Chapter 12: Infrastructure, Solid Waste and Sanitation Services, and Energy

A. INTRODUCTION

This chapter evaluates the impacts of the proposed project on New York City's infrastructure, including the City's water supply, sanitary sewage treatment, municipal solid waste management system, and (private) energy systems. It describes the existing water supply and sewer infrastructure within the ¼-mile study area and identifies changes to water supply and sewer conditions that would occur with and without the proposed project. This chapter also describes the effects of the proposed project on the City's municipal solid waste management system, considering the existing services available within the study area and projecting future changes in solid waste generation that would be anticipated to occur with and without the proposed project and its effects on the municipal solid waste system. In addition, this chapter describes the effects that the proposed project may have on energy consumption in the study area that would occur with and without the proposed project; the energy assessment also considers potential impacts on energy sources and transmission of energy, as well as the proposed project's energy conservation measures. The proposed Moynihan Station would comply with New York State Executive Order No. 111, which directs State agencies, State authorities, and other affected entities to be more energy efficient and environmentally aware (in this case, through "Green Buildings" construction).

The proposed project would result in increased demand for water supply and sanitary sewage treatment, solid waste management, electricity, gas, and steam services, when compared to existing levels. The capacity of the infrastructure currently serving the project site has been assessed to determine whether modifications would be required to meet the incremental demands of the proposed project.

PRINCIPAL CONCLUSIONS

WATER SUPPLY

In 2015, the proposed project (both Phase I and the Phase II overbuild) would require up to approximately 170,800 gallons per day (gpd) of potable water and generate an equivalent amount of sanitary sewage. During peak periods of air conditioning use, an additional estimated 309,600 gpd of water would be required for the uses on the project site. This represents an insignificant increase in the average water consumption in Manhattan; therefore, no significant impacts to the City's water supply are expected as a result of the proposed project.

SANITARY SEWAGE

Redevelopment of the Farley Complex would result in a net increase in sanitary sewage of up to approximately 170,800 gpd. This would represent a relatively small increase in demand compared with the overall flow to the North River Water Pollution Control Plant (WPCP), which would continue to operate within the permitted limit of 170 million gallons per day

(mgd). The impervious coverage on the Farley Complex site is not expected to change as a result of the proposed project, and therefore stormwater volumes from the project site would not increase. No significant adverse impacts related to sanitary sewage are expected.

SOLID WASTE

The proposed project would result in an increased demand for private carter solid waste services. In 2015, the projected development would generate approximately 107 tons per week (tpw) of commercial solid waste. This amount would also represent a small increase over the City's daily commercial solid waste generation. In addition, the proposed project would comply with the City's recycling program and would be designed to accommodate source separation of recyclables in conformance with City recycling regulations. Therefore, the proposed project is not expected to result in significant adverse impacts to solid waste streams or recycling in the City.

ENERGY

The proposed project would not result in significant adverse impacts related to energy. Coordination with Con Edison would ensure that adequate electrical, gas, and, potentially, steam services would be in place to serve the project site.

B. METHODOLOGY

As described in this section, the *CEQR Technical Manual* provides guidance on the methods to be used to assess impacts to the municipal water supply, wastewater treatment, solid waste and sanitation services, and energy.

WATER SUPPLY

In accordance with the *CEQR Technical Manual*, the study area for the water supply impact assessment includes the entire area serviced by the Croton gravity system in addition to pressure regulators from the Catskill/Delaware System. Water pressure regulators reduce the water pressure within the water mains to levels suitable for public use. The water supply system is a gravity-fed system, which relies on the elevation gradient between the heights of Hillview Reservoir in Yonkers for Catskill/Delaware Water and the Jerome Park Reservoir in the Bronx for Croton Water. Average daily water usage for existing and future conditions was calculated using rates given in the *CEQR Technical Manual*.

The proposed project was evaluated to determine whether the water demand that would be generated by the proposed project would overburden the existing supply system or require a reconfiguration or modification to the water supply infrastructure.

The City has initiated a comprehensive water conservation program with the objective of reducing water use by implementing water metering programs and by requiring that existing and new structures be designed on the basis of low-flow criteria (Local Law No. 29, 1989). Additional measures, including leak detection programs and locking fire hydrants, are also intended to reduce water demand, as are plans by the New York City Department of Environmental Protection (DEP) to meter water usage in all buildings. The *CEQR Technical Manual* uses water usage rates that do not include the effects of these water conservation measures, which results in a conservative water consumption analysis.

SANITARY SEWAGE

In conformance with the *CEQR Technical Manual*, the study area for the sanitary sewage (or wastewater) analysis is the entire area served by the North River WPCP. Consistent with *CEQR Technical Manual* guidance, the amount of sanitary sewage from the proposed project to be treated at the North River WPCP is assumed to be equal to the projected volume of potable water demand for the proposed project. Wastewater generated from air conditioning use is minimal because of the recirculation and evaporation processes of water cooling systems and is therefore not included in the overall sanitary sewage volumes. The analysis includes an evaluation of whether the increased volume of sanitary sewage flows with the proposed project to the North River WPCP would be within the limits of the State Pollutant Discharge Elimination System (SPDES) permit. The SPDES permit is issued by the New York State Department of Environmental Conservation (NYSDEC). An adverse impact would occur if the proposed project results in a volume of sanitary sewage that exceeds the limits of the SPDES permit. North River WPCP's current permitted flow limit is 170 mgd based on a 12-month rolling average, with a maximum acceptable flow of 340 mgd during wet weather events.

SOLID WASTE

The *CEQR Technical Manual* provides guidance on the methods used to assess effects on the City's solid waste and sanitation system and conformity with the Solid Waste Management Plan (SWMP). It allows for both a screening level and a full assessment of the proposed project.

The *CEQR Technical Manual* recommends that an assessment of impacts on the municipal solid waste management system be conducted for any project that would generate more than 10,000 pounds per week of municipal solid waste. Because the proposed project would exceed this threshold, this chapter provides estimates of the increased volumes of commercial and municipal waste that would be generated by the proposed project, as well as the additional municipal waste services that would be required. In addition, this chapter identifies available waste reduction, recycling, and other waste management measures to mitigate anticipated effects.

ENERGY

The *CEQR Technical Manual* recommends an assessment of the impacts of increased energy consumption on energy sources and transmission capacity. Because the proposed project would result in increased energy demand, this chapter estimates energy requirements of the proposed project, assesses its effects on the energy infrastructure, and identifies conservation measures and improvements needed to alleviate the anticipated effects. The available (existing) gas, steam, and electrical utilities serving New York City are provided and maintained by Con Edison.

C. EXISTING CONDITIONS

WATER SUPPLY

New York City gets its water from three watersheds and a network of reservoirs, aqueducts, and tunnels extending as far as 125 miles north of the City. Within the City, a grid of mains distributes water to individual buildings.

The Delaware and Catskill systems collect water from the Catskill Mountains and deliver it to the Hillview Reservoir in Yonkers. From there, it is distributed to the rest of the City through one of two tunnels: City Tunnel No. 1, which goes through the Bronx and Manhattan to

Brooklyn, and City Tunnel No. 2, which goes through the Bronx, Queens, and Brooklyn, and from there through the Richmond Tunnel to Staten Island. (A third tunnel, City Tunnel No. 3, is under construction. The first segment of that tunnel became operational in August 1999.) The third system, the Croton system, collects water from Westchester and Putnam Counties and delivers it to the Jerome Park Reservoir in the Bronx. From there, it is distributed to the Bronx and Manhattan through the New Croton Aqueduct, which travels beneath the Bronx and Manhattan.

Manhattan, including the project site, is served by the Catskill/Delaware System via Water Tunnel No. 1 and the Croton System. On the eastern edge of the study area, Water Tunnel No. 1 is located several hundred feet below Sixth Avenue and Broadway. Water Tunnel No. 1 ranges between 10 and 14 feet in diameter. Water ascends from Water Tunnel No. 1 through shafts at 42nd and 23rd Streets to trunk mains ranging between 20 inches and 48 inches in diameter, running 4 feet below grade. The trunk mains that would serve the proposed project—most notably, a 48-inch main under Ninth Avenue—run north to the south. Individual smaller mains (of 12 and 20 inches) branch out from the trunk mains to provide water sources to individual buildings and fire hydrants.

Water consumption in the City averages approximately 1.2 billion gpd. In Manhattan, average consumption is approximately 322 mgd; peak consumption is approximately 500 mgd. The Croton system has lower pressure than the Delaware and Catskill systems and supplies domestic uses primarily in the lower elevations of Manhattan and the Bronx. The higher-pressure Delaware and Catskill systems serve all five boroughs and higher elevations where the water pressure of the Croton system would be inadequate. The Croton system supplies about 10 percent of the City's water needs, and the Catskill/Delaware systems supply the rest. Any of the three systems can serve the project site.

The project site contains the approximately 1.4 million-square-foot (sf) Farley Complex, which occupies a superblock over the Penn Station rail yard between Eighth and Ninth Avenues from West 31st to West 33rd Streets. Based on recommended CEQR rates for water demand, at an average of 25 gpd per employee, the project site currently consumes an estimated 3,300 gpd. An additional 140,000 gpd of water is currently used for air conditioning on the project site.

SANITARY SEWAGE

Most sanitary sewage in the City is collected and conveyed through a combined sewer system operated and maintained by DEP. This system receives sanitary sewage from residences, businesses, and municipal buildings, as well as stormwater accumulated in catch basins along the streets, and the combined flow is sent for treatment at one of the City's WPCPs. The study area is served by the North River WPCP, located between West 135th and West 145th Streets along the Hudson River. This plant began operation with primary treatment in March 1986. Before the plant began operating, sewage from the West Side of Manhattan was discharged untreated into the Hudson and Harlem Rivers.

The North River WPCP is regulated by a SPDES permit issued by NYSDEC. The SPDES permit restricts the daily flow at North River WPCP to 170 mgd, based on a 12-month rolling average. The most recent 12-month period (October 2004 to September 2005) daily flow averaged 127 mgd, well below the 170 mgd permitted limit, as shown in Table 12-1. During storm events, the North River WPCP is capable of processing up to a maximum of 340 mgd of wastewater.

Table 12-1
Monthly Flow to
North River WPCP

Year	Month	Flow (mgd)
2004	October	126
	November	132
2005	December	125
	January	126
	February	122
	March	137
	April	128
	May	117
	June	133
	July	134
	August	136
	September	123
	12-month average	127
	SPDES permit limit	170

Source: New York City Department of Environmental Protection.

The sewer system within the study area consists of combined sewers, regulators, and interceptors. Each trunk sewer feeds into the interceptor sewer through a regulator chamber that controls the flow from the trunk sewer to the interceptor. Generally, the wastewater within the study area flows westerly in collector and trunk sewers toward the intercepting sewer under Twelfth Avenue. The purpose of a regulator is to divert sanitary flow from the existing combined sewers to the intercepting sewer during normal flow periods (dry weather), and limit the flow to the intercepting sewer to twice dry weather flow during storm periods (wet weather). The existing tide gates placed on the combined sewer outfall (CSO) downstream of the regulators are designed to keep tide water from entering the existing combined sewers and the intercepting sewer. Tide gates can be part of the regulator structure or stand-alone chambers.

The intercepting sewer (under Twelfth Avenue) serving the study area is an 8-foot-by-8-foot sewer between West 26th Street and West 40th Street, an 8-foot-6-inch-by-8-foot-6-inch sewer between West 40th Street and West 49th Street, and a 10-foot-6-inch-by-10-foot-6-inch sewer between West 49th Street and West 52nd Street. The Twelfth Avenue interceptor sewer conveys the study area's sanitary sewage by gravity to the North River WPCP. Most of the sewers serving the area were installed between the 1840s and 1940s. The sewer is constructed of brick or concrete in various sizes and shapes, ranging from elliptical to circular, and is generally located between 8 and 16 feet below the surface.

Stormwater runoff is collected in catch basins along the streets and channeled to the combined sewer system. A typical outfall has regulators that divert the wastewater flow to interceptor sewers, which deliver wastewater to the North River WPCP. The regulators are designed to allow two times the mean dry weather flow into the interceptor.

Consistent with *CEQR Technical Manual* guidance, the amount of sanitary sewage from the project site to be treated at the North River WPCP is assumed to be equal to the volume of

potable water demand for the project site. The current amount of sewage generated by the project site is estimated to be 3,300 gpd. This volume is included in the total average estimated daily combined flow of 127 mgd treated at the North River WPCP.

SOLID WASTE

The New York City Department of Sanitation (DSNY) manages the disposal of municipal solid waste and recyclable materials it collects from residences, public areas, nonprofit institutions, and government offices. DSNY also collects wastes from street litter baskets, street sweeping operations, and lot cleaning activities. The City does not operate any incinerators or waste-to-energy facilities, and individual apartment house incinerators are prohibited under Local Law 39 of 1989. Waste incineration is permitted at hospitals within the City. Commercial solid waste from offices, restaurants, retail stores, and other businesses is collected and disposed by private carters.

Throughout the 1990s, almost all of the municipal waste generated in the City was disposed of at the Fresh Kills landfill on Staten Island. The Fresh Kills landfill was permanently closed in spring 2001 pursuant to a statute enacted by the New York State legislature. Under the current interim export activities, most of the City's municipal solid waste is collected and delivered to transfer stations, where it is loaded onto larger transfer trailers and transported out of the City for disposal, and some waste is transported by rail to out-of-City disposal sites. Waste is also moved to out-of-City transfer stations or disposal facilities in DSNY collection vehicles. Municipal solid waste from the study area is collected and trucked directly to out-of-State waste-to-energy facilities. Private carters consolidate solid waste at waste transfer facilities both inside and outside the City, and it is then transported to out-of-City disposal facilities.

Solid waste and recyclable material from the project site is handled by private carters. Based on the solid waste generation rates recommended in the *CEQR Technical Manual*, the office uses on the project site are estimated to generate about 42,000 pounds per week, for a total of 21 tpw. Based on the typical capacities of 13.5 tons for a private collection truck, the current volume of commercial solid waste generated on the project site requires two private hauler truck trips per week.

ENERGY

Con Edison provides the electrical power transmission system for the City through a series of area and transmission substations. The electricity is generated by a number of independent power companies as well as Con Edison. Transmission substations receive electricity from the generating stations through the transmission system and reduce the voltage to a level that can be delivered to area substations. Each area substation serves one or more distinct geographic areas, called networks, which are isolated from the rest of the local distribution system (as to localize any potential system malfunctions). Con Edison currently has 34 networks and 24 area substations in Manhattan. Substations are designed to have sufficient capacity for the network to grow. Electrical conduits, including high-voltage transmission lines and low-voltage distribution lines, are aligned beneath the streets of Manhattan.

Annual electric sales total nearly 50 billion kilowatt hours (KWH) of electricity supplied to Con Edison's delivery area (New York City and Westchester County). This is equivalent to about 170.75 trillion British Thermal Units (BTUs) and does not include the energy content in the natural gas and other energy sources used in New York City. Based on CEQR rates of 77,900 BTUs per square foot per year for office use, current energy use on the project site is estimated

to be 109,100 million BTUs per year for all heating, cooling, and electric power. This is a minimal amount of energy when compared with overall energy used in New York City.

In addition to the electrical distribution network serving the City, Con Edison maintains the gas and steam utilities. High-pressure steam is generated in cogeneration plants and conventional plants, and is distributed through an interconnected piping network (with pipe sizes up to 30 inches in diameter) to approximately 1,800 customers throughout Manhattan for heating, hot water, and air conditioning. Natural gas in the study area for heating and cooking uses is supplied through mains ranging from 4 to 24 inches. Typically, these gas lines are located between 2 to 4 feet below the street.

D. FUTURE WITHOUT THE PROPOSED ACTION: 2010

The Farley Complex would be redeveloped for commercial and U.S. Postal Service (USPS) uses by 2010 in the Future Without the Proposed Action. As described in Chapter 2, "Analytical Framework," the Farley Complex would be redeveloped to contain approximately 650,000 sf of USPS service space, primarily at the Farley Building, and approximately 685,000 sf of commercial space (approximately 248,000 sf of retail space and 436,000 sf of office space), primarily at the Western Annex. In the study area, a number of privately and publicly sponsored development projects that are now proposed or in construction will also be completed. 2010 is also the first phase of projected development associated with the No. 7 Subway Extension–Hudson Yards Rezoning and Development Program (Hudson Yards project).

WATER SUPPLY

Table 12-2 shows that the water usage at the Farley Complex would be approximately 80,800 gpd, with an additional 150,800 gpd for air conditioning, in the 2010 Future Without the Proposed Action condition. This would result in an increase in demand of approximately 88,300 gpd of potable water usage, compared with existing conditions.

Table 12-2
Farley Complex Water Usage and Sewage Generation
Future Without the Proposed Action: 2010 (in gallons per day)

Use	Water/Sewage	Air Conditioning
Transit station	–	–
Transit retail	–	–
USPS	21,700	65,000
Hotel	–	–
Commercial retail	15,500	42,200
Banquet facilities	–	–
Commercial office	43,600	43,600
Residential	–	–
Total	**80,800**	**150,800**

Note: Water and sewage volumes based on rates provided in the *CEQR Technical Manual*.

As a result of new development associated with the Hudson Yards project, demand for water throughout the Hudson Yards rezoning area, which includes the project site, is expected to increase. The Hudson Yards Final Generic Environmental Impact Statement (FGEIS) indicates an overall water demand increase of 2.8 mgd for domestic consumption and 1.9 mgd for air-cooling uses. To ensure that existing water mains within the study area would continue to

provide adequate water pressure, improvements to the existing water and sewer infrastructure of the study area were included as part of the Hudson Yards project.

Based on the comparatively small incremental Farley Complex demand in the Future Without the Proposed Action and the improvements anticipated for the water supply infrastructure, as described in the Hudson Yards FGEIS, this future demand would not cause adverse impacts to the water supply infrastructure.

SANITARY SEWAGE

Estimated sewage flows in the 2010 Future Without the Proposed Action would be approximately 80,800 gpd. This represents an insignificant increase in demand when compared to the overall flow to the North River WPCP, and no impacts to overall plant capacity are expected. The increase in demand would be only a modest contribution to the overall 2.8 million gpd in sanitary sewage flows expected to be generated by the development proposed in the Hudson Yards project. As described in the Hudson Yards FGEIS, this total new demand is still within the overall capacity at the North River WPCP. The FGEIS does indicate that local conveyance mains within the Hudson Yards area could require improvement subject to a DEP-approved amendment to the New York City Drainage Plan. With or without such improvements, the small increase in demand generated in the Future Without the Proposed Action would not result in a significant impact on sanitary sewer service.

DEP's water conservation measures, which are not reflected in the *CEQR Technical Manual* sewage generation rates, would further reduce the potential sewage generated in the future throughout the City. It is expected that the additional sanitary volumes from the Farley Complex, and the entire Hudson Yards rezoning area, would still allow the North River WPCP to operate within the permitted limit of 170 gpd.

The Farley Complex site currently contains no parkland or other pervious surfaces. The impervious coverage on the project site is not expected to change in the 2010 Future Without the Proposed Action.

SOLID WASTE

As described in Chapter 2, the Farley Complex would be redeveloped for commercial and USPS uses by 2010 in the Future Without the Proposed Action. Based on this projected level of development, it is estimated that approximately 46 tpw of commercial solid waste would be generated at the Farley Complex in 2010 Without the Proposed Action (see Table 12-3). This would result in four private hauler truck trips per week.

Table 12-3
Farley Complex Solid Waste Generation
Future Without the Proposed Action: 2010 (in pounds per week)

Use	Municipal Solid Waste	Commercial Solid Waste
Transit station	–	–
Transit retail	–	–
USPS	–	19,500
Hotel	–	–
Commercial retail	–	49,000
Banquet facilities	–	–
Commercial office	–	22,700
Residential	–	–
Total	**0**	**91,200 (46 tons)**

Notes: Solid waste generation calculations are based on the *CEQR Technical Manual*. For office employees, an estimated rate of one employee/250 square feet was used, and for retail employees, a rate of one employee/400 square feet was used.

ENERGY

In June 2002, the New York State Energy Planning Board released the *New York State Energy Plan and Environmental Impact Statement*. This plan sets out the New York State policies and objectives for the next 5 years. The plan's policy objectives are to support safe, secure, and reliable operation of the energy and transportation systems; to stimulate sustainable economic growth through competitive market development; to increase energy diversity; to promote a cleaner and healthier environment; and to ensure fairness, equity, and consumer protection.

These objectives continue the policies developed in earlier energy plans. Therefore, no large-scale changes in energy generation and consumption policies are foreseen. In the future, Con Edison and other energy providers are expected to continue to deliver energy throughout New York City.

By 2010 in the Future Without the Proposed Action, redevelopment of the Farley Complex would have an estimated energy use of 98,400 million BTUs per year for all heating, cooling, and electric power. Therefore, the overall energy consumption at the Farley Complex is expected to decrease minimally from existing conditions, and significant improvements to energy utility infrastructure are not anticipated.

E. FUTURE WITH THE PROPOSED ACTION: 2010

As described in Chapter 1, "Project Description," a Phase I reasonable worst-case development scenario for the 1.4-million-sf Farley Complex has been formulated based on the three developer proposals and the program included in the 2003 Draft Supplemental Environmental Assessment. The elements of the Phase I program include Moynihan Station, USPS facilities, and commercial development, comprising retail, banquet facilities, and a hotel. In addition, under Scenario 2 for the Phase II utilization of the Farley Complex's 1 million sf of unused development rights, there would be a primarily residential development on the Development Transfer Site; if this is constructed, there would be no commercial overbuild development on the Western Annex by 2015, which is Scenario 1. As a result, the proposed project would increase demands on existing

water supply and wastewater infrastructure. This section discusses future conditions in 2010 with the proposed project.

WATER SUPPLY

By 2010, under Scenario 2 (Phase I plus residential Development Transfer Site building) the proposed project would generate an estimated peak demand of 246,300 gpd for domestic consumption and 221,600 gpd for air-cooling uses, as shown in Table 12-4. This demand is not expected to significantly affect the local water pressures. In addition, the project's demand would represent an insignificant increase in the average amount of water consumed in Manhattan. As a result, this added demand is not expected to overburden the City's water supply or the local conveyance system. The proposed project would also comply with the City's water conservation measures as mandated by Local Law 19.

Table 12-4
Proposed Project Water Usage and Sewage Generation
Future With the Proposed Action: 2010

Use	Units/ Size/FA	Persons/ Employees	GPD for Domestic/ Air Conditioning Use	Water/ Sewage (gpd)	Air Conditioning (gpd)
Train station	300,000	0[1]	25/employee, 0.17/sf	0	51,000
Transit retail	86,000	347	25/employee, 0.17/sf	8,700	14,600
USPS	265,000	133	25/employee, 0.1/sf	3,300	26,500
Hotel[2]	125,000	125	150/occupant, 0.17/sf, 0.1/sf	18,800	12,500
Hotel employees		79	20/employee	1,600	–
Commercial retail[3]	597,350	1,295	25/employee, 0.17/sf	32,400	101,500
Banquet facilities	35,000	N/A	0.17/sf, 0.1 sf	6,000	3,500
Commercial office	0	0	25/employee, 0.1/sf	–	–
Residential[4]	940	1,500	112/resident	168,000	–
Retail[4]	120,000	300	25/employee, 0.1/sf	7,500	12,000
			Total	**246,300**	**221,600**

Notes:
1 No new employees; anticipated same number of existing Penn Station employees; demand from this population not included in this analysis.
2 Hotel total square footage was divided by 1,000 to estimate approximate number of hotel rooms.
3 Commercial retail square footage includes common areas, docks/service, and office core/lobby square footage.
4 Part of Development Transfer Site—Primarily Residential Building.
Water and sewage volumes based on rates provided in the *CEQR Technical Manual*. For office employees, an estimated rate of 1 employee/250 sf was used; for retail employees, 1 employee/400 sf was used.

In addition, improvements to the existing water and sewer infrastructure of the study area were included as part of the Hudson Yards project, and DEP's Trunk Plan will identify necessary modifications to water supply infrastructure serving the study area.

SANITARY SEWAGE

The study area would continue to be served by the North River WPCP in 2010. Under peak conditions, the combined sewage generated by the proposed project in 2010 would total

approximately 246,300 gpd (see Table 12-4). This would represent a relatively small increase in demand compared with the overall flow to the North River WPCP (approximately 128 mgd on an average day). DEP's water conservation measures, which are not reflected in the *CEQR Technical Manual* sewage generation rates, would further reduce the potential sewage generated in the future across the City. These additional sanitary volumes would still allow the North River WPCP to operate well within the permitted limit of 170 mgd. Likewise, the proposed project is not expected to overburden the local conveyance system, particularly with anticipated improvements in sewer mains associated with the larger Hudson Yards project.

The impervious coverage on the Farley Complex site and the Development Transfer Site is not expected to change in the 2010 Future With the Proposed Action from that in the Future Without the Proposed Action, and therefore stormwater volumes from the Farley Complex site and the Development Transfer Site would not increase. No significant adverse impacts related to sanitary sewage are expected.

SOLID WASTE

The proposed project would comply with the City's recycling program and be designed to accommodate source separation of recyclables in conformance with City recycling regulations. This would include recycling paper, glass, metals, and certain plastics.

Based on *CEQR Technical Manual* solid waste generation rates, it is estimated that the proposed project would generate an estimated peak demand of 19 and 92 tpw of municipal and commercial solid waste, respectively, as shown in Table 12-5. These volumes would represent a small increase over the City's daily solid waste generation of 12,000 tons per day of municipal waste collected by the DSNY and 10,000 tons per day of commercial waste collected by private carters. This estimated increase in solid waste would require five DSNY truck trips per week (typical capacities of 12.5 tons for a DSNY collection truck) and three additional truck trips per week by private carters. As a result, the proposed project is not expected to adversely affect solid waste streams or recycling in the City.

Table 12-5
Proposed Project Solid Waste Generation
Future With the Proposed Action: 2010

Use	Units/ Size/FA	Persons/ Employees	Solid Waste Generation Rate (pounds per week)	Municipal Solid Waste	Commercial Solid Waste
Train station	300,000	0[1]	25/employee	–	0
Transit retail	86,000	347	79/employee	–	27,400
USPS	265,000	133	0.03/sf	–	8,000
Hotel	125,000	79	75/employee	–	5,900
Commercial retail[2]	597,350	1,295	79/employee	–	102,300
Banquet facilities	35,000	70	251/employee	–	17,600
Commercial office	0	0	13/employee	–	0
Residential[3]	940	0	41/residential unit	38,500	–
Retail[3]	120,000	300	79/employee	–	23,700
			Total	**38,500**	**184,900**

Notes:
[1] No new employees; anticipated same number of existing Penn Station employees; demand from this population not included in this analysis.
[2] Commercial retail square footage includes common areas, docks/service, and office core/lobby square footage.
[3] Part of Development Transfer Site—Primarily Residential Building.

Solid waste generation calculations are based on the *CEQR Technical Manual*. For office employees, an estimated rate of 1 employee/250 sf was used; for retail employees, 1 employee/400 sf was used.

ENERGY

As described in the *CEQR Technical Manual*, all new structures requiring heating and cooling are subject to the New York State Energy Conservation Code. This code governs performance requirements of heating, ventilation, and air conditioning systems, as well as the exterior building envelope. The code, promulgated on January 1, 1979, pursuant to Article 11 of the Energy Law of the State of New York, requires that new and recycled buildings (both public and private) be designed to ensure adequate thermal resistance to heat loss and infiltration. In addition, it provides requirements for the design and selection of mechanical, electrical, and illumination systems. In compliance with the code, the basic designs would incorporate all required energy conservation measures, including meeting the code's requirements relating to energy efficiency and combined thermal transmittance, and the proposed project would be substantially more energy-efficient than conventional pre-code buildings. Therefore, those actions that would result in new construction, such as the proposed project, would not result in adverse energy impacts, and do not require a detailed energy assessment.

As part of the proposed project, the existing 120/208 volt, 3-phase, 4-wire existing electrical services will be demolished and a new 265/460 volt, 3-phase 4-wire service will be provided by Con Edison to serve the new facilities being constructed in the Farley Complex. Although the design for the project is still evolving, it is envisioned that the project will include two (2) "spot networks" each with six transformers and associated network protector compartments. A separate transformer vault will also likely be required to power the emergency ventilation system fans that are proposed to be installed as part of this project in the train shed under the Farley Complex. Con Edison has been contacted concerning this facet of the project, and ongoing coordination will be undertaken to ensure that the tie in to the existing power network will be appropriately designed and sited. (It is anticipated that the new vault would be located under one of the sidewalks adjacent to the Farley Complex, either on West 31st or 33rd Streets. That determination has not yet been finalized.)

The proposed project would require approximately 248,100 million BTUs of energy per year, as shown in Table 12-6. The additional consumption would be very small compared with the existing energy demands of New York City. Further, this additional demand is not expected to overburden the energy generation, transmission, and distribution system and would not result in a significant adverse energy impact.

F. FUTURE WITHOUT THE PROPOSED ACTION: 2015

As discussed above under "Future Without the Proposed Action: 2010," the Farley Complex would contain approximately 650,000 sf of USPS service space, 248,000 sf of retail space, and 436,000 sf of office space. No land use developments are proposed for the Farley Complex after 2010.

WATER SUPPLY

Water usage at the Farley Complex is expected to be same as usage in the Future Without the Proposed Action in 2010. This demand would not create a significant adverse impact on DEP's water supply infrastructure.

Table 12-6
Proposed Project Energy Usage
Future With the Proposed Action: 2010

Use	Units/ Size/FA	Energy Consumption Rate (BTUs/sf/year)	Annual Energy Consumption (million BTUs per year)
Train station	300,000	77,900	23,400
Transit retail	86,000	55,800	4,800
USPS	265,000	77,900	20,600
Hotel	125,000	145,500	18,200
Commercial retail[1]	597,350	55,800	33,300
Banquet facilities	35,000	113,800	4,000
Commercial office	0	77,900	–
Residential[2]	940,000	145,500	136,800
Retail[2]	120,000	55,800	7,000
		Total	**248,100**

Note:
[1] Commercial retail square footage includes common areas, docks/service, and office core/lobby square footage.
[2] Part of Development Transfer Site—Primarily Residential Building.
Energy consumption rates provided in the *CEQR Technical Manual*.

SANITARY SEWAGE

In the Future Without the Proposed Action in 2015, the North River WPCP is expected to continue treating (to full secondary treatment levels) wastewater from the WPCP's service area. In addition, it is expected that the North River WPCP will continue to meet or exceed its permit limitations, and development at the Farley Complex, which is expected to be the same as in the Future Without the Proposed Action in 2010, would not create a significant adverse impact on the North River WPCP or the City sewer system. The impervious coverage on the Farley Complex site is not expected to change in the 2015 Future Without the Proposed Action from that in the existing condition, and therefore stormwater volumes from the Farley Complex site would not increase.

SOLID WASTE

The amount of recyclables and solid waste generated by the Farley Complex in the 2015 Future Without the Proposed Action would be identical to that in 2010 Future Without the Proposed Action. Solid waste from the Farley Complex would result in four private hauler truck trips and would not overburden the City municipal solid waste system or private hauler operations.

ENERGY

By 2015 in the Future Without the Proposed Action, redevelopment at the Farley Complex would have an estimated energy use of 98,400 million BTUs per year for all heating, cooling, and electric power. Therefore, the overall energy consumption at the Farley Complex is expected to decrease minimally from existing conditions, and significant improvements to energy utility infrastructure are not anticipated.

G. FUTURE WITH THE PROPOSED ACTION: 2015

As described in Chapter 1, "Project Description," under development Scenario 1, Phase II of the proposed project would involve a new 1 million-sf commercial office overbuild on the Western Annex using unused development rights from the Farley Complex. This commercial overbuild is in addition to the Phase I redevelopment of the Farley Complex and it would be developed in place of the 1,000-unit residential building on the Development Transfer Site discussed in "Future With the Proposed Action: 2010," above. This section discloses the anticipated future demand of the proposed project upon full build-out (Phase I plus commercial overbuild) in 2015.

WATER SUPPLY

By 2015, the proposed project would generate an estimated peak demand of 170,800 gpd for domestic consumption and 309,600 gpd for air-cooling uses, as shown in Table 12-7. In comparison to the total demand of development Scenario 2 (described above in "The Future With the Proposed Action: 2010"), the demand of 480,400 gpd would be only 12,500 gpd greater and is not expected to significantly affect the local water pressures. This total peak demand of 503,600 gpd would represent an insignificant increase in the average water consumption in Manhattan and would be only a small portion (about 2.3 percent) of the total new demand generated by the Hudson Yards project (up to 13.1 mgd by 2025). As a result, this added demand is not expected to overburden the City's water supply or the local conveyance system. The proposed project would also comply with the City's water conservation measures as mandated by Local Law 19.

Table 12-7
Proposed Project Water Usage and Sewage Generation
Future With the Proposed Action: 2015

Use	Units/ Size/FA	Persons/ Employees	GPD for Domestic/ Air Conditioning Use	Water/ Sewage (gpd)	Air Conditioning (gpd)
Train station	300,000	0[1]	25/employee, 0.17/sf	0	51,000
Transit retail	86,000	347	25/employee, 0.17/sf	8,700	14,600
USPS	265,000	133	25/employee, 0.1/sf	3,300	26,500
Hotel[2]	125,000	125	150/occupant, 0.17/sf, 0.1/sf	18,800	12,500
Hotel employees		79	20/employee	1,600	–
Commercial retail[3]	597,350	1,295	25/employee, 0.17/sf	32,400	101,500
Banquet facilities	35,000	N/A	0.17/sf, 0.1 sf	6,000	3,500
Commercial office	1,000,000	4,000	25/employee, 0.1/sf	100,000	100,000
Residential	0	0	112/resident	–	–
			Total	**170,800**	**309,600**

Notes:
1 No new employees; anticipated same number of existing Penn Station employees; demand from this population not included in this analysis.
2 Hotel total square footage was divided by 1,000 to estimate approximate number of hotel rooms.
3 Commercial retail square footage includes common areas, docks/service, and office core/lobby square footage.
Water and sewage volumes based on rates provided in the *CEQR Technical Manual*. For office employees, an estimated rate of 1 employee/250 sf was used, and for retail employees 1 employee/400 sf was used.

In addition, improvements to the existing water and sewer infrastructure of the study area were included as part of the Hudson Yards project, and DEP's Trunk Plan will identify necessary modifications to water supply infrastructure serving the study area. Therefore, no significant impacts to the City's water supply are expected as a result of the proposed project.

SANITARY SEWAGE

The study area would continue to be served by the North River WPCP in 2015. Under peak conditions, the combined sewage generated under Scenario 1 by the proposed project in 2015 would total approximately 170,800 gpd (see Table 12-7). The combined sewage generated by the proposed project in 2015 would be less than that with the 2010 Scenario 2 proposed project, which included the primarily residential building on the Development Transfer Site that contained 940 residential units and 120,000 sf of retail space. The total sewage generated by the proposed project would represent a relatively small increase in demand compared with the overall flow to the North River WPCP (approximately 128 mgd on an average day). DEP's water conservation measures, which are not reflected in the *CEQR Technical Manual* sewage generation rates, would further reduce the potential sewage generated in the future across the City. These additional sanitary volumes would still allow the North River WPCP to operate within the permitted limit of 170 mgd. Likewise, the proposed project is not expected to overburden the local conveyance system, particularly with anticipated improvements in sewer mains associated with the larger Hudson Yards project.

The impervious coverage on the Farley Complex site is not expected to change in the 2015 Future With the Proposed Action from that in the Future Without the Proposed Action, and therefore stormwater volumes from the Farley Complex site would not increase. No significant adverse impacts related to sanitary sewage are expected.

SOLID WASTE

The proposed project would comply with the City's recycling program and would be designed to accommodate source separation of recyclables in conformance with City recycling regulations. This would include recycling paper, glass, metals, and certain plastics.

Based on *CEQR Technical Manual* solid waste generation rates, it is estimated that under Scenario 1 the proposed project would generate an estimated peak demand of 107 tpw of commercial solid waste, as shown in Table 12-8. (No municipal solid waste would be generated under Scenario 1 by the proposed project since there would not be a residential component.) This volume would also represent a small increase over the City's daily solid waste generation of 10,000 tons per day of commercial waste collected by private carters. This estimated increase in solid waste would require four additional truck trips by private carters per week. As a result, the proposed project is not expected to adversely affect solid waste streams or recycling in the City.

ENERGY

As discussed above, projects that would result in new construction generally do not result in adverse energy impacts and do not require a detailed energy assessment. The proposed project would require approximately 182,200 million BTUs of energy per year, as shown in Table 12-9. The additional consumption would be very small compared with the existing energy demands of New York City. Further, this additional demand is not expected to overburden the energy generation, transmission, and distribution system and would not result in a significant adverse energy impact.

Table 12-8
Proposed Project Solid Waste Generation
Future With the Proposed Action: 2015

Use	Units/ Size/FA	Persons/ Employees	Solid Waste Generation Rate (pounds per week)	Municipal Solid Waste	Commercial Solid Waste
Train station	300,000	0[1]	25/employee	–	0
Transit retail	86,000	347	79/employee	–	27,400
USPS	265,000	133	0.03/sf	–	8,000
Hotel	125,000	79	75/employee	–	5,900
Commercial retail[2]	597,350	1,295	79/employee	–	102,300
Banquet facilities	35,000	70	251/employee	–	17,600
Commercial office	1,000,000	4,000	13/employee	–	52,000
Residential	0	0	41/residential unit	–	–
			Total	**0**	**213,200**

Notes:
[1] No new employees; anticipated same number of existing Penn Station employees; demand from this population not included in this analysis.
[2] Commercial retail square footage includes common areas, docks/service, and office core/lobby square footage.
Solid waste generation calculations are based on the *CEQR Technical Manual*. For office employees, an estimated rate of 1 employee/250 sf was used, and for retail employees, 1 employee/400 sf was used.

Table 12-9
Proposed Project Energy Usage
Future With the Proposed Action: 2015

Use	Units/ Size/FA	Energy Consumption Rate (BTUs/sf/year)	Annual Energy Consumption (million BTUs per year)
Train station	300,000	77,900	23,400
Transit retail	86,000	55,800	4,800
USPS	265,000	77,900	20,600
Hotel	125,000	145,500	18,200
Commercial retail[1]	597,350	55,800	33,300
Banquet facilities	35,000	113,800	4,000
Commercial office	1,000,000	77,900	77,900
Residential	0	145,500	–
		Total	**182,200**

Notes:
[1] Commercial retail square footage includes common areas, docks/service, and office core/lobby square footage.
Energy consumption rates provided in the *CEQR Technical Manual*.

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