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## **Appendix A Documents**

**Appendix A**  
**Document 5.1-1**  
**Air Permit**



**PERMIT**  
**Under the Environmental Conservation Law (ECL)**

**IDENTIFICATION INFORMATION**

Permit Type: Air State Facility  
Permit ID: 2-6204-00058/00004  
Effective Date: 05/06/2015 Expiration Date: 05/05/2025

Permit Issued To: NYC HEALTH & HOSPITALS CORP  
125 WORTH STREET  
NEW YORK, NY 10013-4006

Contact: HECTOR P MAZARA  
METROPOLITAN HOSPITAL/ NYC HH CORP  
1901 FIRST AVE  
NEW YORK, NY 10029  
(212) 423-7878

Facility: NYC-HH - METROPOLITAN HOSPITAL  
1901 1ST AVE  
NEW YORK, NY 10029-7491

Contact: SAL VAZQUEZ  
METROPOLITAN HOSPITAL/JOHNSON CONTROLS  
1901 FIRST AVE  
NEW YORK, NY 10029  
(212) 423-8274

Description:

Metropolitan Hospital is submitting this Air State facility Permit application for the construction and operation of two (2) temporary distillate oil-fired boilers to provide steam to the facility while its existing boilers are permanently removed from service and deconstructed. As a part of this application the metropolitan Hospital intends to accept a 24.5 tpy cap on its annual NO<sub>x</sub> and up on issuance, will submit a formal request to surrender its Air Title V facility permit.

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, the General Conditions specified and any Special Conditions included as part of this permit.

Permit Administrator: JOHN F CRYAN  
NYSDEC - REGION 2  
47-40 21ST ST  
LONG ISLAND CITY, NY 11101-5407

Authorized Signature: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_



**Notification of Other State Permittee Obligations**

**Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification**

The permittee expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the compliance permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in any compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

**Item B: Permittee's Contractors to Comply with Permit**

The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

**Item C: Permittee Responsible for Obtaining Other Required Permits**

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

**Item D: No Right to Trespass or Interfere with Riparian Rights**

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.



**LIST OF CONDITIONS**

**DEC GENERAL CONDITIONS**

**General Provisions**

- Facility Inspection by the Department
- Relationship of this Permit to Other Department Orders and Determinations
- Applications for permit renewals, modifications and transfers
- Permit modifications, suspensions or revocations by the Department

**Facility Level**

- Submission of application for permit modification or renewal -  
REGION 2 HEADQUARTERS



**DEC GENERAL CONDITIONS**  
**\*\*\*\* General Provisions \*\*\*\***  
**GENERAL CONDITIONS - Apply to ALL Authorized Permits.**

**Condition 1: Facility Inspection by the Department**

**Applicable State Requirement: ECL 19-0305**

**Item 1.1:**

The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71-0301 and SAPA 401(3).

**Item 1.2:**

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

**Item 1.3:**

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

**Condition 2: Relationship of this Permit to Other Department Orders and Determinations**

**Applicable State Requirement: ECL 3-0301 (2) (m)**

**Item 2.1:**

Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

**Condition 3: Applications for permit renewals, modifications and transfers**

**Applicable State Requirement: 6 NYCRR 621.11**

**Item 3.1:**

The permittee must submit a separate written application to the Department for renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing.

**Item 3.2:**

The permittee must submit a renewal application at least 180 days before expiration of permits for Title V Facility Permits, or at least 30 days before expiration of permits for State Facility Permits.

**Item 3.3:**

Permits are transferrable with the approval of the department unless specifically prohibited by the statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.



**Condition 4: Permit modifications, suspensions or revocations by the Department**  
**Applicable State Requirement: 6 NYCRR 621.13**

**Item 4.1:**

The Department reserves the right to exercise all available authority to modify, suspend, or revoke this permit in accordance with 6NYCRR Part 621. The grounds for modification, suspension or revocation include:

- a) materially false or inaccurate statements in the permit application or supporting papers;
- b) failure by the permittee to comply with any terms or conditions of the permit;
- c) exceeding the scope of the project as described in the permit application;
- d) newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
- e) noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

**\*\*\*\* Facility Level \*\*\*\***

**Condition 5: Submission of application for permit modification or renewal - REGION 2**  
**HEADQUARTERS**  
**Applicable State Requirement: 6 NYCRR 621.6 (a)**

**Item 5.1:**

Submission of applications for permit modification or renewal are to be submitted to:

NYSDEC Regional Permit Administrator  
Region 2 Headquarters  
Division of Environmental Permits  
1 Hunters Point Plaza, 4740 21st Street  
Long Island City, NY 11101-5407  
(718) 482-4997



**New York State Department of Environmental Conservation**

Permit ID: 2-6204-00058/00004

Facility DEC ID: 2620400058



**Permit Under the Environmental Conservation Law (ECL)**

**ARTICLE 19: AIR POLLUTION CONTROL - AIR STATE FACILITY  
PERMIT**

**IDENTIFICATION INFORMATION**

Permit Issued To: NYC HEALTH & HOSPITALS CORP  
125 WORTH STREET  
NEW YORK, NY 10013-4006

Facility: NYC-HH - METROPOLITAN HOSPITAL  
1901 1ST AVE  
NEW YORK, NY 10029-7491

Authorized Activity By Standard Industrial Classification Code:  
8062 - GENERAL MEDICAL & SURGICAL HOSPITALS

Permit Effective Date: 05/06/2015

Permit Expiration Date: 05/05/2025



**LIST OF CONDITIONS**

**FEDERALLY ENFORCEABLE CONDITIONS**

**Facility Level**

- 1 6 NYCRR 201-3.2 (a): Exempt Sources - Proof of Eligibility
- 2 6 NYCRR Subpart 201-7: Facility Permissible Emissions
- \*3 6 NYCRR Subpart 201-7: Capping Monitoring Condition
- 4 6 NYCRR 211.1: Air pollution prohibited
- 5 6 NYCRR 225-1.2 (f): Compliance Demonstration
- 6 6 NYCRR 225-1.2 (g): Compliance Demonstration
- 7 6 NYCRR 225-1.2 (h): Compliance Demonstration
- 8 6 NYCRR 225-1.6 (d): Record Availability
- 9 6 NYCRR 225-1.6 (f): Compliance Demonstration
- 10 6 NYCRR 227-1.3 (a): Compliance Demonstration
- 11 40CFR 60.48c(f)(1), NSPS Subpart Dc: Compliance Demonstration
- 12 40CFR 63, Subpart JJJJJ: Applicability
- 13 40CFR 63, Subpart JJJJJ: Compliance and Enforcement

**STATE ONLY ENFORCEABLE CONDITIONS**

**Facility Level**

- 14 ECL 19-0301: Contaminant List
- 15 6 NYCRR 201-1.4: Malfunctions and start-up/shutdown activities
- 16 6 NYCRR 201-1.15: Requirement to Commence Construction
- 17 6 NYCRR Subpart 201-5: Emission Unit Definition
- 18 6 NYCRR 201-5.2 (c): Renewal deadlines for state facility permits
- 19 6 NYCRR 201-5.3 (c): Compliance Demonstration
- 20 6 NYCRR 211.2: Visible Emissions Limited

**Emission Unit Level**

- 21 6 NYCRR Subpart 201-5: Emission Point Definition By Emission Unit
- 22 6 NYCRR Subpart 201-5: Process Definition By Emission Unit

NOTE: \* preceding the condition number indicates capping.



**FEDERALLY ENFORCEABLE CONDITIONS**  
**\*\*\*\* Facility Level \*\*\*\***

**NOTIFICATION OF GENERAL PERMITTEE OBLIGATIONS**

**This section contains terms and conditions which are federally enforceable. Permittees may also have other obligations under regulations of general applicability**

**Item A: Sealing - 6 NYCRR 200.5**

The Commissioner may seal an air contamination source to prevent its operation if compliance with 6 NYCRR Chapter III is not met within the time provided by an order of the Commissioner issued in the case of the violation.

Sealing means labeling or tagging a source to notify any person that operation of the source is prohibited, and also includes physical means of preventing the operation of an air contamination source without resulting in destruction of any equipment associated with such source, and includes, but is not limited to, bolting, chaining or wiring shut control panels, apertures or conduits associated with such source.

No person shall operate any air contamination source sealed by the Commissioner in accordance with this section unless a modification has been made which enables such source to comply with all requirements applicable to such modification.

Unless authorized by the Commissioner, no person shall remove or alter any seal affixed to any contamination source in accordance with this section.

**Item B: Acceptable Ambient Air Quality - 6 NYCRR 200.6**

Notwithstanding the provisions of 6 NYCRR Chapter III, Subchapter A, no person shall allow or permit any air contamination source to emit air contaminants in quantities which alone or in combination with emissions from other air contamination sources would contravene any applicable ambient air quality standard and/or cause air pollution. In such cases where contravention occurs or may occur, the Commissioner shall specify the degree and/or method of emission control required.

**Item C: Maintenance of Equipment - 6 NYCRR 200.7**

Any person who owns or operates an air contamination source which is equipped with an emission control device shall operate such device and keep it in a satisfactory state of maintenance and repair in accordance with ordinary and necessary practices, standards and procedures, inclusive of manufacturer's specifications,



required to operate such device effectively.

**Item D: Unpermitted Emission Sources - 6 NYCRR 201-1.2**

If an existing emission source was subject to the permitting requirements of 6 NYCRR Part 201 at the time of construction or modification, and the owner and/or operator failed to apply for a permit for such emission source then the following provisions apply:

- (a) The owner and/or operator must apply for a permit for such emission source or register the facility in accordance with the provisions of Part 201.
- (b) The emission source or facility is subject to all regulations that were applicable to it at the time of construction or modification and any subsequent requirements applicable to existing sources or facilities.

**Item E: Emergency Defense - 6 NYCRR 201-1.5**

An emergency constitutes an affirmative defense to an action brought for noncompliance with emissions limitations or permit conditions for all facilities in New York State.

(a) The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

- (1) An emergency occurred and that the facility owner and/or operator can identify the cause(s) of the emergency;
- (2) The equipment at the permitted facility causing the emergency was at the time being properly operated;
- (3) During the period of the emergency the facility owner and/or operator took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and
- (4) The facility owner and/or operator notified the Department within two working days after the event occurred. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

(b) In any enforcement proceeding, the facility owner and/or operator seeking to establish the occurrence of an emergency has the burden of proof.



(c) This provision is in addition to any emergency or upset provision contained in any applicable requirement.

**Item F: Recycling and Salvage - 6 NYCRR 201-1.7**

Where practical, any person who owns or operates an air contamination source shall recycle or salvage air contaminants collected in an air cleaning device according to the requirements of 6 NYCRR.

**Item G: Prohibition of Reintroduction of Collected Contaminants to the Air - 6 NYCRR 201-1.8**

No person shall unnecessarily remove, handle, or cause to be handled, collected air contaminants from an air cleaning device for recycling, salvage or disposal in a manner that would reintroduce them to the outdoor atmosphere.

**Item H: Proof of Eligibility for Sources Defined as Exempt Activities - 6 NYCRR 201-3.2 (a)**

The owner and/or operator of an emission source or unit that is eligible to be exempt, may be required to certify that it operates within the specific criteria described in 6 NYCRR Subpart 201-3. The owner or operator of any such emission source must maintain all required records on-site for a period of five years and make them available to representatives of the Department upon request. Department representatives must be granted access to any facility which contains emission sources or units subject to 6 NYCRR Subpart 201-3, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations, or law.

**Item I: Proof of Eligibility for Sources Defined as Trivial Activities - 6 NYCRR 201-3.3 (a)**

The owner and/or operator of an emission source or unit that is listed as being trivial in 6 NYCRR Part 201 may be required to certify that it operates within the specific criteria described in 6 NYCRR Subpart 201-3. The owner or operator of any such emission source must maintain all required records on-site for a period of five years and make them available to representatives of the Department upon request. Department representatives must be granted access to any facility which contains emission sources or units subject to 6 NYCRR Subpart 201-3, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations, or law.

**Item J: Required Emission Tests - 6 NYCRR 202-1.1**



An acceptable report of measured emissions shall be submitted, as may be required by the Commissioner, to ascertain compliance or noncompliance with any air pollution code, rule, or regulation. Failure to submit a report acceptable to the Commissioner within the time stated shall be sufficient reason for the Commissioner to suspend or deny an operating permit. Notification and acceptable procedures are specified in 6 NYCRR Subpart 202-1.

**Item K: Open Fires Prohibitions - 6 NYCRR 215.2**  
Except as allowed by section 215.3 of 6 NYCRR Part 215, no person shall burn, cause, suffer, allow or permit the burning of any materials in an open fire.

**Item L: Permit Exclusion - ECL 19-0305**  
The issuance of this permit by the Department and the receipt thereof by the Applicant does not and shall not be construed as barring, diminishing, adjudicating or in any way affecting any legal, administrative or equitable rights or claims, actions, suits, causes of action or demands whatsoever that the Department may have against the Applicant for violations based on facts and circumstances alleged to have occurred or existed prior to the effective date of this permit, including, but not limited to, any enforcement action authorized pursuant to the provisions of applicable federal law, the Environmental Conservation Law of the State of New York (ECL) and Chapter III of the Official Compilation of the Codes, Rules and Regulations of the State of New York (NYCRR). The issuance of this permit also shall not in any way affect pending or future enforcement actions under the Clean Air Act brought by the United States or any person.

**Item M: Federally Enforceable Requirements - 40 CFR 70.6 (b)**  
All terms and conditions in this permit required by the Act or any applicable requirement, including any provisions designed to limit a facility's potential to emit, are enforceable by the Administrator and citizens under the Act. The Department has, in this permit, specifically designated any terms and conditions that are not required under the Act or under any of its applicable requirements as being enforceable under only state regulations.

**FEDERAL APPLICABLE REQUIREMENTS**  
**The following conditions are federally enforceable.**

**Condition 1: Exempt Sources - Proof of Eligibility**



Effective between the dates of 05/06/2015 and 05/05/2025

Applicable Federal Requirement:6 NYCRR 201-3.2 (a)

**Item 1.1:**

The owner or operator of an emission source or activity that is listed as being exempt may be required to certify that it is operated within the specific criteria described in this Subpart. The owner or operator of any such emission source or activity must maintain all records necessary for demonstrating compliance with this Subpart on-site for a period of five years, and make them available to representatives of the department upon request.

**Condition 2: Facility Permissible Emissions**  
Effective between the dates of 05/06/2015 and 05/05/2025

Applicable Federal Requirement:6 NYCRR Subpart 201-7

**Item 2.1:**

The sum of emissions from the emission units specified in this permit shall not equal or exceed the following  
Potential To Emit (PTE) rate for each regulated contaminant:

CAS No: 0NY210-00-0 PTE: 49,000 pounds per year  
Name: OXIDES OF NITROGEN

**Condition 3: Capping Monitoring Condition**  
Effective between the dates of 05/06/2015 and 05/05/2025

Applicable Federal Requirement:6 NYCRR Subpart 201-7

**Item 3.1:**

Under the authority of 6 NYCRR Part 201-7, this condition contains an emission cap for the purpose of limiting emissions from the facility, emission unit or process to avoid being subject to the following applicable requirement(s) that the facility, emission unit or process would otherwise be subject to:

6 NYCRR Subpart 201-6

**Item 3.2:**

Operation of this facility shall take place in accordance with the approved criteria, emission limits, terms, conditions and standards in this permit.

**Item 3.3:**

The owner or operator of the permitted facility must maintain all required records on-site for a period of five years and make them available to representatives of the Department upon request. Department representatives must be granted access to any facility regulated by this Subpart, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations or law.

**Item 3.4:**

On an annual basis, unless otherwise specified below, beginning one year after the granting of an emissions cap, the responsible official shall provide a certification to the Department that the

**New York State Department of Environmental Conservation**

Permit ID: 2-6204-00058/00004

Facility DEC ID: 2620400058



facility has operated all emission units within the limits imposed by the emission cap. This certification shall include a brief summary of the emissions subject to the cap for that time period and a comparison to the threshold levels that would require compliance with an applicable requirement.

**Item 3.5:**

The emission of pollutants that exceed the applicability thresholds for an applicable requirement, for which the facility has obtained an emissions cap, constitutes a violation of Part 201 and of the Act.

**Item 3.6:**

The Compliance Demonstration activity will be performed for the Facility.

Regulated Contaminant(s):

CAS No: 0NY210-00-0 OXIDES OF NITROGEN

**Item 3.7:**

Compliance Demonstration shall include the following monitoring:

Capping: Yes

Monitoring Type: MONITORING OF PROCESS OR CONTROL  
DEVICE PARAMETERS AS SURROGATE

Monitoring Description:

Facility wide total NOx (Oxides of Nitrogen) emissions are capped at 24.5 tons/yr.

The owner/operator shall maintain a record of the quantity of each fuel fired at the facility. The facility shall demonstrate the compliance by keeping records of fuel consumption and calculating emissions based on the following equation

$D (0.02) + G (100) + E (0.44) < 49,000\text{lbs/yr}$  of Oxides of Nitrogen emissions.

Where

D= 12-month rolling total of distillate oil fired in boilers in gal/yr ,

G= 12-month rolling total of natural gas fired in boilers in MMscf/yr and

E= 12-month rolling total of diesel fuel fired in emergency generators in gals/yr.

Parameter Monitored: OXIDES OF NITROGEN

Upper Permit Limit: 49000 pounds per year

Monitoring Frequency: MONTHLY

Averaging Method: ANNUAL TOTAL ROLLED MONTHLY

Reporting Requirements: ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2016.

Subsequent reports are due every 12 calendar month(s).

**Condition 4: Air pollution prohibited**

**Effective between the dates of 05/06/2015 and 05/05/2025**





**Applicable Federal Requirement:6 NYCRR 211.1**

**Item 4.1:**

No person shall cause or allow emissions of air contaminants to the outdoor atmosphere of such quantity, characteristic or duration which are injurious to human, plant or animal life or to property, or which unreasonably interfere with the comfortable enjoyment of life or property. Notwithstanding the existence of specific air quality standards or emission limits, this prohibition applies, but is not limited to, any particulate, fume, gas, mist, odor, smoke, vapor, pollen, toxic or deleterious emission, either alone or in combination with others.

**Condition 5: Compliance Demonstration**  
**Effective between the dates of 05/06/2015 and 05/05/2025**

**Applicable Federal Requirement:6 NYCRR 225-1.2 (f)**

**Item 5.1:**

The Compliance Demonstration activity will be performed for the Facility.

**Item 5.2:**

Compliance Demonstration shall include the following monitoring:

Monitoring Type: WORK PRACTICE INVOLVING SPECIFIC OPERATIONS

Monitoring Description:

Owners and/or operators of commercial, industrial, or residential emission sources that fire number two heating oil on or after July 1, 2012 are limited to the purchase of number two heating oil with 0.0015 percent sulfur by weight or less. Compliance with this limit will be based on vendor certifications.

Data collected pursuant to this Subpart must be tabulated and summarized in a form acceptable to the Department, and must be retained for at least five years. The owner of a Title V facility must furnish to the Department such records and summaries, on a semiannual calendar basis, within 30 days after the end of the semiannual period. All other facility owners or distributors must submit these records and summaries upon request of the Department.

Work Practice Type: PARAMETER OF PROCESS MATERIAL

Process Material: NUMBER 2 HEATING OIL

Parameter Monitored: SULFUR CONTENT

Upper Permit Limit: 0.0015 percent by weight

Monitoring Frequency: PER DELIVERY

Averaging Method: MAXIMUM - NOT TO BE EXCEEDED AT ANY TIME (INSTANTANEOUS/DISCRETE OR GRAB)

Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION



**Condition 6: Compliance Demonstration**  
Effective between the dates of 05/06/2015 and 05/05/2025

**Applicable Federal Requirement:6 NYCRR 225-1.2 (g)**

**Item 6.1:**

The Compliance Demonstration activity will be performed for the Facility.

**Item 6.2:**

Compliance Demonstration shall include the following monitoring:

Monitoring Type: WORK PRACTICE INVOLVING SPECIFIC OPERATIONS

Monitoring Description:

Owners and/or operators of a stationary combustion installation that fires distillate oil other than number two heating oil are limited to the purchase of distillate oil with 0.0015 percent sulfur by weight or less on or after July 1, 2014. Compliance with this limit will be based on vendor certifications.

Data collected pursuant to this Subpart must be tabulated and summarized in a form acceptable to the Department, and must be retained for at least five years. The owner of a Title V facility must furnish to the Department such records and summaries, on a semiannual calendar basis, within 30 days after the end of the semiannual period. All other facility owners or distributors must submit these records and summaries upon request of the Department.

Work Practice Type: PARAMETER OF PROCESS MATERIAL  
Process Material: DISTILLATES - NUMBER 1 AND NUMBER 2 OIL  
Parameter Monitored: SULFUR CONTENT  
Upper Permit Limit: 0.0015 percent by weight  
Monitoring Frequency: PER DELIVERY  
Averaging Method: MAXIMUM - NOT TO BE EXCEEDED AT ANY TIME (INSTANTANEOUS/DISCRETE OR GRAB)  
Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

**Condition 7: Compliance Demonstration**  
Effective between the dates of 05/06/2015 and 05/05/2025

**Applicable Federal Requirement:6 NYCRR 225-1.2 (h)**

**Item 7.1:**

The Compliance Demonstration activity will be performed for the Facility.

**Item 7.2:**

Compliance Demonstration shall include the following monitoring:

Monitoring Type: WORK PRACTICE INVOLVING SPECIFIC



OPERATIONS

Monitoring Description:

Owners and/or operators of a stationary combustion installations that fire distillate oil are limited to the firing of distillate oil with 0.0015 percent sulfur by weight or less on or after July 1, 2016. Compliance with this limit will be based on vendor certifications.

Data collected pursuant to this Subpart must be tabulated and summarized in a form acceptable to the Department, and must be retained for at least five years. The owner of a Title V facility must furnish to the Department such records and summaries, on a semiannual calendar basis, within 30 days after the end of the semiannual period. All other facility owners or distributors must submit these records and summaries upon request of the Department.

Work Practice Type: PARAMETER OF PROCESS MATERIAL  
Process Material: DISTILLATES - NUMBER 1 AND NUMBER 2 OIL  
Parameter Monitored: SULFUR CONTENT  
Upper Permit Limit: 0.0015 percent by weight  
Monitoring Frequency: PER DELIVERY  
Averaging Method: MAXIMUM - NOT TO BE EXCEEDED AT ANY TIME (INSTANTANEOUS/DISCRETE OR GRAB)  
Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

**Condition 8: Record Availability**  
Effective between the dates of 05/06/2015 and 05/05/2025

**Applicable Federal Requirement:6 NYCRR 225-1.6 (d)**

**Item 8.1: Facility owners required to maintain and retain records pursuant to this Subpart must make such records available for inspection by the Department.**

**Condition 9: Compliance Demonstration**  
Effective between the dates of 05/06/2015 and 05/05/2025

**Applicable Federal Requirement:6 NYCRR 225-1.6 (f)**

**Item 9.1:**  
The Compliance Demonstration activity will be performed for the Facility.

**Item 9.2:**  
Compliance Demonstration shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES  
Monitoring Description:

Facility owners subject to this Subpart must submit a



written report of the fuel sulfur content exceeding the applicable sulfur-in-fuel limitation, measured emissions exceeding the applicable sulfur-in-fuel limitation, measured emissions exceeding the applicable equivalent emission rate, and the nature and cause of such exceedances if known, for each calendar quarter, within 30 days after the end of any quarterly period in which an exceedance takes place.

Data collected pursuant to this Subpart must be tabulated and summarized in a form acceptable to the Department, and must be retained for at least five years. The owner of a Title V facility must furnish to the Department such records and summaries, on a semiannual calendar basis, within 30 days after the end of the semiannual period. All other facility owners or distributors must submit these records and summaries upon request of the Department.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION

Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

**Condition 10: Compliance Demonstration**  
**Effective between the dates of 05/06/2015 and 05/05/2025**

**Applicable Federal Requirement: 6 NYCRR 227-1.3 (a)**

**Item 10.1:**

The Compliance Demonstration activity will be performed for the Facility.

**Item 10.2:**

Compliance Demonstration shall include the following monitoring:

Monitoring Type: MONITORING OF PROCESS OR CONTROL DEVICE PARAMETERS AS SURROGATE

Monitoring Description:

No person shall operate a stationary combustion installation which exhibits greater than 20 percent opacity (six minute average), except for one 6 minute period per hour of not more than 27 percent opacity. The Department reserves the right to perform or require the performance of a Method 9 opacity evaluation at any time during facility operation.

The permittee will conduct observations of visible emissions from the emission unit, process, etc. to which this condition applies at the monitoring frequency stated below while the process is in operation. The permittee will investigate, in a timely manner, any instance where there is cause to believe that visible emissions have the potential to exceed the opacity standard.



The permittee shall investigate the cause, make any necessary corrections, and verify that the excess visible emissions problem has been corrected. If visible emissions with the potential to exceed the standard continue, the permittee will conduct a Method 9 assessment within the next operating day of the sources associated with the potential noncompliance to determine the degree of opacity and will notify the NYSDEC if the Method 9 test indicates that the opacity standard is not met.

Records of visible emissions observations (or any follow-up Method 9 tests), investigations and corrective actions will be kept on-site. Should the Department determine that permittee's record keeping format is inadequate to demonstrate compliance with this condition, it shall provide written notice to the permittee stating the inadequacies, and permittee shall have 90 days to revise its prospective record keeping format in a manner acceptable to the Department.

Parameter Monitored: OPACITY  
Upper Permit Limit: 20 percent  
Averaging Method: 6-MINUTE AVERAGE (METHOD 9)  
Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

**Condition 11: Compliance Demonstration**  
**Effective between the dates of 05/06/2015 and 05/05/2025**

**Applicable Federal Requirement: 40CFR 60.48c(f)(1), NSPS Subpart Dc**

**Item 11.1:**  
The Compliance Demonstration activity will be performed for the Facility.

**Item 11.2:**  
Compliance Demonstration shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES  
Monitoring Description:

Fuel supplier certification shall include the following information for distillate oil:

- i) The name of the oil supplier, and
- ii) A statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil in §60.41c. 60-Dc 41c defines distillate oil as fuel that complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society for Testing and Materials in ASTM D396-78, A standard Specification for Fuel Oils.

**New York State Department of Environmental Conservation**

Permit ID: 2-6204-00058/00004

Facility DEC ID: 2620400058



iii) The sulfur content or maximum sulfur content of the oil.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION

Reporting Requirements: ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2016.

Subsequent reports are due every 12 calendar month(s).

**Condition 12:     Applicability**  
**Effective between the dates of 05/06/2015 and 05/05/2025**

**Applicable Federal Requirement:40CFR 63, Subpart JJJJJJ**

**Item 12.1:**

Facilities that are area sources of HAP with industrial, commercial, or institutional boilers must comply with applicable portions of 40 CFR 63 JJJJJJ.

**Condition 13:     Compliance and Enforcement**  
**Effective between the dates of 05/06/2015 and 05/05/2025**

**Applicable Federal Requirement:40CFR 63, Subpart JJJJJJ**

**Item 13.1:**

The Department has not accepted delegation of 40 CFR Part 63 Subpart JJJJJJ. Any questions concerning compliance and/or enforcement of this regulation should be referred to USEPA Region 2, 290 Broadway, 21st Floor, New York, NY 10007-1866; (212) 637-4080. Should the Department decide to accept delegation of 40 CFR Part 63 Subpart JJJJJJ during the term of this permit, enforcement of this regulation will revert to the Department as of the effective date of delegation.



**STATE ONLY ENFORCEABLE CONDITIONS**  
**\*\*\*\* Facility Level \*\*\*\***

**NOTIFICATION OF GENERAL PERMITTEE OBLIGATIONS**  
**This section contains terms and conditions which are not federally enforceable. Permittees may also have other obligations under regulations of general applicability**

**Item A: Public Access to Recordkeeping for Facilities With State Facility Permits - 6 NYCRR 201-1.10 (a)**

Where facility owners and/or operators keep records pursuant to compliance with the requirements of 6 NYCRR Subpart 201-5.4, and/or the emission capping requirements of 6 NYCRR Subpart 201-7, the Department will make such records available to the public upon request in accordance with 6 NYCRR Part 616 - Public Access to Records. Facility owners and/or operators must submit the records required to comply with the request within sixty working days of written notification by the Department.

**Item B: General Provisions for State Enforceable Permit Terms and Condition - 6 NYCRR Part 201-5**

Any person who owns and/or operates stationary sources shall operate and maintain all emission units and any required emission control devices in compliance with all applicable Parts of this Chapter and existing laws, and shall operate the facility in accordance with all criteria, emission limits, terms, conditions, and standards in this permit. Failure of such person to properly operate and maintain the effectiveness of such emission units and emission control devices may be sufficient reason for the Department to revoke or deny a permit.

The owner or operator of the permitted facility must maintain all required records on-site for a period of five years and make them available to representatives of the Department upon request. Department representatives must be granted access to any facility regulated by this Subpart, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations or law.

**STATE ONLY APPLICABLE REQUIREMENTS**

**The following conditions are state only enforceable.**

**Condition 14: Contaminant List**  
**Effective between the dates of 05/06/2015 and 05/05/2025**



**Applicable State Requirement:ECL 19-0301**

**Item 14.1:**

Emissions of the following contaminants are subject to contaminant specific requirements in this permit(emission limits, control requirements or compliance monitoring conditions).

CAS No: 0NY210-00-0

Name: OXIDES OF NITROGEN

**Condition 15: Malfunctions and start-up/shutdown activities  
Effective between the dates of 05/06/2015 and 05/05/2025**

**Applicable State Requirement:6 NYCRR 201-1.4**

**Item 15.1:**

(a) The facility owner or operator shall take all necessary and appropriate actions to prevent the emission of air pollutants that result in contravention of any applicable emission standard during periods of start-up, shutdown, or malfunction.

(b) The facility owner or operator shall compile and maintain records of all equipment malfunctions, maintenance, or start-up/shutdown activities when they can be expected to result in an exceedance of any applicable emission standard, and shall submit a report of such activities to the department when requested to do so, or when so required by a condition of a permit issued for the corresponding air contamination source. Such reports shall state whether any violations occurred and, if so, whether they were unavoidable, include the time, frequency and duration of the maintenance and/or start-up/shutdown activities, and an estimate of the emission rates of any air contaminants released. Such records shall be maintained for a period of at least five years and made available for review to department representatives upon request. Facility owners or operators subject to continuous stack monitoring and quarterly reporting requirements need not submit additional reports for equipment maintenance or start-up/shutdown activities for the facility to the department.

(c) In the event that emissions of air contaminants in excess of any emission standard in this Subchapter occur due to a malfunction, the facility owner or operator shall compile and maintain records of the malfunction and notify the department as soon as possible during normal working hours, but not later than two working days after becoming aware that the malfunction occurred. When requested by the department, the facility owner or operator shall submit a written report to the department describing the malfunction, the corrective action taken, identification of air contaminants, and an estimate of the emission rates.

(d) The department may also require the owner or operator to include, in reports described under Subdivisions (b) and (c) of this Section, an estimate of the maximum ground level concentration of each air contaminant emitted and the effect of such emissions.

(e) A violation of any applicable emission standard resulting from start-up, shutdown, or malfunction conditions at a permitted or registered facility may not be subject to an enforcement action by the department and/or penalty if the department determines, in its sole discretion, that such a violation was unavoidable. The actions and recordkeeping and reporting requirements listed above must be adhered to in such circumstances.





**Condition 16: Requirement to Commence Construction**  
Effective between the dates of 05/06/2015 and 05/05/2025

**Applicable State Requirement:6 NYCRR 201-1.15**

**Item 16.1:**

The Department may suspend, modify or revoke the permit, pursuant to 6 NYCRR Part 621, if construction has not commenced within 18 months of the date of permit issuance, or construction has been discontinued for a period of more than 18 months at any point after the date of permit issuance.

The Department may grant the facility owner or operator an extension of up to 18 months upon a showing of good cause submitted in writing.

**Condition 17: Emission Unit Definition**  
Effective between the dates of 05/06/2015 and 05/05/2025

**Applicable State Requirement:6 NYCRR Subpart 201-5**

**Item 17.1:**

The facility is authorized to perform regulated processes under this permit for:

Emission Unit: U-T0001

Emission Unit Description:

This unit consist of two (2) identical Victory Energy Model VSM-75 boilers, each designed to provide up to 40,000 pounds per hour of steam at approximately 360 degrees Fahrenheit and 135 psig. Each boiler will have a maximum fuel heat input of 47.8 MMBtu/hr and be equipped with a Hawthorne Peabody MSC 650 burner for combustion of distillate oil.

Building(s): TEMP

**Condition 18: Renewal deadlines for state facility permits**  
Effective between the dates of 05/06/2015 and 05/05/2025

**Applicable State Requirement:6 NYCRR 201-5.2 (c)**

**Item 18.1:**

The owner or operator of a facility having an issued state facility permit shall submit a complete application at least 180 days, but not more than eighteen months, prior to the date of permit expiration for permit renewal purposes.

**Condition 19: Compliance Demonstration**  
Effective between the dates of 05/06/2015 and 05/05/2025

**Applicable State Requirement:6 NYCRR 201-5.3 (c)**

**Item 19.1:**

**New York State Department of Environmental Conservation**

Permit ID: 2-6204-00058/00004

Facility DEC ID: 2620400058



The Compliance Demonstration activity will be performed for the Facility.

**Item 19.2:**

Compliance Demonstration shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

Any reports or submissions required by this permit shall be submitted to the Regional Air Pollution Control Engineer (RAPCE) at the following address:

Division of Air Resources  
NYS Dept. of Environmental Conservation  
Region 2  
47-40 21st St.  
Long Island City, NY 11101

Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

**Condition 20: Visible Emissions Limited**  
**Effective between the dates of 05/06/2015 and 05/05/2025**

**Applicable State Requirement:6 NYCRR 211.2**

**Item 20.1:**

Except as permitted by a specific part of this Subchapter and for open fires for which a restricted burning permit has been issued, no person shall cause or allow any air contamination source to emit any material having an opacity equal to or greater than 20 percent (six minute average) except for one continuous six-minute period per hour of not more than 57 percent opacity.

**\*\*\*\* Emission Unit Level \*\*\*\***

**Condition 21: Emission Point Definition By Emission Unit**  
**Effective between the dates of 05/06/2015 and 05/05/2025**

**Applicable State Requirement:6 NYCRR Subpart 201-5**

**Item 21.1:**

The following emission points are included in this permit for the cited Emission Unit:

Emission Unit: U-T0001

Emission Point: TSTK1

Height (ft.): 30 Diameter (in.): 30  
NYTMN (km.): 4515.39 NYTME (km.): 589.1 Building: TEMP

Emission Point: TSTK2

Height (ft.): 30 Diameter (in.): 30  
NYTMN (km.): 4515.394 NYTME (km.): 589.103 Building: TEMP

**New York State Department of Environmental Conservation**

Permit ID: 2-6204-00058/00004

Facility DEC ID: 2620400058



**Condition 22: Process Definition By Emission Unit**  
Effective between the dates of 05/06/2015 and 05/05/2025

**Applicable State Requirement:6 NYCRR Subpart 201-5**

**Item 22.1:**

This permit authorizes the following regulated processes for the cited Emission Unit:

Emission Unit: U-T0001

Process: 001

Source Classification Code: 1-02-005-02

Process Description:

Process 001 is the combustion of distillate oil in the  
boilers designated as TB-001 and TB002

Emission Source/Control: TB001 - Combustion

Design Capacity: 47.8 million BTUs per hour

Emission Source/Control: TB002 - Combustion

Design Capacity: 47.8 million BTUs per hour



**Appendix A**  
**Document 5.4-1**  
**8-Step Floodplain Decision Making Notice**

## **Appendix A, Document 5.4-1      8- Step Floodplain Decision Making Notice**

Executive Order 11988 (Floodplain Management) requires federal agencies “to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of the floodplain and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.” FEMA’s implementing regulations are at 44 CFR Part 9, which includes an eight-step decision making process for compliance with this part.

Metropolitan Hospital (the Project Site) is located entirely within the 100-year floodplain. Therefore, the Proposed Metropolitan Hospital Hazard Mitigation Project, described in the Environmental Assessment, is required to follow the 8-Step Process. This Appendix summarizes how the 8-Step Floodplain Decision Making Process was applied to the Proposed Metropolitan Hospital Hazard Mitigation Project.

### **Step 1: Determine if a proposed action is in the base floodplain (that area which has a one percent or greater chance of flooding in any given year).**

The project site is located at 1901 First Avenue, New York, NY (40.785027°, -73.944940°) As indicated in the FEMA Preliminary Flood Hazard Areas map for the Project Site (see Figure 5.4-1, FIRM panel 3604970087G) the majority of the Project Site is located within the “100-year” floodplain (Zone AE) with a Base Flood Elevation (BFE) for the Project Site of +13 feet North American Vertical Datum of 1988 (NAVD88) and small portions are located within the “500-year” floodplain with a BFE of +14.5 feet NAVD88.

The Proposed Project is defined as a *Critical Action* pursuant to 44 CFR Part 9, which means that the minimum floodplain of concern is the 500-year Floodplain.

### **Step 2: Conduct early public review, including public notice.**

A cumulative initial public notice was published in the New York Post on December 14, 2012. An additional Notice of Availability for the draft NEPA document will be published when the document is ready for public comment.

### **Step 3: Identify and evaluate practicable alternatives to locating in the base floodplain, including alternative sites outside of the floodplain.**

Several alternative courses of action were evaluated for the Metropolitan Hospital Hazard Mitigation project. The alternatives were evaluated based upon engineering constraints, environmental impacts and available property. Budgetary constraints were considered but were not the controlling factor.

#### Alternative 1: No Action Alternative

Under the No Action Alternative, no alterations would be made to the Metropolitan Hospital campus or hospital facilities. No federal funds would be provided and the status quo would be maintained and the hospital would remain in its existing condition. The hospital would continue

to operate with repair measures implemented following Hurricane Sandy, and no hazard mitigation would be pursued to enhance the hospital's resiliency. The Metropolitan Hospital campus and hospital facilities would remain at risk from future storm or flooding events with repetitive financial losses and disruption of critical healthcare services. The surrounding community would experience service interruptions and threats to human health due to the loss of healthcare functions, particularly emergency care, in the event a future storm or flooding event causes a partial or full cessation of operations at Metropolitan Hospital.

#### Alternative 2: **Proposed Alternative:** Comprehensive Mitigation System

A perimeter flood protection system would surround the hospital campus. This system would be designed to the 500-year flood elevation plus three feet of freeboard for sea level rise and would include floodwalls along the open portions of the campus' perimeter and strengthening of the basement walls of the Mental Health Building (MHB) at the northwest corner of the campus. Additionally, flood proof doors would be installed at several locations along the first floor. Vehicular and pedestrian floodgates would be provided to maintain access to the hospital. The tunnel between the MHB and the Main Building along East 99th Street (which carries high pressure steam piping, chilled water piping, and electrical conduits), would be rebuilt to support the floodwall's weight, and a floodgate would be added by the MHB tunnel access door. Several manholes around the campus perimeter would also be sealed with watertight covers.

The Proposed Alternative would also include the following mitigation measures:

- A new stormwater piping system along the north and south sides of the hospital campus, along with two submersible flood pump stations, would be installed to convey stormwater collected within the protected perimeter to two new discharge locations to the combined sewer; sump pumps would also be installed at specific low points around the campus to collect and remove accumulated stormwater.
- Updates to the existing sanitary sewer system would be made, including disconnecting sanitary fixtures on the first floor and reconnecting them to new sanitary sewer lines on the north and south sides of the hospital, and upsizing existing cellar pumps.
- Deployable flood planks for the loading dock would be placed at both the top and bottom of the loading dock ramp, which would provide a secondary layer of defense at this particularly vulnerable point should the perimeter wall be overtopped.
- Two utility tunnels connected to the boiler/chiller room in the Main Building basement would be sealed to prevent water entry, including installing floodproof doors at the tunnel entrances; a third tunnel would be sealed and abandoned in place.
- The New York City/New York State Emergency Management Chempack Room would be relocated from the Main Building's basement to the first floor; in order to accommodate the Chempack Room, the vacated paramedics/ambulance quarters would be renovated to provide the required waterproofing, security measures, and climate control.

#### Alternative 3: Mitigation-in-Place

The Subgrantee considered another alternative, Alternative 3: Mitigation-in-Place. This alternative would include measures to protect the existing MHC facilities by elevating the critical MEP systems from the basement to at least the second floor. All mitigation work would be performed within the existing buildings, and no new structures would be constructed on the MHC campus. To accommodate the relocated MEP systems, departments being displaced would

need to move elsewhere on campus. In addition, new connections to the relocated MEP systems would need to be made, which would require extensive modifications to existing buildings.

Alternative 3 (Mitigation-in-Place) was dismissed due to code compliance issues and the difficulty of maintaining hospital operations during the extensive renovations required to the existing buildings to accommodate the new MEP systems. Relocated MEP systems and departments would be required to comply with code (the New York City Building Code and related electrical and fire protection codes). This alternative is cost-prohibitive due to the significant phasing required to relocate the MEP systems and displaced departments and would take much longer than the Proposed Alternative to construct.

#### Alternative Location

Relocating the existing Metropolitan Hospital to another location outside of the 500-year floodplain is not practicable. Significant infrastructure investments have been made to the hospital over its 60-year existence at its current location by the local, state, and federal government. Abandoning those investments is not practical. In addition, there are no sites in the vicinity of the Project Site that are of sufficient size and outside of the 500-year floodplain that are available to the Subgrantee. Therefore, relocation of the hospital complex is deemed impractical.

#### **Step 4: Identify impacts of the proposed action.**

The impacts of the Proposed Alternative, including those impacts to the natural function of the floodplain, have been identified and described in the Environmental Assessment. In summary, the Proposed Alternative supports the continued occupancy within the floodplain by restoring flood damaged facilities and equipment and by increasing the resiliency of the hospital through hazard mitigation projects, including a floodwall. The floodplain within the Project Site has been substantially developed prior to Hurricane Sandy. In addition, because the Project Site is located in a densely populated and built section of Manhattan, the Proposed Alternative does not encourage further development within the floodplain. Finally, as shown in the Hydrologic and Hydraulic study (see Appendix A, Document 5.4B), the flood volume displaced by the Metropolitan Hospital is much less than the storm tide volume of the East River. Therefore, there will be no significant impact on flood elevations in the immediate vicinity of the Project Site as a result of the construction of the floodwall and the resultant decrease in the amount of flood storage volume that is available.

The Proposed Alternative will have a tremendous positive impact on public health and safety. By repairing damaged components at this critical facility, the services being offered by the hospital can again be supported by permanent infrastructure. In addition, increasing the resiliency of the Project Site will allow for public health services to be maintained during future disasters. Finally, increasing the flood protection afforded to the hospital will save the city, state, and federal government significant expenses that would occur as a result of future flood events.

#### **Step 5: If impacts cannot be avoided, develop measures to minimize the impacts and restore and preserve the floodplain, as appropriate.**

The Proposed Alternative is not expected to result in significant adverse impacts, as discussed in the Environmental Assessment and summarized above in Step 4. Restoring the floodplain to its natural state is not a practical or viable alternative to the Proposed Alternative. The Proposed



Alternative will be designed to meet or exceed all local, state, and federal permit rules, regulations, and permit conditions.

**Step 6: Reevaluate alternatives.**

The Proposed Alternative is the most practicable alternative based on the review of possible adverse effects on the floodplain and community/socioeconomic expectations. The public benefits of the Proposed Alternative outweigh the risk of investment in the floodplain located structures.

**Step 7: Present the findings and a public explanation.**

A cumulative initial public notice was published in the New York Post on December 14, 2012. An additional Notice of Availability of the draft Environmental Assessment will be published when the document is ready for public comment. Following the public comment period and consideration of any substantive comments received during the comment period, a Finding of No Significant Impact is anticipated. The Final Notice will be incorporated into this notice.

**Step 8: Implement the action.**

FEMA approval of the Proposed Alternative will be conditioned on review of implementation and post-implementation phases to ensure compliance with the order(s). All requirements stated in Section 6.0 of the Environmental Assessment will be fully implemented. Oversight responsibility shall be integrated into existing processes and project completion in accordance with all applicable local floodplain ordinances and codes and standards shall be verified at project closeout.

**Appendix A**  
**Document 5.4-2**  
**Hydrology and Hydraulics**

## NEW YORK CITY HEALTH AND HOSPITALS CORPORATION

METROPOLITAN HOSPITAL ENVIRONMENTAL ASSESSMENT

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### Appendix 5.4B

## Hydrology and Hydraulics

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# 1.0 INTRODUCTION

Metropolitan Hospital Center lies within the 100-year and 500-year flood hazard area on FEMA’s Preliminary Flood Insurance Rate Maps (PFIRM) that were released on January 30, 2015. This identified flood risk supports a need to protect this critical facility from flooding. Metropolitan Hospital plays a critical role in serving patients throughout and following extreme events such as 100-year and 500-year floods.

To reduce the Center’s flood risk during the 100-year and 500-year flood events, a perimeter floodwall is proposed, designed to the 500-year water level plus freeboard to elevation 19 feet NAVD88. In tandem, modifications to the interior drainage network are proposed to convey rainfall runoff and sanitary flow during a flood event. In addition, modifications to the connections to the existing New York City (NYC) sewers are proposed to prevent storm tide “backup” behind the proposed perimeter floodwall. Floodproofing of other utility manholes and tunnels that provide opportunities for storm tide penetration to the campus are also proposed. Figure 1 summarizes the proposed mitigation efforts (interior drainage modification shown in Section 3).

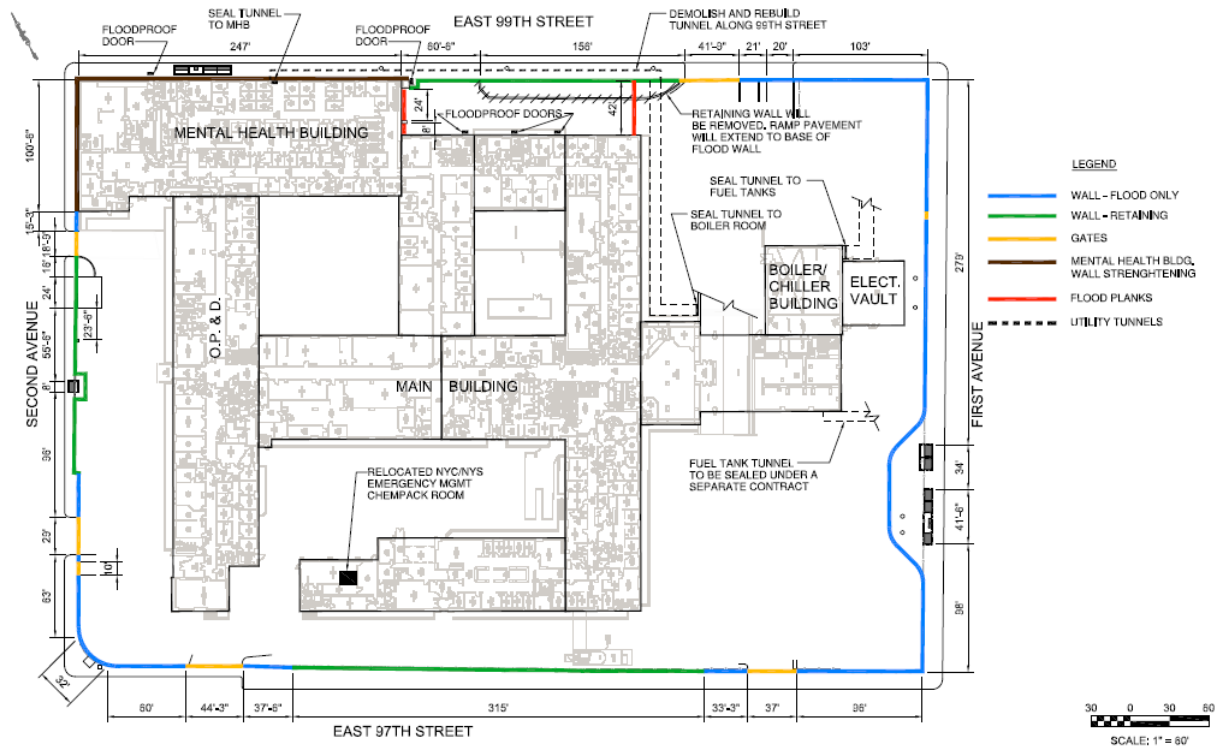


FIGURE 1. SCHEMATIC OVERVIEW OF PROPOSED FLOOD MITIGATION STRATEGIES.

In the following, the Center’s existing storm tide, wave, and interior drainage climate are discussed. This is the condition without the proposed floodwall and associated interior drainage modification, i.e. the no action scenario. Additionally, the storm tide, wave, and interior drainage climate is discussed with the proposed floodwall and associated interior drainage modifications. Emphasis will be placed on the potential impacts that these proposed modifications could have on adjacent properties.

## 2.0 EXISTING CONDITIONS

### 2.1 STORM TIDE

The storm tide elevations (referred to as stillwater elevations in FEMA’s flood insurance studies) that are contributing to the return interval flood risk that is displayed on FEMA’s PFIRM for the Metropolitan Hospital Center are as shown in Table 1. The storm tide (addition of storm surge and tide) is combined with waves to develop the preliminary Base Flood Elevations.

TABLE 1: FEMA PRELIMINARY BASE FLOOD AND STORM TIDE ELEVATIONS (FEET-NAVD88)

	100-year	500-year
Preliminary Base Flood Elevation	12-13	16
Storm Tide Elevation	12	14.5

Source: FEMA

### 2.2 WAVES

FEMA’s Preliminary Flood Insurance Study shows that the 100-year wave at the shoreline of the East River near Metropolitan Hospital is 2.4 feet. For the 500-year wave, values are not reported as part of FEMA’s studies; therefore, ARCADIS developed a 500-year wave estimate of 2.9 feet. This estimate was determined assuming that waves and storm tide scale in a similar fashion. As shown in Table 1, the 500-year storm tide is 21% greater than the 100-year storm tide. Assuming the same scaling for waves, a 21% increase of the 100-year wave results in a 500-year wave of 2.9 feet.

As shown in Figure 2, there are pathways for these offshore waves to propagate inland to the Metropolitan Hospital Center. FEMA’s inland wave propagation model, Wave Height Analysis for Flood Insurance Studies known as WHAFIS (Version 4.0G, Watershed Concepts, 2007) was used to account for this propagation for a transect running through the parking lot to the east of the hospital campus as shown by the blue wave transect in Figure 2. Transects used by FEMA as part of their regional analysis are also shown, but it was determined that the new transect would be required for this site scale analysis.



FIGURE 2. WAVE TRANSECTS AND TOPOGRAPHY AT THE METROPOLITAN HOSPITAL CENTER. PROJECT SPECIFIC TRANSECT SHOWN IN BLUE, WITH FEMA TRANSECTS AS PART OF THE REGIONAL STUDY SHOWN IN GREEN.

WHAFIS accounts for the following wave processes as waves move inland:

- Dissipation and shoaling of wave energy by bathymetry
- Dissipation of wave energy by structural features such as building elements
- Wave growth due to wind forcing

For this analysis, the 1 foot DEM used in the FEMA coastal study associated with the PFIRMs was deemed appropriate. Wave forcing was applied using FEMA’s recommended value of 75 mph for 500-year events and 60 mph for 100-year events. Variation of the wave heights from the shoreline to Metropolitan Hospital are shown in Figure 3.

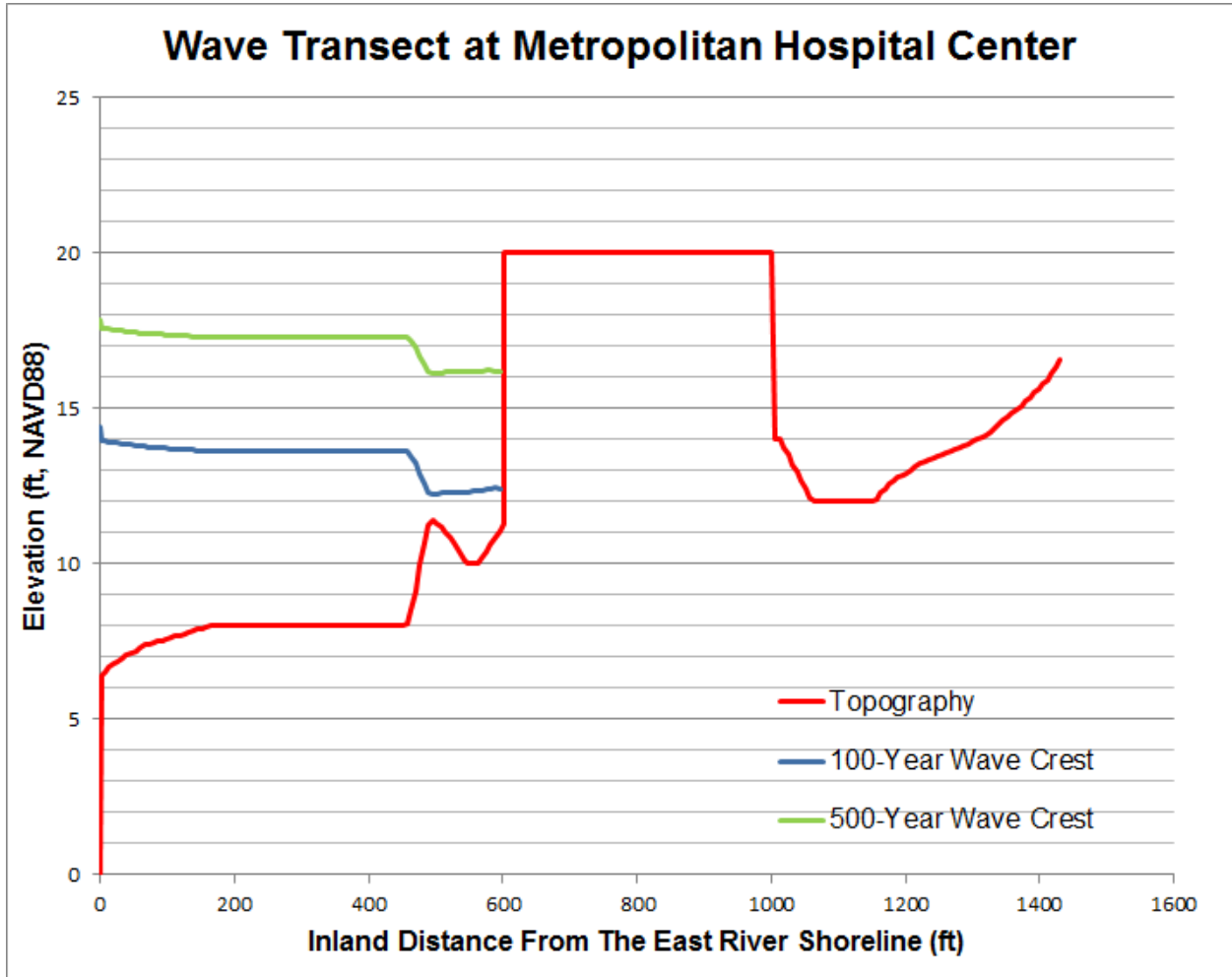


FIGURE 3. WAVE CREST PROFILE ALONG TRANSECT FROM EAST RIVER SHORELINE TO METROPOLITAN HOSPITAL CENTER.

The resulting wave climate at the eastern edge of the hospital campus for the 100-year and 500-year water elevations are shown in Table 2. It should be noted that the wave heights are reported as the wave crest elevation minus the storm tide elevation.

TABLE 2: WAVE CLIMATE AT METROPOLITAN HOSPITAL CENTER

	100-year	500-year
Wave Height (ft)	0.4	1.7
Peak Wave Period (s)	2.3	2.8



## 2.3 INTERIOR DRAINAGE

The existing stormwater and sanitary flows from the Metropolitan Hospital Center are conveyed by gravity drainage to NYC sewers on First Avenue. Diversion chambers then connect this flow to the Manhattan interceptor that runs northward on First Avenue to the Manhattan Grit Chamber on 109<sup>th</sup> Street. After passing the grit chamber, flows are conveyed to the Wards Island Water Pollution Control Plant (WPCP). If the interceptor main is at capacity, flows are conveyed via combined sewer overflow (CSO) outfalls to the East River. This is schematically shown in Figure 4.

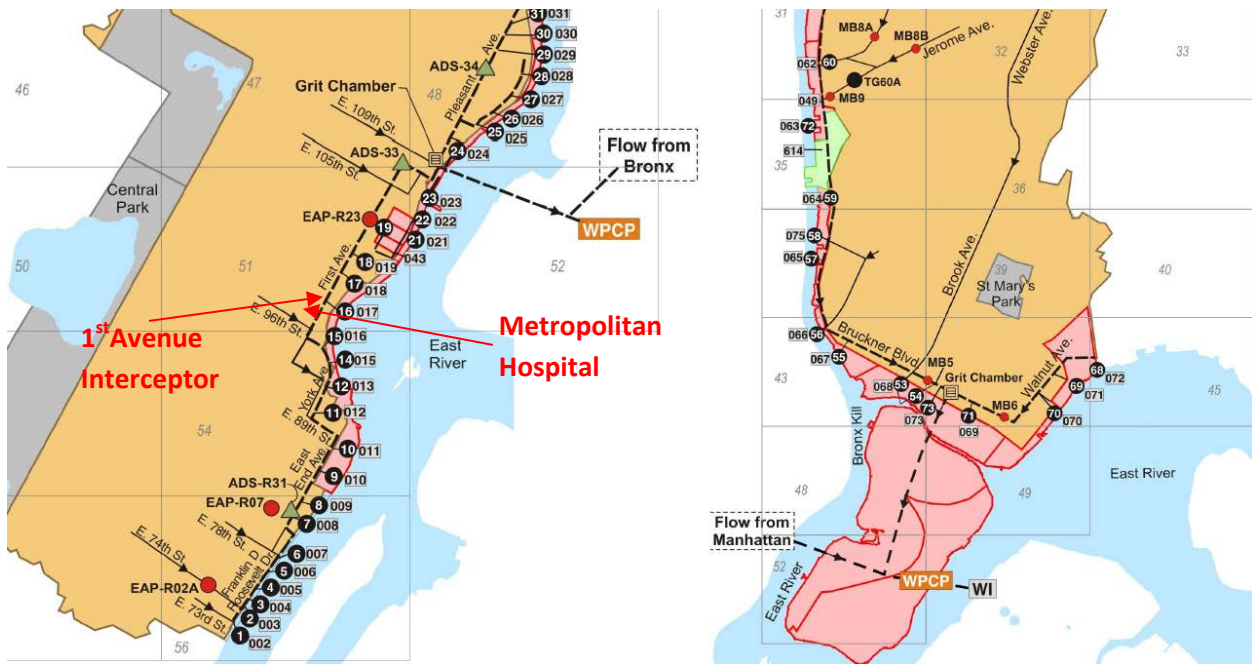


FIGURE 4. SCHEMATIC OVERVIEW OF THE WARDS ISLAND SEWER NETWORK AS TAKEN FROM THE NYCDEP LANDSIDE MODELING REPORT, OCTOBER 2007.

This overview description of the sewer system highlights the numerous opportunities for storm tide to back up into the Metropolitan Hospital campus at existing connections to the NYC sewer because of:

- Outfalls directly connected to storm tide at the East River
- Storm tide street flooding penetrating catch basins connected to the First Avenue Interceptor

## 2.4 SUMMARY

The following points summarize the existing conditions at the Metropolitan Hospital Center:

- 100-year storm tide of 12 feet + 0.4 feet waves
- 500-year storm tide of 14.5 feet + 1.7 feet waves
- Interior drainage system connected to NYC sewers on First Avenue that are exposed to storm tide at multiple:
- East River outfalls
- Street catch basins connected to the First Avenue interceptor main

## 3.0 PROPOSED CONDITIONS

### 3.1 STORM TIDE REDUCTION AT METROPOLITAN HOSPITAL CENTER

With the proposed perimeter floodwall, the Metropolitan Hospital campus will be sheltered from the direct effects of both the 100-year and 500-year storm tide. As design progresses through to completed construction, a letter of map revision can be pursued to demonstrate the reduced flood risk on the Flood Insurance Rate Maps.

The height of the proposed wall (elevation 19 feet NAVD) is above the 500-year storm tide level with three feet of freeboard, but waves on top of storm tide could still overtop the perimeter floodwall during the 500-year event. Any overtopping will be conveyed by the proposed drainage features from behind the wall to the sewer system. Additionally, storm tide could penetrate behind the wall through any open pipes (combined sewer, storm sewer, ConEd lines, etc.), but sufficient closure of these pipes through valves or watertight manholes are included in the proposed design. The details of the waves and interior drainage are discussed in the following sections.

### 3.2 STORM TIDE: NO-IMPACT TO ADJACENT PROPERTIES

By removing the storm tide risk to Metropolitan Hospital by the construction of a perimeter floodwall, the storm tide risk to adjacent properties will not be increased. This is because the storm tide volume that enters the East River is much larger than the flood volume displaced by the Metropolitan Hospital campus. Additionally, the volume of water that is conveyed through the East River is controlled by water elevation differences that convey water through the inlets to the East River, i.e. the Long Island Sound, the Harlem River, and the Upper New York Bay as shown in Figure 5.

Without significant modification to the cross sectional geometry of those three inlets, the volume of water conveyed through the East River will be relatively fixed for a given set of water surface elevations in the Long Island Sound, Upper New York Bay, and Harlem River.

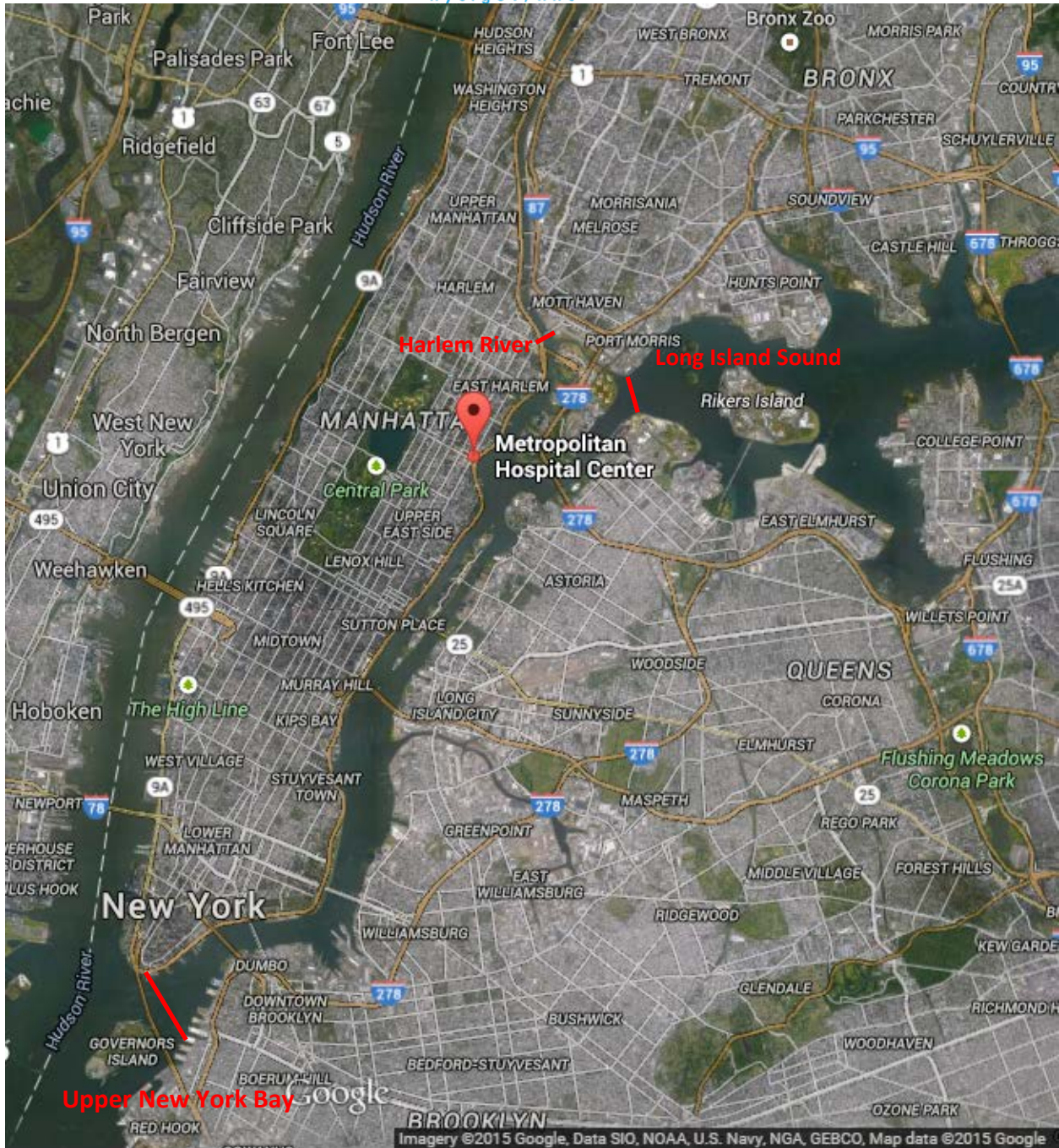


FIGURE 5. INLETS TO THE EAST RIVER SHOWN IN RED, I.E. HARLEM RIVER, LONG ISLAND SOUND, AND UPPER NEW YORK BAY.

To demonstrate the size of the volumes conveyed through the East River, during routine tide events the surface area of the lower East River is reported as 2,562 acres. With a tidal range of 4.5 feet, this results in the conveyance of 11,518 acre-feet of routine tidal volume (Jay, D.A. and M. J. Bowman. 1975. *The Physical Oceanography and Water Quality of New York Harbor and Western Long Island Sound*). A 500-



year storm tide event expands the routine “tidal” range and increases the surface area of the East River, expanding the volume of water conveyed through the East River beyond 11,518 acre-feet.

In comparison, the Metropolitan Hospital campus is roughly 7.5 acres, and when exposed to the 500-year storm tide (elevation 14.5 feet NAVD88), flooding could range up to 6 feet, but on average would be in the 3 feet range. Assuming an average of 3 feet, the total volume of flood at the hospital center is 22.5 acre-feet. Therefore, even the routine tidal volume in the East River is more than 500 times larger than the flood volume of the Metropolitan Hospital Center, demonstrating the small effect of the center on the total volume conveyed through the East River.

The cross sectional area of the East River adjacent to the Metropolitan Hospital Center is shown in Figure 6. For a given volume that needs to be conveyed through the East River during a storm event, significant modification of the cross sectional area at any point along the East River could locally modify flow velocities that could then modify the local distribution of water levels. But again, the scale of the modification to the flow area by the proposed floodwall is small resulting in the expectation that changes to water levels would be small as well, i.e. lower than the uncertainty involved in the mapped flood elevations (+/- 0.5 feet).

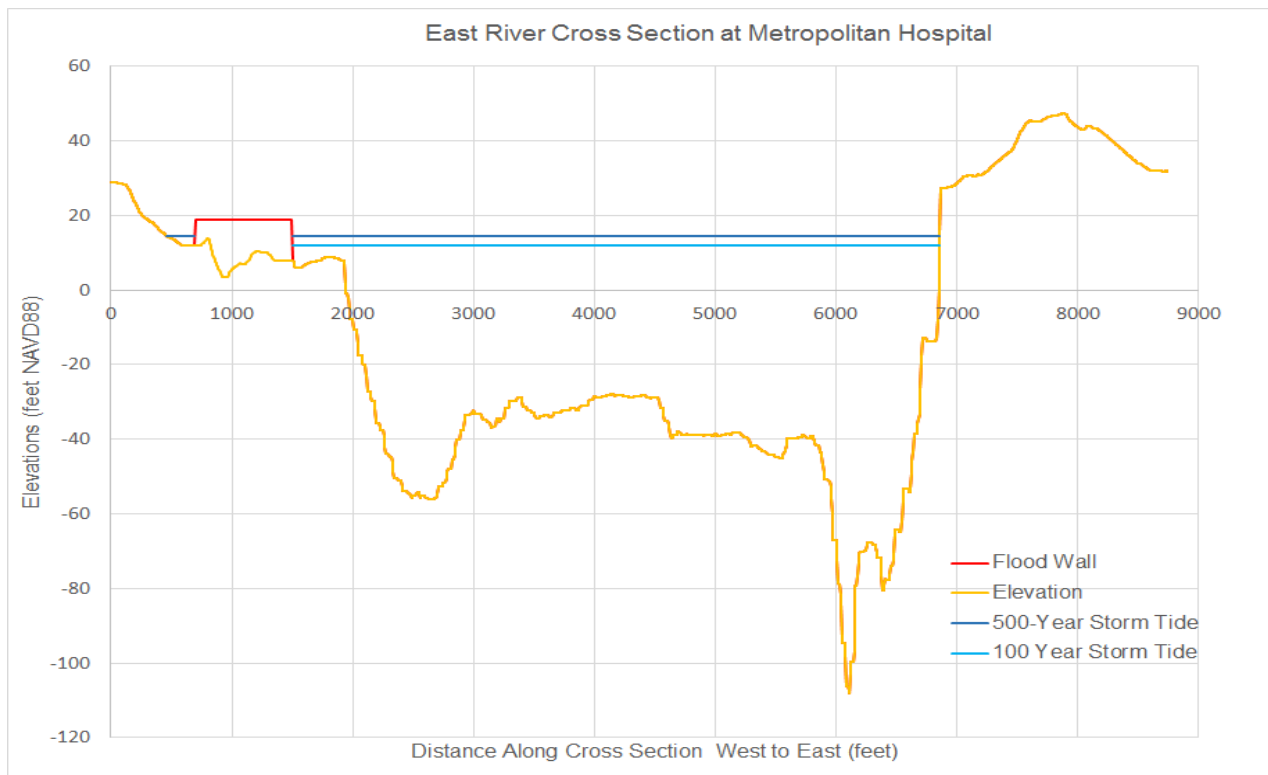


FIGURE 6. CROSS SECTIONAL AREA OF THE EAST RIVER AT METROPOLITAN HOSPITAL AS EXTRACTED FROM THE FEMA DEM USED IN THE COASTAL ANALYSIS THAT GENERATED THE PFIRMS.

### 3.3 WAVE REDUCTION AT THE METROPOLITAN HOSPITAL CENTER

The proposed perimeter floodwall will shelter the Metropolitan Hospital Center from waves. Wave overtopping could occur during the 500-year event, but with freeboard designed into the wall height, the overtopping contribution is likely to be reduced. Any wave overtopping that does occur will be conveyed away from the interior of the wall by the proposed drainage system. Figure 7 shows the wave profile with the proposed perimeter floodwall in place.

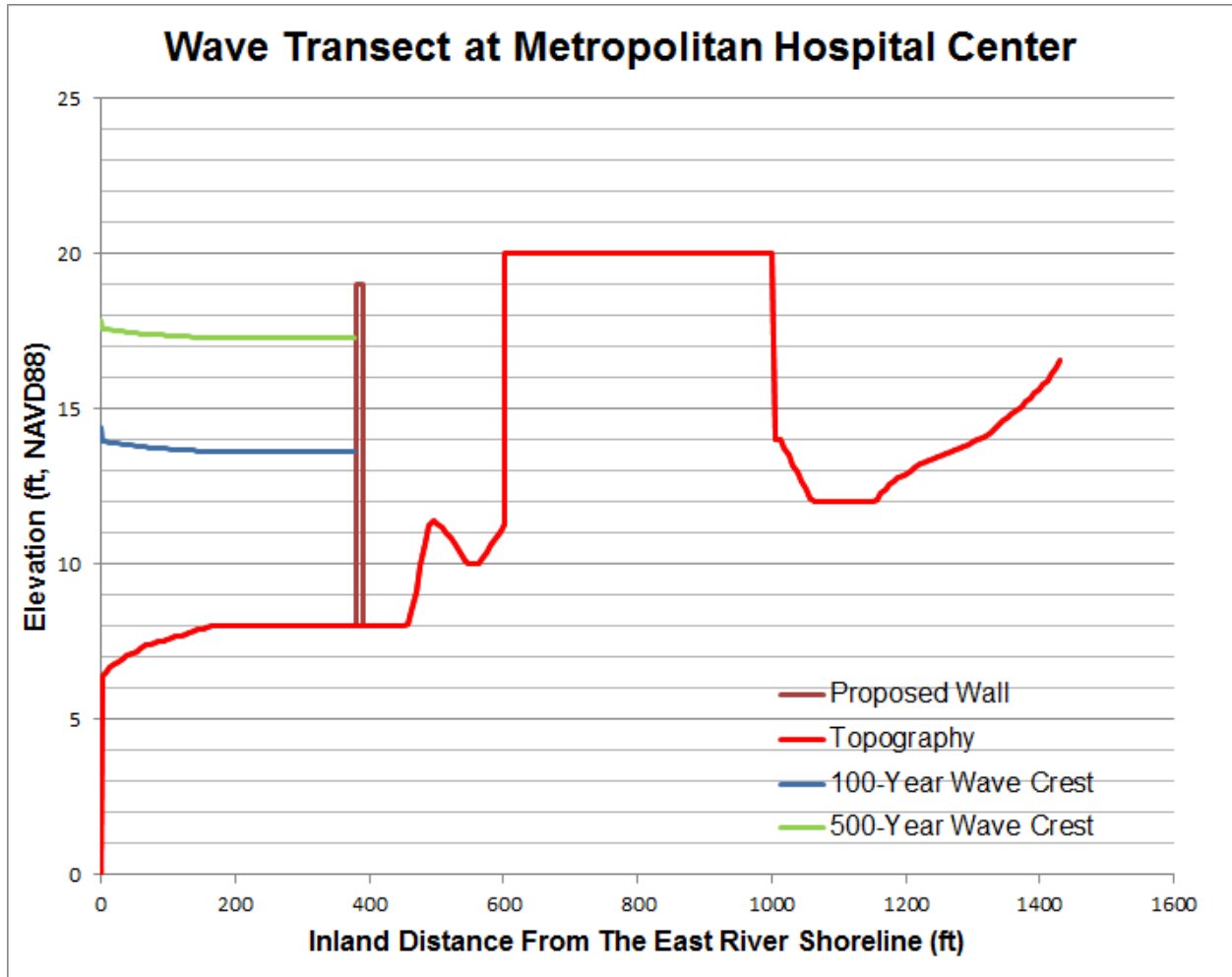


FIGURE 7. WAVE CREST PROFILE ALONG TRANSECT FROM EAST RIVER SHORELINE TO METROPOLITAN HOSPITAL CENTER, WITH PROPOSED FLOOD WALL IN PLACE.

### 3.4 WAVE REFLECTION: IMPACT TO ADJACENT PROPERTIES

The Draper Hall building, specifically the perimeter wall exterior to the main building, to the east of Metropolitan Hospital was identified as the only existing structure adjacent to the Metropolitan Hospital Center that could receive significant reflected wave energy from the proposed floodwall, as shown schematically in Figure 8. Wave reflection analysis was performed for the 500-year event from the Metropolitan Hospital Center to the perimeter wall exterior to Draper Hall. Because the proposed floodwall at the Center is approximately 75 feet closer than the existing building face to the edge of the wall exterior to Draper Hall, a wave reflection estimate, with and without the proposed wall, was performed.

The WHAFIS output wave height as discussed in Sections 2.2 and 3.3 was reflected at the existing hospital wall and at the proposed wall using a reflection coefficient of 0.9 (*Allsop, N. W. H. et al.. 1994. The Reflection Performance of Vertical Walls and 'Low Reflection' Alternatives – Results of Random Wave Flume Tests*). The reflected wave was then used as input to the SWAN wave model (*SWAN Cycle III version 40.51*) for propagation across First Avenue to the wall exterior to Draper Hall. Wind wave generation effects were turned off for the reflection analysis, considering that waves would be reflecting into the dominant wind direction or perhaps even sheltered from the winds by Draper Hall.



FIGURE 8. RED ARROW DEMONSTRATES WAVES APPROACHING FROM THE EAST RIVER AND IMPACTING THE EXISTING METROPOLITAN HOSPITAL BUILDING FACE OR PROPOSED WALL. YELLOW ARROWS SHOW WAVE REFLECTION PATHWAYS TO THE WALL EXTERIOR TO DRAPER HALL, EAST OF FIRST AVENUE.

The propagation analysis across First Avenue needed to accurately capture the effects of wave dissipation, so two sets of well-accepted dissipation formulations were included:

- JONSWAP (*Hasselmann et. al.. 1973. Measurements of Wind–Wave Growth and Swell Decay during the Joint North Sea Wave Project*)
- Madsen (*Madsen et. al.. 1988. Bound Waves and Triad Interactions in Shallow Water*)

This allowed for a range of acceptable results to be examined, highlighting some of the uncertainties in the analysis. Table 3 shows the range of wave reflection results from the existing building face and also from the proposed floodwall for the 500-year event. It should be clarified that this is the percentage of the incoming wave that is reflected to the wall exterior Draper Hall. The proposed floodwall, because it is closer to Draper Hall than the existing building face, does increase the expected wave reflection. Considering the mid-points of the ranges shown in Table 3, the increase in reflected wave energy from Metropolitan to the wall exterior to Draper Hall by the proposed wall is 14%. A few important points are highlighted:

- The 14% increase in reflected incoming wave energy from the proposed wall to the wall exterior to Draper Hall is only slightly higher than the range of the estimates using the Madsen and JONSWAP wave dissipation formulas, i.e. 10%-11%
- The increase in reflected wave energy is to a wall exterior to, and less critical structurally than, Draper Hall
- Independent of this analysis, Draper Hall is being considered for demolition in the future

**TABLE 3: PERCENTAGE OF INCOMING WAVE HEIGHT REFLECTED FROM METROPOLITAN TO THE WALL EXTERIOR TO DRAPER HALL BY THE EXISTING BUILDING FACE AND THE PROPOSED FLOOD WALL**

	EXISTING BUILDING FACE	PROPOSED FLOOD WALL
Percentage of Incoming Wave Height Reflected From Metropolitan to the Wall Exterior to Draper Hall	61%-72%	75%-85%

### 3.5 INTERIOR DRAINAGE

With the proposed perimeter floodwall in place, the existing sanitary and stormwater drainage systems will be modified to continue conveying drainage from behind the wall during a storm tide event and also to prevent storm tide backup from NYC sewers into the Metropolitan Hospital campus. The following will be required and are schematically highlighted in Figure 9:

- New Diversion Chamber Connections to NYC sewers
- Valves on existing connections installed to prevent exterior storm tide backflows during storm tide events
- Diversion of combined stormwater and sanitary flows to a new pump station during storm tide events

- Watertight manholes on exterior utilities to prevent storm tide backflow
- New pump stations to convey sanitary, stormwater, and wave overtopping during storm tide events
- Designed to convey the Center’s rainfall runoff during the 5.95 inches/hour event plus concurrent sanitary flows from all hospital fixtures
- Designed to supply pump head sufficient to evacuate water from basements to elevations above the 500-year storm tide
- Sump pumps at low points to support conveyance throughout the campus

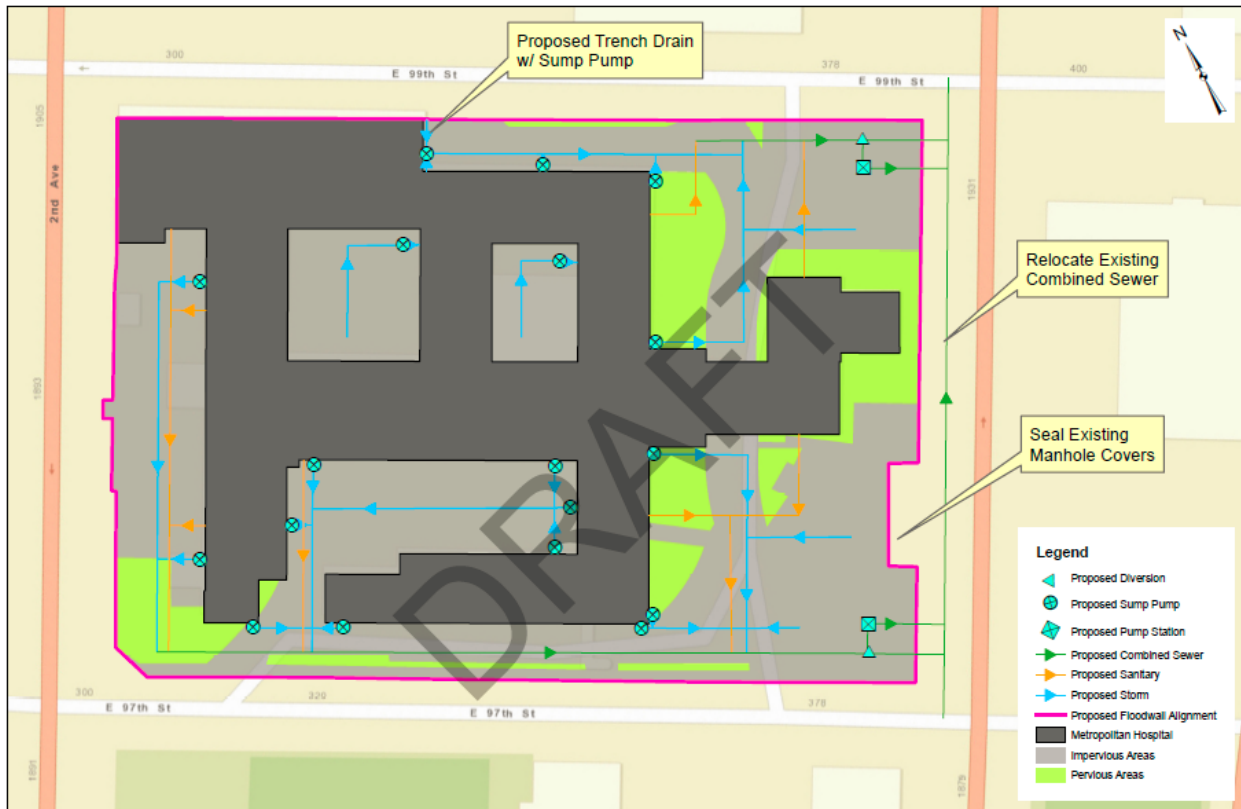


FIGURE 9. PROPOSED INTERIOR DRAINAGE SYSTEM FOR THE METROPOLITAN HOSPITAL CENTER.



### 3.6 SUMMARY

The following points summarize conditions with the proposed perimeter floodwall and associated interior drainage modifications:

- Direct storm tide and wave risk reduced behind the wall
- No storm tide impact to adjacent properties
- Wave reflection to the wall exterior to Draper Hall
  - 14% increase with the proposed wall relative to existing conditions (range of estimates is 10% - 11%)
  - Wall exterior to Draper Hall is less critical structurally than Draper Hall and will shield Draper Hall from any increases in reflected wave energy
  - Draper Hall is being considered for future demolition, at which point it would not be exposed to any additional reflected wave energy
- Interior drainage modified to prevent storm tide backflow behind the wall and to convey the following during a storm tide event:
  - 5.95 inches/hour rainfall event
  - Sanitary flows from all hospital fixtures

**Appendix A**  
**Document 5.7-1**  
**U.S. Department of the Interior**  
**Correspondence**



# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Long Island Ecological Services Field Office  
340 SMITH ROAD  
SHIRLEY, NY 11967  
PHONE: (631)286-0485 FAX: (631)286-4003

Consultation Code: 05E1LI00-2015-SLI-0072

March 02, 2015

Event Code: 05E1LI00-2015-E-00072

Project Name: NYC HHC Metropolitan Hospital Hazard Mitigation

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

## To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having

similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan ([http://www.fws.gov/windenergy/eagle\\_guidance.html](http://www.fws.gov/windenergy/eagle_guidance.html)). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment



United States Department of Interior  
Fish and Wildlife Service

Project name: NYC HHC Metropolitan Hospital Hazard Mitigation

## Official Species List

### Provided by:

Long Island Ecological Services Field Office  
340 SMITH ROAD  
SHIRLEY, NY 11967  
(631) 286-0485

**Consultation Code:** 05E1LI00-2015-SLI-0072

**Event Code:** 05E1LI00-2015-E-00072

**Project Type:** Development

**Project Name:** NYC HHC Metropolitan Hospital Hazard Mitigation

**Project Description:** Hurricane Sandy flooded the Metropolitan Hospital Center (MHC) campus with contaminated floodwaters, damaging critical electrical and mechanical systems. HHC is seeking funding from FEMA pursuant to section 406 and 428 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act for the proposed project, which would prevent damage to the hospital from future storm or flooding events by providing a flood barrier around the hospital campus and improved stormwater management systems.

**Please Note:** The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



United States Department of Interior  
Fish and Wildlife Service

Project name: NYC HHC Metropolitan Hospital Hazard Mitigation

### Project Location Map:



**Project Coordinates:** MULTIPOLYGON (((-73.9465075 40.7849265, -73.9456497 40.7861291, -73.9433859 40.7851864, -73.9442013 40.7839602, -73.9465075 40.7849265)))

**Project Counties:** New York, NY



United States Department of Interior  
Fish and Wildlife Service

Project name: NYC HHC Metropolitan Hospital Hazard Mitigation

## Endangered Species Act Species List

There are a total of 1 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Mammals	Status	Has Critical Habitat	Condition(s)
northern long-eared Bat ( <i>Myotis septentrionalis</i> )	Proposed Endangered		



United States Department of Interior  
Fish and Wildlife Service

Project name: NYC HHC Metropolitan Hospital Hazard Mitigation

## **Critical habitats that lie within your project area**

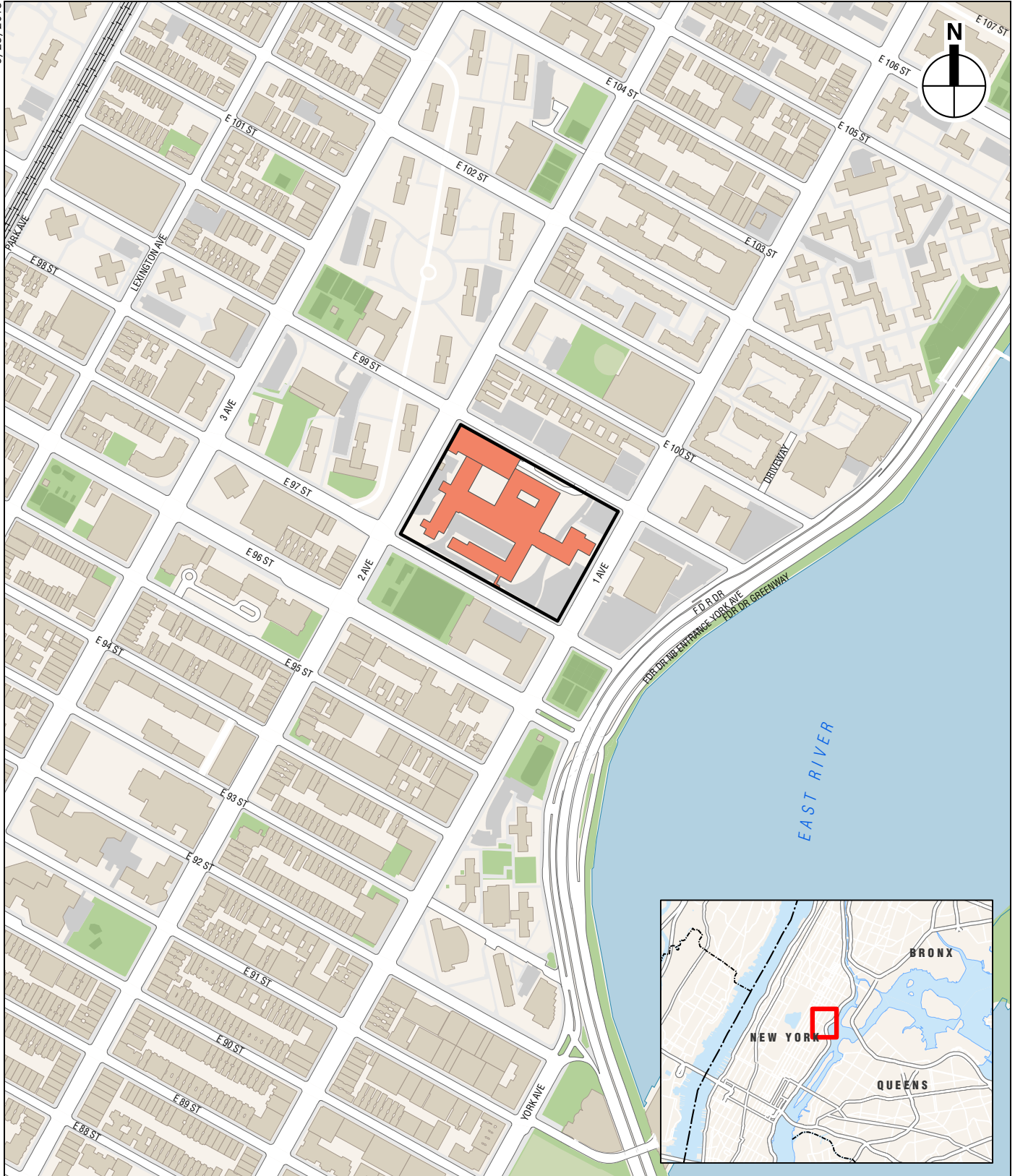
There are no critical habitats within your project area.



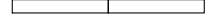
## **Appendix B**

### **Figures**

3/25/2015



 Project Site

0 500 FEET  






3/25/2015



 Project Site

0 200 FEET  
