, and with the exception of one structure, the South Sludge Thickeners, do not possess exceptional significance to qualify for listing in the National Register. Although some of these structures are over 30 years old (New York City Landmarks Law criterion), they do not appear to be New York City Landmarks. In general, these structures are characterized as utilitarian construction, representing the historical expansion of the Tallman Island facility over time to meet the public need for wastewater treatment.

The South Sludge Thickeners, constructed in 1957, appear to be New York City Landmark and National Register-eligible because of their Modern design as expressed through the sunken fillets on the surface of the tanks, and the brick and glass-block enclosed spiral staircase leading from the ground surface to the top of the four tanks.

Photos of all buildings and structures at the Tallman Island WPCP keyed to a photo location map are included at the end of this document.

D.3 Future Without the Proposed Action

New York City Environmental Quality Review (CEQR) provides specific criteria for assessing the effects of undertakings on historic properties and identifying significant adverse impacts. The effects of an undertaking on New York City Landmark-listed/eligible resources and National Register-listed/eligible resources and are predicted by evaluating the significant characteristics of the resource and the anticipated consequences of the undertaking on the resource, as described in Table D-1.

The proposed action includes implementation of the Tallman Island Plant Upgrade Program (PUP) described under the Impacts of Proposed Action section. The future no action condition would have no impact on six New York City Landmark and National Register-eligible features at Tallman Island WPCP. New construction would not take place at the facility, and the historic feeling and character of these components of the complex would remain intact.

Table D-1

Significant Adverse Impacts Criteria

Significant Adverse Impacts
CEQR impact assessments are directly related to the proposed action and how it will affect the distinguishing characteristics of identified State/National Register-listed/eligible resources and NYC-designated/eligible resources. The assessment asks two major questions: Will there be a physical change to the property or its setting as a result of the proposed action and is the change likely to diminish the qualities of the resource that make it important?
Examples of Significant Adverse Impacts to Architectural Resources
<ol style="list-style-type: none"> 1. Physical destruction of or damage to all or part of the property; 2. Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that cause it to become a different visual entity; 3. Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features; 4. Replication of aspects of the resource so as to create a false historical appearance; 5. Elimination or screening of publicly accessible views of the resource; 6. Construction-related impacts, such as falling objects, vibration, dewatering, flooding, subsidence or collapse; and 7. Introduction of significant new shadows or significant lengthening of the duration of existing shadows on historically important resources.
Source: Chapter 3, Section F, CEQR Technical Manual (October 2001).

D.4 Impacts of the Proposed Action

The impacts of the Tallman Island WPCP PUP are described below and featured in Figure 5.

Mixed Flow Pumping Station Modifications

The Mixed Flow Pumping Station is situated west of the New York City Landmark and National Register-eligible Final Settling Tank Nos. 1-4 in the East Battery. The Mixed Flow Pumping Station was constructed in the 1970s and is not recommended to be New York City Landmark or National Register eligible. Under the PUP, the mixed flow pumps, spray water pumps, piping and valves would be replaced.

Modifications to the pumping station are slated to occur inside the structure and therefore, would have no impact on nearby eligible resources, including the Final Settling Tank Nos. 1-4 in the East Battery. Thus, alterations to the Mixed Flow Pumping Station would have no effect on New York City Landmark and National Register-eligible resources at Tallman Island WPCP.

RAS and Blower Building

The RAS and Blower Building would be constructed adjacent to and west of New York City Landmark and National Register-eligible Aeration Tank Nos. 1-2 and northwest of Preliminary Settling Tank Nos. 1-3.

The RAS and Blower Building would be a rectangular plan building capped by a flat roof. It would be constructed of poured-in-place concrete, pre-cast concrete, metal siding, glass block, and metal panels, range between two and three stories high. The structure, approximately 400 ft long and 40 ft wide, would extend the entire length of the west side of Aeration Tank Nos. 1-2, and occupy a grassy median that flanks the west side of Aeration Tank Nos. 1-2 and Preliminary Settling Tank Nos. 1-3, where no structures previously existed.

The RAS and Blower Building would have no direct impacts on New York City Landmark and National Register-eligible aeration tanks and preliminary settling tanks because the design and function of the tanks would not be altered.

However, the RAS and Blower Building would have an indirect visual impact on the aeration tanks and preliminary settling tanks because the layout and setting of the tanks would be compromised by the introduction of new adjacent structures where none previously existed. Within the functional portion of Tallman Island WPCP, the view east toward the tanks would be blocked. However, the view east from the publicly accessible park space would not be compromised because the view from the park toward the tanks is currently screened by trees. Although the RAS and Blower Building may cast new shadows on the aeration tanks and preliminary settling tanks, the significance of the tanks are not related to sunlight, and introduction of shadows would not obscure the tanks. The introduction of the RAS and Blower Building would not be incompatible with other sewage treatment-related structures within the Tallman Island WPCP, including the aeration tanks and preliminary settling tanks.

To minimize the impacts of the indirect visual effects on New York City Landmark and National Register-eligible resources, designers should strive to choose building materials for new structures that conform as much as practicable to the existing materials and at the plant, including concrete, buff and painted brick, metal and glass.

27 KV Substation

The 27 KV Substation would be constructed partially in an open park space owned by NYCDEP located on the north side of Powell's Cove Boulevard, west of the principal entrance to the facility and partially atop the interior road network flanking the West Battery within Tallman Island WPCP. The Transformer would not be constructed adjacent to New York City Landmark or National Register-eligible resources at Tallman Island WPCP.

The substation would consist of a rounded rectangular form and a V-shaped form that are joined by a hyphen section. Flat roofs cap the rectangular, V and hyphen forms. The building would be constructed of metal panels and siding (stem of the T plan) and poured-in-place concrete (cross-bar of the T-plan). The building would be approximately 150 ft long, 70 ft wide and one to two stories (20 ft) high.

Construction of the substation would result in no direct impact on New York City Landmark and National Register-eligible resources at Tallman Island WPCP because it would be built within or adjacent to eligible resources.

However, the substation may have an indirect visual impact on New York City Landmark and National Register-eligible resources at the facility because the setting of the plant would be compromised by the introduction of new adjacent structures where none existed before. However, the view toward the eligible resources in the East Battery from the proposed location of the substation would not be severely compromised because the view is currently screened by trees within the park and sloping topography. Introduction of the substation would not be incompatible with other sewage treatment-related structures within the Tallman Island WPCP, including electrical buildings that are slated for construction as part of this plant upgrade project.

While the substation may screen views of West Battery from Powell's Cove Boulevard and the NYCDEP-owned park, it would provide power to the WPCP, a non-publicly accessible facility. Although the substation may cast new shadows within the open space park, the West Battery and Powell's Cove Boulevard, the shadows would not adversely impact eligible resources that are far-removed from the substation and whose significance is not linked to unobstructed sunlight.

Furthermore, the substation may have an indirect impact on a portion the adjacent residential College Point neighborhood. The area was largely developed between the 1930s-present but residences closest to Tallman Island WPCP appear to have been within the past decade. For example, residences flanking 128th and 129th streets between Fifth Avenue and Powell's Cove Boulevard have been constructed within the past five years, and access to these streets has been blocked from Fifth Avenue and Powell's Cove Boulevard. The street leading to the plant, 127th Street, is flanked by a combination of modern brick and frame residences that do not possess historic significance. Furthermore, Powell's Cove Boulevard itself is flanked by residences constructed within the past decade. In general, the area does not qualify as a New York City Landmark or National Register-eligible historic district because it has been highly altered over time, and is typical of many World War II-era neighborhoods in Queens.

Nevertheless, to ensure that the historic integrity of New York City Landmark and National Register-eligible resources in the East Battery of Tallman Island WPCP is preserved, designers should strive to ensure that the materials of the transformer conform to existing structures at Tallman Island WPCP as much as practicable, including concrete, buff and painted brick, metal and glass.

Three Electrical Buildings

Sludge Area Electrical Building (Electrical Building [EB]-201)

The Sludge Area Electrical Building (EB-201) would be constructed northeast of the New York City Landmark and National Register-eligible South Sludge Thickeners, at the northeast corner of the thickener structure.

EB-201 would be a rectangular plan building capped by a flat roof. It would be constructed of metal siding and pre-cast panels, and range between one to three stories high. The structure, approximately 90 ft long and 30 ft wide, would occupy a waterfront area on the east side of Tallman Island WPCP between the South Sludge Thickeners and the North Sludge Thickeners, where no structures previously existed.

Construction of EB-201 would have no direct impacts on the New York City Landmark and National Register-eligible South Sludge Thickeners because the design and function of the four thickener tanks and enclosed spiral staircase would not be altered.

However, EB-201 would have an indirect visual impact on the South Sludge Thickeners because the setting of the structure would be compromised by the introduction of new adjacent structures where none

existed before. Nevertheless, introduction of EB-201 would not be incompatible with other sewage treatment-related structures within the Tallman Island WPCP, including the South Sludge Thickeners. Furthermore, the North Sludge Thickeners located north of the south thickeners were constructed in 1970 and have already slightly comprised the setting of the South Sludge Thickeners. While EB-201 may screen views of the South Sludge Thickeners from Powell's Cove, EB-201 would form an integral part of the WPCP, a non-public facility. Although EB-201 may cast new shadows on the South Sludge Thickeners, the significance of the thickener tanks are not related to sunlight, and introduction of shadows would not obscure the tanks.

To ensure that the historic integrity of the South Sludge Thickeners is preserved, designers should strive to ensure that the materials of the EB-201 conform to existing structures at Tallman Island WPCP as much as practicable, including concrete, buff and painted brick, metal and glass.

East Battery Electrical Building

The East Battery Electrical Building would be constructed west of an existing meter house between the New York City Landmark and National Register-eligible Aeration Tank Nos. 1-2 and Final Settling Tank Nos. 1-4. The new building would be situated on the site of a temporary structure. The building would be a rectangular plan structure capped by a flat roof. It would be constructed of cast-in-place concrete on a poured-in-place concrete slab, and be 15 feet high. The structure, approximately 28 ft long and 19.5 ft wide, would sit atop a concrete pad west of the existing meter house.

Construction of the building would have no direct impacts on the New York City Landmark and National Register-eligible Aeration Tank Nos. 1-2 and Final Settling Tank Nos. 1-4 because the design and function of the tanks would not be altered.

The building would not have an indirect visual impact on the aeration and final settling tanks because it would replace an existing temporary structure and a meter house already exists east of the proposed electrical building. Construction of the building would be compatible with other sewage treatment-related structures within Tallman Island WPCP. The building would not screen views of the aeration tanks and final settling tanks, and would cast approximately the same shadows that the meter house currently casts on the tanks.

West Battery Electrical Building

The West Battery Electrical Building would be constructed in the West Battery between the aeration tanks and final settling tanks. The building would not be constructed adjacent to New York City Landmark-eligible or National Register-eligible resources at Tallman Island WPCP. The building would have a rectangular plan and be capped by a flat roof. It would be constructed of cast-in-place concrete on a poured-in-place concrete slab and would be approximately 31 ft long, 18 ft wide and 15 feet high.

Construction of the building would have no direct or indirect effect on significant architectural resources at the facility because it would be built adjacent to eligible resources, would not obstruct sight lines to and from resources, or cast new shadows on resources.

Aeration System Improvements/Tank Modifications

Aeration Tanks at Tallman Island WPCP would be upgraded by the replacement of existing coarse bubble diffusers with submerged fine bubble membrane-type diffusers, air headers, control valves and piping. In addition, the following tank modifications would also be required to accommodate the step-feed BNR

process. Modifications include the construction of two wet wells that would be situated above water level, multiple floating weirs that would be situated above water level, multiple submerged baffle walls, eight froth hoods that would span tank passes above water level, and 42 platform mixers. The platform mixers would extend from the sides of tank passes above water level and consist of an electric motor atop a platform. The motor would provide power to an underwater shaft propeller that would mix the contents of the tank pass.

These actions would directly impact New York City Landmark and National Register-eligible Aeration Tank Nos. 1-2 in the East Battery. The tanks are significant because they were integral to the original operation of Tallman Island WPCP, the first plant in New York City and the US to process sewage via the step feed aeration process. While the proposed alterations would facilitate step-feed BNR operation of the tanks, the upgrades would alter the appearance of the tanks. For example, new structures such as wet wells, floating weirs, baffle walls, froth hoods and platform mixers would be visible from the ground surface and therefore change the historic configuration of the tanks.

Implementation of tank improvements within Aeration Tank Nos. 1-2 would directly affect the New York City Landmark and National Register-eligible the tanks. Since initial construction in the 1930s, these features have been modified over time to keep pace with sewage treatment technology. The significance of these features is related to their historic function, which would be preserved. However, to avoid significant adverse impacts that implementation of the PUP would have on the physical appearance of these historic resources, it is recommended that Aeration Tank Nos. 1-2 (along with Digester Tanks described below), and surrounding New York City Landmark and National Register-eligible resources, be documented according to NYCLPC/NYSHPO standards for historic structures documentation.

At a minimum, this would include photo-documentation of the Aeration Tank Nos. 1-2 provided by the professional photographer hired by the contractor responsible for implementing PUP. The photographer will coordinate with project cultural resources consultants to take photographs of Aeration Tank Nos. 1-2 (and Digester Tanks described below), in addition to contextual views and aerial views of the treatment plant prior to commencement of PUP. In addition to photographs, a detailed physical description and historic narrative describing the aeration and digester tanks and how they fit into the overall operation of Tallman Island WPCP from its opening in the 1930s through present time will also be prepared. The report would be deposited at the NYCLPC, NYSHPO and NYCDEP and other repositories designated by lead agency, NYCDEP, and NYCLPC/NYSHPO.

Main Sewage Pumping Station

The upgrade project also entails replacement of the five main sewage lift pumps, piping and valves with five new 60 MGD main sewage pumps; replacement of five existing dual-fuel engine drive units with five (5) new 550 hp motors and replacement of the existing underground East and West batteries force mains. These actions would occur in the Pump and Blower Building and underground in the area where the force mains are located between the Pump and Blower Building and East and West batteries. The Pump and Blower Building has been highly altered over time and does not qualify for New York City Landmark or National Register-eligibility. Furthermore, replacement of force mains will occur underground and would not visually impact New York City Landmark and National Register-eligible resources in the East Battery. Therefore, alterations to the Pump and Blower Building would have no effect on New York City Landmark or National Register-eligible resources at Tallman Island WPCP.

Sludge Digesters Improvements

New roofs would replace the roofs of the Digester Tanks. The current roofs are leaking and in poor condition. The four tanks are New York City Landmark and National Register-eligible resources and are presently capped by dome-shaped roofs sheathed in rolled asphalt panels that were most likely erected atop the tanks in the 1960s. The roofs are pierced by numerous structures including pipes and other metal fixtures. Furthermore, a modern plexiglas roof light pierces the roof area between the four tanks.

Proposed designs for the new roofs consist of geodesic domes that would be clad in milled-finish aluminum panels similar in texture and color to an aircraft fuselage. The aluminum would become darker and duller over time as the panels are exposed to the elements. The roof would retain its spheroid dome shape, but its surface would be faceted in a manner consistent with geodesic domes constructed of triangular fragments. Furthermore, pipes may pierce the roof and walkways adjacent to the domes would provide maintenance access.

Implementation of the Sludge Digesters Improvement scheme would directly affect the New York City Landmark and National Register-eligible Digester Tanks. Since initial construction in the 1930s, these features have been modified over time to keep pace with sewage treatment technology. The significance of these features is related to their historic function, which would be preserved. However, to avoid significant adverse impacts that implementation of the PUP would have on the physical appearance of these historic resources, it is recommended that the Digester Tanks, along with Aeration Tank Nos. 1-2, and surrounding New York City Landmark and National Register-eligible resources, be documented according to the NYCLPC/NYSHPO standards for historic structures documentation.

At a minimum, this would include photo-documentation of the Digester Tanks provided by the professional photographer hired by the contractor responsible for implementing PUP. The photographer will coordinate with the project cultural resources consultant to take photographs of the tanks, in addition to contextual views and aerial views of the treatment plant prior to commencement of PUP. In addition to photographs, a detailed physical description and historic narrative describing the tanks, combined with the documentation of Aeration Tank Nos. 1-2, will be prepared. The document will describe how the aeration and digester tanks fit into the overall operation of Tallman Island WPCP from its opening in the 1930s through present time. The report would be deposited at the NYCLPC, NYSHPO, NYCDEP and other repositories designated by lead agency, NYCDEP, and NYCLPC/NYSHPO.

Sludge Thickeners Improvements

The upgrade project also entails replacement of the South Sludge Thickener mechanisms, and replacement of the south sludge pumps with new pumps and grinders. The South Sludge Thickeners are New York City Landmark and National Register-eligible because of their Modern design as expressed through sunken fillets that embellish the tanks' surfaces and the brick and glass-block enclosed spiral staircase leading from the ground to the top of the four tanks.

Replacement of mechanisms would occur within the tank interiors, and therefore, not impact the historic feeling and association of the South Sludge Thickener tanks. As a result, improvement of the South Sludge Thickeners would have no effect these New York City Landmark and National Register-eligible resources, provided the historic appearance of the tanks remain intact.

Process Control System

The upgrade project requires provision of a process control/instrumentation system for new and modified systems at Tallman Island WPCP. The system would consist of surface-mounted conduits on the Sludge Area Electrical Building, East Battery Electrical Building and West Battery Electrical Building that would be linked to system of underground ducts that would carry signals to the Pump & Blower Building. Like the impacts described under the Three Electrical Buildings section, surface mounted conduits on the Sludge Area Electrical Building would result in an indirect visual impact because construction of the building adjacent to the New York City Landmark and National Register-eligible South Sludge Thickeners would visually alter the layout and setting of the East Battery. To ensure that the historic integrity of the South Sludge Thickeners is preserved, design of the conduit should strive to blend into the existing historic environment of the East Battery as much as practicable.

Temporary Field Office Complex

A temporary field office complex would be erected north of the North Sludge Thickeners. The office would be a pre-fabricated metal trailer that would measure 110 ft long and 60 ft wide and one story high. The temporary office would have a temporary indirect visual impact on New York City Landmark and National Register-eligible resources, including Aeration Tank Nos. 1-2 and Preliminary Settling Tank Nos. 1-4 because views of these tanks may be blocked by the structure. However, because it is a temporary structure, the indirect visual impact would be removed and the layout and configuration restored at the completion of the PUP action.

Centrate Pumping Station

A new Centrate Pumping Station, measuring 20 ft by 23 ft, would be erected east of Chlorine Contact Tank No. 1 in the West Battery to convey centrate to the aeration tanks in the East and West batteries. Approximately 7 ft of the structure would be visible above ground. An underground PVC pipe would convey centrate to the Aeration Tank Nos. 1-4, and would not alter the visual appearance of New York City Landmark and National Register-eligible Aeration Tank Nos. 1-2 in the East Battery. Therefore, this action would have no effect on New York City Landmark and National Register-eligible resources at Tallman Island WPCP because the Centrate Pumping Station is far removed from eligible resources in the East Battery, and the historic appearance and setting of eligible aeration tanks would not be compromised by the underground piping system.

Demolition of Gas Tanks

The Gas Holder Tank and Waste Gas Burner Tanks would be demolished in the East Battery. The Waste Gas Burner would be replaced. These tanks are not New York City Landmark or National Register-eligible resources. Therefore, removal of the tanks would have no effect on eligible resources at Tallman Island WPCP.

D.5 Conclusion

In conclusion, selected elements of the proposed action would result in an indirect effect on New York City Landmark and National Register-eligible resources at Tallman Island WPCP. Specifically, construction of the RAS/Blower Building, 27 KV Electrical Substation, Sludge Area Electrical Building with surface-mounted conduit, and temporary Pump Around System would indirectly impact selected significant resources in the East Battery. To minimize indirect visual impacts, designers should strive to

design and erect structures that conform to the existing materials at the plant as much as practicable, including concrete, buff and painted brick, metal, and glass.

In addition, implementation of the aeration tanks upgrades and digester tanks improvements would directly affect Aeration Tank Nos. 1-2 and the Digester Tanks. To avoid significant adverse impacts, it is recommended that Aeration Tank Nos. 1-2 and Digester Tanks, and surrounding New York City Landmark and National Register-eligible resources be documented according to the NYCLPC/NYSHPO standards for historic structures documentation prior to project implementation. The report would be deposited at the NYCLPC, NYSHPO and NYCDEP and other repositories designated by lead agency, NYCDEP, and NYCLPC/NYSHPO.

D.6 References Cited

Articles

Anonymous, "Mayor Hits Critics; Opens Sewage Plant; Caustic Speech Enlivens Fete at Dedication." April 23, 1939. Newspaper clipping on file at Tallman Island Water Pollution Control Plant, College Point, New York.

New York Times. "Mayor Lashes Out at Sewage Critics." April 23, 1939. Page 10 L.

Sawyer, Clair N. "Milestones in the Development of the Activated Sludge Process" in *Journal of the Water Pollution Control Federation*. February 1965, p. 151-161.

Maps

New York City Department of Sanitation (NYCDOS). Site Plan of Tallman Island. 1937. On file at New York City Department of Environmental Protection (NYCDEP), Bureau of Environmental Engineering, Corona, New York.

Sanborn Map Company. *Insurance Maps of the Borough of Queens*. 1916; 1941, 1943.

US Geological Service (USGS). *Harlem, New York Quadrangle*. 15 minute series. 1891

Photographs

Affiliated Photo Services. Aerial view of Tallman Island, March 20, 1974. On file at Tallman Island Water Pollution Control Plant, College Point, New York.

New York City Department of Public Works, Division of Shops Photo Service. Aerial view of Tallman Island, 1964. On file at Tallman Island Water Pollution Control Plant, College Point, New York.

New York City Department of Environmental Protection (NYCDEP). Aerial View of Tallman Island Water Pollution Control Plant, February 1976. On file at Tallman Island Water Pollution Control Plant, College Point, New York.

Plans

Camp, Dresser & McKee (CDM). Tallmans Island Water Pollution Control Project - Upgrading and Expansion. Contract No. 1 – Structures and Equipment, General Sheet, Plan Layout. August 1970. On file at Earth Tech, New York, New York.

NYCDOS. Site Plan of Tallman Island. 1937. On file at NYCDEP, Bureau of Environmental Engineering, Corona, New York.

Reports and Publications

NYCDEP, Bureau of Wastewater Pollution Control. Operations and Maintenance Manual, Tallman Island Water Pollution Control Plant, 1978. On file at Tallman Island Water Pollution Control Plant, College Point, New York.

NYCDEP. “Executive Summary, Nitrogen Control Action Plan – 6th Annual Report, December 31, 1998.” Accessed at www.ci.nyc.ny.us/dep, June 14, 2000.

NYCDEP. *New York City's Wastewater Treatment System, Cleaning the Water We Use; Protecting the Environment We Live In*. New York: NYCDEP. c. 1998.

Interviews

Carrio, Luis A. NYCDEP Process Engineer, telephone interview, June 12, 2000.

Olivieri, Bridget. Public Participation Coordinator, Biosolids Management Section, NYCDEP, telephone interview, June 19, 2000.

Reardon, Roderick, D. Vice President, CDM, telephone interview, June 12, 2000