

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK
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UNITED STATES OF AMERICA,

Plaintiff,

-against -

Civil Action No. CV-19-
()

CITY OF NEW YORK and NEW YORK
CITY DEPARTMENT OF
ENVIRONMENTAL PROTECTION,

Defendants.
-----X

NOTICE OF LODGING OF CONSENT DECREE

The United States of America respectfully gives notice of lodging with the Court a proposed Consent Decree and Judgment (“Consent Decree”) in the above-captioned action. **No action is required by the Court at this time.**

Pursuant to 28 C.F.R. § 50.7, the United States will publish a notice in the Federal Register that the proposed Consent Decree has been lodged with the Court. The notice will solicit public comment for a period of 30 days. Section XX of the Consent Decree reflects the parties’ agreement that final approval and entry of the Consent Decree is subject to this public comment period. After the close of the comment period, the United States will evaluate any comments received and determine whether any comments disclose facts or considerations that indicate that the proposed Consent Decree is inappropriate, improper or inadequate, and will advise the Court whether the United States requests that the Consent Decree be entered.

Accordingly, the United States respectfully requests that the Court not sign the proposed Consent Decree unless and until the United States moves for entry of the Consent Decree.

Dated: March 18, 2019

Respectfully submitted,

RICHARD P. DONOGHUE
United States Attorney
Eastern District of New York
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Brooklyn, New York 11201

By: s/Deborah B. Zwany
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(718) 254-6010

EXHIBIT A

PROPOSED CONSENT JUDGMENT

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK

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 :
 UNITED STATES OF AMERICA, :
 :
 Plaintiff, :
 :
 STATE OF NEW YORK, :
 :
 Plaintiff-Intervenor :
 :
 v. :
 :
 CITY OF NEW YORK and NEW YORK :
 CITY DEPARTMENT OF :
 ENVIRONMENTAL PROTECTION, :
 :
 Defendants. :
 -----X

Civil Action No. :

CONSENT DECREE AND JUDGMENT

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Glossary of Acronyms

Acronym	Term
BODR	Basis of Design Report
CFR	Code of Federal Regulations
CGA Plan	Revised <i>Cryptosporidium</i> and <i>Giardia</i> Action Plan
CDUV	Eastview Ultraviolet Facility
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
EPA AOC	EPA Administrative Order on Consent SDWA-02-2010-8027
HRI	Hillview Reservoir Improvements
KEC	Kensico-Eastview Connection Project
LT2 Rule	Long Term 2 Enhanced Surface Water Treatment Rule
NYCDEP	New York City Department of Environmental Protection
NYCRR	New York Codes, Rules and Regulations
NYSDOH	New York State Department of Health
NTP	Notice to Proceed
PCA	Catskill Aqueduct Pressurization Project
RWBT Repair	Rondout West Branch Tunnel Repair
SDWA	Safe Drinking Water Act
U.S.C.	United States Code

WHEREAS, Plaintiff United States of America (“United States”), on behalf of the United States Environmental Protection Agency (“EPA”), filed a complaint in this action concurrently with this Consent Decree and Judgment (“Consent Judgment”) by authority of Section 1414(b) of the Safe Drinking Water Act, 42 U.S.C. § 300g-3(b), (“the SDWA” or “the Act”) for continuing violations of the SDWA and the Long Term 2 Enhanced Surface Water Treatment Rule (“LT2 Rule”), 40 C.F.R. § 141, Subpart W, an applicable requirement of the SDWA, as a result of the failure of Defendants, the City of New York and the New York City Department of Environmental Protection (collectively “the City”), to cover the Hillview Reservoir, a finished water storage facility, in accordance with the provisions of 40 C.F.R. § 141.714; and

WHEREAS, Plaintiff-Intervenor the State of New York, by and through the New York State Department of Health (“State”), filed a Complaint-in-Intervention in this action for violations of the New York State Department of Health’s (“NYSDOH”) Administrative Order AT 940772-CO. The Order was issued on February 22, 2008 pursuant to provisions of the State Sanitary Code, 10 NYCRR Part 5, which was promulgated under Section 225 of the New York Public Health Law. The Order required the City, inter alia, to cover the Hillview Reservoir and to implement various operational changes at the Reservoir; and

WHEREAS, the LT2 Rule is intended to protect public health from illness due to *Cryptosporidium* and other microbial pathogens in drinking water by requiring that uncovered finished water storage facilities must either be covered or the discharge from any uncovered finished water storage facility must be treated; and

WHEREAS, the City has stated that it is not feasible to treat the discharge from the Hillview Reservoir and therefore, pursuant to the LT2 Rule, the City is required to cover the Hillview Reservoir; and

WHEREAS, on May 24, 2010, the City consented to EPA's issuance of EPA Administrative Order on Consent SDWA-02-2010-8027 ("EPA AOC"), in which the City agreed to construct the Hillview Cover, including Site Preparation, the East Basin Cover, and the West Basin Cover, between January 31, 2017, and May 31, 2028 ("AOC Schedule"); and

WHEREAS, on September 22, 2010, the AOC Schedule dates for completion of the Hillview Cover were incorporated into the NYSDOH Administrative Order AT 940772-CO; and

WHEREAS, on October 7, 2010, the City requested a postponement of the schedule for completion of the Hillview Cover in the AOC Schedule in order to complete the Rondout West Branch Tunnel Repair ("RWBT Repair") and the Catskill Aqueduct Pressurization Project ("PCA") prior to construction of the Hillview Cover; and

WHEREAS, in March 2011, the City requested that EPA, as part of its 6 year review of regulations promulgated under the SDWA, consider amending the LT2 Rule to authorize water supplies to implement a state approved risk management plan to protect uncovered finished water storage reservoirs; and

WHEREAS, in December 2016, EPA concluded that no regulatory revisions to the uncovered finished water reservoir requirements of the LT2 Rule were warranted; and

WHEREAS, in the period between 2010 and 2016, the City commenced the RWBT Repair, and replaced the previously planned PCA with the Kensico-Eastview Connection Project ("KEC") and commenced planning for the KEC; and

WHEREAS, the City represents that to ensure the reliable delivery of water to City consumers and the City's ability to meet water demand throughout the year, both the KEC and the Hillview Reservoir Improvements must be completed before construction of the Hillview Cover starts; and

WHEREAS, the City represents that the KEC will increase the flow from the Kensico Reservoir to the City's Eastview Ultraviolet ("UV") Facility and reduce hydraulic losses, and that these changes will greatly improve the ability to maintain Hillview Reservoir water surface levels within the normal operating band during single-basin operation at Hillview Reservoir; and

WHEREAS, the City represents that the Hillview Reservoir Improvements will improve existing equipment and processes, some of which have been in operation for more than 100 years, that are necessary for single-basin operation at Hillview Reservoir; and

WHEREAS, the City did not meet a regulatory State-approved schedule for the Hillview Cover contemplated in 40 C.F.R. § 141.714(c) and failed to comply with the AOC Schedule; and

WHEREAS, the schedule set forth in this Consent Judgment for construction of the Hillview Cover is a judicial enforcement schedule; and

WHEREAS, the Parties recognize, and the Court by entering this Consent Judgment finds, that this Consent Judgment has been negotiated by the Parties in good faith and will avoid litigation between the Parties and that this Consent Judgment is fair, reasonable, and in the public interest.

NOW, THEREFORE, before the taking of any testimony, without the adjudication or admission of any issue of fact or law, and with the consent of the Parties,

IT IS HEREBY ADJUDGED, ORDERED, AND DECREED as follows:

I. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action, pursuant to 28 U.S.C. §§ 1331, 1345, and 1355, and Section 1414(b) of the Act, 42 U.S.C. § 300g-3(b), and over the Parties. This Court has supplemental jurisdiction over the State's Complaint-in-Intervention pursuant to 28 U.S.C. § 1367. Venue lies in this District pursuant to 28 U.S.C. §§ 1391(b) and 1395(a), because the Defendants reside in and are found in this judicial district. For purposes of this Consent Judgment, or any action to enforce this Consent Judgment, the City consents to the Court's jurisdiction over this Consent Judgment and any such action and over the City and consents to venue in this judicial district.

2. Solely for purposes of this action and Consent Judgment, the Defendants agree that the Complaint states claims upon which relief may be granted pursuant to Section 1414(b) of the Act and the Complaint-in-Intervention states claims upon which relief may be granted pursuant to New York Public Health Law § 225 and 10 NYCRR Part 5.

II. APPLICABILITY

3. The obligations of this Consent Judgment apply to and are binding upon the United States and the State, and upon the City and any successors, assigns, or other entities or persons otherwise bound by law.

4. No transfer of ownership or operation of the KEC, the Catskill Aqueduct or the Hillview Reservoir, whether in compliance with the procedures of this Paragraph or otherwise, shall relieve the City of its obligation to ensure that the terms of the Consent Judgment are implemented. At least 30 Days prior to such transfer, the City shall provide a copy of this Consent Judgment to the proposed transferee and shall simultaneously provide written notice of the prospective transfer, together with a copy of the proposed written agreement, to EPA Region 2, the United States Attorney

for the Eastern District of New York, the United States Department of Justice, and the State, in accordance with Section XV of this Judgment (Notices). Any attempt to transfer ownership or operation of the Hillview Reservoir without complying with this Paragraph constitutes a violation of this Consent Judgment.

5. The City shall provide a copy of this Consent Judgment to all officers, employees, and agents whose duties might reasonably include compliance with any provision of this Consent Judgment, as well as to any contractor retained to perform work required under this Consent Judgment. The City shall include in any such contract entered into after the Effective Date terms and schedules consistent with this Consent Judgment.

6. In any action to enforce this Consent Judgment, the City shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Judgment.

III. OBJECTIVES

7. The express purpose of the Parties in entering this Consent Judgment is to ensure compliance with the SDWA, the LT2 Rule, the New York Public Health Law, and the New York Sanitary Code by constructing the Hillview Cover.

IV. DEFINITIONS

8. Terms used in this Consent Judgment that are defined in the Act or in regulations promulgated pursuant to the Act shall have the meanings assigned to them in the Act or such regulations, unless otherwise provided in this Consent Judgment.

9. Whenever the terms set forth below are used in this Consent Judgment, the following definitions shall apply:

a. “Basis of Design Report” or “BODR” shall mean a planning report that documents the major design criteria and includes recommended project elements, planning level drawings, preliminary schedules, and cost estimates.

b. “CGA Plan” shall mean the Revised *Cryptosporidium* and *Giardia* Action Plan prepared by the New York City Department of Environmental Protection (“NYCDEP”) that describes actions to be taken by, and consultations among, NYCDEP, NYSDOH, the New York City Department of Health and Mental Hygiene and EPA in response to elevated levels of *Cryptosporidium* and/or *Giardia* at the Hillview Reservoir effluent location (Site 3). A current copy of the Hillview CGA Plan is attached as Appendix A.

c. The “City” shall mean the City of New York and the New York City Department of Environmental Protection.

d. “Commence Full Operation” shall mean, when used in reference to construction projects required under this Consent Judgment, the placement of the facility constructed or repaired into operation after the construction project or specified part thereof, is completed, and after Start-Up and Testing has been fully performed, such that the facility or specified part thereof is capable of being consistently and reliably used to accomplish the purposes for which it was intended and fully complies with applicable regulations and the completed works approval has been obtained from NYSDOH, and all required permits necessary to commence operation of the facility have been received.

e. “Complaint” shall mean the complaint filed by the United States in this action.

- f. “Complaint-in-Intervention” shall mean the complaint-in-intervention filed by the State of New York in this action.
- g. “Complete Construction” shall mean the completion of construction work to a degree that functional use of the facility is achieved.
- h. “Consent Judgment” or “Judgment” shall mean this Consent Judgment and all appendices attached hereto.
- i. “Day” shall mean a calendar day unless expressly stated to be a business day. In computing any period of time under this Consent Judgment, where the last day would fall on a Saturday, Sunday, or federal holiday, the period shall run until the close of business of the next business day.
- j. “Documents” shall be defined in accordance with Local Civil Rule 26.3 of the Local Rules of the United States District Courts for the Southern and Eastern Districts of New York.
- k. “Eastview UV Facility,” or “CDUV,” shall mean the facility located at 10 Walker Road, Mount Pleasant, New York 10595.
- l. “Environmental Impact Statement” or “EIS” shall mean the document(s) required to be prepared pursuant to the State Environmental Quality Review Act, New York State Environmental Conservation Law Article 8, Section 8-0109.
- m. “EPA” shall mean the United States Environmental Protection Agency and any of its successor departments or agencies.
- n. “Effective Date” shall have the definition provided in Section XVI.
- o. “Facility(ies)” shall mean any building(s) or other structure(s) built or installed by the City for a specific function or owned or operated by the City.

p. “Facility Planning” shall mean identification of the project needs and goals, evaluation of alternative approaches, and development of an implementation plan for the selected alternative, including conceptual drawings, schedules, and cost estimates.

q. “Final Design” shall mean an engineer’s plans and specifications developed in conformance with Recommended Standards for Water Works, 2012 Edition, including any variances and/or exceptions approved by NYSDOH. The Final Design shall be at the level of detail suitable for approval by NYSDOH and for incorporation or reference in construction contract procurement documents.

r. “Gate Operation System” shall mean the motors and other ancillary equipment that operate the mechanical sluice gates at the uptake and downtake chambers at Hillview Reservoir.

s. “Hillview Cover” shall mean the cover to be constructed in order to achieve compliance with the LT2 Rule, 40 C.F.R. §141.714, for the Hillview Reservoir. It is anticipated that the Hillview Cover will be constructed in phases, referred to herein as Hillview Cover – Site Preparation (or “Site Preparation”), Hillview Cover – East Basin (or “East Basin Cover”), and Hillview Cover – West Basin (or “West Basin Cover”).

t. “Hillview Reservoir Improvements Project” or “Hillview Reservoir Improvements” (“HRI”) shall mean projects at the Hillview Reservoir that the City represents are necessary prior to commencement of construction of the Hillview Cover, including Hillview chemical addition facilities and Hillview facility and flow control improvements, which will (i) improve uptake and downtake chemical storage and provide flow-paced chemical feed systems, (ii) replace sluice gates and operators which control incoming and outgoing flow and replace other mechanical flow-control equipment, (iii) make structural/architectural/electrical improvements to existing infrastructure to

allow the facility to continue operating safely and reliably, (iv) construct a new hydraulic interconnection between Hillview Reservoir and City Tunnels No. 2 and 3, and (v) maintain appropriate flow monitoring and chemical dosage control.

u. “Kensico-Eastview Connection Project” (“KEC”) shall mean the project that will provide a new connection between the Kensico Reservoir and the Eastview UV Facility to increase flow and reduce hydraulic losses. For purposes of this Consent Judgment, this project will include the following components: Upper Effluent Chamber (“UEC”) modifications at the Kensico Reservoir, a new screen chamber adjacent to the Kensico Reservoir (“Screen Chamber”), a downtake shaft (from the screen chamber to the KEC downtake) (“Downtake Shaft”), a new conveyance tunnel between the Kensico Reservoir and the Eastview UV Facility (“Deep Rock Tunnel”), an uptake shaft (at Eastview) (“Uptake Shaft”), and an Eastview connection chamber to tie the tunnel into the Eastview UV Facility (“CDUV Connection”).

v. “LT2 Rule” shall mean the requirements set forth in 40 C.F.R. § 141, Subpart W, an applicable requirement of the Act.

w. “Notice to Proceed” shall mean the notification by the City to a contractor authorizing the contractor to commence work under the specific contract(s) for the construction or implementation of the project.

x. “NYSDOH” shall mean the New York State Department of Health.

y. “Paragraph” shall mean a portion of this Consent Judgment identified by an arabic numeral.

z. “Parties” shall mean the United States, the State (as defined in paragraph ee below), and the City.

aa. “Preliminary Design” shall mean documents, including drawings, developed by the City, which serve as the basis for plans and specifications for the final design and construction contracts for each of the three construction projects: the KEC, the Hillview Reservoir Improvements Project, and the Hillview Cover. The preliminary designs shall include drawings and criteria that define general and spatial allowances for architectural, structural, mechanical, heating, ventilating, plumbing, electrical and other appurtenances. The preliminary design shall include a proposed construction plan setting forth at a minimum the number and scope of phases of construction contracts and their interrelationships and a proposed preliminary construction schedule.

bb. “Section” shall mean a portion of this Consent Judgment identified by a roman numeral.

cc. “Site Preparation” shall mean the first construction contract(s) or phase(s) as described in the Preliminary Design for the KEC, the Hillview Reservoir Improvements Project and the Hillview Cover. Site Preparation shall include provision of temporary construction management facilities (such as trailers, offices, fencing and site security); construction of temporary service and access roads; site clearing and grubbing; demolition and removal of existing structures; rough grading; and provision of temporary electrical and other utilities.

dd. “Start-Up and Testing” shall mean, when used in reference to construction projects required under this Consent Judgment, the start-up of the facility constructed or repaired through the construction project, including initial operation, and all testing and adjustments necessary to assure that the facility is capable of being consistently and reliably used to accomplish the purpose for which it is intended and fully complies with applicable regulations.

ee. “State” shall mean the State of New York, by and through the New York State Department of Health.

ff. “United States” shall mean the United States of America, acting on behalf of EPA.

V. CIVIL PENALTY

10. a. Within 45 Days after the Effective Date of this Consent Judgment, the City shall pay to the United States the sum of \$ 1,000,000.00 as a civil penalty.

b. If the full payment of \$ 1,000,000 to the United States is not made within 45 Days of the Effective Date of this Consent Judgment, the City shall pay to the United States interest on the balance due from the original due date to the date of full payment, at the rate calculated pursuant to 28 U.S.C. § 1961 as of the original due date. The City will also be liable for stipulated penalties under Paragraph 110.a.

c. The civil penalty paid to the United States shall be paid by FedWire Electronic Funds Transfer (“EFT”) to the U.S. Department of Justice in accordance with written instructions to be provided to the City, following entry of the Consent Judgment, by the Financial Litigation Unit of the U.S. Attorney’s Office for the Eastern District of New York, 271 Cadman Plaza East, Brooklyn, New York 11201, (718) 254-7000. At the time of payment, the City shall send a copy of the EFT authorization form and the EFT transaction record, together with a transmittal letter, which shall state that the payment is for the civil penalty owed pursuant to the Consent Judgment in United States v. City of New York and New York City Department of Environmental Protection and shall reference the civil action number, USAO number: 2011V00094 and DOJ case number 90-5-1-1-10223/1, to the

United States in accordance with Section XV of this Judgment (Notices); by email to acctsreceivable.CINWD@epa.gov; and by mail to:

EPA Cincinnati Finance Office
26 Martin Luther King Drive, Cincinnati, Ohio 45268

11. a. The State and the City have agreed on an additional state civil penalty of \$250,000, payable as follows: (i) within 45 Days after the Effective Date of this Consent Judgment, the City shall pay to the State of New York the sum of \$ 50,000.00, and (ii) the City shall spend at least \$200,000 on a water quality benefit project (WQBP), approved by NYSDOH, as set forth in Appendix B or determined in accordance with subparagraph c, below. The WQBP shall be a project that the City is not legally required to implement, that the City does not currently plan to implement, and that the City has not funded in its current budget.

b. The \$50,000 civil penalty payable to the State of New York shall be paid by check made payable to “New York State Department of Health,” mailed to Gavin McCabe, Special Assistant Attorney General, Environmental Protection Bureau, 28 Liberty Street – 19th Floor, New York, NY 10005.

c. The City shall provide the State with an accounting of the amount spent on the WQBP within 60 days of project completion. In the event the WQBP is not completed or is completed for less than \$200,000, the City shall propose an additional Water Quality Benefit Project (Additional WQBP), and a schedule for implementing the Additional WQBP, for approval by the State. The Additional WQBP shall require the City to expend at least the difference between \$200,000 and the amount spent by the City on the WQBP. If the State approves the Additional WQBP, the City shall implement the Additional WQBP as approved by the State. If the State disapproves the Additional WQBP, the City

and the State agree to meet and discuss the Additional WQBP or any other water quality benefit project either the City or State proposes. If the City and State cannot reach agreement on a water quality benefit project that requires the City to expend at least the difference between \$200,000 and the amount spent by the City on the WQBP within 60 days of the State's disapproval, or such additional time as the City and State agree upon, the State may provide the City written notice directing the City to pay the difference between \$200,000 and the amount spent by the City on the WQBP to the State, and the City shall make payment within 45 days of the City's receipt of such written notice following the same payment process as set forth in Paragraph 11.b above.

d. The City agrees that in any public communication regarding the WQBP, the City shall include language noting that the WQBP is being performed in lieu of a portion of a penalty for violation of an administrative order with NYSDOH.

e. Failure to meet deadlines for the WQBP will be governed by the terms of Section IX (Stipulated Penalties). Should a dispute arise between the City and the State concerning any aspect of the WQBP, including the proposed schedule, the dispute shall be resolved by the City and the State in accordance with Section XI (Dispute Resolution) (Paragraphs 128 to 135). With respect to that dispute the State shall have the rights and responsibilities afforded the United States in Paragraphs 128 to 135.

VI. LONG TERM COMPLIANCE REQUIREMENTS

The City shall comply with the long term compliance requirements set forth in and developed under this Section VI.

A. Kensico-Eastview Connection Project

12. By September 30, 2017, commence the preliminary design for the KEC.

13. By May 31, 2022, complete and submit to the United States and the State the Preliminary Design for the KEC.

14. By October 31, 2022, complete and submit to the United States and the State the Draft Environmental Impact Statement (“EIS”) and commence the Final EIS procedure for the KEC. The DEIS will include a list of all local, State, and federal permits and approvals and will identify all property acquisition needed for construction of the KEC at all properties under consideration by the City for implementation of the KEC. If other permits, approvals or land acquisition needs are identified by the City at a later date, the City shall have a duty to supplement its notification to the United States and the State in its next quarterly report to the United States.

15. By December 31, 2022, issue public notice of hearing on the Draft EIS for the KEC.

16. By January 31, 2023, submit proposed Interim Long Term Milestones related to procurement for each construction contract for the KEC, for review and approval in accordance with Section VI.E. below.

17. By February 28, 2023, complete and submit to EPA and NYSDOH, for approval by NYSDOH, the Final Design for the first construction contract for KEC.

18. By October 31, 2023, complete and submit to the United States and the State the Final EIS for the KEC and notify the United States of the City’s determination as to whether the schedule for construction of the KEC can be accelerated. If the KEC construction schedule can be accelerated, the City shall submit proposed accelerated milestone dates to the United States and the State in accordance with Section VI.D. below.

19. By January 31, 2025, advertise for bids for the first contract for construction of the KEC.

20. By July 31, 2026, secure all local, State, and federal final approvals and permits necessary to start construction under the first construction contract of the KEC, issue notice to proceed for the first contract for construction of the KEC and commence construction of the KEC.

21. By July 31, 2027, submit proposed Interim Long Term Milestones related to construction under the first construction contract for the KEC in accordance with Section VI.E. below.

22. By April 30, 2032, complete construction of the Uptake Shaft, Deep Rock Tunnel, and Downtake Shaft.

23. By October 31, 2032, complete construction of the Screen Chamber.

24. By October 31, 2032, complete construction of the UEC Modifications.

25. By April 30, 2034, complete construction of the CDUV Connection.

26. By April 30, 2034 complete construction of the KEC and commence Start-Up and Testing.

27. By March 31, 2035, commence Full Operation of the KEC.

B. Hillview Reservoir Improvements Project

28. By May 1, 2017, issue notice to proceed for the HRI Facility Planning/Design.

29. By December 31, 2017, commence design and/or procurement of repair of Gate Operations System at Hillview Reservoir Uptake 1.

30. By December 31, 2018, place into service repaired Gate Operations System at Hillview Reservoir Uptake 1.

31. By July 31, 2019, complete HRI Facility Planning Report and submit the report to the United States and the State.

32. By April 30, 2020, complete HRI Project Basis of Design Report and submit the report to the United States and the State and commence the Preliminary Design for the HRI.

33. By December 31, 2020, complete analysis of HRI facility planning information and notify the United States and the State of the City's determination as to whether the schedule for design and/or construction of the HRI can be accelerated and if so, submit accelerated milestone dates to the United States in accordance with Section VI.D.

34. By May 31, 2021, complete and submit to the United States and the State the Preliminary Design for the HRI and commence the Final Design for the HRI.

35. By January 31, 2022, submit proposed Interim Long Term Milestones related to procurement of construction contracts for the HRI in accordance with Section VI.E. below.

36. By May 31, 2022, identify and submit to the United States and the State, using due diligence, a list of all local, State, and federal permits and approvals needed for construction of the HRI. If other permits or approvals are identified by the City at a later date, the City shall have a duty to supplement its notification to the United States and the State in its next quarterly report to the United States and the State.

37. By December 31, 2022, complete and submit to EPA and NYSDOH, for approval by NYSDOH, the Final Design for the first construction contract for the HRI.

38. By September 30, 2023, advertise for bids for the first contract for construction of the HRI.

39. By August 31, 2024, secure all local, State, and federal final approvals and permits necessary to start construction under the first construction contract of the HRI, issue notice to proceed for the first contract for construction of the HRI, and commence construction of the HRI.

40. By August 31, 2025, submit proposed Interim Long Term Milestones related to construction under the first construction contract for the HRI in accordance with Section VI.E. below.

41. By August 31, 2032, complete construction of the HRI and commence Start-Up and Testing.

42. By February 28, 2033, commence Full Operation of the HRI facilities.

C. Hillview Cover

Hillview Cover Facilities Planning

43. By February 29, 2020, issue the Notice to Proceed for the Hillview Cover Facility Planning.

44. By August 31, 2024, complete Hillview Cover - Facility Planning report and submit Facility Planning report to the United States and the State.

45. By April 30, 2025, notify the United States and the State of 1) the City's selected type of cover for the Hillview Cover, together with a description of the benefits of the selected type of cover, 2) any modification to the City's determination that the KEC must be completed before construction of the Hillview Cover starts based on the City's analysis of hydraulic operating criteria developed during Hillview Cover facility planning, and 3) the City's evaluation of the impact, if any, on the milestones for the Hillview Cover.

46. The schedule set forth in ¶¶ 47-76 of this section VI.C is based on a concrete cover, which was the technology planned by the City at the time of the EPA AOC. If after Facility Planning, the City proposes a type of cover other than a concrete cover for the Hillview Reservoir, by April 30, 2025, the City will submit a revised proposed schedule, together with all supporting documentation, in accordance with Section VI.D. The Parties shall meet to discuss the selected type of cover and the

proposed schedule and proceed in accordance with Section VI.D. Absent a modification of this Consent Judgment, the schedule set forth in this Section VI.C. shall remain in force.

Hillview Cover Design and Construction Long Term Milestones

47. By December 31, 2029, complete Hillview Cover Project Basis of Design Report and submit the report to the United States and the State.

48. By February 28, 2030, commence the design phase for the Hillview Cover - Site Preparation.

49. By May 31, 2030, commence the design phase for the Hillview Cover - East Basin and commence any design work for the Hillview Cover - West Basin needed to support the Environmental Impact Statement process.

50. By December 31, 2030, complete and submit to the United States and the State the Preliminary Design for the Hillview Cover - Site Preparation and commence the Final Design for Site Preparation for the Hillview Cover.

51. By April 30, 2031, complete and submit to the United States and the State the Preliminary Design for the Hillview Cover – East Basin, commence the Final Design for the Hillview Cover – East Basin, and complete any design work for the Hillview Cover - West Basin needed to support the Environmental Impact Statement process for the Hillview Cover.

52. By August 31, 2031, if more than one construction contract is required for the Hillview Cover - Site Preparation, submit proposed Interim Long Term Milestones related to procurement of construction contracts for the Hillview Cover – Site Preparation in accordance with Section VI.E. below.

53. By December 31, 2031, if more than one construction contract is required for the Hillview Cover-East Basin, submit proposed Interim Long Term Milestones related to procurement of construction contracts for the Hillview Cover – East Basin in accordance with Section VI.E. below.

54. By April 30, 2032, complete and submit to EPA and NYSDOH, for approval by NYSDOH, the Final Design for Site Preparation for the Hillview Cover.

55. By October 31, 2032, advertise for bids for Site Preparation for the Hillview Cover.

56. By December 31, 2032, complete and submit to the United States and the State the Draft EIS and commence the Final EIS procedure for the Hillview Cover. The Draft EIS will include a list of all local, State, and federal permits and approvals and will identify any land acquisition needed for construction of the Hillview Cover. If other permits or approvals or land acquisition needs are identified by the City at a later date, the City shall have a duty to supplement its notification to the United States and the State in its next quarterly report to the United States and the State.

57. By December 31, 2032, complete and submit to EPA and NYSDOH, for approval by NYSDOH, the Final Design for the first construction contract for the Hillview Cover – East Basin.

58. By February 28, 2033, issue public notice of hearing on the Draft EIS for the Hillview Cover.

59. By July 31, 2033, complete and submit to the United States and the State the Final EIS and any other necessary environmental review procedures for the Hillview Cover.

60. By July 31, 2033, advertise for bids for the first contract for construction of the Hillview Cover - East Basin.

61. By October 31, 2033, secure all local, State, and federal final approvals and permits necessary to start construction under the first construction contract of the Hillview Cover and issue notice to proceed for the Site Preparation for the Hillview Cover contract.

62. By October 31, 2034, submit proposed Interim Long Term Milestones related to construction under the contract for Site Preparation for the Hillview Cover.

63. By March 31, 2035, issue notice to proceed for the first contract for construction of the East Basin Cover and commence construction of the Hillview Cover - East Basin.

64. By August 31, 2035, complete Site Preparation for the Hillview Cover.

65. By March 31, 2036, submit proposed Interim Long Term Milestones related to construction under the first construction contract for Hillview Cover - East Basin construction, for review and approval in accordance with Section VI.E. below.

66. By January 31, 2038, commence Preliminary Design for the Hillview Cover - West Basin.

67. By January 31, 2039, complete and submit to the United States and the State the Preliminary Design for the Hillview Cover – West Basin and commence the Final Design for the Hillview Cover -West Basin.

68. By September 30, 2039, if more than one construction contract is required for the Hillview Cover-West Basin, submit proposed Interim Long Term Milestones related to procurement of construction contracts for Hillview Cover – West Basin, for review and approval in accordance with Section VI.E. below.

69. By November 30, 2040, complete and submit to EPA and NYSDOH, for approval by NYSDOH, the Final Design for the first construction contract for the Hillview Cover - West Basin.

70. By May 31, 2041, advertise for bids for the first contract for construction of the Hillview Cover - West Basin.

71. By September 30, 2041, complete construction of the Hillview Cover - East Basin and commence Start-Up and Testing of the Covered East Basin of the Hillview Reservoir.

72. By April 30, 2042, issue notice to proceed for the first contract for construction of the Hillview Cover - West Basin and commence construction of the Hillview Cover - West Basin.

73. By August 31, 2042, commence Full Operation of the Covered East Basin of the Hillview Reservoir.

74. By April 30, 2043, submit proposed Interim Long Term Milestones related to construction under the first construction contract for the Hillview Cover – West Basin in accordance with Section VI.E. below.

75. By March 31, 2048, complete construction of the Hillview Cover - West Basin and commence Start-Up and Testing of the Covered West Basin for the Hillview Reservoir.

76. By February 28, 2049, commence Full Operation for the Covered West Basin for the Hillview Reservoir.

D. Schedule Adjustment

77. The City represents that, based on the information available to the City to date, the schedules in Section VI.A.-C. are the most expeditious schedules practicable for the construction of the KEC and the HRI (which are to be constructed concurrently) and the Hillview Cover, if the Hillview Cover is completed sequentially after the KEC and the HRI. However, it may be possible to accelerate the schedules set forth in Section VI.A.-C. if a type of cover other than a concrete cover is selected for the Hillview Cover (e.g. a non-concrete cover or tanks), if a determination is later made that the

Hillview Cover can be constructed concurrently with the KEC and HRI, or for other reasons. If the schedule is not accelerated pursuant to this Section VI.D, the City shall design and construct the KEC, the HRI, and the Hillview Cover no later than the schedule set forth in Section VI.A-C.

78. The following provisions govern the acceleration, if any, of the completion of the KEC, the Hillview Reservoir Improvements, and the Hillview Cover set forth in Section VI.A-C:

79. If the City determines that the schedules for completion of the KEC, the HRI, and/or the Hillview Cover can be accelerated by time saving measures, including but not limited to parallel work on portions of the Hillview Cover, the City shall notify the United States and the State that the schedule for implementation of the KEC, HRI, and/or the Hillview Cover can be accelerated. In the event of such a notification by the City, the schedules for the KEC, HRI, and/or the Hillview Cover shall be accelerated and the accelerated schedules for the KEC, HRI, and/or the Hillview Cover shall be determined in accordance with Section VI.D. Paragraphs 83 through 87 below. The United States, in consultation with the State, may also determine, based on discussions with the City and any other pertinent information, that the schedule for implementation of the KEC, HRI, and/or the Hillview Cover can be accelerated and may notify the City of its determination. In the event of such a notification by the United States, the schedules for the KEC, HRI, and/or the Hillview Cover shall be determined in accordance with Section VI.D. Paragraphs 83 through 87 below.

80. If the City determines not to proceed with construction of the KEC for any reason, the City shall notify the United States and the State within ten days of making such a determination. In the event of such a notification by the City, the schedule for the Hillview Cover shall be accelerated because the rationale for delaying the construction of the Hillview Cover based on the KEC would no longer be extant and accelerated schedules shall be determined in accordance with the provisions of

Section VI.D. Paragraphs 83 through 87 below. If, based on (a) the City's removal of the KEC from or failure to include the KEC in its capital budgets, (b) non-compliance with the milestones set forth in this Section relating to the KEC, (c) public statements indicating that the City will not proceed with the KEC, or (d) other actions inconsistent with the City's proceeding with the KEC, the United States, in consultation with the State, determines that the City does not intend to or will not proceed with the KEC, the United States may notify the City of such a determination. In the event of such a notification by the United States, the schedules shall be determined in accordance with the provisions of Section VI.D. Paragraphs 83 through 87 below.

81. If the City determines not to proceed with construction of the HRI for any reason, the City shall notify the United States and the State within ten days of making such a determination. In the event of such a notification by the City, the City shall also notify the United States and the State of the City's determination as to whether the Hillview Cover can be accelerated because the rationale for delaying the construction of the Hillview Cover based on the HRI would no longer be extant. If the City determines that the Hillview Cover can be accelerated or if the United States, in consultation with the State, disagrees with a City determination that the Hillview Cover cannot be accelerated, any accelerated schedules shall be determined in accordance with the provisions of Section VI.D.

Paragraphs 83 through 87 below. If, based on (a) the City's removal of the HRI from or failure to include the HRI in its capital budgets, (b) non-compliance with the milestones set forth in this Section relating to the HRI, (c) public statements indicating that the City will not proceed with the HRI, or (d) other actions inconsistent with the City's proceeding with the HRI, the United States, in consultation with the State, determines that the City does not intend to or will not proceed with the HRI, the United States may notify the City of such a determination. In the event of such a notification by the United

States, the schedules shall be determined in accordance with the provisions of Section VI.D.

Paragraphs 83 through 87 below.

82. If construction of the KEC is completed one year or more earlier than the date set forth in Paragraph 26, the schedules for the Hillview Cover shall be accelerated if feasible. The City shall notify the United States and the State within ten days if this event occurs or the City has reason to believe that it will occur. The accelerated schedule(s) for the Hillview Cover shall be determined in accordance with the provisions of Section VI.D. Paragraphs 83 through 87 below.

83. Within 30 days following any notification by the City pursuant to Section VI.D. Paragraphs 79, 80, 81, or 82 above, the City shall propose new, accelerated dates for completion of the Hillview Cover, the HRI and/or the KEC, as applicable. The accelerated dates shall be the most expeditious that are practicable from an engineering, water supply safety, and reliability perspective. The City shall submit technical justification therewith for its statement and/or proposal. Following a notification by either the City or the United States pursuant to Section VI.D. Paragraphs 79, 80, 81, or 82, the City shall provide to the United States and the State additional documents and factual information in the possession of the City, including documents in the possession of its contractors and consultants, requested by the United States and/or the State with respect to the City's ability to accelerate the completion of the Hillview Cover, the KEC, and/or the HRI within 30 days of the City's receipt of a request from the United States and/or the State for such documents and factual information. The City retains the right to assert appropriate privileges with respect to documents requested by the United States and/or the State. If the City asserts such privilege(s), in accordance with Civil Rule 26.2 of the Local Rules of the United States District Courts for the Southern and Eastern Districts of New York, for each document, the City shall provide the United States and the

State with the following, unless divulgence of such information would cause disclosure of the allegedly privileged information: (1) the title of the document, (2) the date of the document, (3) the name and title of the author of the document, (4) the name and title of each addressee and recipient, (5) a description of the general subject matter of the document, and (6) the privilege asserted by the City. Where the document contains non-privileged information, the City shall transmit copies of the document containing the non-privileged information, with the privileged portions of the document redacted. The United States and the State retain the right to challenge such assertions of privilege by application to the Court.

84. If the City proposes dates for an accelerated completion of the Hillview Cover, the KEC, and/or the HRI, as applicable, the United States and the State shall review the City's proposal. If the United States approves, in consultation with the State, in writing, the City's proposed dates for completion of the accelerated completion of the Hillview Cover, the KEC, and/or the HRI, as applicable, such dates shall be substituted for the milestone dates for completion of the Hillview Cover, the KEC, and/or the HRI set forth in Section VI.A-C above, as applicable, without further order of the Court.

85. If either the City or the United States has made a notification pursuant to Section VI.D. Paragraphs 79, 80, 81, or 82 above and the City does not propose dates for an accelerated completion of the Hillview Cover, the KEC, and/or the HRI, as applicable, and the United States believes that acceleration is appropriate, or the City submits a proposed accelerated schedule for the Hillview Cover, the KEC, and/or the HRI which the United States, in consultation with the State, does not believe is sufficiently expeditious, the United States shall notify the City and propose an accelerated schedule for completion of the Hillview Cover, the KEC, and/or the HRI, as applicable, together with a

technical justification for the acceleration. The accelerated dates shall be the most expeditious that are practicable from an engineering, water supply safety, and reliability perspective.

86. If the event(s) specified in Paragraphs 84 and/or 85 occur, the Parties agree to meet and discuss the proposal(s), including the City's proposals and/or the proposal of the United States (if any). The discussions shall conclude as soon as possible but no later than 30 days after notification to the City by the United States in accordance with Paragraph 85 above, unless a later date for concluding discussions is agreed to by all of the Parties. If agreement has not been reached by the end of the 30-day period, or any later date for concluding discussion agreed to by all of the Parties, the United States and/or the City may apply to the Court for a determination of the schedule for implementation, and/or a determination whether the completion of the Hillview Cover, the KEC, and/or the HRI, as applicable, shall be accelerated, and, if so, by how much. Any such application shall be filed with the Court no later than 60 days after the conclusion of the discussions provided for in this paragraph, unless the City has failed to timely provide the documents and factual information requested by the United States and/or the State, in accordance with Paragraph 83 above, in which case the time for filing any application with the Court shall be automatically extended by the period of any such delay. The resolution of the schedules shall be based on the standard that the design and construction schedule for completion of the Hillview Cover, the KEC, and/or the HRI, as applicable, shall be the most expeditious schedule that is practicable from an engineering, water supply safety, and reliability perspective and any other legal requirements set forth in Section VI.D. Paragraphs 79 through 82 above.

87. If the City has proposed dates for accelerated completion of the Hillview Cover, the KEC, and/or the HRI, as applicable, during the pendency of any application to the Court for the

determination of dates for accelerated completion of the Hillview Cover, the KEC, and/or the HRI, as applicable, the schedule milestone dates shall be changed to the City's proposed dates for the City's proposed accelerated Hillview Cover, the KEC, and/or the HRI completion dates. This shall be without prejudice to the application of the United States, if any, for a determination by the Court that earlier dates are appropriate for accelerated completion of the Hillview Cover, the KEC, and/or the HRI, as applicable.

E. Interim Long Term Milestones

88. Interim Milestones for Section VI.A. shall be established, through the process set forth in Paragraphs 88 and 91 to 97, from Section VI.A., Paragraph 16 until completion of construction of the KEC, to supplement the milestones in Section VI.A. Interim Milestones for Section VI.A. shall include milestones related to KEC procurement and construction, shall include milestones that are critical and necessary for completion of the components of the KEC described in the KEC definition, and shall be at sufficient frequency to ensure the ability of the United States and the State to maintain oversight and to ensure compliance with the construction completion date for the KEC. The Interim Milestones shall be set forth with sufficient specificity to enable a court to determine whether or not the milestone has in fact been met. The Interim Milestones related to procurement shall, at a minimum, include "complete and submit the Final Design to EPA and NYSDOH, for approval by NYSDOH" and "issue Notice to Proceed" milestones for each construction contract besides the first construction contract for the KEC and may include, without limitation, milestones for advertisement for bid, award of contract, securing permits and approvals, and completion of property acquisition necessary to commence construction. The Interim Milestones related to construction may include, without limitation, milestones developed through a Critical Path Method ("CPM") analysis for KEC

construction and may also include milestones for securing permits and approvals and completion of property acquisition.

89. Interim Milestones for Section VI.B. shall be established, through the process set forth in Paragraphs 89 and 91 to 97 below, from Section VI.B., Paragraph 35 until completion of construction of the HRI, to supplement the milestones in Section VI.B. Interim Milestones for Section VI.B. shall include milestones related to HRI procurement and construction, shall include milestones that are critical and necessary for completion of the components of the HRI described in the HRI definition and shall be at sufficient frequency to ensure the ability of the United States and the State to maintain oversight and to ensure compliance with the construction completion date for the HRI. The Interim Milestones shall be set forth with sufficient specificity to enable a court to determine whether or not the milestone has in fact been met. The Interim Milestones related to procurement shall, at a minimum, include “complete and submit the Final Design to EPA and NYSDOH, for approval by NYSDOH” and “issue Notice to Proceed” milestones for each construction contract besides the first construction contract for the HRI and may include, without limitation, milestones for advertisement for bid, award of contract, securing permits and approvals, and completion of property acquisition necessary to commence construction. The Interim Milestones related to construction may include, without limitation, milestones developed through a CPM analysis for HRI construction and may also include milestones for securing permits and approvals and completion of property acquisition.

90. Interim Milestones for Section VI.C. shall be established, through the process set forth in Paragraph 90 and Paragraphs 91 to 97 below, (a) for Hillview Cover- Site Preparation and Hillview Cover – East Basin from Section VI.C., Paragraph 52 until Section VI.C., Paragraph 71 and (b) for Hillview Cover - West Basin from Section VI.C., Paragraph 68 until Section VI.C., Paragraph 75, to

supplement the milestones in Section VI.C. The Interim Milestones for Section VI.C. shall include milestones related to Hillview Cover procurement and construction, shall include milestones that are critical and necessary for completion of the components of the Hillview Cover, and shall be at sufficient frequency to ensure the ability of the United States and the State to maintain oversight and to ensure compliance with the construction completion dates for Hillview Cover – Site Preparation, Hillview Cover – East Basin, and Hillview Cover – West Basin. The Interim Milestones shall be set forth with sufficient specificity to enable a court to determine whether or not the milestone has in fact been met. The Interim Milestones related to procurement shall, at a minimum, include “complete and submit the Final Design to EPA and NYSDOH, for approval by NYSDOH,” advertise for bids, and “issue Notice to Proceed” milestones for each construction contract besides the first construction contract for the Hillview Cover – Site Preparation, the first construction contract for the Hillview Cover - East Basin, and the first construction contract for the Hillview Cover – West Basin, and may include, without limitation, milestones for award of contract, securing permits and approvals, and completion of property acquisition, necessary to commence construction. The Interim Milestones for Hillview Cover related to construction may include, without limitation, milestones developed through a CPM analysis for Hillview Cover construction, and may also include milestones for securing permits and approvals and completion of property acquisition, and shall also include milestones for completion of construction phases. For each phase of construction, Interim Milestones shall include, but not be limited to, a separate milestone for (1) securing of necessary approval(s) of designs by NYSDOH, with submission of a complete application to NYSDOH no less than 30 days prior to securing of approval, (2) advertisement for bids, (3) issuance of a Notice to Proceed, and (4) completion of construction. The City shall use its best efforts to commence each phase of construction as early as practicable.

91. The City shall propose Interim Long Term Milestones related to procurement of each construction contract for the KEC, the Hillview Reservoir Improvements Project, and the Hillview Cover no later than eight months after the City completes and submits to the United States and NYSDOH the Preliminary Design for each such project. The City shall propose Interim Long Term Milestones for construction-related milestones for each construction contract for the KEC, the Hillview Reservoir Improvements Project, and the Hillview Cover no later than twelve months after the City issues the Notice to Proceed for such contract.

92. The United States and the State shall review the City's proposed Interim Milestones. If the United States, in consultation with the State, approves, in writing, the City's proposed Interim Milestones, such milestones shall be attached and incorporated into the Consent Decree as an Attachment as soon as possible, but no later than 60 days after receipt of the City's proposal(s). The City shall provide to the United States and the State additional documents and factual information in the possession of the City, including documents in the possession of its contractors and consultants, requested by the United States and/or the State with respect to the City's proposed Interim Milestones within 30 days of the City's receipt of a request from the United States and/or the State for such documents and factual information. The City retains the right to assert appropriate privileges with respect to documents requested by the United States and/or the State. If the City asserts such privilege(s), in accordance with Civil Rule 26.2 of the Local Rules of the United States District Courts for the Southern and Eastern Districts of New York, for each document, the City shall provide the United States and the State with the following, unless divulgence of such information would cause disclosure of the allegedly privileged information: (1) the title of the document, (2) the date of the document, (3) the name and title of the author of the document, (4) the name and title of each

addressee and recipient, (5) a description of the general subject matter of the document, and (6) the privilege asserted by the City. Where the document contains non-privileged information, the City shall transmit copies of the document containing the non-privileged information, with the privileged portions of the document redacted. The United States and the State retain the right to challenge such assertions of privilege by application to the Court.

93. If the City fails to provide a schedule of Interim Milestones pursuant to Section VI.E. that is required to be submitted under Section VI.A., Paragraph 16, Section VI.A., Paragraph 21, Section VI.B., Paragraph 35, Section VI.B., Paragraph 40, Section VI.C., Paragraph 52, Section VI.C., Paragraph 53, Section VI.C., Paragraph 62, Section VI.C., Paragraph 65, Section VI.C., Paragraph 68, Section VI.C., Paragraph 74, or Section VI.E., Paragraph 91, the United States, in consultation with the State, may provide such Interim Milestones to the Court for its review and approval. In such event, the City may submit to the Court alternative Interim Milestones other than those proposed by the United States, provided that the Interim Milestones submitted by the City are consistent with Section VI.E. and the applicable dates for completion of construction set forth in Section VI. Any such submission by the City must be made within 15 days of the United States' submission to the Court under this Paragraph. The United States shall have the right to submit a response to the City's submission to the Court. Upon approval by the Court the Interim Milestones shall be attached and incorporated into the Consent Decree as an Attachment.

94. If the United States, in consultation with the State, does not approve the Interim Milestones proposed by the City pursuant to Paragraphs 16, 21, 35, 40, 52, 53, 62, 65, 68, 74, or 91, as applicable, and Section VI.E., the United States shall notify the City as soon as possible but no later

than 60 days after receipt of the City's proposal and provide the City with alternative proposed Interim Milestones, together with a technical justification therefor.

95. If the event(s) specified in Section VI.E., Paragraph 94, occur, the Parties agree to meet and discuss the proposals, including the City's proposals and the United States' proposals (if any). The discussions shall conclude as soon as possible but no later than 30 days after notification to the City by the United States in accordance with Section VI.E., Paragraph 94, unless a later date for concluding discussions is agreed to by the Parties. If agreement has not been reached by the end of the 30-day period, or any later date for concluding discussion agreed to by the Parties, the United States or the City may apply to the Court for the establishment of Interim Milestones in conformance with Section VI.E. Any such application shall be filed with the Court no later than 30 days after the conclusion of the discussions provided for in this paragraph, unless the City has failed to timely provide the documents and factual information requested by the United States and/or the State, in accordance with Section VI.E., Paragraph 92, in which case the time for filing any application with the Court shall be automatically extended by the period of any such delay.

96. Interim Milestones established by the Court pursuant to Section VI.E. shall be attached and incorporated into the Consent Decree as an Attachment.

97. All provisions of the Consent Decree shall apply to the Interim Milestones incorporated into the Consent Decree in accordance with Section VI.E and any accelerated dates incorporated into the Consent Decree in accordance with Section VI.D.

VII. INTERIM MEASURES

98. Until the City has complied with all the requirements set forth in Section VI. (Long Term Compliance Milestones), the City shall implement the following Interim Measures:

- a. Enhanced Wildlife Management at Hillview Reservoir: During the term of this Consent Judgment, the City shall continue to implement the activities in its Enhanced Wildlife Management Plan (“EWMP”) for Hillview Reservoir (attached as Appendix C) which outlines the New York City Department of Environmental Protection (NYCDEP)’s enhanced tracking and management of wildlife at Hillview Reservoir for the purpose of reducing potential fecal contamination of the Hillview Reservoir by waterfowl, mammals and other wildlife. The City shall revise the EWMP, as necessary, as proposed by NYCDEP and approved by EPA, in consultation with NYSDOH. The City shall provide a link to the Enhanced Wildlife Management Plan for Hillview on NYCDEP’s website.
- b. Weekly Sampling: During the term of this Consent Judgment, the City shall continue to conduct weekly monitoring and sampling as follows:
 - i. Source water monitoring for *Cryptosporidium* and *Giardia* at the Kensico Reservoir effluent(s).
 - ii. *Cryptosporidium* and *Giardia* sampling at the Hillview Reservoir effluent (Site 3).
- c. Quality Control samples of the Hillview Reservoir effluent (Site 3): During the term of this Consent Judgment, quality control sampling of the Hillview Reservoir effluent shall be done on the same frequency that has been established for Kensico Reservoir source water samples.
- d. *Cryptosporidium* and *Giardia* Action Plan (“CGAP”): The City shall implement the CGAP (attached as Appendix A) which outlines response procedures for elevated *Cryptosporidium* and *Giardia* at Hillview. Annually, the City shall revise the CGAP, as necessary, as proposed by NYCDEP and approved by EPA, in consultation with the NYSDOH. The City shall provide a link to the CGAP on NYCDEP’s website.

- e. Public Notification: The City shall include a statement in its annual Drinking Water Supply and Quality Report until compliance with 40 CFR § 141.714 is achieved that the City entered into a Consent Judgment that sets forth a schedule to cover the Hillview Reservoir as required by the LT2 Rule and include a status of the project.

VIII. REPORTING REQUIREMENTS AND EPA/STATE APPROVALS

99. a. Quarterly Reporting: Within 30 Days after the end of each quarter (i.e., by April 30, July 30, October 30, and January 30) after lodging of this Consent Judgment, until termination of this Judgment pursuant to Section XIX., the City shall submit to the United States and the State a quarterly report and certification for the preceding quarter that shall detail the status and progress of all milestones and other requirements set forth in Section VI., including any accelerated milestones and interim milestones incorporated into this Consent Judgment pursuant to Sections VI. D. and E., (hereinafter “milestones in Section VI.”) and in Section VII., including a description of the work performed in the previous quarter and a projection of the work to be performed during the following four-month period pursuant to this Consent Judgment and a description of any known or anticipated delay which may affect compliance with any milestones. For each milestone due to be met during the quarter, the report and certification shall state whether or not the City has fully met that milestone, and, if not, the work remaining to be done to achieve full compliance with such milestone, and a schedule for completion of such work. If a schedule milestone is not met, the report and certification shall state what, if any, impact the City anticipate there may be on compliance with other milestones in Section VI. Within 15 days of any non-compliance with any milestone in Section VI. that may affect the milestones in Section VI.C. (or any accelerated or interim milestones relating to the Hillview Cover incorporated herein pursuant to Sections VI.D. and E.) (hereinafter the “Hillview Cover Milestones”),

the City shall prepare and submit a plan for approval by EPA, in consultation with the State, that describes the steps the City will take to prevent or minimize any noncompliance with the Hillview Cover Milestones. The report shall also include a description of any non-compliance with all other requirements of this Consent Judgment and an explanation of the violations likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. The report shall also include a description of the status and progress of the implementation of the requirements of Appendix B (Water Quality Benefit Project).

b. Annual Report to the Court: On or before March 1 of each year after the lodging of this Consent Judgment, until termination of this Judgment pursuant to Section XIX, the United States, in consultation with the City and the State, shall submit to the Court an annual report on compliance and/or noncompliance with the requirements of this Judgment. The City and/or the State may submit to the Court a response or supplement to the United States' annual report to the Court on or before March 20 of each year.

100. Non-Compliance Reporting: If the City violates, or has reason to believe that it may violate, any requirement of this Consent Judgment, the City shall notify the United States and the State of such violation and its likely duration, in writing, within ten working Days of the Day the City first becomes aware of the violation, with an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation and any resulting delay in the milestone schedule. If the cause of a violation cannot be fully explained at the time the report is due, the City shall so state in the report. The City shall investigate the cause of the violation and shall then submit an amendment to the report, including a full explanation of the cause of the violation, within 30 Days of the Day the City becomes aware of the cause of the violation. Nothing in this Paragraph or the

following Paragraph relieves the City of its obligation to provide the notice required by Section X. of this Consent Judgment (Force Majeure).

101. In addition to the reports and certifications set forth in this Paragraph, the City shall provide the United States and the State with copies of additional documents and factual information in the City's possession, including those documents in the possession of its contractors and consultants, requested by the United States and/or the State to assist in their analysis of the City's progress in implementing the schedules and milestones set forth in Sections VI. and VII. The City retains the right to assert appropriate privileges with respect to documents requested by the United States and/or the State. If the City asserts such privilege(s), in accordance with Civil Rule 26.2 of the Local Rules of the United States District Courts for the Southern and Eastern Districts of New York, for each document, the City shall provide the United States and the State with the following, unless divulgence of such information would cause disclosure of the allegedly privileged information: (1) the title of the document; (2) the date of the document; (3) the name and title of the author of the document; (4) the name and title of each addressee and recipient; (5) a description of the general subject matter of the document; and (6) the privilege asserted by the City. Where the document contains non-privileged information, the City shall transmit copies of the document containing the non-privileged information, with the privileged portions of the document redacted. The United State and the State retain the right to challenge such assertions of privilege by application to the Court.

102. The City shall maintain legible copies of documentation relied on in preparation of or which form the basis of the reports and certifications for a period of two years from the date of the report or certification, unless requested by the United States and/or the State to retain the documents for a longer period, not to exceed the length of the Consent Judgment. The City may satisfy this

obligation by providing copies of the document to the United States and the State. Nothing herein shall alter the obligations of the City to maintain documents in accordance with any law.

103. Whenever any violation of this Consent Judgment or any other event affecting the City's performance under this Consent Judgment may pose an immediate threat to the public health or welfare or the environment, the City shall notify EPA and NYSDOH orally or by electronic or facsimile transmission as soon as possible, but no later than 24 hours after the City first knew of the violation or event. This procedure is in addition to the requirements set forth in the preceding Paragraph.

104. All reports shall be submitted to the persons designated in Section XV. of this Consent Judgment (Notices).

105. Each report submitted by the City under this Section shall be signed by an official of the submitting party and include the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

This certification requirement does not apply to emergency or similar notifications where compliance with the certification requirement would be impractical.

106. The reporting requirements of this Consent Judgment do not relieve the City of any reporting obligations required by the Act or implementing regulations, or by any other federal, state, or local law, regulation, permit, or other requirement.

107. Any information provided pursuant to this Consent Judgment may be used by the United States and/or the State in any proceeding to enforce the provisions of this Consent Judgment and as otherwise permitted by law.

108. With respect to any plan, report, or other item that the City is required by this Consent Decree to submit to EPA “for approval” by EPA and/or to submit to NYSDOH “for approval” by NYSDOH, EPA and/or NYSDOH may approve the submission or decline to approve it and provide written comments. Within 45 days of receiving EPA’s written comments and/or NYSDOH’s written comments, the City shall either: (i) alter the submission consistent with EPA’s written comments and/or NYSDOH’s written comments, and provide the submission to EPA and/or NYSDOH for final approval, or (ii) submit the matter for dispute resolution under Section XI of this Judgment. Upon receipt of EPA’s and/or NYSDOH’s final approval of the submission, or upon completion of the submission pursuant to dispute resolution, the City shall implement the submission in accordance with the schedule in the approved submission and the applicable milestone requirements of Section VI. EPA and NYSDOH will each copy the other on its written comments and all correspondence relating to the submissions. The City shall provide its written responses and all correspondence relating to the submissions and, where applicable, revised submissions, to both EPA and NYSDOH.

IX. STIPULATED PENALTIES

109. The City shall be liable for stipulated penalties to the United States and the State for violations of this Consent Judgment as specified below, unless excused under Section X. (Force

Majeure). A violation includes failing to perform any obligation required by the terms of this Consent Judgment according to all applicable requirements of this Consent Judgment and within the specified time schedules established under or in accordance with this Consent Judgment.

Civil Penalty

110. a. If the City fails to pay the civil penalty required to be paid to the United States under Paragraph 10 of Section V. of this Judgment (Civil Penalty) when due, the City shall pay a stipulated penalty of \$ 1,000 per Day for each Day that the payment is late.

b. If the City fails to pay the civil penalty required to be paid to the State under Paragraph 11.a.(i) and b. of Section V. of this Judgment (Civil Penalty) when due, the City shall pay a stipulated penalty of \$ 250 per Day for each Day that the payment is late.

c. If the City fails to comply with any of the other requirements of Paragraph 11 of Section V. of this Judgment (Civil Penalty) or of Appendix B (Water Quality Benefit Project), the City shall pay a stipulated penalty for each Day that the City has failed to comply with any of the requirements according to the schedule set forth below:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$ 150	1st through 14th Day
\$ 300	15th through 30th Day
\$ 600	31st Day and beyond

Long Term Compliance Milestones

111. a. i. The following stipulated penalties shall accrue per violation per Day for each violation of the requirements (including the dates specified therein or any accelerated dates established under Section VI.D.) of the Paragraphs identified in subparagraph a.ii:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$ 300	1st through 14th Day
\$ 500	15th through 30th Day
\$ 1,000	31st Day through 90 th Day
\$ 2,500	91 st Day and beyond

- ii. Paragraph 12 (commence preliminary design (“PD”) for KEC)
- Paragraph 15 (issue public notice of hearing on DEIS for KEC)
- Paragraph 19 (advertise for bids for first contract for KEC construction)
- Paragraph 28 (issue NTP for HRI project facility planning/design)
- Paragraph 29 (commence Hillview Uptake 1 GOS repair design or procurement)
- Paragraph 30 (place repaired Hillview Uptake 1 GOS into service)
- Paragraph 36 (submit list of permits/approvals needed for HRI Project)
- Paragraph 38 (advertise for bids for first contract for HRI construction)
- Paragraph 48 (commence design for Hillview Cover (“HC”) – Site Preparation)
- Paragraph 49 (commence design for HC – East Basin (& West Basin as needed))
- Paragraph 55 (advertise for bids for HC – Site Preparation)
- Paragraph 58 (issue public notice of hearing on DEIS for HC)
- Paragraph 60 (advertise for bids for first constr. contract for HC – East Basin)
- Paragraph 66 (commence PD for HC – West Basin)
- Paragraph 70 (advertise for bids for first constr. contract for HC – West Basin)

b. i. The following stipulated penalties shall accrue per violation per Day for each violation of the requirements (including the dates specified therein or any accelerated dates established under Section VI.D.) of the Paragraphs identified in subparagraph b.ii:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$ 500	1st through 14th Day
\$ 1,000	15th through 30th Day
\$ 2,000	31st Day through 90 th Day
\$ 5,000	91 st Day and beyond

- ii. Paragraph 13 (submit PD for KEC)
- Paragraph 14 (submit DEIS for KEC)
- Paragraph 17 (submit final design (“FD”) for first KEC construction contract)
- Paragraph 18 (submit FEIS for KEC and City determination re acceleration)
- Paragraph 20 (secure permits/approvals, issue NTP for first KEC construction contract)
- Paragraph 22 (complete construction of Tunnel and Shafts)
- Paragraph 23 (complete construction of Screen Chamber)
- Paragraph 24 (complete construction of UEC Modifications)
- Paragraph 25 (complete construction of CDUV Connection)
- Paragraph 27 (commence Full Operation of KEC)
- Paragraph 31 (submit HRI Project Facility Planning Report)
- Paragraph 32 (submit HRI BODR)
- Paragraph 33 (complete analysis of HRI facility planning info, City determination re whether HRI can be accelerated and, if so, submit accelerated dates)
- Paragraph 34 (submit PD for HRI Project)
- Paragraph 37 (submit FD for HRI Project for first HRI construction contract)
- Paragraph 39 (secure permits/approvals, issue NTP for first HRI construction contract)
- Paragraph 42 (commence Full Operation of HRI Project facilities)
- Paragraph 43 (issue NTP for HC Facility Planning)
- Paragraph 44 (submit HC Facility Planning report)
- Paragraph 47 (submit HC BODR)
- Paragraph 50 (submit PD for HC – Site Preparation)
- Paragraph 51 (submit PD for HC – East Basin)
- Paragraph 54 (submit FD for HC – Site Preparation)
- Paragraph 56 (submit DEIS for HC)
- Paragraph 57 (submit FD for first HC – East Basin construction contract)
- Paragraph 59 (submit FEIS for HC)
- Paragraph 61 (secure permits/approvals, issue NTP for HC – Site Preparation)
- Paragraph 64 (complete HC – Site Preparation)
- Paragraph 67 (submit PD for HC – West Basin)
- Paragraph 69 (submit FD for first HC – West Basin construction contract)

Paragraph 72 (issue NTP for first contract for HC – West Basin construction)

c. i. The following stipulated penalties shall accrue per violation per Day for each violation of the requirements (including the dates specified therein or any accelerated dates established under Section VI.D.) of the Paragraphs identified in subparagraph c.ii:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$ 1,000	1st through 14th Day
\$ 2,000	15th through 30th Day
\$ 4,000	31st Day through 90 th Day
\$ 10,000	91 st Day and beyond

ii.

Paragraph 16 (submit Interim LT Milestones for KEC – procurement)
Paragraph 21 (submit Interim LT Milestones for KEC Construction, first contract)
Paragraph 26 (complete construction of KEC and commence start-up and testing)
Paragraph 35 (submit Interim LT Milestones for HRI – procurement)
Paragraph 40 (submit Interim LT Milestones for HRI Construction, first contract)
Paragraph 41 (complete construction of HRI and commence start-up and testing)
Paragraphs 45 and 46 (notification of type of cover selected/City’s further evaluation of necessity of KEC before HC construction/City’s evaluation of impact on milestones (¶ 45)/submission of proposed milestones (¶ 46))
Paragraph 52 (submit Interim LT Milestones for HC – Site Preparation –procurement)
Paragraph 53 (submit Interim LT Milestones for HC – East Basin –procurement)
Paragraph 62 (submit Interim LT Milestones for HC – Site Preparation –construction)
Paragraph 63 (issue NTP for first contract for HC – East Basin construction)
Paragraph 65 (submit Interim LT Milestones for HC – East Basin, first construction contract)
Paragraph 68 (submit Interim LT Milestones for HC – West Basin –procurement)
Paragraph 73 (commence Full Operation of Covered East Basin of HR)
Paragraph 74 (submit Interim LT Milestones for HC – West Basin, first construction contract)
Paragraph 76 (commence Full Operation of Covered West Basin of HR)
Paragraph 91 (submit Interim LT Milestones requirements, to extent not covered in Paragraphs identified in c.ii. above)

d. i. The following stipulated penalties shall accrue per violation per Day for each violation of the requirements (including the dates specified therein or any accelerated dates established under Section VI.D.) of the Paragraphs identified in subparagraph d.ii:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$ 1,000	1st through 14th Day
\$ 2,000	15th through 30th Day
\$ 4,000	31st Day through 90 th Day
\$ 10,000	91 st Day through 120 th Day
\$ 30,000	121 st Day through 364th Day
\$ 55, 907	365 th Day and beyond

ii.

Paragraph 71 (complete construction of HC – East Basin & commence SU/testing)
 Paragraph 75 (complete construction of HC– West Basin & commence SU/testing)

112. Interim Long Term Milestones Established Under Section VI.E.

The following stipulated penalties shall accrue per violation per Day for each violation of the Interim Long Term Milestones established under Section VI.E.:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$ 300	1st through 14th Day
\$ 500	15th through 30th Day
\$ 1,000	31st Day through 90 th Day
\$ 2,500	91 st Day through 120 th Day
\$ 5,000	121 st Day and Beyond

113. Interim Measures Requirements (Section VII)

The following stipulated penalties shall accrue per violation per Day for each violation of the requirements of Paragraphs 98.a., b., c., d. or e.: \$1,000 per violation per day.

114. Reporting Requirements. The following stipulated penalties shall accrue per violation per Day for each violation of the reporting requirements of Section VIII of this Consent Judgment: \$500 per violation per day.

115. Stipulated penalties under this Section shall begin to accrue on the Day after performance is due or on the Day any other violation occurs, whichever is applicable, and shall continue to accrue until performance is satisfactorily completed or until the violation ceases. Stipulated penalties shall accrue simultaneously for separate violations of this Consent Judgment.

116. The City shall pay any stipulated penalty within 45 Days of receiving the United States' written demand, except for any stipulated penalty under Paragraph 110.b. or c. With respect to any stipulated penalty under Paragraph 110.b. or c., the City shall pay any such stipulated penalty within 45 Days of receiving the State's written demand. The United States will copy the State on any demand for payment of stipulated penalties.

117. Stipulated penalties shall continue to accrue as provided in Paragraph 115, during any Dispute Resolution, but need not be paid until the following:

- a. If the dispute is resolved by agreement or by a decision of EPA (or where the dispute is solely with NYSDOH, a decision or order of NYSDOH) that is not appealed to the Court, the City shall pay accrued penalties determined to be owing, together with interest, to the United States and the State within 30 Days of the effective date of the

agreement or the receipt of EPA's decision or order (or where the dispute is solely with NYSDOH, a decision or order of NYSDOH).

- b. If the dispute is appealed to the Court and the United States or the State prevails in whole or in part, the City shall pay all accrued penalties determined by the Court to be owing, together with interest, within 60 Days of receiving the Court's decision or order, except as provided in subparagraph c, below.
- c. If any Party appeals the District Court's decision, the City shall pay all accrued penalties determined to be owed, together with interest, within 45 Days of receiving the final appellate court decision.

118. Except for stipulated penalties under Paragraph 110, the City shall pay 50% of the stipulated penalties owed under this Section IX to the United States and 50% of the stipulated penalties owed under this Section IX to the State, unless the State states that it will decline certain stipulated penalties, in which case the City shall pay 100% of those stipulated penalties to the United States. The City shall pay 100% of the stipulated penalties under Paragraph 110.a., if any, to the United States. The City shall pay 100% of the stipulated penalties under Paragraph 110.b. or 110.c., if any, to the State. The City shall pay stipulated penalties owing to the United States in the manner set forth and with the confirmation notices required by Paragraph 10.c., except that the transmittal letter shall state that the payment is for stipulated penalties and shall state for which violation(s) the penalties are being paid. The City shall pay stipulated penalties owing to the State in the manner set forth in Paragraph 11.b., except that the transmittal letter shall state that the payment is for stipulated penalties and shall state for which violation(s) the penalties are being paid.

119. If the City fails to pay stipulated penalties according to the terms of this Consent Judgment, the City shall be liable for interest on such penalties, as provided for in 28 U.S.C. § 1961, accruing from the date payment became due. Nothing in this Paragraph shall be construed to limit the United States or the State from seeking any remedy otherwise provided by law for the City's failure to pay any stipulated penalties.

120. Subject to the provisions of Section XIII of this Consent Judgment (Effect of Settlement/Reservation of Rights), the stipulated penalties provided for in this Consent Judgment shall be in addition to any other rights, remedies, or sanctions available to the United States or the State for the City's violation of this Consent Judgment or applicable law. Where a violation of this Consent Judgment is also a violation of the Act or the regulations, the City shall be allowed a credit, for any stipulated penalties paid, against any statutory penalties imposed for such violation.

121. The United States and the State may seek and the Court has jurisdiction to grant equitable relief, in addition to stipulated penalties, to enforce the requirements of this Consent Judgment.

X. FORCE MAJEURE

122. "Force majeure," for purposes of this Consent Judgment, is defined as any event arising from causes beyond the control of the City, of any entity controlled by the City, or of the City's contractors, that delays or prevents the performance of any obligation under this Consent Judgment despite the City's best efforts to fulfill the obligation. The requirement that the City exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any such event (a) as it is occurring and (b) after it has

occurred to prevent or minimize any resulting delay to the greatest extent possible. “Force Majeure” does not include the City’s financial inability to perform any obligation under this Consent Judgment.

123. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Judgment, whether or not caused by a force majeure event, the City shall provide notice orally or by electronic or facsimile transmission to the United States and the State within 72 hours of when the City first knew that the event might cause a delay. Within 20 days thereafter, the City shall provide in writing to the United States and the State an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; the City’s rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of the City, such event may cause or contribute to an endangerment to public health, welfare or the environment. The City shall include with any notice all available documentation supporting the claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude the City from asserting any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. The City shall be deemed to know of any circumstance of which the City, any entity controlled by the City, or the City’s contractors knew or should have known.

124. If the United States, after a reasonable opportunity for review and comment by the State, agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Consent Judgment that are affected by the force majeure event will be extended by the United States, after a reasonable opportunity for review and comment by

the State, for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. The United States will notify the City in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event and will provide a copy of the notification to the State.

125. If the United States, after a reasonable opportunity for review and comment by the State, does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, the United States will notify the City in writing of its decision and will provide a copy of the notification to the State.

126. If the City elects to invoke the dispute resolution procedures set forth in Section XI (Dispute Resolution), it shall do so no later than 15 days after receipt of the notice from the United States. In any such proceeding, the City shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that the City complied with the requirements of Paragraphs 122 and 123 above. If the City carries this burden, the delay at issue shall be deemed not to be a violation by the City of the affected obligation of this Consent Judgment identified to the United States, the State, and the Court.

127. The City shall take all practicable measures to prevent or minimize any delay. The City shall make all practicable efforts to recoup all lost time in completing the milestones affected by the force majeure event, including payment of reasonable additional expenses or fees. If any legal action is brought which might delay performance of any of the milestones in this Consent Judgment, the City

shall exercise due diligence in seeking removal of the action to this Court and in defending such action, including any appeals.

XI. DISPUTE RESOLUTION

128. Unless otherwise expressly provided for in this Consent Judgment, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Judgment.

129. Informal Dispute Resolution. Any dispute subject to Dispute Resolution under this Consent Judgment shall first be the subject of informal negotiations. The dispute shall be considered to have arisen when the City sends the United States and the State a written Notice of Dispute. Such Notice of Dispute shall state clearly the matter in dispute. The period of informal negotiations shall not exceed 60 Days from the date the dispute arises, unless that period is modified by written agreement among all Parties. If the Parties cannot resolve a dispute by informal negotiations, then the position advanced by the United States, after consultation with the State, shall be considered binding unless, within 60 Days after the conclusion of the informal negotiation period, the City invokes formal dispute resolution procedures as set forth below.

130. Formal Dispute Resolution. The City shall invoke formal dispute resolution procedures, within the time period provided in the preceding Paragraph, by serving on the United States and the State a written Statement of Position regarding the matter in dispute. The Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting the City's position and any supporting documentation relied upon by the City.

131. The United States and State shall serve their Statement of Position within 60 Days of receipt of the City's Statement of Position. The United States' and State's Statement of Position shall

include, but need not be limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by the United States. The United States' and State's Statement of Position shall be binding on the City, unless the City files a motion for judicial review of the dispute in accordance with the following Paragraph.

132. The City may seek judicial review of the dispute by filing with the Court and serving on the United States and the State, in accordance with Section XV of this Consent Judgment (Notices), a motion requesting judicial resolution of the dispute. The motion must be filed within 20 Days of receipt of the United States' and State's Statement of Position pursuant to the preceding Paragraph. The motion shall contain a written statement of the City's position on the matter in dispute, including any supporting factual data, analysis, opinion, or documentation, and shall set forth the relief requested and any schedule within which the dispute must be resolved for orderly implementation of the Consent Judgment.

133. The United States and the State shall respond to the City's motion within the time period allowed by the Local Rules of this Court. The City may file a reply memorandum, to the extent permitted by the Local Rules.

134. Standard of Review

a. Disputes Concerning Matters Accorded Record Review. Except as otherwise provided in this Consent Judgment, in any dispute brought under Section XI (Dispute Resolution) pertaining to the adequacy or appropriateness of plans, procedures to implement plans, schedules or any items requiring approval by EPA or the State under this Consent Decree; the adequacy of the performance of work undertaken pursuant to this Consent Decree; and all other disputes that are accorded review on the administrative record under applicable principles of administrative law, the

City shall have the burden of demonstrating, based on the administrative record, that the position of the United States and/or the State is arbitrary and capricious or otherwise not in accordance with law.

b. Other Disputes. Except as otherwise provided in this Consent Judgment, in any dispute brought under Section XI (Dispute Resolution) other than those disputes governed by Paragraph 134.a. above, the City shall bear the burden of demonstrating that its position complies with this Consent Judgment and furthers the Objectives of the Consent Judgment.

135. The invocation of dispute resolution procedures under this Section shall not, by itself, extend, postpone, or affect in any way any obligation of the City under this Consent Judgment, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter shall continue to accrue from the first Day of noncompliance, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 117. If the City does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section IX. (Stipulated Penalties).

XII. INFORMATION COLLECTION AND RETENTION

136. The United States, the State, and their representatives, including attorneys, contractors, and consultants, shall have the right of entry into any facility covered by this Consent Judgment, at all reasonable times, upon presentation of credentials, to:

- a. monitor the progress of activities required under this Consent Judgment;
- b. verify any data or information submitted to the United States or the State in accordance with the terms of this Consent Judgment;
- c. obtain samples and, upon request, splits of any samples taken by the City or its representatives, contractors, or consultants;

d. obtain documentary evidence, including photographs and similar data related to activities required under this Consent Judgment; and

e. assess the City's compliance with this Consent Judgment.

137. Upon request, the City shall provide EPA and the State or their authorized representatives splits of any samples taken by the City. Upon request, EPA and the State shall provide the City splits of any samples taken by EPA or the State.

138. Until three years after the termination of this Consent Judgment, the City shall retain, and shall instruct its contractors and agents to preserve, all non-identical copies of all documents, records, or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control, or that come into its or its contractors' or agents' possession or control, and that relate in any manner to the City's performance of its obligations under this Consent Judgment. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, upon request by the United States or the State, the City shall provide copies of any documents, records, or other information required to be maintained under this Paragraph.

139. At the conclusion of the information-retention period provided in the preceding Paragraph, the City shall notify the United States and the State at least 90 Days prior to the destruction of any documents, records, or other information subject to the requirements of the preceding Paragraph and, upon request by the United States or the State, the City shall deliver any such documents, records, or other information to EPA or the State. The City may assert that certain documents, records, or other information is privileged under the attorney-client privilege or any other privilege recognized by federal law. If the City asserts such a privilege, it shall provide the following: (1) the title of the

document, record, or information; (2) the date of the document, record, or information; (3) the name and title of each author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted by the City. However, no documents, records, or other information created or generated pursuant to the requirements of this Consent Judgment shall be withheld on grounds of privilege.

140. With respect to documents, records, or other information provided to the United States, the City may also assert that documents, records, or other information required to be provided under this Section (Information Collection and Retention) or under Section VI (Long Term Compliance Requirements) of this Decree, including but not limited to facilities plans, BODRs, and design plans, contain information that is exempt from disclosure under one or more exemption(s) in the Freedom of Information Act (“FOIA”), including, without limitation, 5 U.S.C. § 552(b)(3) (specific exemption under statute other than FOIA), § 552(b)(4) (confidential business information (“CBI”) exemption), and § 552(b)(7)(F) (exemption for security-sensitive law enforcement information). Any documents, records, or other information that the City asserts contain information exempt from disclosure under a FOIA exemption in 5 U.S.C. § 552(b) (“FOIA Exempt Material”) shall be provided to the United States, through the United States Attorney’s Office, in accordance with Section XV (Notices), with a cover letter stating that the documents, records, or other information contain FOIA Exempt Material and identifying the exemption(s) asserted, and the City shall mark each and every page of such documents, records, or other information that contains FOIA Exempt material with the legend, “Submitted Subject to NYC Claim of FOIA Exemption.” The United States Attorney’s Office will limit dissemination of the pages designated as containing FOIA Exempt Material to United States

employees, and contractors employed by the United States, as well as consultants retained for purposes of this case, who shall be subject to confidentiality agreements, as necessary to carry out the United States' evaluations under this Decree, and maintain a tracking sheet of who receives copies. Should any documents, records, or other information containing information designated as FOIA Exempt Material be subject to a FOIA request, the United States Attorney's Office will notify the City and afford the City a reasonable time to object or comment with respect to the United States' proposed response to the FOIA request. The United States Attorney's Office will promptly notify the City of any lawsuit wherein a third party seeks access to FOIA Exempt Material, and will not oppose any request by the City to intervene in such lawsuit to defend its interests.

141. In the event that the City takes the position that the City must maintain sole custody of certain sensitive documents, records, or other information to prevent a serious security risk to the New York City Water Supply System, the City may request that the United States review such sensitive documents, records, or other information at premises designated by the City. If the United States does not agree with the position of the City or the premises designated by the City, the dispute shall be resolved in accordance with Section XI (Dispute Resolution), Paragraph 134.b. (Other Disputes). The City's request that the United States review certain sensitive documents, records, or other information at premises designated by the City shall not preclude the United States from requesting that copies of such documents, records, or other information be provided to the United States at its own office(s). If the United States agrees to review certain sensitive documents, records, or other information at premises designated by the City, the City shall mark all pages in such documents, records, or other information that contain information that the City believes would constitute a serious security risk if released.

142. The United States agrees to consult with the City regarding the proper handling of any information designated as FOIA Exempt Material at the termination of this Consent Judgment.

143. With respect to documents, records, or other information provided to the State, the City may also assert that documents, records, or other information required to be provided under this Section (Information Collection and Retention) or under Section VI (Long Term Compliance Requirements) of this Decree, including but not limited to facilities plans, BODRs, and design plans, contain information that is exempt from disclosure under one or more exemption(s) in the New York Freedom of Information Law (“FOIL”), codified at Article 6, sections 84 to 90 of the New York State Public Officers Law (“POL”), including without limitation, sections 87(2)(f) (relating to information that if disclosed could endanger the life or safety of an person), 87(2)(g) (relating to inter-agency or intra-agency materials), and 89(5)(a)(1-a) (relating to critical infrastructure information). Any documents, records, or other information that the City asserts contain information exempt from disclosure under FOIL (“FOIL Exempt Material”) shall be provided to the State in accordance with Section XV (Notices). The City shall provide a cover letter stating that the documents, records, or other information contain FOIL Exempt Material and identifying the exemption(s) asserted, and the City shall mark each and every page of such documents, records, or other information that contains FOIL Exempt Material with the legend, “Submitted Subject to NYC Claim of FOIL Exemption.” The State will limit dissemination of the pages designated as containing FOIL Exempt Material to State employees as necessary to carry out the State’s evaluations under this Decree, and maintain a tracking sheet of who receives copies. Should any documents, records, or other information containing information designated as FOIL Exempt Material be subject to a FOIL request, the State will notify the City and afford the City a reasonable time to object or comment with respect to the State’s proposed

response to the FOIL request. If the State does not agree with the position of the City regarding any claimed exemption to FOIL, the dispute shall be resolved in accordance with POL section 89(5)(a)(3)-(5)(d). The State agrees to promptly notify the City of any lawsuit wherein a third party seeks access to FOIL Exempt Material, and shall not oppose any request by the City to intervene in such lawsuit to defend its interests.

144. In the event that the City takes the position that the City must maintain sole custody of certain sensitive documents, records, or other information to prevent a serious security risk to the New York City Water Supply System, the City may request that the State review such sensitive documents, records, or other information at premises designated by the City. If the State does not agree with the position of the City or the premises designated by the City, the dispute shall be resolved in accordance with Section XI (Dispute Resolution), Paragraph 134.b. (Other Disputes). The City's request that the State review certain sensitive documents, records, or other information at premises designated by the City shall not preclude the State from requesting that copies of such documents, records, or other information be provided to the State at its own office(s). If the State agrees to review certain sensitive documents, records, or other information at premises designated by the City, the City shall mark all pages in such documents, records, or other information that contain information that the City believes would constitute a serious security risk if released. Should a dispute arise between the City and the State under this Paragraph 144 related solely to the release of certain sensitive documents, records, or other information to the State outside the custody of the City, the dispute shall be resolved by the City and the State in accordance with Section XI (Dispute Resolution) (Paragraphs 128 to 135). With respect to that dispute the State shall have the rights and responsibilities afforded the United States in Paragraphs 128 to 135.

145. The State agrees to consult with the City regarding the proper handling of any information designated as FOIL Exempt Material at the termination of this Consent Judgment.

146. This Consent Judgment in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States or the State pursuant to applicable federal or state laws, regulations, or permits, nor does it limit or affect any duty or obligation of the City to maintain documents, records, or other information imposed by applicable federal or state laws, regulations, or permits.

XIII. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

147. This Consent Judgment resolves the civil claims of the United States for the violations alleged in the Complaint filed in this action through the date of lodging. The Consent Judgment also resolves the civil claims of the State for violations alleged in the complaint-in-intervention filed in this action through the date of lodging.

148. The United States and the State reserve all legal and equitable remedies available to enforce the provisions of this Consent Judgment, except as expressly stated in Paragraph 147. This Consent Judgment shall not be construed to limit the rights of the United States or the State to obtain penalties or injunctive relief under the Act or implementing regulations, or under other federal or State laws, regulations, or permit conditions, except as expressly specified in Paragraph 147. The United States and the State further reserves all legal and equitable remedies to address any imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, the City's Facilities, whether related to the violations addressed in this Consent Judgment or otherwise.

149. In any subsequent administrative or judicial proceeding initiated by the United States or the State for injunctive relief, civil penalties, other appropriate relief relating to the City's Facilities or

violations, the City shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States or the State in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to Paragraph 147 of this Section.

150. This Consent Judgment is not a permit, or a modification of any permit, under any federal, State, or local laws or regulations. This Consent Judgment is not, and shall not be interpreted as, a waiver or variance from or modification of any requirements of the SDWA or the LT2 Rule. For avoidance of doubt, nothing herein shall relieve the City of its independent obligation to ensure that all drinking water delivered to the New York City drinking water distribution system is in compliance with all National Primary Drinking Water Regulations (“NPDWRs”) and applicable federal, State and local laws, regulations and permits. The City remains responsible for achieving and maintaining complete compliance with all applicable federal, State, and local laws, regulations, and permits. The City’s compliance with this Consent Judgment shall be no defense to any action commenced pursuant to any such laws, regulations, or permits, except as set forth herein. The United States and the State do not, by their consent to the entry of this Consent Judgment, warrant or aver in any manner that the City’s compliance with any aspect of this Consent Judgment will result in compliance with provisions of the Act, 42 U.S.C. § 300f *et seq.*, or with any other provisions of federal, State, or local laws, regulations, or permits.

151. This Consent Judgment does not limit or affect the rights of the City or of the United States or the State against any third parties, not party to this Consent Judgment, nor does it limit the

rights of third parties, not party to this Consent Judgment, against the City, except as otherwise provided by law.

152. This Consent Judgment shall not be construed to create rights in, or grant any cause of action to, any non-party.

XIV. COSTS

153. The Parties shall bear their own costs of this action and any dispute resolution proceeding instituted under Section XI, including attorneys' fees, except that the United States and the State shall be entitled to collect the costs (including attorneys' fees) incurred in any action necessary to collect any portion of the civil penalty or any stipulated penalties due but not paid by the City.

XV. NOTICES

154. Unless otherwise specified herein, whenever notifications, submissions, or communications are required by this Consent Judgment, they shall be made in writing and addressed as follows:

To the United States:

United States Attorney's Office
Eastern District of New York
Civil Division
271 Cadman Plaza East
Brooklyn, New York 11201
USAO No.: 2011V00094

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Box 7611 Ben Franklin Station
Washington, D.C. 20044-7611
Re: DOJ No.: 90-5-1-1-10223/1

and

U.S. Environmental Protection Agency
Region 2
Water Compliance Branch
Attn: Nicole Kraft
20th Floor
290 Broadway
New York, New York 10007

To EPA:

U.S. Environmental Protection Agency
Region 2
Water Compliance Branch
Attn: Nicole Kraft
20th Floor
290 Broadway
New York, New York 10007

To the State/NYSDOH:

Kerry-Ann Lawrence
New York State Department of Health
Bureau of Litigation
Corning Tower, Room 2438
Empire State Plaza
Albany, NY 12237

New York State Department of Health
Bureau of Water Supply Protection
Attn: Patrick Palmer
Corning Tower, Room 1110
Empire State Plaza
Albany, NY 12237

New York State Office of the Attorney General
Environmental Protection Bureau
Attn: Gavin McCabe
28 Liberty Street, 19th Floor
New York, NY 10005

To the City:

Environmental Law Division, Chief
New York City Law Department
100 Church Street
New York, New York 10007

General Counsel
New York City Department of Environmental Protection
59-17 Junction Boulevard, 19th Floor
Corona, New York 11368

155. Any Party may, by written notice to the other Parties, change its designated notice recipient or notice address provided above.

156. Notices submitted pursuant to this Section shall be deemed submitted upon mailing, unless otherwise provided in this Consent Judgment or by mutual agreement of the Parties in writing.

XVI. EFFECTIVE DATE

157. The Effective Date of this Consent Judgment shall be the date on which this Consent Judgment is entered by the Court or a motion to enter the Consent Judgment is granted, whichever occurs first, as recorded on the Court's docket; provided, however, that the City hereby agrees it shall be bound to perform duties scheduled to occur prior to the Effective Date. If the United States, in consultation with the State, withdraws or withholds consent to this Consent Judgment before entry, or the Court declines to enter the Consent Judgment, then the preceding requirement to perform duties scheduled to occur before the Effective Date shall terminate.

XVII. RETENTION OF JURISDICTION

158. The Court shall retain jurisdiction over this case until termination of this Consent Judgment.

XVIII. MODIFICATION

159. Except as set forth in Sections VI.D. and E., the terms of this Consent Judgment, including any attached appendices, may be modified only by a subsequent written agreement signed by all the Parties, and where the modification constitutes a material change to this Judgment, it shall be effective only upon approval by the Court. Any modifications of the Consent Judgment pursuant to Sections VI.D. and E. shall be governed by the provisions of Sections VI.D. and E. The Parties agree that each Party shall give due consideration in good faith to any request by the other Party for a modification of this Consent Judgment.

160. Except as set forth in Sections VI.D. and E., any disputes concerning modification of this Judgment shall be resolved pursuant to Section XI of this Judgment (Dispute Resolution), provided, however, that, instead of the burden of proof provided by Paragraph 134, the Party seeking the modification bears the burden of demonstrating that it is entitled to the requested modification in accordance with Federal Rule of Civil Procedure 60(b). Any disputes regarding modifications of the Consent Judgment pursuant to Sections VI.D. and E. shall be governed by the standards and procedures set forth in Sections VI.D. and E.

XIX. TERMINATION

161. This Consent Judgment may be terminated when the United States and the State determine that the City has satisfactorily completed performance of its compliance obligations required by this Consent Judgment, including Commencement of Full Operation of both the Covered East Basin and the Covered West Basin of the Hillview Reservoir, and after operating the Hillview Reservoir with the Hillview Cover for a period of three hundred sixty five days thereafter without any violations of the SDWA or NPDWRs that are related to the Hillview Cover, provided that the City has fulfilled all other

obligations of this Consent Judgment, including payment of the civil penalty under Section V of this Judgment and any outstanding stipulated penalties under Section IX. The Parties shall file with the Court an appropriate stipulation reciting that the requirements of the Consent Judgment have been met and requesting termination of the Judgment. The City may request a determination from the United States and the State under this Paragraph.

162. If the United States and the State do not agree that the Consent Judgment may be terminated, the City may invoke Dispute Resolution under Section XI of this Consent Judgment. However, the City shall not seek Dispute Resolution of any dispute regarding termination, under Paragraph 130 of Section XI, until 60 Days after service of its Request for Termination.

XX. PUBLIC PARTICIPATION

163. This Consent Judgment shall be lodged with the Court for a period of not less than 30 Days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Judgment disclose facts or considerations indicating that the Consent Judgment is inappropriate, improper, or inadequate. The City consents to entry of this Consent Judgment without further notice and agrees not to withdraw from or oppose entry of this Consent Judgment by the Court or to challenge any provision of the Judgment, unless the United States has notified the City in writing that it no longer supports entry of the Judgment.

XXI. PUBLIC NOTIFICATION

164. Upon entry of the Consent Judgment, the City shall submit certification and a copy of the public notice to the United States and the State that it has completed public notification for the

violation of 40 C.F.R. § 141.714 in accordance with 40 C.F.R. Part 141 Subpart Q and applicable state regulations.

XXII. SIGNATORIES/SERVICE

165. Each undersigned representative of the City, the State, the United States Attorney for the Eastern District of New York and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Judgment and to execute and legally bind the Party he or she represents to this document.

166. This Consent Judgment may be signed in counterparts, and its validity shall not be challenged on that basis. The City agrees to accept service of process by mail with respect to all matters arising under or relating to this Consent Judgment and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons.

XXIII. INTEGRATION

167. This Consent Judgment constitutes the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in the Consent Judgment and supersedes all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. Other than deliverables that are subsequently submitted and approved pursuant to this Consent Judgment or documents setting forth any accelerated schedules established under Section VI.D or interim milestones established under Section VI.E, no other document, nor any representation, inducement, agreement, understanding, or promise, constitutes any part of this Consent Judgment or

the settlement it represents, nor shall it be used in construing the terms of this Judgment. Upon the Effective Date, this Consent Judgment supersedes the EPA AOC and NYSDOH Administrative Order AT 940772-CO. For avoidance of doubt, the schedules set forth in or incorporated pursuant to Section VI of the Consent Decree are not a regulatory “State-approved schedule” contemplated in 40 C.F.R. § 141.714(c).

XXIV. APPENDICES

168. The following appendices are attached to and part of this Consent Judgment:

“Appendix A” is the Hillview *Cryptosporidium* and *Giardia* Action Plan.

“Appendix B” is the Water Quality Benefit Project document referenced in Paragraph

11.a.

“Appendix C” is the Enhanced Wildlife Management Plan for Hillview Reservoir.


XXV. FINAL JUDGMENT

169. Upon approval and entry of this Consent Judgment by the Court, this Consent Judgment shall constitute a final judgment of the Court as to the United States, the State, and the City. The Court therefore enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

Dated and entered this ___ day of _____, ____.


UNITED STATES DISTRICT JUDGE
Eastern District of New York


FOR PLAINTIFF UNITED STATES OF AMERICA:


JEFFREY BOSSERT CLARK
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice

RICHARD P. DONOGHUE
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FOR THE CITY OF NEW YORK AND NEW YORK CITY DEPARTMENT OF
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New York City
Department of Environmental Protection



Hillview Cryptosporidium and Giardia Action Plan

Guidelines for Inter-Agency Notifications and Coordination

Rev #9

Effective Date: December 1, 2018

** Appendix II (contact info) is for restricted distribution **

Prepared by:
Water Quality Science & Research

Vincent Sapienza, P.E., Commissioner
Paul V. Rush, P.E., Deputy Commissioner Bureau of Water Supply
Steven C. Schindler, Director of Water Quality

REVISION HISTORY

Revision Number	Revision Date	Revisions made to prior version, starting with August 1, 2011 CGAP (Such as the section that was changed, the reasons for the change, etc., as appropriate.)
01	01/20/12	Updated several DOH, DOHMH, DEP phone numbers and contacts.
02	12/31/12	Revised in response to comments made after 3/1/12 functional exercise.
03	12/31/13	Reviewed and revised per annual review protocol. Revisions made primarily included updates to Contacts sheet and Background section.
04	12/31/14	Some revisions to actions for CGAP activation and deactivation, based upon 3/19/14 Plan activation. Also, minor revisions/updates to Background text, and updates to Contacts information. Notification templates added. (This version was distributed as a Draft Revised version, in order to allow comment before becoming effective: See Revision #5 below.)
05	02/02/15	This is the final version of revised 2014-2015 CGAP, which includes revisions contained in Revision #4 (issued 12/31/2014 as Draft Revised version), plus minor revisions/clarifications, per request by NYSDOH (1/14/15, P. Young)
06	12/30/15	Revised per annual review protocol. Revisions include updates to: Background section, Attachment C (Contacts sheet), Attachment A, and minor modifications to cover pages.
07	12/22/16	Revised per annual review protocol. Revisions include updates to: Background section, Attachment A, and Attachment C.
08	12/20/17	Revised as per recommendations from CGAP Functional Exercise on 5/23/17. Also report formatting revisions and new appendices.
09	11/16/2018	Updated contacts (Appendix II); updated communications flowchart (Appendix I); additions to resources listing (Appendix VI); wording re DAPI.

Acknowledgements: Numerous individuals have contributed toward the development of the NYC CGAP document, and its predecessor, the NYC Cryptosporidium Action Plan (CAP). Initially developed in 2001, the NYC CAP was a NYCDEP & NYCDOHMH joint-agency effort coordinated under the NYC Waterborne Disease Risk Assessment Program. Lead author of the initial CAP document was A. Seeley, working with A. Ashendorff, S. Balter, and others. D. Lipsky was lead author in transition from CAP to CGAP. Since the transition to CGAP, updates have been coordinated by A. Seeley. Thanks to all for contributions toward this action plan series over the years, including staff of the NYCDEP Bureau of Water Supply, Water Quality Directorate, the NYCDOHMH Bureau of Communicable Diseases, and from other bureaus and agencies. For Revision #8, special thanks to L. Janus, and to P. Bennett for his work on the CGAP Functional Exercise held in May 2017.

--- A. Seeley

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LIST OF ACRONYMS

AL	Action Level
BCD	Bureau of Communicable Diseases/NYCDOHMH
BESE	Bureau of Environmental Science & Engineering/NYCDOHMH
BPA	Bureau of Public Affairs
BWS	Bureau of Water Supply
BWSP	Bureau of Water Supply Protection
CAP	<i>Cryptosporidium</i> Action Plan
CDC	Communicable Disease Control/NYSDOH
CGAP	<i>Cryptosporidium</i> & <i>Giardia</i> Action Plan
DAPI	4'6-diamidino-2-phenylindole
DEP	NYC Department of Environmental Protection
DOH	NYS Department of Health
DOHMH	NYC Department of Health & Mental Hygiene
DWQO	BWS/WQ Distribution Water Quality Operations
EOH	BWS/WQ East of Hudson Watershed Water Quality Operations
EPA	US Environmental Protection Agency
HAN	NYCDOH Health Advisory Notice
HAPC	BWS/WQ Health Assessment & Policy Coordination
HVR	Hillview Reservoir
NSF	National Sanitation Foundation
NCYWT	New York City Watershed Team/USEPA
NYCWU	New York City Watershed Unit/NYSDOH
OEA	Office of External Affairs/NYCDOHMH
OPHE	Office of Public Health Engineering/NYCDOHMH
PDSP	Parasitic Disease Surveillance Program
RAU	Research Applications Unit/BWS
Site3	Hillview Reservoir Site #3 (Downtake #1)
WQD	Water Quality Directorate/BWS
WQSR	Water Quality Science and Research/BWS
WWQO	Watershed Water Quality Operations/BWS

BACKGROUND

The purpose of this Hillview *Cryptosporidium* and *Giardia* Action Plan (CGAP) is to provide guidance for intra- and inter-agency action and coordination in response to potential elevations in levels of either *Giardia* cysts or *Cryptosporidium* oocysts at Hillview Reservoir (HVR), Site 3 (Downtake 1)¹. Sampling is currently performed by DEP on a weekly basis at Hillview Site 3. In developing the CGAP, the New York City Department of Environmental Protection (DEP) has assumed that all *Cryptosporidium* oocysts and *Giardia* cysts entering HVR from the source waters have been deactivated by UV treatment and chlorine. This Plan is intended to address elevated *Giardia* or *Cryptosporidium* concentrations that could theoretically originate from sources at the Hillview Reservoir, which is an uncovered, finished water reservoir regulated under the Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR).

The Hillview CGAP was initially developed based upon a review of *Cryptosporidium* and *Giardia* data from Kensico Reservoir for the period 2001-2010 and the results of the Hillview Reservoir (HVR) inflow and outflow study (conducted in 2006-2008)² of *Giardia* and *Cryptosporidium* (Alderisio, et al., 2008). The first CGAP (effective date: August 1, 2011), was a required deliverable under the Hillview Reservoir Administrative Order on Consent (AOC), SDWA-02-2010-8027, dated May 24, 2010. The 2010 Hillview AOC also required DEP to submit by December 31, 2012 any proposed revisions to the CGAP. The document is updated on an annual basis. (See the Hillview AOC and the subsequent “HVR AOC Technical Memorandum to EPA and NYSDOH from DEP”, November 15, 2012, for revision requirements). Experience was gained from the CGAP activation of March 19, 2014 in response to an elevated *Giardia* finding at Hillview Reservoir. Revision #8 incorporates improvements gained from the May 2017 CGAP Functional Exercise, captured in the After Action Report, and Improvement Plan. The modifications made to the CGAP versions are summarized in the Revision History table (page i).

The NYC *Cryptosporidium* Action Plan (CAP), which was created prior to the CGAP, was developed for responding to the detection of *Cryptosporidium* in the City’s source water reservoirs: Kensico Reservoir and the New Croton Reservoir. The CAP was created as part of a deliverable under the NYC Filtration Avoidance Determination (FAD) and did not directly address *Giardia* since any cysts detected in source water should be inactivated by chlorine. CAP documents were developed by NYC from 2001 to 2011. With the completion of NYC’s Catskill/Delaware ultraviolet treatment plant (plant on line October 2012), the CAP has been phased out (per NYC FAD Long-Term Watershed Protection Program document, December 2011, page 83)³. Note that the Croton system had been off line for several years, and was brought back into service in 2015, following completion of the Croton Filtration Plant and associated infrastructure work. As Croton water is filtered and there is no open finished water reservoir involved, no action plan based on pathogen testing results is needed for the Croton System.

The Hillview CGAP has a baseline (no-action) level and two action levels, as well as de-escalation plans. The no-action level consists of enhanced scrutiny of Hillview Reservoir, and disease and syndromic, data. The first action level involves notification of the Director of Water Quality, who directs additional data gathering, data evaluation, and communication by conference calls with regulators. The second action level involves consideration of additional response actions, including operational and treatment changes, enhanced interagency communications at the Deputy Commissioner or Commissioner level, and potential advisories for the public.

¹ Hillview Reservoir Site 3 located in Downtake 1 is also called BX-3 in some DEP reports.

² Alderisio, K.A. and S. DiLonardo. 2008. Monitoring of *Giardia* spp. cysts and *Cryptosporidium* spp. oocysts at the Uptakes and Downtakes of Hillview Reservoir (Yonkers, NY). NYC DEP Internal Report, December 2008.

³ NYSDOH continues to use detection of 6 *Giardia* cysts/50L for a 2-week running average in Kensico source water as a benchmark that may trigger additional investigation of water system conditions.

GUIDELINES FOR INTER-AGENCY NOTIFICATION AND COORDINATION⁴

NO-ACTION LEVEL: 0 - 6 *GIARDIA* CYSTS OR 0-3 *CRYPTOSPORIDIUM* OOCYSTS DETECTED - SITE 3

PATHOGEN DATA DISTRIBUTION

Hillview, Site 3 (Downtake 1), *Giardia* and *Cryptosporidium* weekly monitoring results are sent from the DEP Pathogen Laboratory via e-mail.

SURVEILLANCE DATA REVIEW

DEP and the New York City Department of Health and Mental Hygiene (NYCDOHMH) conduct routine review of water quality and disease/syndromic surveillance data, respectively.

ACTION LEVEL 1: 7-15 *GIARDIA* CYSTS OR 4-6 *CRYPTOSPORIDIUM* OOCYSTS DETECTED - SITE 3

Follow steps in No-Action Level above.

NOTIFICATION – INTERNAL

Immediately following the detection of Action Level 1 (AL-1) levels of cysts or oocysts, the DEP Pathogen Laboratory Director will affirmatively contact the DEP Director of Water Quality and the Chiefs of the Water Quality Directorate, Bureau of Water Supply.

NOTIFICATION – EXTERNAL

The Director of Water Quality for the DEP Bureau of Water Supply or designee will affirmatively contact by email and/or phone the key individuals for the involved agencies:

- NYCDOHMH's Bureau of Communicable Disease (BCD) and its Bureau of Environmental Sciences and Engineering (BESE),
- NYSDOH Bureau of Water Supply Protection/NYC Watershed Unit (BWSP/NYCWU),
- USEPA's NYC Watershed Team (NYCWT).
- See Appendices I (notification flow chart) and II (contact information). The key individuals are responsible for notifying personnel and coordinating within their respective agencies.

DATA COMPILATION

DEP will assemble all available relevant water quality, water system operations, meteorological data, and protozoan data (*Giardia* and *Cryptosporidium*). DOHMH will provide relevant disease/syndromic surveillance information for the period surrounding the sampling date (taking into account the incubation period for *Giardia* or for *Cryptosporidium*). These data will be assembled and reviewed by staff at the NYCDOHMH and DEP. Appendix III

⁴ All Action Levels are based upon an approximately 50L sample

provides a list of representative parameters to be considered for review. The data review will include water quality and other data both for Hillview Reservoir and Kensico Reservoir.

TREATMENT INFORMATION

DEP will also assemble and review information concerning the status of UV disinfection and chlorine disinfection from Kensico through to the distribution system entry points.

PATHOGEN MONITORING AT HILLVIEW

DEP will conduct additional monitoring at Hillview Site 3 for *Giardia* and *Cryptosporidium*, on an expedited basis.

- Duplicate samples should be collected, to be archived and analyzed in the event that the repeat sample has a high number of oocysts.
- Matrix spikes will be collected and analyzed with resamples

FURTHER ACTION DETERMINATION

To determine if any further action is warranted, as soon as possible after notification, the DEP's Water Quality Directorate (WQD) will confer with:

- NYCDOHMH's Bureau of Communicable Disease (BCD) and its Bureau of Environmental Sciences and Engineering (BESE),
- NYSDOH Bureau of Water Supply Protection/NYC Watershed Unit (BWSP/NYCWU), and
- USEPA's NYC Watershed Team (NYCWT).

Further actions to consider:

- No further action;
- Additional sampling of source waters, HVR uptakes and/or downtakes;
 - duplicate samples should be collected, to be archived and analyzed in the event that the repeat sample has a high number of oocysts
 - matrix spikes are required with all resamples
- Expedited sample processing times (to more rapidly assess any trends and determine the need for more frequent monitoring);
- An expedited sanitary survey at HVR;
- Calculation of CT Inactivation Ratios for secondary disinfection;
- Consideration will be given to analyzing and/or genotyping fecal matter collected at Hillview Reservoir for *Cryptosporidium* and/or *Giardia*;
- Escalation to AL-2, or to any of the actions included in AL-2.

Consider Context

- In deciding if additional actions are warranted, the data will be evaluated with respect to historic seasonal and temporal trends.

ACTION LEVEL 1: DE-ESCALATION PLAN

If results from a subsequent sampling event indicate that *Giardia* concentrations have dropped below 7 cysts/50 L or that *Cryptosporidium* concentrations have dropped below 4 oocysts/50L:

DATA REVIEW

All available relevant water quality, water system operations, meteorological data and disease/syndromic surveillance information for the period surrounding the sampling date will again be reviewed by staff at the NYCDOHMH and DEP (See Appendix III).

DEACTIVATION DETERMINATION

DEP's BWS/WQD will confer with NYCDOHMH's BCD and BESE, the NYSDOH BWSP/NYCWU, and USEPA NYCWT. If data from successive *Giardia* and *Cryptosporidium* sample(s), disease/syndromic monitoring and other data indicate there is no need for continued response actions under Action Level 1, these data will be presented during the conference call and the Action Level 1 alert will be rescinded or modified, as appropriate. If data are pending during the joint-agency deactivation conference call, the parties to the call may make a determination proactively whether the alert activation would be continued or rescinded depending on different potential future sampling or data collection outcomes; thus the continued event activation or deactivation would be able to occur without the necessity of an additional conference call.

AFTER ACTION REPORT

An After Action Report on the activation of this Plan will be prepared by DEP and submitted to NYSDOH and USEPA after the return to "No Action" status.

DISEASE/SYNDROMIC SURVEILLANCE

Information will continue to be collected and reviewed with heightened attention even after CGAP deactivation, for a period deemed appropriate by DOHMH/BCD and DEP, taking into account the date(s) of the elevated pathogen result(s), and the incubation period for *Giardia* and/or for *Cryptosporidium*, as appropriate. (This period will most likely be for approximately two weeks following the elevated *Giardia* and/or *Cryptosporidium* levels, unless determined otherwise). If any public health surveillance findings of significant concern are observed, DOHMH/BDC will immediately report such findings to DEP, and DEP will immediately report such to NYSDOH/BWSP/NYCWU, USEPA NYCWT, and NYCDOHMH BESE. DOHMH/BCD will also provide a summary report on the findings to DEP following the event, and in a timeframe agreed upon by DEP and DOHMH. A summary of syndromic findings will be included in the above-mentioned After Action Report.

ACTION LEVEL 2: >15 *GIARDIA* CYSTS OR > 6 *CRYPTOSPORIDIUM* OOCYSTS DETECTED - SITE 3

Follow steps in the No-Action Level above.

ADDITIONAL PATHOGEN MONITORING

DEP will immediately conduct additional monitoring for *Giardia* and *Cryptosporidium* at a minimum frequency of three times per week (one routine sample plus two additional samples), at Hillview Reservoir and the upstream source water keypoints, with expedited processing time, to the extent practicable. The first sample will be collected within 24 hours of notification. Resamples will be collected in duplicate along with a matrix spike. The duplicate sample will be archived and analyzed in the event that the repeat sample has a high number of oocysts. If resamples are positive, samples may also be collected at Hillview Site 1 to help ascertain if HVR is the source of the pathogens.

NOTIFICATION – INTERNAL

Immediately following the detection of Action Level 2 (AL-2) levels of cysts or oocysts, the DEP Pathogen Laboratory Director will affirmatively contact the DEP Director of Water Quality and the Chiefs of the Water Quality Directorate to start the process of assembling appropriate data for review.

NOTIFICATION – EXTERNAL

The Director of Water Quality for the DEP Bureau of Water Supply or designee will affirmatively contact by email and/or phone the key individuals for the involved agencies:

- NYCDOHMH's Bureau of Communicable Disease (BCD) and its Bureau of Environmental Sciences and Engineering (BESE),
- NYSDOH Bureau of Water Supply Protection/NYC Watershed Unit (BWSP/NYCWU), and
- USEPA's NYC Watershed Team (NYCWT).
- See Appendices I (notification flow chart) and II (contact information). The key individuals are responsible for notifying personnel and coordinating within their respective agencies.

TREATMENT DETERMINATION

Upon notification that *Giardia* levels have triggered an AL-2 response, the DEP Director of Water Quality for the Bureau of Water Supply will consult with staff and make a determination whether to raise secondary chlorine disinfection levels.

DATA COMPILATION

All available relevant water quality, water system operations, meteorological data, and disease/syndromic surveillance information for the period surrounding the sampling date (taking into account the incubation period for *Giardia* or for *Cryptosporidium*) will be assembled and reviewed (see Appendix III for parameters to be considered). DEP and NYCDOHMH will evaluate any unusual (or otherwise significant) findings, events, or water system operating conditions. Information will be sent to relevant DEP and NYCDOHMH personnel.

CONSIDER CONTEXT - In deciding if additional actions are warranted, the data will be evaluated with respect to historic seasonal and temporal trends.

WILDLIFE AND SANITARY INSPECTIONS

Census data and other data collected as part of DEP's enhanced wildlife management program and the results of recent sanitation inspections implemented under the Hillview Reservoir AOC will also be evaluated.

HILLVIEW RESERVOIR VISUAL INSPECTION

DEP will conduct a visual inspection of Hillview Reservoir to qualitatively assess and document possible issues associated with existing sanitary barriers. This will include, but not be limited to documenting:

- visual evidence of increased presence of waterfowl, birds, and other wildlife in/near the Reservoir;
- evidence of fecal matter in or near the reservoir;
- visual inspection of wiring, fencing and other barriers to wildlife.

CONFERENCE CALL

Deputy/Assistant Commissioners or their designees and appropriate managers and staffs of DEP (BWS) and NYCDOHMH (BCD and BESE) will confer as soon as possible.

BOIL WATER CONSIDERATION

The Deputy/Assistant Commissioners or their designees and staff will apprise the Commissioners of DEP and NYCDOHMH of a possible pending boil water situation.

PUBLIC NOTIFICATION PREPARATION

The Deputy/Assistant Commissioners or their designees, in conjunction with public affairs staff from each agency will initiate preparation of public notification materials (fact sheets in Appendix IV and notification templates in Appendix V).

FURTHER ACTION

Based on consideration of all available relevant information and data (see Appendix III), the Deputy/Assistant Commissioners or their designees and staff, in consultation with NYSDOH (BWSP), and USEPA (NYCWT) will decide:

- whether to notify the general public, and/or certain subpopulations, and/or health care provider organizations;
- whether to undertake any other response actions (e.g. activation of the DEP Crisis and Consequence Management Plan);
- whether to consult with the Commissioners of DOHMH, DOH and DEP for escalation to a boil water advisory (in the event of a boil water advisory, may refer to the New York City Drinking Water E. coli Action Plan);
- the form, content and mechanism for effectively and rapidly communicating with the public; and
- whether there are potential concerns or issues with the existing sanitary barriers and BMPs implemented at Hillview Reservoir under the Hillview Reservoir AOC, which might have contributed to the elevated levels of *Cryptosporidium* or *Giardia*, and whether additional corrective actions are required.
- Corrective action may include minimizing flow through, or by-passing one basin at Hillview Reservoir.

ACTION LEVEL 2: DE-ESCALATION PLAN

If results from two successive sampling events indicate that *Giardia* concentrations have dropped below 16 cysts/50 L or that *Cryptosporidium* concentrations have dropped below 7 oocysts/50 L, de-escalation may occur as follows:

DATA REVIEW

All available relevant water quality, water system operations, meteorological data and disease/syndromic surveillance information for the period surrounding the sampling date will again be reviewed by staff at the NYCDOH and DEP.

DEACTIVATION DETERMINATION

DEP's BWS/WQD will confer with NYCDOHMH's BCD and the BESE; the NYSDOH BWSP/NYCWU; and USEPA NYCWT. If data from *Giardia* and *Cryptosporidium* resample(s), disease/syndromic monitoring and other data indicate there is no need for continued response actions under Action Level 2, these data will be presented during the conference call and the Action Level 2 alert will be rescinded or modified, as appropriate. If data are pending during the joint-agency deactivation conference call, the parties to the call may make a determination proactively whether the alert activation would be continued or rescinded depending on different potential future sampling or data collection outcomes; thus the continued event activation or deactivation would be able to occur without the necessity of an additional conference call.

DEACTIVATION NOTIFICATION

Commissioners, Deputy Commissioners, Public Affairs, USEPA, and NYSDOH will be notified.

Any parties notified of the alert will be informed that the alert has been rescinded (e.g. via the Health Advisory Notification (HAN), postings on NYC websites).

AFTER ACTION REPORT

An After Action Report on the activation of this Plan will be prepared and submitted to NYSDOH and USEPA after the return to "No Action" status.

DISEASE/SYNDROMIC SURVEILLANCE

Information will continue to be reviewed with heightened attention after CGAP deactivation, for a period deemed appropriate by DOHMH/BCD and DEP -- taking into account the date(s) of the elevated pathogen result(s), and the incubation period for *Giardia* and/or for *Cryptosporidium*. (This period will most likely be for approximately two weeks following the elevated pathogen level.) If any public health surveillance findings of significant concern are observed, DOHMH/BDC will immediately report such findings to DEP, and DEP will immediately report such to the key contacts at NYCDOHMH, NYSDOH, and USEPA. DOHMH/BCD will also provide a summary report on the findings to DEP following the event, and in a timeframe agreed upon with DEP. A summary of syndromic findings will be included in the After Action Report.








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APPENDIX - I





FLOW CHART FOR INTERAGENCY COMMUNICATION

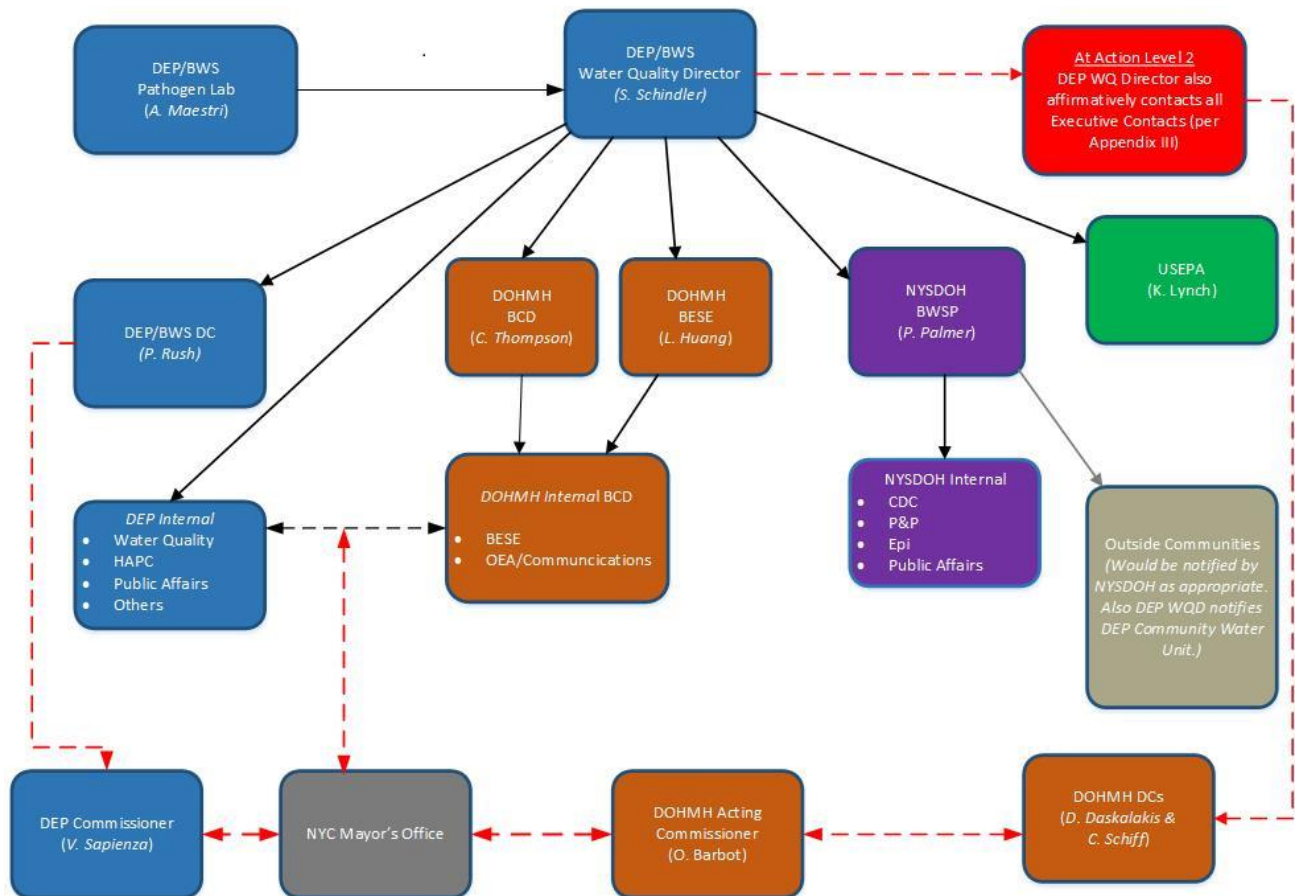
- If primary contact cannot be reached, seek alternate. Ensure notification continues down flow chart to reach next party.
- See APPENDIX II for contact details & for internal notification lists for each agency.

BOXES:

	NYC DEP		USEPA
	NYSDOH		NYC Mayor's Office
	NYCDOHMH		Outside Communities
	Action Level 2		

ARROWS:

Notification by E-mail (phone, alternate)	
Notification if needed	
Collaboration on Public/Press info	
Additional Notification for Action Level 2	



APPENDIX - III

DATA COMPILATION FORM FOR DEP AND DOHMH

This form is to facilitate the compilation of relevant information – i.e., water quality, water system and disease/syndromic surveillance results --for review during CGAP event conference calls. Current data for the parameters below should be interpreted in the context of historical records and seasonal trends.

DATE OF DATA COMPILATION: _____

WATERSHED WATER QUALITY AND OPERATIONS

Site	Date of sample collection	Crypto	Giardia	Total Coliform	Fecal Coliform	Turbidity
DEL17 (Kensico Inflow)						
DEL18DT(Kensico Outflow)						
Other locations? (see "B" for Hillview sites)						

- Treatment operations/disruptions (chlorine residuals, CT IAR changes, at Kensico Reservoir; UV plant information). Include date & any other relevant details;
- Spills, overflows or other failures in watershed wastewater infrastructure or other events in the watershed which could potentially result in microbial contamination of the water supply;
- Wildlife data – Kensico (and any changes observed over time);
- *Cryptosporidium* and/or *Giardia* supplemental data or additional analysis, if any;
- Meteorological data (i.e., storm events upstream of sampling points);
- QA/QC data (lab blanks and matrix spikes).
- Consideration can be given to DAPI staining, and reviewing staining characteristics and trends. If DAPI is performed, negative DAPI will not be used to rule out the presence of *Cryptosporidium* oocysts.

HILLVIEW & DISTRIBUTION WATER QUALITY AND OPERATIONS

Site	Date of Sample Collection	Crypto	Giardia	Total Coliform	E. coli	Turbidity
Hillview Site 1						
Hillview Site 3						
Distribution sites						

- Changes or disruptions in water system operations (flow changes, operational mode changes, valve operations). Indicate what, where, dates, & info source (BWSO Ops, Police, BEDC, Contractors): [Contact person: Chief, BWS Upstate/Eastern Operations].
- Any treatment operations/disruptions (chlorine residuals, CT IAR changes) at Hillview. Include date & any other relevant details.

- Any spills, overflows or other failures in watershed wastewater infrastructure or other events event in the watershed which could result in microbial contamination of the water supply;
- Wildlife data – Hillview (and any changes observed over time);
- Customer complaints called to DEP or to DOHMH (assess nature and location of any complaints);
- QA/QC data (lab blanks and matrix spikes);
- Consideration can be given to DAPI staining, and reviewing staining characteristics and trends. If DAPI is performed, negative DAPI will not be used to rule out the presence of *Cryptosporidium* oocysts.

DISEASE/SYNDROMIC SURVEILLANCE PARAMETERS

DOHMH/BCD (or BWS/HAPC as alternate) to provide overall impression based on public health data. Indicate if any changes have occurred and dates.

- Cryptosporidiosis and giardiasis case surveillance data;
- Emergency department data;
- Pharmacy sales (anti-diarrheal medications) surveillance data (Pharmacy OTC Dashboard data from DOHMH);
- Nursing home outbreak surveillance data;
- Clinical lab surveillance data: (see Clinical Lab Stool Specimen Submission Charts from DOHMH).

Note: Review of disease/syndromic surveillance should take into consideration incubation periods for these infections, as appropriate. Also, review of above-noted public health information should be continued with heightened attention even after CGAP deactivation, for a period deemed appropriate by DOHMH/BCD and DEP.

CRYPTOSPORIDIOSIS FACT SHEET

<https://www1.nyc.gov/site/doh/health/health-topics/cryptosporidiosis.page>

WHAT IS CRYPTOSPORIDIOSIS?

Cryptosporidiosis is a diarrheal illness caused by the microscopic parasite *Cryptosporidium*, which until 1976 was not known to cause disease in humans. In 2008, there were 107 cases reported among New York City residents (rate of 1.3 cases per 100,000 persons).

WHO GETS CRYPTOSPORIDIOSIS?

Anyone can get cryptosporidiosis. However, it causes more severe illness in persons with HIV/AIDS and others with impaired immune systems, such as people receiving cancer chemotherapy and transplant patients on immunosuppressive drugs.

HOW IS CRYPTOSPORIDIOSIS SPREAD?

Infected animals and humans have *Cryptosporidium* in their digestive systems. The parasite is passed in the stool (feces) of an infected person or animal as an oocyst (egg-like form of the organism). When it is outside the body it is protected by an outer shell and can live in the environment for long periods of time.

- People become infected by ingesting the organism.
- Infection can occur by touching stool or objects contaminated by stool and then touching the mouth with unwashed hands.
- Persons and animals can also become infected by drinking water or by eating raw or undercooked food that is contaminated with stool from infected animals or persons.
- Some people have become sick after swimming in public pools contaminated with stools from infected persons.
- Sexual activity in which the mouth or hand may come into contact with a partner's anus or stool presents a risk. It may take very few oocysts to cause infection.

WHAT ARE THE SYMPTOMS OF CRYPTOSPORIDIOSIS?

The most common symptoms are watery diarrhea and abdominal cramping. Vomiting, low-grade fever, loss of appetite, weight loss, and dehydration may occur. In persons with healthy immune systems, symptoms may last about 1 to 2 weeks. In persons with weakened immune systems, especially persons with HIV/AIDS, the infection may lead to prolonged illness. Some people infected with *Cryptosporidium* may not have any symptoms.

HOW SOON AFTER INFECTION DO SYMPTOMS APPEAR?

Symptoms usually appear within 2 to 10 days after exposure, with an average of 7 days.

HOW IS CRYPTOSPORIDIOSIS DIAGNOSED?

If your doctor suspects cryptosporidiosis, you will be asked to submit one or more stool samples. Diagnosis is made by examining the stool under a microscope or by using special detection tests for *Cryptosporidium*. The test for *Cryptosporidium* must be specifically requested by your doctor. Sometimes, several stool samples obtained on different days are necessary, since the number of *Cryptosporidium* parasites shed in the stool varies from day to day.

WHAT IS THE TREATMENT FOR CRYPTOSPORIDIOSIS?

- People with healthy immune systems usually get well without treatment.
- People with diarrhea should drink plenty of fluids.
- Young children and pregnant women may be more susceptible to the dehydration resulting from diarrhea, so it is especially important that they drink plenty of fluids while ill.

Currently, there is no standard treatment for cryptosporidiosis. One drug, nitazoxanide, has been approved for the treatment of diarrhea caused by *Cryptosporidium* in people who are not immunocompromised. For people living with AIDS, antiretroviral therapy that improves immune status can decrease or eliminate symptoms. Symptoms may recur if immune status worsens. Persons with cryptosporidiosis should consult with their health care provider regarding treatment options.

SHOULD AN INFECTED PERSON BE EXCLUDED FROM WORK OR SCHOOL?

Since the *Cryptosporidium* parasite is passed in the stool, people with active diarrhea who are unable to control their bowel habits (for example, infants, young children, and certain disabled individuals) may need to be excluded from group settings where they may present a risk to others. Most infected people may return to work or school when their stools become formed as long as they wash their hands thoroughly after using the toilet. Food handlers, certain health care workers, employees and children in day care, pre-kindergarten and kindergarten settings must obtain approval from the Health Department before returning to their routine activities, even if they are not having diarrhea. This requires follow-up stool testing to be sure that they are no longer infectious.

HOW CAN CRYPTOSPORIDIOSIS BE PREVENTED?

The following measures for preventing cryptosporidiosis are recommended:

PRACTICE GOOD HYGIENE.

- Always thoroughly wash hands with soap and warm running water before touching food, after using the toilet or changing diapers, after handling animal stools, and after gardening or other direct contact with soil.
- If you work in a child-care center where you change children's diapers, wash your hands carefully between changing each child's diapers. When using gloves, wash your hands and change gloves between each child.
- If you take care of persons with cryptosporidiosis, or persons who have diarrhea, wash your hands after bathing patients, emptying bedpans, changing soiled linen, or otherwise coming in contact with stool.

AVOID WATER THAT MAY BE CONTAMINATED.

- Do not drink water directly from streams, lakes, springs or swimming pools.
- Heat water to a rolling boil for 1 minute whenever you are unsure of the safety of a drinking water source.

- Carefully dispose of sewage wastes so as not to contaminate surface water or ground water.
- Comply fully with water advisories whenever issued by public health or government authorities.

AVOID FOOD THAT MAY BE CONTAMINATED.

- Avoid eating unwashed fruits and vegetables, and drinking unpasteurized milk or other milk products that are not pasteurized. Unpasteurized apple cider has also caused infection in the past.

TAKE EXTRA CARE WHEN TRAVELING.

- If you travel to developing countries, you may be at greater risk for cryptosporidiosis because of poorer water treatment and food sanitation. Avoid raw fruits and vegetables that you did not peel or wash yourself, unboiled tap water, ice made from unboiled tap water, unpasteurized dairy products, and items purchased from street vendors.

PROTECT YOURSELF AND OTHERS.

- If you have cryptosporidiosis, wash your hands often to prevent spreading the disease to other people.
- If you have diarrhea, protect others by not swimming. Persons with diarrhea should not use public swimming facilities. If you have cryptosporidiosis, you should not swim in any recreational water for at least 2 weeks after diarrhea stops. You can pass *Cryptosporidium* in your stool and contaminate water for several weeks after your symptoms have ended. *Cryptosporidium* can survive in chlorine-treated swimming pools.
- Sexual practices that may result in hand or mouth contact with stool, such as anal sex, touching the anus, or oral-anal sex ("rimming"), increase the risk for cryptosporidiosis transmission. Risk of transmission may be decreased by washing thoroughly with soap and water before and after any anal contact, and by using a barrier such as a dental dam or household plastic wrap during oral-anal contact. Persons with any diarrheal illness should avoid any sexual practice that may expose a partner to their stool.

IS *CRYPTOSPORIDIUM* IN NYC WATER?

Very low levels of *Cryptosporidium* oocysts are sometimes found in public water supply sources, including in New York City's water supply reservoirs. Laboratory tests cannot yet determine if any cysts found in the water supply are alive or dead, and no one knows for sure if these very low levels can cause infection among persons with healthy immune systems or immunocompromised persons. At this time there is no evidence to suggest that there is a significant risk of cryptosporidiosis from New York City drinking water. Information on New York City source water testing results for *Cryptosporidium* is available at the NYC Department of Environmental Protection website.

For more information regarding cryptosporidiosis and drinking water, see the information below on "Extra Precautions to Avoid Cryptosporidiosis for Persons with HIV/AIDS or Other Causes of Immunosuppression."

EXTRA PRECAUTIONS TO AVOID CRYPTOSPORIDIOSIS FOR PERSONS WITH HIV/AIDS OR OTHER CAUSES OF IMMUNOSUPPRESSION

If you are HIV positive or otherwise immunocompromised, be extra careful about hand washing, carefully wash food before eating, and thoroughly cook foods that are heated before eating. Do not let raw foods contaminate other foods. Avoid drinking or accidentally swallowing water from lakes, rivers, streams, springs or swimming pools. Follow "safer sex" guidelines. Any sex act that involves hand or mouth contact with the anus or stool (feces) increases the risk for cryptosporidiosis. Oral-anal contact (rimming) is very likely to spread infection, therefore you

should avoid it, even if you and your partner wash well before. Always wash your hands well after touching your partner's anal area.

You may want to discuss the need for taking further protective measures with your medical provider.

Drinking water that is considered safe for persons with healthy immune systems may contain some *Cryptosporidium* oocysts. No one knows whether a small number of oocysts could create a risk for someone who is immunocompromised. Some researchers think that oocysts ingested while you are still relatively healthy can remain in your digestive system until your immune system is severely depressed and then cause serious illness.

IF YOU WANT GREATER ASSURANCE THAT YOUR DRINKING WATER IS SAFE TO DRINK, HERE ARE SOME OPTIONS FOR SAFER BEVERAGES:

- Heat tap water to a rolling boil for 1 minute before using. This will kill all microorganisms including *Cryptosporidium*. To avoid burning yourself, allow water to cool before pouring into a clean, dry container.
- Use boiled water for ice cubes, tooth brushing, washing vegetables that will be eaten raw, and mixing with concentrates. You do not need to use boiled water for food that will be cooked before eating. Dishes, silverware, pots, and pans may be washed with tap water as long as they are dry before being used.
- Not all available home or office water filters remove *Cryptosporidium*. Point-of-use filters with an absolute pore size of less than or equal to 1 micron in diameter will remove *Cryptosporidium*. Filters designed to remove *Cryptosporidium* will have one of the following labels: "Absolute pore size of 1 micron or smaller," "Tested and certified by the National Sanitation Foundation (NSF) Standard 53 for cyst removal," "Tested and certified by NSF Standard 53 for cyst reduction," or "Reverse osmosis." Follow manufacturer's directions for routine maintenance, and replace filters according to schedule. Filters collect microorganisms, so someone who is not immunocompromised should change filter cartridges. Anyone changing cartridges should wear gloves and wash hands afterwards.
- Bottled water is not necessarily free of *Cryptosporidium*. Bottled water from a surface water source (for example, a river or lake) offers the same risk of cryptosporidiosis as tap water from the same source unless additional treatment is provided. Bottled water can be considered free of *Cryptosporidium* if it has been filtered through an absolute 1 micron or smaller filter, or treated with reverse osmosis or distillation. Bottled water that comes from deep ground water sources (for example, well water) is less likely to contain *Cryptosporidium* than bottled water from surface water sources. Only bottled water certified by the New York State Department of Health for sale in New York should be considered. Look for the New York State Department of Health certification on the label (it will read "NYSHD Cert # ---"). A list of certified bottled waters for sale in New York along with their sources can be obtained from the New York State Department of Health by calling (518) 402-7676 or by going to the New York State Department of Health website.

GIARDIASIS FACT SHEET

<https://www1.nyc.gov/site/doh/health/health-topics/giardiasis.page>

WHAT IS GIARDIASIS?

Giardiasis, an intestinal illness, is caused by a microscopic parasite called *Giardia lamblia*. In 2008, there were 840 cases reported among New York City residents (rate of 10.2 cases per 100,000 persons).

WHO GETS GIARDIASIS?

Anyone can get giardiasis. However, it tends to occur more often in people residing in institutional settings, diaper-aged children in day care centers, child care workers, parents of infected children, foreign travelers, and individuals who drink improperly treated surface water (such as from lakes, rivers, or streams) or who swim in contaminated water. Men who have sex with men may also be at increased risk of contracting giardiasis.

HOW IS GIARDIASIS SPREAD?

The parasite is passed in the stool (feces) of an infected person or animal. When it is outside the body, it is protected by an outer shell, and can survive in the environment for long periods of time. It may contaminate soil, water, food or surfaces. People become infected by swallowing the parasite. Person-to-person transmission may occur in day care centers or other settings where hand-washing practices are poor. Sexual practices in which the mouth or hand comes into contact with a partner's anus or stool may result in spread.

WHERE ARE THE *GIARDIA* PARASITES FOUND?

Giardia has been found in infected people (with or without symptoms) and wild and domestic animals. The beaver has gained attention as a potential source of *Giardia* contamination of lakes, reservoirs, and streams, but human fecal wastes may be just as important.

WHAT ARE THE SYMPTOMS OF GIARDIASIS?

People exposed to *giardia* may experience mild or severe diarrhea, abdominal cramps, bloating, and fatigue. In some instances, there may be no symptoms at all. Fever is rarely present. Occasionally, chronic diarrhea may develop over several weeks or months, with significant weight loss. In otherwise healthy persons, symptoms may last 2 to 6 weeks.

HOW SOON AFTER INFECTION DO SYMPTOMS APPEAR?

The symptoms may appear from 3 to 25 days after exposure, but usually within 10 days.

HOW LONG CAN AN INFECTED PERSON CARRY *GIARDIA*?

The carrier stage generally lasts from a few weeks to a few months. Treatment with specific antibiotics may shorten the carrier stage.

HOW IS GIARDIASIS DIAGNOSED?

Diagnosis is made by examining the stool under a microscope or by using special detection tests for *Giardia*. Sometimes, several stool samples obtained on different days are necessary, since the number of *Giardia* parasites shed in the stool varies from day to day.

WHAT IS THE TREATMENT FOR GIARDIASIS?

Anti-infective drugs such as metronidazole, tinidazole, or nitazoxanide are often prescribed by doctors to treat giardiasis. Drug resistance or relapse may occur with any drug. Some individuals may recover on their own without medication. Although *Giardia* can infect all people, young children and pregnant women may be more susceptible to the dehydration caused by diarrhea and should drink plenty of fluids while ill.

SHOULD AN INFECTED PERSON BE EXCLUDED FROM WORK OR SCHOOL?

Since the *Giardia* parasite is passed in the stool, people with active diarrhea who are unable to control their bowel habits (for example, infants, young children, and certain disabled individuals) may need to be excluded from group settings where they present a risk to others. Most infected people may return to work or school when their stools become formed as long as they wash their hands thoroughly after using the toilet. Food handlers, certain health care workers, children in day care, pre-kindergarten or kindergarten, and employees in day care, pre-kindergarten and kindergarten must obtain approval from the Health Department before returning to their routine activities, even if they are not having diarrhea. This requires follow-up stool testing to be sure that they are no longer infectious.

HOW CAN GIARDIASIS BE PREVENTED?

The most important preventive measures include:

PRACTICE GOOD HYGIENE.

- Always thoroughly wash hands with soap and water before handling food, after using the toilet or changing diapers, after handling animal stools, and after gardening or other direct contact with soil.
- If you work in a child-care center where you change children's diapers, wash hands carefully between changing each child's diapers. When using gloves, wash your hands and change gloves between each child. If you take care of persons with giardiasis, or persons who have diarrhea, wash your hands after bathing patients, emptying bedpans, changing soiled linen, or otherwise coming in contact with stool.

AVOID WATER THAT MAY BE CONTAMINATED.

- Do not drink water directly from streams, lakes, springs or swimming pools.
- If there is a possibility of *Giardia* contamination in a drinking water source, you can make the water safe to drink by: (1) Heating water to a rolling boil for 1 minute, or (2) Using a water filter that has an absolute pore size of at least 1 micron or smaller, or one that has been National Sanitation Foundation (NSF) rated for "cyst removal."

AVOID FOOD THAT MAY BE CONTAMINATED.

- Uncooked fruits and vegetables should be washed thoroughly before being eaten.

TAKE EXTRA CARE WHEN TRAVELING.

- If you travel to developing countries, you may be at greater risk for giardiasis because of poorer water treatment and food sanitation. Avoid raw fruits and vegetables that you did not wash or peel yourself, unboiled tap water, ice made from unboiled tap water, and items purchased from street vendors.

PROTECT YOURSELF AND OTHERS.

- Carefully dispose of sewage wastes so as not to contaminate surface water or ground water.
- If you have giardiasis, wash your hands often to prevent spreading the disease to other people.
- If you have diarrhea, protect others by not swimming. Persons with diarrhea should not use public swimming facilities. If you have giardiasis, do not swim in recreational waters while experiencing diarrhea and for at least 2 weeks after the diarrhea stops. You can pass *Giardia* in your stool and contaminate water for several weeks after your symptoms have ended.
- Sexual practices that may result in hand or mouth contact with stool, such as anal sex, touching the anus, or oral-anal sex ("rimming"), increase the risk for giardiasis transmission. Risk of transmission may be decreased by washing thoroughly with soap and water before and after any anal contact, and by using a barrier such as a dental dam or household plastic wrap during oral-anal contact. Persons who are infected with giardiasis, or any diarrheal illness, should refrain from sexual activity that may expose a partner to their stool until they are effectively treated.

SAMPLE NOTIFICATION TEMPLATES

Note: The attached notification templates are draft samples only, and should not be considered final documents. Any notification would need to be modified as appropriate for a specific event, and would also require clearance by appropriate parties at both NYCDEP and NYCDOHMH, in addition to by any other appropriate agencies.

Note: Sections of the templates highlighted in YELLOW should particularly be reviewed for any modifications needed for the particular event.

TEMPLATES INCLUDED:

- Boil Water Advisory for *Giardia*
- Boil Water Advisory for *Cryptosporidium*
- Precautionary Drinking Water Advisory for Immunocompromised Patients
- Boil Water Advisory Ended



BOIL WATER ADVISORY for *Giardia*

For **New York City/Location** as of **date**

BOIL YOUR WATER BEFORE DRINKING & OTHER USES NOTED BELOW

Where: **Affected Area; presumably will be Citywide**

Issue: Recent water samples taken by NYCDEP from a key water supply reservoir (Hillview) have shown an increase in *Giardia* cyst levels. Whether this poses a health risk is uncertain, due to limitations in laboratory methods and other factors (for example, it is uncertain if these cysts are viable/infectious). However, as a precaution, until further notice, all persons are advised that water used for drinking, baby formula, cooking and certain other uses, should be boiled, filtered, or bottled water should be used. See additional instructions below.

What should you do? Until further notice, NYC water **note area if relevant** used for: drinking, making baby formula, making ice, brushing teeth, food preparation, and giving to pets, should be: (a) boiled (a full boil for one minute, then cooled and stored in clean container); or (b) filtered (filter with \leq one micron pore size; includes filters certified by NSF, standard #53 for cyst reduction); or (c) bottled water certified by NYSDOH for sale in NY (check label) should be used. Further details on water safety are on reverse side of this advisory, and via information sources noted below.

Giardia is a microorganism that can cause diarrhea, gas, cramps, nausea, dehydration, or other symptoms. Those at higher risk for dehydration from diarrhea may include infants, the elderly, pregnant women, and those with certain underlying medical conditions. Thus for these groups, special attention should be paid to insure adequate hydration during illness. If you experience any of the above symptoms, and they persist, you should seek medical advice. Symptoms of giardiasis typically last 2 to 6 weeks in otherwise healthy people. Many prescription medications are available to treat giardiasis. Note the above symptoms can also be caused by many sources other than waterborne microbes.

What is The City doing to resolve the issue? NYCDOHMH and NYCDEP are actively reviewing water quality, water operations, public health surveillance, and other data to assess and resolve the situation. **Expedited monitoring is being undertaken; and modified water supply operations, including increased chlorination, are being implemented to enhance microbial protection.** NYSDOH and USEPA have been notified.

How will you know when the water is safe to drink? An “End of Boil Water Advisory” will be issued. Also, check the NYC web links listed below or call 311 for updates.

Please share this information with others who drink NYC water and who may not have seen this notice.

For further information, see www.nyc.gov/dep, www.nyc.gov/health, or call 311. See reverse side for water usage and treatment tips. General info about *Giardia* and giardiasis is also available at: www.cdc.gov, www.usepa.gov/safe_water.

ADDITIONAL TIPS FOR A *GIARDIA* BOIL WATER ALERT

A) WATER USAGE TIPS

For greatest risk reduction during a Boil Water Alert, water usage precautions should be taken at all locations supplied by the affected water source -- at home, work, school, and other.

Use Boiled/Filtered/Bottled Water (per below) for:	OK to use Tap Water for:	Use Caution:
<ul style="list-style-type: none"> • Drinking • Brushing Teeth • Washing fruits and vegetables • Preparing food (unless well cooked) • Mixing baby formula • Making ice • Giving water to pets 	<ul style="list-style-type: none"> • Washing clothes • Bathing (but caution not to swallow) • Flushing toilets • Washing dishes (as long as they dried well before being used) • Cooking (if water will be boiled for 1 minute or longer) 	<ul style="list-style-type: none"> • Water/soda/coffee/ice machines may use tap water • Not all home filters remove <i>Giardia</i> (see below)

B) WATER TREATMENT TIPS

<p>BOILING WATER</p> <ul style="list-style-type: none"> • Bring tap water to a full boil. Boil for one minute. • Allow water to cool before pouring, to avoid burn injury • Pour cooled water into a clean and dry container with a cover for storage
<p>FILTERING WATER</p> <ul style="list-style-type: none"> • In-home filters with an absolute pore size of ≤ 1 micron will remove <i>Giardia</i> • This would include, but is not limited to, filters that are certified by the National Sanitation Foundation (NSF) for “absolute cyst removal of particles \leq one micron”, or Standard #53 (cyst reduction). The certification seal can be found on the filter • Filters labeled “Reverse Osmosis” will also remove <i>Giardia</i> • Follow manufacturer’s directions for routine maintenance and replace filters according to schedule. • Filters commonly used for chlorine and metals removal (e.g., Brita® brand) filter are not NSF-certified for cyst reduction or removal.
<p>BOTTLED WATER</p> <ul style="list-style-type: none"> • Bottled water is not necessarily free of <i>Giardia</i> • Bottled water certified by the NYS Department of Health for sale in NY should be considered safe Look for the NYSDOH certification identifier on the label (NYSHD Cert. # XXX). A list of certified bottled waters for sale in NY, along with their sources, can be obtained from the NYSDOH at 1-800-458-1158 • Bottled water holds the same risk of <i>Giardia</i> exposure as tap water from the same source unless additional treatment is provided. Bottled water can be considered <i>Giardia</i>-free if it has been treated by submicron filtration (≤ 1 micron), reverse osmosis, or distillation. Bottled water from deep ground water sources (deep well water) is more likely to be free of <i>Giardia</i> than bottled water from surface water sources, assuming the same level of water treatment.



BOIL WATER ADVISORY for **Cryptosporidium**

For **New York City/Location** as of **date**

BOIL YOUR WATER BEFORE DRINKING & OTHER USES NOTED BELOW

Where: **Affected Area; presumably will be Citywide**

Issue: Recent water samples taken by NYCDEP at a key water supply reservoir (Hillview) have shown an increase in *Cryptosporidium* oocyst levels. Whether this poses a health risk is uncertain, due to limitations in laboratory methods and other factors (for example, it is uncertain if these oocysts are viable/infectious). However as a precaution, until further notice, all persons are advised that water used for drinking, baby formula, cooking, and certain other uses, should be boiled or filtered, or bottled water should be used. See additional instructions below. *Cryptosporidium* poses highest risk to immunocompromised patients, especially persons living with HIV/AIDS and CD4 <200 cells/mm³.

What should you do? Until further notice, NYC water **note area if relevant** used for drinking, making baby formula, making ice, brushing teeth, food preparation, and giving to pets should be: (a) boiled (a full boil for one minute, then cooled and stored in clean container); or (b) filtered (filter with ≤ one micron pore size; includes filters certified by NSF, standard #53 for oocyst reduction); or (c) bottled water certified by NYSDOH for sale in NY (check label) should be used instead. Further details on water safety are on reverse side of this advisory, and via information sources noted below.

Cryptosporidium is a microorganism that can cause diarrhea (typically, profuse watery diarrhea), cramps, nausea, headaches, or other symptoms. *Cryptosporidium* poses a special health risk for immunocompromised patients, especially persons living with HIV/AIDS and CD4 counts <200 cells/mm³. Infants, the elderly, and others with undeveloped or weakened immune systems may also be at increased risk for severe illness. If you experience any of these symptoms, and they persist, you should seek medical advice. Also, those at increased risk for dehydration, including infants, should be provided adequate hydration during illness. *Cryptosporidium* infections are typically self-limiting in persons with a healthy immune system. Note the above symptoms can also be caused by many sources other than waterborne microbes.

What is The City doing to resolve the issue? NYCDOHMH and NYCDEP are actively reviewing water quality, water operations, public health surveillance, and other data to assess and resolve the situation. **Expedited monitoring is being undertaken; and modified water supply operations are being implemented as appropriate to enhance microbial protection.** NYSDOH and USEPA have been notified.

How will you know when the water is safe to drink? An “End of Boil Water Advisory” will be issued. Also, check the NYC web links listed below or call 311 for updates.

Please share this information with others who drink NYC water and who may not have seen this notice.

For further information, see www.nyc.gov/dep, www.nyc.gov/health, or call 311. See reverse side for water usage and treatment tips. General info about *Cryptosporidium* is also available at: www.cdc.gov, www.usepa.gov/safewater.

ADDITIONAL TIPS FOR A *CRYPTOSPORIDIUM* BOIL WATER ALERT

A) WATER USAGE TIPS

For greatest risk reduction during a Boil Water Alert, water usage precautions should be taken at all locations supplied by the affected water source -- at home, work, school, and other.

Use Boiled/Filtered/Bottled Water (per below) for:	OK to use Tap Water for:	Use Caution:
<ul style="list-style-type: none"> • Drinking • Brushing Teeth • Washing fruits and vegetables • Preparing food (unless well cooked) • Mixing baby formula • Making ice • Giving water to pets 	<ul style="list-style-type: none"> • Washing clothes • Bathing (but caution not to swallow) • Flushing toilets • Washing dishes (as long as they are dried well before being used) • Cooking (if water will be boiled for 1 minute or longer) 	<ul style="list-style-type: none"> • Water/soda/coffee/ice machines may use tap water • Not all home filters remove <i>Cryptosporidium</i> (see below) • Special degree of caution for immunocompromised persons, especially with HIV/AIDS and CD4 counts <200 cells/mm³

B) WATER TREATMENT TIPS

BOILING WATER
<ul style="list-style-type: none"> • Bring tap water to a full boil. Boil for one minute. • Allow water to cool before pouring, to avoid burn injury. • Pour cooled water into a clean and dry container with a cover for storage.
FILTERING WATER
<ul style="list-style-type: none"> • In-home filters with an absolute pore size of ≤ 1 micron will remove <i>Cryptosporidium</i>. • This would include, but is not limited to, filters that are certified by the National Sanitation Foundation (NSF) for “absolute cyst removal of particles \leq one micron”, or Standard #53 (oocyst reduction). The certification seal can be found on the filter. • Filters labeled “Reverse Osmosis” will also remove <i>Cryptosporidium</i>. • Follow manufacturer’s directions for routine maintenance and replace filters according to schedule. • Filters commonly used for chlorine and metals removal (e.g., Brita® brand) filter are NOT NSF-certified for oocyst reduction or removal.
BOTTLED WATER
<ul style="list-style-type: none"> • Bottled water is not necessarily free of <i>Cryptosporidium</i>. • Bottled water certified by the NYS Department of Health for sale in NY should be considered safe. • Look for the NYSDOH certification identifier on the label (NYSHD Cert. # XXX). A list of certified bottled waters for sale in NY, along with their sources, can be obtained from the NYSDOH at 1-800-458-1158. • Bottled water holds the same risk of <i>Cryptosporidium</i> exposure as tap water from the same source unless additional treatment is provided. Bottled water can be considered <i>Cryptosporidium</i>-free if it has been treated by submicron filtration (≤ 1 micron), reverse osmosis, or distillation. Bottled water from deep ground water sources (well water) is more likely to be free of <i>Cryptosporidium</i> than bottled water from surface water sources, assuming the same level of water treatment.



Precautionary Drinking Water Advisory for Immunocompromised Patients

For **New York City/Location** as of **date**

BOIL WATER SUGGESTIONS FOR DRINKING & OTHER USES NOTED BELOW

Who: This advisory is to immunocompromised patients, especially persons with HIV/AIDS and CD4 <200 cells/mm³.

Where: *Affected Area; presumably will be Citywide*

Issue: Recent water samples taken by NYCDEP from a key water supply reservoir (Hillview) have shown an increase in *Cryptosporidium* oocyst levels. Whether this poses a health risk is uncertain, due to limitations in laboratory methods and other factors (for example, it is uncertain if these oocysts are viable/infectious). However as a precaution, until further notice, all persons at heightened risk of *Cryptosporidium* infection – e.g., immunocompromised persons, especially persons living with HIV/AIDS and CD 4 counts <200 -- are advised to take certain precautions with regard to tap water usage.

What should you do? Until further notice, persons at heightened risk of *Cryptosporidium* infection, and who use tap water, are advised to take precautions when using water for: drinking, making ice, brushing teeth, food preparation, making baby formula, and giving to pets. Tap water used for such purposes should be boiled or filtered, or bottled water should be used, at this time, per instructions on reverse side of this sheet. Also further information is available via sources noted below.

Cryptosporidium is a microorganism that can cause diarrhea (typically, profuse watery diarrhea), cramps, nausea, headaches, or other symptoms. *Cryptosporidium* poses a special health risk for immunocompromised patients, especially persons living with HIV/AIDS and CD4 counts <200 cells/mm³. If you experience any of these symptoms, you should consult with your doctor. *Cryptosporidium* infections are typically self-limiting in persons with a healthy immune system. Infants, the elderly, and others with undeveloped or weakened immune systems may be at increased risk for prolonged or heightened symptoms, including dehydration. Water precautions are advised at this time, per above. However, for general health protection, note that *Cryptosporidium* exposure can also be via: travel, certain high-risk sexual practices, contact with ill humans or pets, contaminated food or water and recreational water contact.

What is The City doing to resolve the issue? NYCDOHMH and NYCDEP are actively reviewing water quality, water operations, public health surveillance, and other data to assess and resolve the situation. *Expedited monitoring is being undertaken; and modified water supply operations are being implemented as appropriate to enhance microbial protection.* NYSDOH and USEPA have been notified.

How will you know when the water is safe to drink? An “End of Boil Water Advisory” notice will be issued. Also, check the NYC web links listed below or call 311 for updates.

Please share this information with persons at heightened risk – i.e., immunocompromised persons, particularly people living with HIV/AIDS and CD4 counts <200 cells/mm³.

For further info, see www.nyc.gov/dep, www.nyc.gov/health, or call 311. See reverse side for water usage & treatment tips. General *Cryptosporidium* info also at: www.cdc.gov, www.usepa.gov/safe_water.

ADDITIONAL TIPS FOR A *CRYPTOSPORIDIUM* BOIL WATER ALERT

A) WATER USAGE TIPS

For greatest risk reduction during a Boil Water Alert, water usage precautions should be taken at all locations supplied by the affected water source -- at home, work, school, and other.

Use Boiled/Filtered/Bottled Water (per below) for:	OK to use Tap Water for:	Use Caution:
<ul style="list-style-type: none"> • Drinking • Brushing Teeth • Washing fruits and vegetables • Preparing food (unless well cooked) • Mixing baby formula • Making ice • Giving water to pets 	<ul style="list-style-type: none"> • Washing clothes • Bathing (but caution not to swallow) • Flushing toilets • Washing dishes (as long as they are dried well before being used) • Cooking (if water will be boiled for 1 minute or longer) 	<ul style="list-style-type: none"> • Water/soda/coffee/ice machines may use tap water • Not all home filters remove <i>Cryptosporidium</i> (see below) • Special degree of caution for immunocompromised persons, especially with HIV/AIDS and CD4 counts <200 cells/mm³

B) WATER TREATMENT TIPS

BOILING WATER

- Bring tap water to a full boil. Boil for one minute.
- Allow water to cool before pouring, to avoid burn injury.
- Pour cooled water into a clean and dry container with a cover for storage.

FILTERING WATER

- In-home filters with an absolute pore size of ≤ 1 micron will remove *Cryptosporidium*.
- This would include, but is not limited to, filters that are certified by the National Sanitation Foundation (NSF) for “absolute cyst removal of particles \leq one micron”, or Standard #53 (cyst reduction). The certification seal can be found on the filter.
- Filters labeled “Reverse Osmosis” will also remove *Cryptosporidium*.
- Follow manufacturer’s directions for routine maintenance and replace filters according to schedule.
- Filters commonly used for chlorine and metals removal (e.g., Brita® brand) filter are NOT NSF-certified for cyst reduction or removal.

BOTTLED WATER

- Bottled water is not necessarily free of *Cryptosporidium*.
- Bottled water certified by the NYS Department of Health for sale in NY should be considered safe.
- Look for the NYSDOH certification identifier on the label (NYSHD Cert. # XXX). A list of certified bottled waters for sale in NY, along with their sources, can be obtained from the NYSDOH at 1-800-458-1158.
- Bottled water holds the same risk of *Cryptosporidium* exposure as tap water from the same source unless additional treatment is provided. Bottled water can be considered *Cryptosporidium*-free if it has been treated by submicron filtration (≤ 1 micron), reverse osmosis, or distillation. Bottled water from deep ground water sources (well water) is more likely to be free of *Cryptosporidium* than bottled water from surface water sources, assuming the same level of water treatment.



2017 Alert XX

Boil Water Advisory Ended

- Recent water samples at NYC's reservoirs have shown undetectable levels of *Cryptosporidium* oocysts and all persons may resume consuming water as previously
 - City water undergoes UV treatment and is felt to be safe, however patients with CD4 counts <200 cells/mm³ may always wish to take precautions when consuming tap water
- DOHMH requests increased testing for *Cryptosporidium* over the next 3 weeks (until **date**) in patients presenting with prolonged watery diarrhea.
 - Tests for *Cryptosporidium* are not included in standard ova and parasite (O&P) testing and must be specifically requested [further details below]
- If you observe increase number of patients with watery diarrhea, please contact the New York City Department of Health and Mental Hygiene (1-866-692-3641)

Please Share this Alert with All Primary Care, Family Medicine, Emergency Medicine, Internal Medicine, Pediatrics, Infectious Disease, Laboratory Medicine, Pathology, Critical Care and Infection Control Staff in Your Facility

DATE

Recent water samples at New York City's reservoirs have shown undetectable levels of *Cryptosporidium* oocysts following an initial detection on **DATE**. The City Department of Health and Mental Hygiene (DOHMH) and Department of Environmental Protection (DEP) are assessing water quality data, water operations and disease surveillance information to continue monitoring the situation. New Yorkers can now use tap water for drinking, brushing teeth and making ice. Please share this information with your patients.

Other water testing parameters, including fecal coliforms, are within acceptable levels. Disease surveillance data do not show any evidence of an increase in gastrointestinal illness at this time. Given the incubation period for *Cryptosporidium* incubation (1-12 days, average 7 days), **it is too early to see a concerning increase** in gastrointestinal illness reports. *Cryptosporidium* is reportable to the DOHMH under the New York City Health Code.

City water undergoes UV treatment. However, severely immunocompromised patients including those with CD4 counts <200 cells/mm³ may wish to always use precautions with tap water generally. This would include boiling for one minute, using approved filtration devices or using bottled water.

In an effort to monitor early increases in diarrheal illness, the DOHMH has several other surveillance systems in place. The DOHMH monitors the sales of over-the-counter antidiarrheal medications at designated pharmacies, tracks the total number of stool submissions to designated clinical laboratories for bacterial culture and sensitivity and ova and parasite testing, tracks the daily number of emergency department visits for diarrheal illness and monitors gastro-intestinal outbreaks among residents in nursing homes. The DOHMH will continue to monitor these systems closely.

While the health risk to the general population is unknown, certain populations including those with immunocompromising conditions such as *patients with HIV/AIDS and especially those with CD4 counts less than 200 cells/mm³*, are especially vulnerable to infection with *Cryptosporidium*. Treatment may be indicated in certain persons. Although nitazoxanide may be used, for HIV/AIDS patients with CD4 counts less than 200 cells/mm³, its efficacy has not been proven in this population; boosting of immune status through treatment with HAART will provide the most benefit.

The DOHMH requests that providers increase testing for *Cryptosporidium* in patients presenting with severe diarrhea over the next 3 weeks (until **date) and report any increase or clustering in diarrheal disease to the DOHMH.** Most clinical laboratories do not perform *Cryptosporidium* testing as part of a routine ova and parasite examination so you must specifically request testing for *Cryptosporidium* (e.g., modified acid fast staining, immunofluorescent antibody staining, ELISA or PCR tests such as BioFire) as well as ova and parasite testing and bacterial culture and sensitivity. All positive tests should be reported routinely to the DOHMH. If you observe an increased number of patients presenting with watery diarrhea or diagnosed with cryptosporidiosis, please contact DOHMH immediately:

Provider Access Line: 1-866-NYC-DOH1 (1-866-692-3641)
Poison Control Center: 1-800-222-1222

APPENDIX - VI

ADDITIONAL RESOURCES

- NYC Drinking Water *E. coli* Action Plan*
- NYCDEP Water Supply System Emergency Response Plan*
- NYCDEP Crisis and Consequence Management Plan*
- NYCDEP BWS Incident Management Team*
- NYCDEP BWS Communications Plan*
- NYCDEP “Contamination Warning System Demonstration Pilot Project” / Operational Strategy (2012) (EPA grant funded project)
- “Drinking Water Advisory Communication Toolbox” (by CDC, USEPA, AWWA, and DHHS) (includes: “Comprehensive List of Q&A’s for Boil Water Advisories”, sample communication/notification templates, and other). Updated 2016 (<https://www.cdc.gov/healthywater/emergency/dwa-comm-toolbox/index.html>)
- “Revised Public Notification Handbook”, USEPA, March 2010, and related documents at:
<https://www.epa.gov/dwreginfo/public-notification-rule-compliance-help-water-system-owners-and-operators>
- [www/cdc.gov](http://www.cdc.gov)
- [www/usepa.gov](http://www.usepa.gov) (e.g., <https://www.epa.gov/waterqualitysurveillance>)

* These plans have restricted distribution and are available to authorized individuals on NYCDEP BWS Emergency Planning SharePoint Site. (DEP staff can contact P. Bennett of BWS/Emergency Planning about access to these plans).

Appendix B – Water Quality Benefit Project

In accordance with paragraph 11.a. of the Consent Judgment, the City proposes to implement the WQBP described below. The State and the City agree that the WQBP described below is in accordance with New York State Finance Law Section 4, insofar as the money is being used to prevent, abate, restore, mitigate, or control an identifiable instance of prior or ongoing water pollution. NYS DOH approves the WQBP described below (“Approved WQBP”).

i. The City will establish a redundant Supervisory Control and Data Acquisition (SCADA) control center at the Catskill-Delaware Ultraviolet Disinfection Plant. This control center will allow for continuous resilient operations of the entire DEP Bureau of Water Supply (BWS) SCADA system in the event of a failure of the primary control center in Grahamsville, New York. The redundant SCADA system will allow for the continuous monitoring and control of the City’s water supply system to ensure continuous delivery of an adequate supply of high quality water to Hillview Reservoir at all times.

ii. The redundant SCADA system will include the following components: fault tolerant SCADA server for redundant control location; fault tolerant historian server for redundant control location; work stations for redundant control location; installation of licensed software; control center and hardware with secure communications to the existing BWS SCADA network including paths between all servers to synchronize data, and access to poll data directly from all field devices throughout the City’s water supply system.

iii. The City shall issue a Notice to Proceed for the Approved WQBP by December 31, 2021. The City shall substantially complete the Approved WQBP by December 31, 2022.

iv. The City certifies that the Approved WQBP is a project that the City is not legally required to implement, that the City does not currently plan to implement, and that the City has not funded in its current budget.

New York City
Department of Environmental Protection



**Enhanced Wildlife Management Plan
For Hillview Reservoir**

December 21, 2018

Prepared by Steven C. Schindler
Director, Water Quality

Vincent Sapienza, P.E., Commissioner
Paul V. Rush, P.E., Deputy Commissioner, Bureau of Water Supply
Steven C. Schindler, Director of Water Quality

Revision History

Revision Number	Revision Date	Revisions made (Such as the section that was changed, the reason for the change, etc., as appropriate.)
01		

Enhanced Wildlife Management Plan for Hillview Reservoir

1. Background

In January of 2006, the United States Environmental Protection Agency (EPA) promulgated the Long Term 2 Enhanced Surface Water Treatment Rule of the Federal Safe Drinking Water Act (LT2ESWTR). The purpose of the LT2ESWTR is to reduce illness linked to *Cryptosporidium* and other pathogens in drinking water. The Rule supplements existing regulations by requiring additional *Cryptosporidium* treatment for high-risk systems, and also contains provisions to reduce risks from uncovered finished water reservoirs like New York City's Hillview Reservoir. Specifically, the LT2ESWTR requires that uncovered finished water reservoirs must either be covered, or the water from them be treated to provide 4-log virus inactivation, 3-log *Giardia* inactivation, and 2-log *Cryptosporidium* inactivation before entering the distribution system. The New York City Department of Environmental Protection (DEP) meets the treatment requirements through chlorination at Delaware Shaft 18 and ultra violet disinfection at Eastview, however since these facilities are upstream of the uncovered Hillview Reservoir in Yonkers, New York, DEP has developed a comprehensive risk mitigation plan to ensure the delivery of high quality drinking water to protect public health.

2. Objective

The objective of this Plan is to summarize the enhanced wildlife management strategies that DEP has implemented to protect public health at Hillview Reservoir.

3. Strategies

3.1 Waterfowl Management Program (WMP) – The Waterfowl Management Program (WMP) is an ongoing FAD mandate. See Revised 2007 FAD, Section 4.1 (NYSDOH 2014). The WMP was initiated in 1992 for Kensico Reservoir to identify potential effects of fecal pollution from waterbirds. In addition, an environmentally sensitive bird mitigation program was implemented to eliminate birds and prevent fecal coliform bacteria inputs which could impact water quality (DEP 2016). After the 2007 FAD, the WMP was expanded to include Hillview Reservoir.

3.2 Enhanced Wildlife Management – On May 24, 2010, EPA issued an Administrative Order on Consent (AOC) requiring DEP to design and construct a cover for Hillview Reservoir, and implement an enhanced wildlife management program at Hillview Reservoir to provide even greater protection. Pursuant to the terms of the AOC, DEP developed, and continues to implement the following enhancements

3.2.1 The frequency of bird census and harassment efforts increased to daily pre-dawn to post-dusk surveys.

3.2.2 DEP and contractor personnel perform periodic sanitation inspections of the dividing wall, catwalks, rooftops, and the grassy buffer immediately around the reservoir perimeter for wildlife droppings. In addition, binoculars and spotting scopes are used to inspect shaft buildings for bird droppings. Fecal matter observed is visually identified to species where possible, before being collected and disposed of off reservoir property.

3.2.3 DEP identifies areas on reservoir property which may be susceptible to wildlife intrusion and develops enhanced wildlife management plans as needed (e.g., mammal trapping on the dividing wall and reservoir perimeter, continued management of woodchucks along reservoir perimeter and on dikes, addition of bird deterrent wires on hand railings and use of night cameras to monitor for wildlife).

3.2.4 DEP develops and implements targeted wildlife management programs as needed (e.g., fish entrainment monitoring and removal, deterring and eliminating Cliff Swallow nests and live capturing or lethal removal of duck and other waterfowl populations).

3.2.5 DEP conducts daily inspections of the bird wire systems, and conducts maintenance and repairs as needed.

3.2.6 DEP submits monthly reports to New York State Department of Health (NYSDOH) and EPA that summarize wildlife monitoring and management efforts including bird census data, a summary of pyrotechnic usage, bird wire status and the results of additional wildlife management activities such as lethal trapping, live trapping and relocation and lethal shooting by USDA.

References

NYSDOH. 2014. New York City Filtration Avoidance Determination. Final Revised 2007 FAD. May 2014.

DEP. 2016a. Watershed Water Quality Monitoring Plan. May 2016.

DEP. 2016b. Distribution Sampling Site Plan. July 2016.

EPA. 2010. Administrative Order on Consent, Docket No. SDWA-02-2010-8027
Catskill/Delaware System, PWS ID: NY7003493