

**STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION**

**In the Matter of the Alleged Violations of Articles 17 of the
Environmental Conservation Law of the State of New York,
Section 750 et seq. of the Official Compilation of Codes,
Rules and Regulations of the State of New York, and
SPDES Permit # NY 0264652 (Catalum SPDES Permit)**

ORDER ON CONSENT

- by-

**DEC CASE NO:
D007-0001-11**

**New York City Department of Environmental Protection
and the City of New York,**

Respondents

1. **WHEREAS**, the New York State Department of Environmental Conservation (Department or DEC) is an agency of the State of New York, authorized to administer and enforce the provisions of Article 17 of the New York State Environmental Conservation Law (ECL), and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (NYCRR) including, but not limited to, water quality standards;

2. **WHEREAS**, the City of New York is a municipal corporation and the New York City Department of Environmental Protection (DEP) is a municipal agency with offices located at 59-17 Junction Boulevard, Queens, New York 11368. Respondents New York City Department of Environmental Protection and New York City (City) control and operate a public water supply system whose surface source waters are located outside the geographic boundaries of the City in upstate New York;

3. **WHEREAS**, DEC has promulgated standards for the “quality and purity of the waters” of the State, commonly referred to as “water quality standards.” ECL § 17-0301. Under ECL § 17-0501, “(i)t shall be unlawful for any person, directly or indirectly, to throw, drain, run or otherwise discharge into such waters organic or inorganic matter that shall cause or contribute to a condition in contravention” of water quality standards for the receiving water. See Section 703.2 of Title 6 of NYCRR (narrative water quality standard for discharges of suspended, colloidal and settleable solids to Class AA waters is “None from sewage, industrial wastes or other wastes that will cause deposition or impair the waters for their best usages”);

4. **WHEREAS**, ECL § 17-0511 prohibits the use of point sources unless in compliance with all standards, criteria, rules and regulations, and limitations. ECL § 17-0803 prohibits the discharge of pollutants to waters of the state from any outlet or point source without a SPDES permit, or in a manner other than as prescribed by such permit. 6 NYCRR Part 750-1.4(a) prohibits the discharge of any pollutant to the waters of the state, unless authorized by a

SPDES permit and in accordance with the terms of the permit;

5. **WHEREAS**, ECL § 71-1929 provides that a person who fails to perform any duty imposed by Titles 1 through 11 inclusive and title 19 of Article 17, the rules and regulations promulgated thereunder, or orders or determinations of the commissioner promulgated thereto, shall be liable for a penalty of not to exceed thirty-seven thousand, five hundred dollars (\$37,500) per day for each violation, and may be enjoined from any continuing violation;

6. **WHEREAS**, the Safe Drinking Water Act Amendments of 1986 required the United States Environmental Protection Agency (USEPA) to develop criteria under which filtration would be required for public surface water supplies. In 1989, USEPA promulgated the Surface Water Treatment Rule (SWTR) which requires municipalities to either provide filtration or meet certain criteria to avoid filtration, to ensure that a public water supply is not a source of a waterborne disease outbreak. Under the SWTR, to avoid filtration, a water supplier must, among other things, meet the objective water quality criteria level for turbidity in source water, except in specified circumstances; the criteria requires that the source water prior to the final point of disinfection not exceed 5 Nephelometric Turbidity Units (NTU). 40 C.F.R. § 141.71. In addition, under the SWTR, to avoid filtration, a public water supplier must “maintain a watershed control program which minimizes the potential for contamination by *Giardia lamblia* cysts and viruses in the source water.” 40 C.F.R. § 141.71(b)(2). USEPA has determined that the City’s water supply meet these criteria and, as a result, issued FADs to the City in 1993, 1997, and 2002, and a ten year FAD in 2007. EPA granted primacy to administer the SWTR to the New York State Department of Health (DOH) in September 2007;

7. **WHEREAS**, preventing pathogens from contaminating drinking water is of particular concern because of the risks that pathogens pose to public health. Pathogens include viruses, bacteria, and protozoa, such as *Giardia lamblia* and *Cryptosporidium*, which can cause serious illness or death, especially among the very young, elderly, and immuno-compromised. Turbidity in a drinking water supply can shelter pathogens from exposure to attack by chlorine, a commonly used disinfectant in the New York City Water Supply System which is why the Surface Water Treatment Rule and the FAD impose turbidity limits;

8. **WHEREAS**, at more than 150 years old, the New York City public water supply is one of the oldest, largest and most complex surface water supply systems in the world. Water is impounded in three upstate reservoir systems which include 19 reservoirs and three controlled lakes with a total storage capacity of approximately 580 billion gallons. The three water supply systems (Catskill, Delaware and Croton) were designed and built with various interconnections to increase flexibility by permitting exchange of water from one system to another. This feature enhances the flexibility of the system including, but not limited to, enabling the City to utilize the best quality water, enhancing the storage capacity of the system and mitigating localized droughts;

9. **WHEREAS**, the water supply system provides water to almost half the population of New York State, including one million consumers outside of New York City in Orange, Putnam, Ulster, and Westchester Counties. Approximately 40% of the average 1.1 billion gallons of daily water demand is provided by the Catskill System which is comprised of the Schoharie Reservoir (which is fed by a 314 square mile watershed), Shandaken Tunnel, and

Ashokan Reservoir (which is fed by the Upper Esopus Creek and a 256 square mile watershed). Once water enters the Ashokan Reservoir, it exits through one of three paths: (1) spilled through a dam spillway on the southeast side; (2) released through a man-made structure known as the Release Channel or Ashokan Reservoir Release Channel; or (3) diverted into the Catskill Aqueduct where it is delivered to the Kensico Reservoir. A number of communities draw water from this portion of the Catskill Aqueduct for their supply needs. Ordinarily, Kensico is the last receiving reservoir for all Catskill and Delaware system waters before those waters enter two aqueducts and flow to the Hillview Reservoir in Yonkers (just north of the City line) for distribution throughout New York City;

10. **WHEREAS**, although the primary purpose of the water in the Catskill System is to provide drinking water to nine million people, the parties recognized that there are key partners who share a common interest in protecting the quality and quantity of water in the Catskill watershed, as well as the diverse watershed ecosystem, and those who use the residential, commercial, agricultural, recreational, and educational facilities in the watershed itself, as well as those residing, working, and recreating in the area downstream of the Ashokan Reservoir;

11. **WHEREAS**, in June of 2005, the City applied for a SPDES permit from the Department for the addition of aluminum sulfate (alum) and sodium hydroxide into the Catskill Aqueduct to improve settling and reduce turbidity in the Kensico Reservoir water column, to assist it in complying with the Surface Water Treatment Rule requirement that the turbidity in representative samples of the source water, immediately prior to the first point of disinfection, not exceed 5 NTU, subject to the exceptions specified in 40 CFR Section 141.71(a)(2);

12. **WHEREAS**, the Department issued to the City a SPDES Permit No. NY 026 4652, effective January 1, 2007 (Catalum SPDES Permit) which authorizes the addition of alum into the Catskill Aqueduct upon the condition that the City continues to work to achieve the goals of turbidity reduction and reduced alum usage in the Kensico Reservoir. The term of the Catalum SPDES permit has been administratively renewed pursuant to 6 NYCRR 750-1.16. In accordance with the version of this Order executed by the City in May 2012 (2012 Proposed Order), on June 15, 2012, DEP timely submitted to DEC an application to modify the Catalum SPDES Permit and Part 1 of a full Environmental Assessment Form. As anticipated under the 2012 Proposed Order, DEP will complete the application based on information to be developed in the draft Environmental Impact Statement, to be prepared in accordance with Appendix A/Schedule of Compliance Paragraph VI;

13. **WHEREAS**, the Catalum SPDES Permit Schedule of Compliance (SOC) Item “c” requires the City to remove alum floc deposits (alum floc means aluminum hydroxide solids plus entrained solids) in the Kensico Reservoir and to submit to the Department an approvable report by July 1, 2007 establishing a scientific basis for the quantity of alum floc to be removed in order to meet narrative water quality standards for settleable solids; Item “d” requires the City to submit an approvable report by April 30, 2008 detailing short term and long term structural modifications that the City can make to its Water Supply System to achieve the goals of turbidity reduction and reduced alum usage in the Kensico Reservoir; and Item “e” requires the City to submit an approvable report by July 1, 2008 evaluating nonstructural measures such as potential stream management and erosion control projects that the City could undertake in its Water

Supply System to achieve the goals of turbidity reduction and reduced alum usage in the Kensico Reservoir;

14. **WHEREAS**, the City submitted a report to comply with SOC Item “c” on October 1, 2007 (in accordance with an extension granted by the Department) which Report the Department did not approve. The City alleges and the Department disputes that the City proposed to remove an amount of alum floc sediment equal to the amount of alum floc sediment that the City was responsible for depositing into the Kensico Reservoir since 2005, from an area in the vicinity of the outfall. The City alleges and the Department disputes that the Department requested that the City dredge not only the amount and in the area proposed, but also to perform studies on the entire area of deposition to identify any potential additional areas to dredge. In a letter dated September 14, 2010, the City explained its position that it has no dredging obligation once the equivalent amount of sediment to the floc deposited since 2005 has been removed; no written response to that letter was received;

15. **WHEREAS**, the City has not to date removed any alum floc. The City alleges that it was not authorized to remove alum floc because there is no DEC-approved plan authorizing DEP to undertake alum floc removal. DEC alleges that DEP failed to provide a complete application for an Article 15 dredging permit;

16. **WHEREAS**, the City submitted a report on July 31, 2008 (in accordance with an extension granted by the Department) to comply with SOC Item “d,” which the Department did not approve. By letter dated July 17, 2009, DEC requested additional detailed information about the duration, frequency, volume, timing and temperature considerations, and potential impacts to biota, residents and property related to water that was flowing through release works that the City owns and controls at the Ashokan Reservoir;

17. **WHEREAS**, the City submitted a report on June 30, 2008 to comply with SOC Item “e,” (Report) which the Department did not approve. The Department found that the Report failed to identify specific projects and lacked an implementation schedule and requested additional information by letter dated July 17, 2009. The City contends that the Report satisfies the requirements of Item “e,” and accurately presented the City’s findings that watershed management programs will not have a measurable effect on meeting the turbidity and alum use reduction goals of the permit and therefore properly recommended continuation of the City’s current watershed programs rather than pursuit of additional programs. On December 21, 2012, the City timely submitted an approvable supplement to the report entitled “Evaluation of Turbidity Reduction Potential through Watershed Management in the Ashokan Basin” dated November 15, 2008. As required by the 2012 Proposed Order, the supplement provided that the City will provide Seven Hundred and Fifty Thousand Dollars (\$750,000) in funding to implement two stream restoration projects, which included an implementation schedule;

18. **WHEREAS**, the Department commenced an enforcement action against the City on February 14, 2011 for these alleged violations of the Catalum SPDES permit, and extended the City’s time to answer the Complaint during the negotiations which ultimately culminated in the City’s execution of the May 2012 Proposed Order;

19. **WHEREAS**, based on authorizations from the Department and the New York State Department of Health (NYSDOH), and consistent with the terms of the Catalum SPDES permit, the City added alum to the Catskill Aqueduct from January 31 to February 11, 2011 and from March 2 to May 20, 2011. Following tropical storms Irene and Lee, to ensure the quality of the drinking water delivered to consumers both in the City and in certain upstate communities, and as approved by the Department and NYSDOH, the City initiated alum treatment in the Catskill Aqueduct on August 29, 2011. Alum treatment of the Catskill Supply continued for 260 days ending on May 15, 2012;

20. **WHEREAS**, in conjunction with previous submissions and compliance with Appendix A Schedule of Compliance Paragraph VI of this Order on Consent, the City's April 1, 2011 submission to DEC of the "Final Report: Turbidity Control Alternatives Analysis Report" dated February 28, 2011 satisfies the City's obligations under Catalum SPDES permit SOC Item "b" to submit an approvable report analyzing alternatives to minimize the area of alum floc deposition;

21. **WHEREAS**, the City has commenced undertaking, and is committed to completing, significant capital infrastructure projects during the next decade to ensure the reliability and sustainability of the water supply system. The City's current plans include replacing all of the stop shutters in the Catskill Aqueduct upstream of Kensico Reservoir, the Shaft 4 Catskill-Delaware Connection Project, Rondout West Branch Tunnel (RWBT) Bypass, and Delaware Aqueduct Leak Repair Project (collectively "Infrastructure Projects"). The City has already completed repair of the East and West basin cranes in the Ashokan Upper Gate Chamber, as required under the 2012 Proposed Order;

22. **WHEREAS**, after the RWBT Bypass is completed, the RWBT must be connected to the existing Delaware Aqueduct. During this connection period, the Delaware Aqueduct will be shut down and, as such, the City expects to rely upon the water in the Catskill System more heavily to meet its daily demand. More reliance on the water in the Catskill System increases the likelihood that the City will need to add alum to reduce turbidity in the Kensico Reservoir while the final connection project is completed. The City anticipates that when all of these projects have been completed in August 2022, the City will no longer need to use alum to reduce turbidity in water entering the Kensico Reservoir because more water will be available elsewhere in the system at times when the water entering the Kensico Reservoir from the Ashokan Reservoir is turbid. DEC and the City therefore agree that the dredging design should not commence until the Infrastructure Projects are complete. Accordingly, the City has proposed, and is committing under the terms of this Order, to remove deposited material associated with alum additions since April 2005 after the City completes the Infrastructure Projects and no later than August 31, 2030 (Dredging Completion Date).

23. **WHEREAS**, DEC and the City agree that the City is required by the terms of this Order and by the Catalum SPDES permit to remove the "Total Dredging Mass," the mass of alum floc that the City has deposited under two Emergency Orders issued in 2005, preceding the issuance of the Catalum SPDES permit, and under authority of the Catalum SPDES permit. The parties further agree that the City's obligation to dredge is based on the Total Dredging Mass rather than on the particular alum floc deposited since 2005, and therefore that the City's

dredging plans will call for removing the Total Dredging Mass. The City's dredging plans will propose a specific area for dredging, with that proposed area subject to DEC review and approval. The incorporation of requirements related to removal of deposited material from the Kensico in a modified Catalum SPDES permit shall resolve the City's violations of the Catalum SPDES permit SOC Item "c";

24. **WHEREAS**, for nearly two decades, the City has funded and implemented a comprehensive *Long-Term Watershed Protection Program* which focuses on both protective and corrective initiatives to ensure that water remains of high quality for current members of the community and future generations. For more than two years, DEC, the City, municipal representatives, and Lower Esopus community-based residents and groups have met with the cooperative goal of exploring strategies for providing and protecting the water quality of the City's water supply, reducing the impact of flooding events, mitigating potential negative effects of releases, and promoting eco-system-based watershed management;

25. **WHEREAS**, the City and DEC support a long-term science-based strategy for releasing water through the Ashokan Reservoir Release Channel. To resolve the City's violations of the Catalum SPDES permit SOC Item "d" and to provide data for an environmental assessment of the potential impact from releases occurring in accordance with the Interim Protocol, the City agrees to adhere to the Interim Release Protocol (IRP) and Interim Monitoring Plan attached to this Order on Consent as Appendix "B," undertake an environmental review in accordance with the State Environmental Quality Review Act (SEQRA) that will, among other things, comprehensively assess the potential impacts from releases, analyze and respond to public comment on the IRP, and propose in an application for modification of the Catalum SPDES permit a Revised Operating Protocol to be based on the public comment and the environmental review that will be done under this Order on Consent in accordance with Appendix A/Schedule of Compliance Paragraph VI. The incorporation of requirements related to operation of the Release Channel in a modified Catalum SPDES permit shall resolve the City's violations of the Catalum SPDES SOC Item "d";

26. **WHEREAS**, DEC and the City are committed to looking at a full range of turbidity management options for operation of the Ashokan and Kensico Reservoirs, the Release Channel, and the Catskill Aqueduct. In accordance with SEQRA, DEC and the City will identify and evaluate the full range of potential significant adverse environmental impacts associated with a modification of the Catalum SPDES permit, and will address the elements listed in Section VI, paragraph 2 of the Schedule of Compliance as well as any other elements that may be identified during the public scoping process and development of the environmental impact statement;

27. **WHEREAS**, the City is committed to undertaking watershed management measures in the Ashokan Basin with a potential for reducing turbidity. The incorporation of requirements related to non-structural measures in a modified Catalum SPDES permit shall resolve the City's alleged violations of the Catalum SPDES permit Item "e";

28. **WHEREAS**, the City will continue to participate in the Ashokan Release Working Group on matters related to the operation of the Ashokan Release Channel related to this Order,

for so long as that Working Group continues to exist, until and unless the Catalum SPDES permit is modified pursuant to this Compliance Schedule;

29. **WHEREAS**, the Hudson River Foundation for Science and Environmental Research, Inc. is a domestic not-for profit corporation which has administered funds for capital construction, development, and improvement projects to enhance public use and enjoyment of natural, scenic and cultural resources in the Hudson River watershed. It is an organization which is well-equipped to serve as a fiduciary to hold Environmental Benefit Project Funds and distribute them for the purposes specified in this Order on Consent;

30. **WHEREAS**, on May 23, 2012, the Department published the 2012 Proposed Order for public comment. Department staff considered and made a record of the public comments, which were received on or before July 16, 2012. Since executing the 2012 Proposed Order, the City has complied with its requirements;

31. **WHEREAS**, DEC and the City have agreed to the execution of this Order on Consent, as modified in response to public comments, among other things, without further litigation; and

32. **WHEREAS**, in settlement of the City's civil liability for the aforesaid violations, the City admits the violations set forth herein in connection with Catalum SPDES SOC Items "c" and "d," affirmatively waives the right to a public hearing in this matter in the manner provided by law, consents to the entering and issuing of this Order, and agrees to be bound by the terms and conditions of this Order.

NOW, having considered this matter and being duly advised, **IT IS ORDERED THAT:**

A. The City is bound by, and agrees to follow and comply with the terms, provisions and requirements set forth in this Order on Consent, including Appendix A- Schedule of Compliance, and Appendix B - Interim Protocol and Interim Monitoring Plan, which are attached hereto and incorporated herein including:

i. implementation of the alum floc dredging project at the Kensico Reservoir, associated with the City's alum use, in accordance with the Appendix A/Schedule of Compliance Paragraph III, and SOC Item "c" of the Catalum SPDES permit as modified hereunder (the "Dredging Provisions"). DEC and the City intend that the Catalum SPDES permit, as modified, and/or successors to that modified permit, will incorporate Schedule of Compliance Paragraph III, subparagraphs 1, 2, 5, 6, 7, 9, and 10. The Dredging Provisions of this Order on Consent will nonetheless remain in effect. In the event that the City fails to comply with any of the Dredging Provisions, DEC agrees that it will pursue enforcement solely under this Order and not also under the Permit, even if the Permit, at that time, contains corresponding provisions. The City may request modifications to the Dredging Commencement Date and Dredging Completion Date established in Appendix A/Schedule of Compliance Paragraph III from time to time in accordance with the terms of Paragraph I "Modification" of this Order;

ii. implementation of structural measures including the IRP in accordance with the Appendix A/Schedule of Compliance Paragraph IV, Appendix B, and SOC Item “d” of the Catalum SPDES permit as modified hereunder. The City may request modifications to Appendix B, in writing, from time to time as additional modeling and impact assessments are performed and as a result of monitoring and other lessons learned. Following DEC’s consultation with stakeholders, DEC shall respond in writing to the City’s request, and shall not unreasonably refuse to grant such requested modifications. Likewise, DEC may also propose modifications to the IRP as a result of monitoring and other lessons learned. If the City agrees with the proposed modifications, and following DEC’s consultation with stakeholders, such modifications may be made to the IRP. The City may not unreasonably refuse DEC’s proposals for modification. The City shall comply with the Interim Protocol, as it may be modified pursuant to the processes described above or pursuant to its terms, until the City proposes and DEC approves a Revised Ashokan Reservoir Release Protocol (Operating Protocol), which may be incorporated into a modified Catalum SPDES permit. Upon modification of the Catalum SPDES permit, the City shall comply with the terms of the modified Catalum SPDES permit, and the provisions of this Order on Consent with respect to the Interim Protocol shall terminate;

iii. In accordance with SEQRA, DEC and the City will identify and evaluate the potential significant adverse environmental impacts associated with a modification of the Catalum SPDES permit, and will address the issues identified in the scope including, but not limited to, those elements listed in Section VI, paragraph 2 of the Schedule of Compliance as well as any other elements that may be incorporated during the public scoping process and development of the environmental impact statement;

iv. implementation of nonstructural measures in accordance with the Appendix A/Schedule of Compliance Paragraph V, and SOC Item “e” of the Catalum SPDES permit as modified hereunder. Upon modification of the Catalum SPDES permit, the City shall comply with the terms of the modified Catalum SPDES permit, and the provisions of this Order on Consent with respect to implementation of nonstructural measures shall terminate; and

v. modification of the Catalum SPDES permit at the request of the City in accordance with the Appendix A/Schedule of Compliance Paragraph VI. DEC will seek and the City shall not object to DEC acting as lead agency for the action.

B. Penalties and Environmental Benefit Projects

1. Civil and Payable Penalties: The City shall be liable to pay a civil penalty in the amount of Two Million, Seven Hundred and Forty Thousand Dollars (\$2,740,000), of which One Hundred Thousand Dollars (\$100,000) is payable within sixty (60) days after the effective date of this Order. The DEC case number appearing on the first page of this Order shall be endorsed on the face of the check. The civil penalty shall be paid by check, bearing the signature of the City, made payable to the “Department of Environmental Conservation” and forwarded to the attention of Elissa Armater at:

Office of General Counsel
New York State Department of Environmental Conservation
625 Broadway, 14th Floor
Albany, New York 12233-1500

2. Environmental Benefit Projects. Of the Civil Penalty, the City shall pay the total sum of Two Million, Six Hundred and Forty Thousand Dollars (\$2,640,000) to perform Environmental Benefit Projects (EBPs). The EBPs are environmental improvement projects designed to address impacts that may be associated with turbidity and alum usage. The City shall fund the EBPs in accordance with the following payment schedule and terms:

(A) Stream Gauges. The City shall pay the United States Geological Survey (USGS) a Total of \$350,000. These funds will be used by USGS in accordance with a separate agreement to be entered between the City and USGS within one year after the effective date of this Order on Consent. The agreement shall provide that the funds will be used to add water quality monitoring to the Mt. Marion gauge and to install a new gauge at Lomontville. The City will provide funding to USGS to maintain those gauges for ten years from the date they are improved/installed.

(B) Other EBPs. The City shall, in accordance with the process outlined below, provide a total of Two Million Two Hundred Ten Thousand (\$2,210,000) Dollars (EBP Funds) to be allocated to one or more Fiduciaries selected by DEC to manage the Other EBPs (as defined in section (iv) below). Such Fiduciary(ies) shall assume the role of holding any such EBP Funds and distributing them for the purposes specified herein. The Parties anticipate that the Hudson River Foundation (HRF) and/or Ulster County will serve as the Fiduciary(ies). The City and DEC will cooperate to identify alternative fiduciary(ies) to manage any or all of the Other EBPs in the event that HRF and/or Ulster County do not serve as Fiduciaries for any or all of the Other EPBs listed below. DEC shall notify DEP in writing within 180 days of the effective date of this Order as to which of the Other EBPs each designated Fiduciary will manage. For purposes of this Section, the term "Fiduciary(ies)" shall mean HRF and/or Ulster County and/or any other entity that the City and DEC agree will manage EBP Funds as described in this Section.

(i) The City shall pay the Fiduciary(ies) EBP Funds for each EBP that the respective Fiduciary is responsible for managing, in the amount allocated to such EBP in subparagraph (iv) below, within 60 days after receipt of DEC's written notice as to the selection of the Fiduciary(ies). These funds will be used by such Fiduciary(ies) for the Other EBPs, described below, in accordance with a separate memorandum of understanding to be entered between DEC and each Fiduciary (the "MOU(s)"). The MOU(s) shall provide that the funds shall be kept in

separate interest-bearing account(s) by Fiduciary(ies) (the “Catalum EBP Account(s)”). The MOU(s) shall further provide that:

(a) Fiduciary(ies) must expend, or enter into binding commitments to expend, the EBP Funds in accordance with the timeframes set forth for each of the Other EBPs below, unless DEC, in its sole discretion, decides to extend this time limit; and

(b) DEC shall have the right to direct Fiduciary(ies) to pay any uncommitted funds remaining in the Catalum EBP Account(s) 5 years after the effective date of this Order on Consent either:

(1) to an alternate not-for-profit organization selected by DEC to receive and administer that money pursuant to an MOU with DEC, consistent with this Section, or

(2) to DEC.

(ii) Nothing in this Section shall invest Fiduciary(ies) with any legal right to the receipt of the EBP Funds from the City. DEC shall promptly notify the City if it designates an alternate entity to replace a Fiduciary, and notify the City concerning the City’s revised payment obligation(s). In no event shall the City be required to make a payment within fewer than sixty (60) days of receiving such notice.

(iii) DEC shall make best efforts to work with and encourage Fiduciary(ies) to expend all of the funds paid by the City pursuant to this Section. DEC shall direct the payment of unspent or uncommitted funds to itself only:

(a) pursuant to subparagraph (i)(b)(2) above, or

(b) if DEC, after consultation with the City, is unable to designate a Fiduciary to receive and administer such funds pursuant to an MOU with DEC, consistent with this Section.

In the event any unspent EBP funds are paid to DEC, such funds shall be processed as penalties.

(iv) The Other EBPs are the following:

(a) Technical Review Consultant for the Ashokan Release Working Group (ARWG) (TRC EBP). A total of up to eighty thousand dollars (\$80,000) of the EBP Funds may be used for the actual and reasonable costs of a Technical Review Consultant (TRC) to assist ARWG in participating in the public process under the State Environmental Quality Review Act

(SEQRA) for the environmental review referenced in Appendix A/Schedule of Compliance Section VI. The MOU providing for management of the TRC EBP shall provide that no work produced by the TRC with funding provided by the City may be used in support of any litigation or administrative proceeding where DEP or the City of New York is a party without DEP's written consent, nor may funding by the City be used to pay the consultant for testifying or preparing any of the Stakeholder parties for testifying in connection with any such litigation or administrative proceeding.

(b) Fish Stocking (Fish Stocking EBP). A total of ten thousand dollars (\$10,000) of the EBP Funds shall be used for fish stocking in the Lower Esopus, to be completed within 2 years of execution of the MOU providing for management of the Fish Stocking EBP. Any remaining funds from the ten thousand dollars (\$10,000) allocated for the Fish Stocking EBP as of two years after the execution of such MOU may be added to the funding allocated for the Lower Esopus SMP Development EBP and/or the Lower Esopus SMP Implementation EBP pursuant to subparagraphs (c) and/or (d) below.

(c) Lower Esopus Stream Management Plan Development (Lower Esopus SMP Development EBP). A total of two hundred thousand dollars (\$200,000) of the EBP Funds shall be used to develop a stream management plan for the Lower Esopus. Upon request by the entity which the Fiduciary managing the Lower Esopus SMP Development EBP selects to develop the Lower Esopus Stream Management Plan, the City shall meet with such entity as often as the City, Ulster County, and such entity agree to meet (but in no event shall the City be required to meet more frequently than quarterly) to provide comments on the draft stream management plan and recommendations. The MOU providing for management of the Lower Esopus SMP Development EBP shall provide that the Stream Management Plan will be completed within 24 months of the effective date of such MOU. Any remaining funds from the two hundred thousand dollars (\$200,000) allocated for the Lower Esopus SMP Development EBP as of the completion of the Lower Esopus Stream Management Plan may be added to the funding allocated for Lower Esopus SMP Implementation EBP pursuant to subparagraph (d) below.

(d) Lower Esopus Stream Management Plan Implementation (Lower Esopus SMP Implementation EBP). A total sum of Two Million dollars (\$2,000,000) of the EBP Funds shall be used toward implementation of recommendations in the Lower Esopus Stream Management Plan. The

MOU providing for management of the Lower Esopus SMP
Implementation EBP shall include a schedule for expenditure of these
implementation funds, which shall provide for the funds to be used as
soon as practicable after completion of the plan.

3. Stipulated Penalties: Any judgment against the City pursuant to this Section shall be due and payable, and may be entered upon sixty (60) days notice to the City. Interest shall accrue on any stipulated penalty not paid when due, at a judgment rate not to exceed 9% per annum, non-compound, or such other judgment interest rate as General Municipal Finance Law § 3-a or any successor law shall establish. The City shall have sixty (60) days from receipt of written notice of a violation to challenge that determination by the State, or the right to challenge shall be waived. Any such challenge shall be made to the DEC Director of the Division of Water, in accordance with the standards set forth in CPLR section 7803[3] or [4], whichever is applicable, or any successor rule or regulation. Commencement of a timely challenge by the City shall preclude the State from entering judgment on the subject violation pending a resolution of that challenge, including appeals of any determination by the DEC Director of the Division of Water.

(A) If the City fails to meet any of the major milestone dates set forth in Appendix A, the State shall have judgment against the City and the City consents to entry of judgment in this Court for a stipulated penalty in the amounts set forth below, for each day of violation:

Period of Non-Compliance Penalty Per-Day

1st day through 30th day \$ 1,750
31st day through 60th day \$ 3,750
Each day beyond the 60th day \$ 7,500

(B) If the City fails to meet any of the minor milestone dates set forth in Appendix A, the State shall have judgment against the City and the City consents to entry of judgment in this Court for a stipulated penalty in the amounts set forth below, for each day of violation:

Period of Non-Compliance Penalty Per-Day

1st day through 30th day \$ 875
31st day through 60th day \$ 2,000
Each day beyond the 60th day \$ 5,000

(C) For all other events of non-compliance with any terms of this Order on Consent or its Appendices (subject to the understanding that no penalties are payable in connection with the dates set forth herein for the Infrastructure Projects),¹ the State shall have a judgment

¹ The Department shall not have authority under this Order to compel the City to complete the Infrastructure Projects (Shaft 4 Catskill-Delaware Connection Project, Rondout West Branch

against the City and the City consents to entry of a judgment in this Court for a stipulated penalty in the amounts set forth below, for each day of violation:

Period of Non-compliance Penalty Per-day

1st day through 30th day \$ 500

31st day through 60th day \$1,000

Each day beyond the 60th day \$2,000

C. Schedule of Compliance

In addition to the requirements set forth in paragraph A and B above, the City shall perform and strictly adhere to the milestones identified as major or minor milestones set forth in the Schedule of Compliance. The Schedule of Compliance is hereby incorporated into, and made an enforceable part of, this Order. The City shall certify, in writing, when it has complied with each milestone date, as set forth in the Schedule of Compliance.

D. Force Majeure

1. The City shall not be in default of the provisions of this Order on Consent only to the extent that its non-compliance is directly attributable to an Act of God, war, terrorism, insurrection, strike, judicial injunction, material default by contractor or supplier, failure of a federal or state agency or authority to issue any necessary permit or approval in a timely fashion where, in accordance with applicable law or regulations, the City has timely submitted a complete application and all necessary supporting information and is otherwise entitled to such permit or approval, catastrophic condition, or other circumstance that is entirely beyond its control and where the City has made all good faith efforts to comply with the provisions of this Order on Consent at issue (force majeure). If such a force majeure event occurs, the City shall be entitled to an extension of the schedule milestone(s), limited to the period of time caused by such event that placed compliance with a provision of this Order on Consent beyond the City's control. Penalties for failure to satisfy any Order on Consent requirement, due to a force majeure event, can be excused only under the terms of this decretal paragraph, demonstrating that it took all steps reasonably necessary to avoid or mitigate the delay, and that it strictly complied with the notice requirements of this paragraph, and that the delay is limited to an amount of time equal to the period of delay directly attributable to the force majeure. As a condition precedent to obtaining any relief under this provision, the City shall notify the DEC Director of the Division of Water in writing that a force majeure event has occurred, no later than thirty (30) days after the date the City knew or should have known of the occurrence of any force majeure event. The City shall include in such notice the measures taken and to be taken by the City to prevent or minimize any compliance delays and shall request an appropriate extension or modification of the applicable deadlines under this Order on Consent. Failure to give such notice within such thirty (30) day period constitutes a waiver of the ability to evoke force majeure as a defense to stipulated penalties.

Tunnel Bypass, and Delaware Aqueduct Leak Repair Project) and the dates provided for those projects in this Order on Consent are not independently enforceable milestones.

2. The State shall respond to the City's notification of a force majeure event within 45 days of receiving the notification and shall inform the City whether it agrees or disagrees with its assertion, or whether the State requires additional information before stating its position. In the latter case, the State shall specify the additional information it requires. The City shall provide the information, and the State shall respond to the force majeure notification within 120 days of receipt of the additional information. If the State disagrees that a force majeure event has occurred, it shall provide a written statement as to the basis for its disagreement. In the case of such disagreement, the parties' respective positions shall be reserved until such a time as the State alleges in court that the City has violated a requirement or requirements of the Order on Consent as to which the City asserts the claimed force majeure event as a defense. Failure by the State to respond to the City's notification of a force majeure event within the specified time frames shall be deemed agreement with the City's assertion of a force majeure event.

3. Whenever a milestone is missed, pursuant to a force majeure event or otherwise, the City shall exercise its best efforts to recoup all lost time, including where appropriate, the payment of extraordinary expenses for overtime, double shifts, or additional contractors or consultants, or alternative methods to the extent allowable under local law.

E. Reservation of Rights

1. Nothing contained in this Order on Consent shall be construed as a release or waiver by the State of its rights to: (a) seek injunctive relief to abate any violation of law or this Order on Consent; (b) seek stipulated penalties and entry of judgment as provided in Section II of this Order on Consent; (c) re-allege the violations listed in this Order on Consent to obtain injunctive relief or damages in support of natural resource damage claims; (d) seek penalties and other relief for any criminal liability for any violations listed in this Order on Consent; or (e) seek to modify, suspend, or revoke any DEC-issued permit.

2. Except as expressly set forth herein, nothing contained in this Order on Consent shall be construed as a release or waiver of the City's rights to oppose and defend against injunctive relief, imposition of penalties, damages or any other imposition of liability by the State. Nothing contained in this Order on Consent shall be construed as a waiver by the City of its rights to seek a modification of any permit or order.

3. The State reserves all such rights as it has to require the City to take any additional measures required to protect human health or the environment, including, but not limited to, the right of the DEC Commissioner or his/her designee to exercise any summary abatement powers, whether at common law, or granted pursuant to statute or regulation, against the City or any other party.

4. Except as expressly set forth herein, nothing set forth in this Order on Consent shall be read as relieving the City of any of its obligations pursuant to any permits, orders on consent, or consent decrees to which it is subject.

5. Nothing in this Order on Consent establishes any enforcement rights in any third party.

F. Indemnity

The City shall indemnify and hold harmless New York State, DEC, and any of their employees or contractors for any and all claims, actions, damages, and costs resulting from the City's acts, or from actions taken by the State in fulfillment or attempted fulfillment of the provisions of this Order on Consent to the extent that they are not caused by intentional, negligent or reckless acts of New York State, DEC, or any of their employees or contractors.

G. Effective Date and Duration

The effective date of this Order shall be the date it is signed by the Commissioner or by a delegate on behalf of the Commissioner. This Order shall be deemed completely satisfied and shall terminate when each of the following conditions has been fully satisfied: (1) the City's payment of the Penalties and Environmental Benefit Project funds set forth in Section B above; and (2) the City's written certification and DEC's written verification, of timely completion of each of the milestones required in Sections III, IV, and V of Appendix A. The provisions of this Order on Consent with respect to the IRP and nonstructural measures shall terminate in accordance with Sections A.ii and iii above. The Dredging Provisions shall be enforced in accordance with Section A.i above.

H. Modification

No change in this Order shall be made or become effective except as specifically set forth by written order of the Commissioner or the Commissioner's delegate: (a) upon written application of the City and with specific justification for the relief sought, or (b) upon the Commissioner's own findings after an opportunity to be heard has been given to the City, or (c) pursuant to the summary abatement provisions of the ECL, or (d) as otherwise provided herein. In those instances in which the City desires that any of the provisions, terms or conditions of this Order be changed, it shall make written application, setting forth the grounds for the relief sought to the Director of the Division of Water and such changes shall not become effective except as specifically set forth by written order of the Commissioner or his delegate or upon agreement of the parties as set forth in Section 8.2 of this Order.

I. Binding Effect

This Order shall be deemed binding on the City, any successors and assigns and all persons, firms and corporations acting under or for the City, including, but not limited to those who may carry on any or all of the operations now being conducted by the City, whether at the present location or at any other in this State.

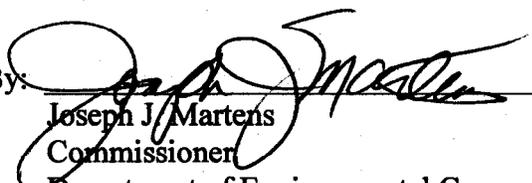
J. Entire Agreement

This Order shall constitute the entire agreement of the Department and the City with respect to settlement of those violations specifically referenced herein and any claims for civil and administrative penalties concerning such violations.

Dated:

Albany, New York
Oct. 4, 2013

By:



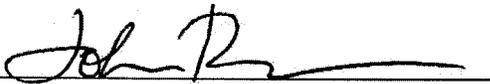
Joseph J. Martens
Commissioner

Department of Environmental Conservation

CONSENT BY THE RESPONDENTS

The City hereby consents to the issuance and entry to this Order without further notice, waives its right to a hearing in this matter, and agrees to be bound by the terms, conditions and provisions of this Order. The undersigned represents and affirms that they have the legal authority to bind Respondents to the terms and conditions of this Order.

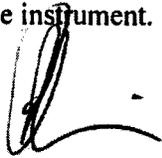
New York City
Department of Environmental Protection and
The City of New York

By: 
Name: John Rousakis
Title: General Counsel

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the 3rd day of October, 2013, before me, the undersigned, personally appeared John Rousakis, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her capacity as shown in the instrument, and that by his/her signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

TANISHA N MILLS
Notary Public, State of New York
No. 02N05230724
Qualified in Queens County
Commission Expires 11/08/2014


NOTARY PUBLIC

APPENDIX A

Schedule of Compliance for Order on Consent

Respondent(s): New York City and New York City Department of Environmental Protection

Site or Facility: Catskill Aqueduct Influent Chamber

DEC Case No.: D007-0001-11

RESPONDENTS ARE REQUIRED TO SELF CERTIFY TIMELY COMPLETION OF EACH OF THE ACTIVITIES REQUIRED BY THIS SCHEDULE.

I. Obligations: This Order on Consent does not relieve the City of its obligation to comply with all applicable provisions of federal and state law.

II. Self certification: Respondents shall submit to DEC, within thirty (30) days of each date set forth in this Schedule of Compliance that is specifically described as a major or minor milestone, a signed statement certifying that the work required was completed by that date, and that the work was done in the manner required by this Order.

All technical submittals to the Department required under this Order shall be made by Respondents as follows:

All submittals, which shall include a hardcopy original and an electronic copy in .pdf format on Compact Disc or by alternative means as agreed to by the parties, shall be submitted to:

Kenneth Kosinski, Division of Water, Watershed Section, New York State Department of Environmental Conservation, 625 Broadway, Albany, NY 12233-3508

In addition, copies of such electronic files shall be distributed to Ulster County and the Ashokan Release Working Group, except with respect to those environmental review documents the City is required to submit to DEC pursuant to paragraphs VI.1, 3, 4, and 8 of this Schedule of Compliance for Order on Consent. Copies of all public documents associated with the environmental review will be provided to Ulster County and ARWG by the Lead Agency at the time they are made publicly available.

Please reference D007-0001-11 on all submittals.

III. Catalum SPDES Permit SOC Item “c” Minimization of Alum to the Maximum Extent Practicable: Dredging of Kensico Reservoir

1. The City will provide DEC with an annual progress report on its Infrastructure Projects the Shaft 4 Catskill-Delaware Connection Project, Rondout West Branch Tunnel Bypass, and

Delaware Aqueduct Leak Repair Project, no later than the last day of February each year, starting on February 28, 2014, which:

- Describes the status of the Shaft 4 Catskill-Delaware Connection-Project and the Croton Water Treatment Plant;
- Identifies any delays anticipated in the completion of the Shaft 4 Catskill Delaware Connection Project and the Croton Water Treatment Plant;
- Describes the status of the Rondout West Branch Tunnel Bypass Project and provides the projected start date for the connection of the Rondout West Branch Tunnel Bypass;
- Describes the status of replacing all stop shutters in the Catskill Aqueduct upstream of Kensico Reservoir;
- Identifies any delays anticipated in the completion of replacing all stop shutters in the Catskill Aqueduct; and
- States whether the City expects to meet the Dredging Commencement Date and, if not, when the City expects to commence.

2. When warranted based on significant changes in operational conditions, including changes to the IRP, or on newly available significant hydrological data, the City will update the projections of the need to add alum to the Catskill Aqueduct in the Report dated February 28, 2011, *Turbidity Control Alternatives Analysis*. The City shall prepare such an update either on its own initiative or within six months of a written request from DEC that is reasonably based on such significant changes or newly available significant data.

3. At any time upon request from DEC, and no later than May 1st of any year in which the City reports a delay in any of the Infrastructure Projects of more than six months, the City shall meet with DEC to discuss the status of the Infrastructure Projects. At such meetings, or at any time, the City may request an extension for completion of the Infrastructure Projects. The City shall make its request for an extension in writing. Upon agreement of the parties the date for the City's completion of an Infrastructure Project may be modified by letter agreement.

4. As set forth in Section B.2. of this Consent Order, DEC will not unreasonably withhold approval for an extension of the Infrastructure Projects.

5. By June 30, 2021, the City shall initiate procurement of a contract to complete the dredging design. The design will include an updated, approvable Bathymetric/Benthic Report. The report must include, at a minimum, a survey of the area and an assessment of the location, quantity and composition of the deposited materials, including alum floc, and a benthic and sediment characterization. The design will provide for removal of the Total Dredging Mass, from specified areas in specified amounts.

6. By August 31, 2022, the City shall issue a Notice to Proceed with the design for the dredging proposal. Under the terms of this Order on Consent, this milestone shall be considered an enforceable minor milestone.

7. By August 31, 2025, the City shall submit plans for removal of the Total Dredging Mass, describing the nature of the proposed alum dredging project or work which shall provide for the removal of an amount of deposited material equal to the amount of alum floc that the City was responsible for depositing into the Kensico Reservoir since 2005, drawings, plans and specifications providing the location and details of the proposed project or work; a report labeled *Supplement to Removal of Alum Floc* establishing a scientific basis for determining the Total Dredging Mass, as required by SOC Item “c” in the Schedule of Compliance in the Catalum SPDES permit; and a complete Article 15 permit application to the Department for the dredging project. The plans and application shall include a proposed Dredging Commencement Date. Under the terms of this Order on Consent, this milestone shall be considered an enforceable major milestone.

8. At any time upon request by either party, the City shall meet with DEC to discuss the status of the City’s dredging plans. At such meetings, or at any time, the City may request DEC to provide in writing the reason(s) why DEC has not approved its dredging plans, if that is the case. The State shall respond to the City’s request within 45 days of receiving the request and shall inform the City whether it agrees or disagrees with its plans, or whether the State requires additional information before stating its position. In the latter case, the State shall specify the additional information it requires. The City shall provide the information, and the State shall respond to the City’s request within 120 days of receipt of the additional information or such period of time as the parties agree is reasonable in light of the information sought. If the State disagrees that the City has submitted approvable dredging plans, it shall provide a written statement as to the basis for its disagreement. In the case of such disagreement, the parties’ respective positions shall be reserved until such a time as the State alleges in court that the City has violated a requirement or requirements of the Order on Consent as to which the City asserts a defense.

9. One year after DEC provides written approval of the City’s dredging plans and no later than August 31, 2027, whichever is later, (Dredging Commencement Date) the City shall initiate the dredging project and issue a notice to proceed with implementation. Under the terms of this Order on Consent, this milestone shall be considered an enforceable major milestone.

10. No later than August 31, 2030 (Dredging Completion Date), the City shall have removed deposited material associated with alum additions since April 2005 from the Kensico Reservoir in accordance with the Department’s Article 15 permit. This Order on Consent may be modified in accordance with the terms of Paragraph “I” Modification to incorporate a new Dredging Completion Date and to modify the other milestone dates in this Section. Under the terms of this Order on Consent, this milestone is an enforceable major milestone.

11. If DEC reasonably determines that the Rondout West Branch Tunnel bypass connection is substantially delayed due to DEP’s failure to prosecute the work and, as a result of such failure, the bypass connection project is unlikely to be completed within a reasonable period of time after

the current projected schedule, DEC, in consultation with the New York State Department of Health, may direct the City to proceed with dredging before completion of the Infrastructure Projects. In making such a determination, DEC will consider, among other things, the environmental and water supply impacts that would be associated with multiple dredgings and the likelihood that more alum additions may be required pending completion of the Infrastructure Projects, taking the City's updated modeling analysis of the continued need for alum into consideration. DEP reserves the right to challenge such determination in a court of competent jurisdiction in an Article 78 proceeding. During the pendency of such proceeding, DEP shall not be required to commence design of the dredging project. If DEP challenges such determination and a court upholds DEC's determination, the City shall proceed with dredging in accordance with the following schedule:

- Issue a Notice to Proceed with the design for the dredging proposal within 14 months of the date of the written direction.
- No later than three years after the Notice to Proceed, submit plans for removal of the Total Dredging Mass (as defined in this Order), describing the nature and extent of the proposed alum dredging project or work, drawings, plans and specifications providing the location and details of the proposed project or work; a report labeled *Supplement to Removal of Alum Floc* as described in paragraph 9 below; and a complete Article 15 permit application to the Department for the dredging project. The plans and application shall include a proposed Dredging Commencement Date no later than two years from the City's submission of the Article 15 permit application, and a proposed Dredging Completion Date which is no later than three years from the date of the Department's issuance of the Article 15 permit.

IV. Catalum SPDES Permit SOC Item "d" Minimization of Alum to the Maximum Extent Practicable: Structural Measures

1. The City shall comply with the IRP, and any future amendments thereto agreed to by the City and the Department as provided for in Paragraph A.ii of this Consent Order. The IRP, including the accompanying monitoring plan (Interim Monitoring Plan), is attached as Appendix B.

V. Catalum SPDES Permit SOC Item "e" Minimization of Alum to the Maximum Extent Practicable: Nonstructural Measures

1. As required by the 2012 Proposed Order, in a report dated December 21, 2012, the City committed to provide Seven Hundred and Fifty Thousand Dollars (\$750,000) in funding to implement two stream restoration projects and proposed an implementation schedule. These projects must be implemented upon the Department's approval of the report. Notwithstanding the implementation schedule proposed by the City in its December 2012 Report, these projects must be completed no later than December 31, 2014. The City shall consult with the local Soil and Water Conservation District in determining which stream restoration projects will be selected for funding under this Order on Consent. Funds allocated to these projects shall be above and beyond any other funds allocated to satisfy the City's commitments in the Ashokan Reservoir watershed under the 2007 Catalum SPDES Permit, 2007 FAD and the mid-term

revisions to the 2007 FAD. Under the terms of this Order on Consent, the submittal of the report and the implementation of the projects are enforceable minor milestones. Once approved, the milestone dates in the schedule are enforceable minor milestones.

VI. Environmental Review and Application to Modify Permit²

1. Within sixty (60) days after this Consent Order is effective, in accordance with 6 NYCRR § 617.8(b) and 62 RCNY § 5-07, the City shall provide to DEC a draft scope for an Environmental Impact Statement (EIS) comprehensively assessing the potential impacts (biological, chemical, physical, and economic) from the City's proposed modifications to the Catalum SPDES permit including, but not limited to, releases from the Ashokan Release Channel to the Lower Esopus Creek in accordance with the Interim Protocol. The draft scope shall include the following:

- a. Biological monitoring;
- b. Sediment transport and deposition;
- c. Impacts of suspended sediment from the Ashokan Release Channel to various species (including but not limited to wildlife, benthic organisms, and fish) and their life stages in the Lower Esopus Creek. The study shall identify the relationship between suspended sediments and turbidity in the Ashokan releases;
- d. Stability/saturation of stream banks and neighboring roadways;
- e. Socioeconomic impacts; and
- f. Comparison of environmental impacts of the use of alum and subsequent floc deposition in Kensico Reservoir versus impacts to the Lower Esopus Creek due to utilization of the Ashokan Release Channel. (This comparison will not include the impacts of use of alum during the RWBT shutdown, which will be assessed in the RWBT Bypass Connection EIS.)

If DEC directs the City in writing to revise the draft scope to include additional elements required by 6 NYCRR § 617.8(f) and 62 RCNY § 5-07(e) after the City has complied with this milestone and prior to making it available to the public, the City shall provide to DEC a revised draft scope within sixty days after receipt of DEC's written notice.

Under the terms of this Order on Consent, this milestone is an enforceable major milestone.

2. DEC will issue the draft scoping document for public review. The City shall cooperate with DEC to provide an opportunity for public input on the draft scope through the use of meetings and solicitation of public comments. The City shall work with DEC to ensure that the final scope includes all of the elements required by 6 NYCRR § 617.8(f) and 62 RCNY § 5-07(e).

3. Within 18 months of DEC's issuance of the final scope,³ the City shall prepare and submit to DEC its draft of a draft environmental impact statement (DEIS) consistent with the Final Scope, in accordance with 6 NYCRR § 617.9. Among other things:

² The milestones in this section are based on DEC serving as lead agency for purposes of this environmental review.

a. The DEIS will analyze the impacts of operating the Ashokan Reservoir in accordance with the Catalum SPDES Permit as the City proposes that Permit should be modified.

b. The DEIS will include an analysis of alternative methods of operating the Catskill Water Supply System (including a comparative analysis of the potential adverse and beneficial impacts for each alternative) in the following categories:

- No-Action Alternative (no permit modification);
- Reasonable alternatives for operation of the Ashokan Reservoir including but not limited to operation of the Release Channel in accordance with the IRP and any future amendments thereto agreed to by the City and the Department as provided for in Paragraph A.ii of this Consent Order;
- Reasonable alternatives for operation of the Catskill Aqueduct including but not limited to:
 - Options to discharge water from the Catskill Aqueduct prior to its reaching the Kensico Reservoir; and
 - Reasonable alternatives for operation of the Kensico Reservoir.

c. If the Lower Esopus Stream Management Plan has been developed by the time the DEIS is issued, the DEIS will consider the potential benefits of implementing recommendations in that Plan.

Under the terms of this Order on Consent, this milestone is an enforceable major milestone.

4. As part of the development of the DEIS, the City shall evaluate the IRP (or its successor revision, if revised) and the Interim Monitoring Plan and propose to DEC whether it is necessary and appropriate to continue and/or modify either one. The City's proposed DEIS shall include a Revised Operating Protocol if the City proposes to continue to release water through the Ashokan Reservoir Release Channel and determines revisions to the IRP are appropriate, and a plan for monitoring of the Ashokan Release Channel releases. The City's draft of the DEIS shall propose whether any future monitoring plan should include any or all of the following elements: temperature, turbidity, total suspended solids, biomonitoring, physical geomorphic factors, and flow data. Any such future monitoring plan may identify monitoring locations, including biological monitoring locations to the extent such monitoring locations are determined to be appropriate, which may include any or all of the following: the Esopus Creek above the Ashokan Reservoir, within the Ashokan Reservoir, the Release Channel discharge, and at appropriate sites downstream between the Release Channel discharge and the Hudson River. The City shall cooperate with DEC to hold at least two public meetings to solicit comment on the City's proposed Operating Protocol and Monitoring Plan; such meetings may be held at the same time as the public hearings on the DEIS.

³ If the IRP is substantially modified before the draft DEIS is submitted, the City may request an extension of this deadline in order to revise draft DEIS to reflect such modifications. DEC will not unreasonably deny such a request.

5. As part of any such Revised Operating Protocol and future monitoring plan that the City may propose, the City may utilize the flow and water quality data that are currently collected for its Catskill Turbidity Control studies and under the IRP.

6. At the same time as it submits its draft DEIS to DEC, the City shall submit to DEC, for review and approval, a revised version of the application to modify the Catalum SPDES permit to be submitted in accordance with paragraph 1 above. The application shall incorporate, among other things, requirements relating to the Ashokan Reservoir Release Channel Operating Protocol (Operating Protocol) based on an environmental review of the impacts. The Operating Protocol shall also include incorporation of the monitoring plan, consistent with paragraph 5 above, as well as provisions concerning the City's plans to reduce the need to add alum at the Catskill Alum Plant. Under the terms of this Order on Consent, this milestone is an enforceable major milestone.

7. Based on the DEIS and the SPDES modification application, and in accordance with 6 NYCRR Part 621, the Department may re-issue the Catalum SPDES permit for public notice to incorporate requirements related to operation of the Release Channel. The City shall cooperate with DEC in scheduling the close of the comment period and public hearings for the DEIS as well as the proposed permit modifications.

8. After the completion of the comment period, the City shall propose to DEC a reasonable date for completion of a draft final EIS in accordance with 6 NYCRR § 617.9, including responses to comments. DEC shall not unreasonably withhold approval of the City's proposed date. The City shall complete a draft of a final EIS by the date approved by DEC. To the extent that the final EIS identifies significant adverse impacts that can be mitigated through implementation of recommendations in the Lower Esopus Stream Management Plan (if such plan has been developed), the City's contributions toward such implementation as an Environmental Benefit Project under this Consent Order shall be considered mitigation under the terms of this Order on Consent.

Appendix B

New York State Department of Environmental Conservation/New York City Department of Environmental Protection (DEC/DEP) Interim Release Protocol (IRP) for the Ashokan Reservoir

September 27, 2013

Introduction: DEC and DEP have agreed to implement a revised Interim Release Protocol (IRP) for the Ashokan Reservoir to enhance benefits to the community, improve flood attenuation, and provide better water quality on an interim basis and recognize that it may be modified or terminated as additional modeling and impact assessments are performed and as additional information becomes available.

The IRP is considered interim as it may be revised as a result of lessons learned during its implementation, or through a modification to SPDES permit #3-9903-00023/00006: SPDES No.: NY-0264652 issued by the DEC after an appropriate public process.

1. Community Release Protocol:

- a. Purpose:** to provide environmental, recreational and economic benefits to the lower Esopus Creek in a manner that will not adversely impact water supply.
- b. Minimum Flow:** DEP will make releases from the Ashokan Reservoir through the Ashokan Reservoir Release Channel at the rates prescribed in the following table.

Release Criteria ¹	Summer (May 1 – Oct 31)	Winter (Nov 1 – Apr 30)
Normal Hydrologic Condition	15 MGD	10 MGD
Turbidity >30NTU	10 MGD	4 MGD
Turbidity >100 NTU	0 MGD	0 MGD
Drought Warning Condition	10 MGD	4 MGD
Turbidity >100 NTU	0 MGD	0 MGD
Drought Condition	0	0

Note 1: Hydrologic Condition is based on the combined storage in the Cannonsville, Pepacton and Neversink Reservoirs.

- c. Turbidity:** When substantial contrast in turbidity exists with varying depths in the West Basin of the Ashokan Reservoir, DEP will make reasonable efforts to make releases from the elevation with the least turbidity.
- d. Action Stage Shutdown:** The community release shall be shutdown when the USGS gage on the Esopus Creek at Mount Marion (Lower Esopus) is within 1 foot of the "Action Stage" (18') and is forecasted to reach "Action Stage", as predicted on

the National Weather Service's (NWS's) Advanced Hydrologic Prediction Service web page.

2. Spill Mitigation Release Protocol:

- a. Purpose:** In order to enhance flood mitigation provided by the Ashokan Reservoir, DEP will utilize the established Conditional Seasonal Storage Objective (CSSO) rule curve depicted in Figure 1. Consistent with good practices for water supply reservoirs, and in order to ensure that sufficient resources are available during an extended dry period to support water supply needs, it is essential to ensure that the Ashokan Reservoir is filled on or around June 1st every year. To accomplish this, the CSSO must be limited and ramped. For the duration of the IRP DEP shall endeavor, to the maximum extent possible without impacting water supply reliability, to maintain reservoir levels at the CSSO, thus creating a high probability of maintaining a ten (10) percent void space from October 14 through March 15 to help mitigate flooding events. In determining the releases needed to maintain the CSSO, DEP will consider the following parameters in the evaluation: forecasted inflows over the next seven (7) days including inflow from snow water equivalent as forecast by the National Weather Service's (NWS) Hydrological Ensemble Forecasting System (HEFS), anticipated diversions over the next seven (7) days, and the current usable reservoir storage. Based on any projected seven (7) day storage surplus, DEP will calculate total release volumes to progress toward the CSSO and allocate those volumes over the upcoming seven 7-day period. In making releases, DEP will consider reasonable requests from Ulster County for a release modification related to a downstream agricultural or recreational concern, within the limitations of the release works for the Ashokan Reservoir Release Channel and subject to DEC concurrence. Spill Mitigation releases are designed to help mitigate the effects of potential for flooding immediately below the Ashokan Reservoir to the lower Esopus Creek communities.
- b. Maximum Flow:** The maximum flow from the Release Channel shall not exceed 600 MGD. DEP will throttle releases as necessary so the combined flow for Ashokan spill and Ashokan Reservoir Release Channel discharge does not exceed 1,000 MGD. In addition, DEP will shutdown the Release Channel when the USGS gage on the Esopus Creek at Mount Marion (Lower Esopus) is within 1 foot of the "Action Stage" (18') and is forecasted to reach "Action Stage", as predicted on the NWS's Advanced Hydrologic Prediction Service web page. DEP shall endeavor to achieve the CSSO in a manner that minimizes the need for maximum flow, large volume releases.
- c. Turbidity:** When substantial contrast in turbidity exists with varying depths in the West Basin of the Ashokan Reservoir, DEP will make reasonable efforts to make releases from the elevation with the least turbidity. The frequency of intake changes

shall be limited to no more than once per week.

i. Dates: July 1 through May 1

Turbidity	Duration	Comments
0-30 NTU	Unlimited	
>30-60 NTU	12Days	At the end of the 12 day discharge provide a release of 200 MGD for 36 hours of water with a turbidity of 30 NTU or less (or best available water that is substantially lower in turbidity from the reservoir) prior to resuming additional Spill Mitigation Releases
> 60 NTU	5 Days	At the end of the 5 day discharge provide a release of 200 MGD for 36 hours of water with a turbidity of 30 NTU or less (or best available water that is substantially lower in turbidity from the reservoir) prior to resuming additional Spill Mitigation Releases

d. Ramping Rates: All changes in water release rates will be conducted in accordance with the following schedule:

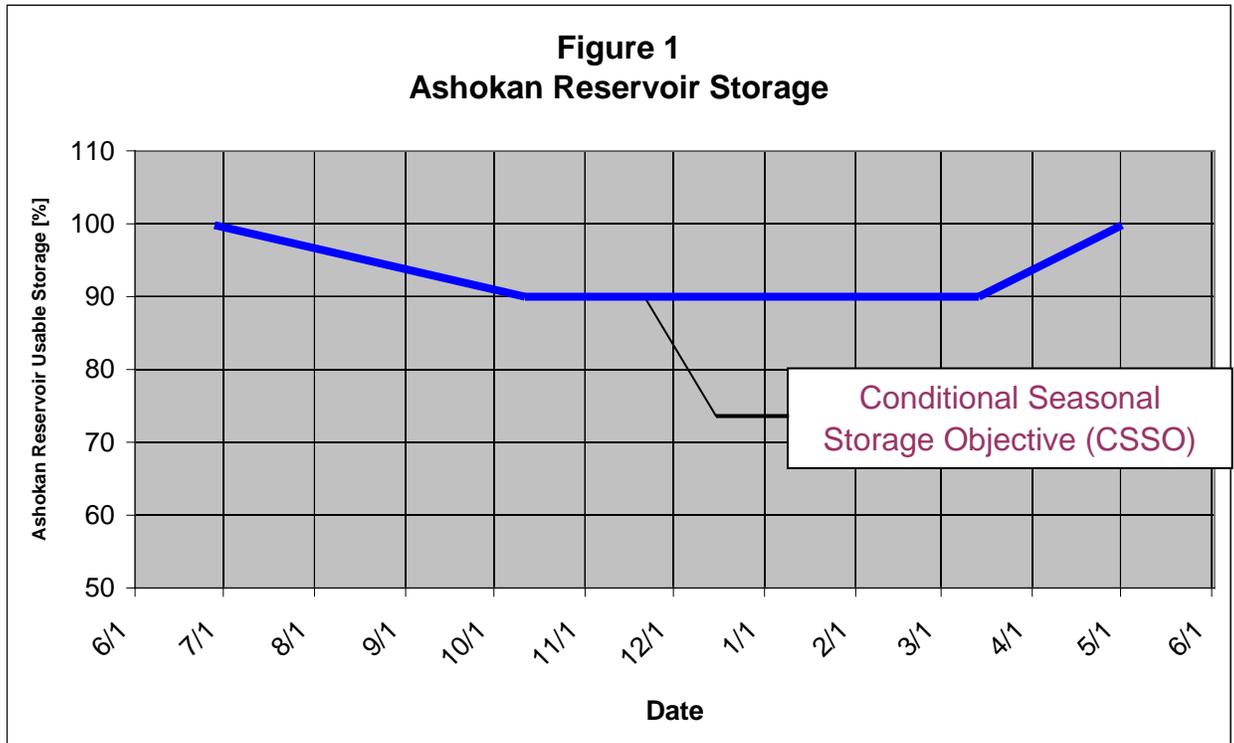
i. Flow Increases:

1. For flows greater than 0 and up to 80 MGD: 20 MGD/hr
2. For flows greater than 80 MGD and up to 200 MGD: 40 MGD/hr
3. For flows greater than 200 MGD: 40 MGD/half-hour

ii. Flow Decreases:

1. For flows greater than 200 MGD: 40 MGD/half-hour
2. For flows from 200 to 80 MGD: 40 MGD/hr
3. For flows from 80 to 0 MGD: 20 MGD/hr

e. Void Target: Conditional Seasonal Storage Objective (CSSO) as per Figure 1



Note: The CSSO is in effect from July 1st through May 1st

3. Operational Release Protocol:

- a. **Purpose:** to prevent or mitigate the spilling of more turbid west basin waters into the east basin of the Ashokan Reservoir in order to protect water quality and enhance the flood mitigation benefit that the reservoir already provides to the lower Esopus Creek communities.
- b. **Maximum Flow:** The release will be throttled as necessary so the combined flow for Ashokan spill and Ashokan Reservoir Release Channel discharge does not exceed 1,000 MGD. In addition, shutdown when the USGS gage on the Esopus Creek at Mount Marion (Lower Esopus) is within 1 foot of the "Action Stage" (18') and is forecasted to reach "Action Stage", as predicted on the NWS's Advanced Hydrologic Prediction Service web page.
Because the Lower Esopus Creek is used for various recreational and agricultural purposes, it may be necessary, at times, to limit the flow rate to be protective of those uses. Therefore, for the period from June 1 through October 1, the maximum flow rate through the release channel for operational releases shall be limited to no more than 300 MGD unless a larger release rate is necessary to prevent overspill of poor quality water from the West Basin into the East Basin of the Ashokan Reservoir.
- c. **Void Target:** to be determined based on current and predicted hydrologic conditions to protect water quality and ensure reservoir refill.

d. Ramping Rates: All changes in water release rates will be conducted in accordance with the following schedule:

i. Flow Increases:

1. For flows greater than 0 and up to 80 MGD: 20 MGD/hour
2. For flows greater than 80 MGD and up to 200 MGD: 40 MGD/hr
3. For flow greater than 200 MGD: 40 MGD/half-hour

ii. Flow Decreases:

1. For flows greater than 200 MGD: 40 MGD/half-hour
2. For flows from 200 to 80 MGD: 40 MGD/hour
3. For flows from 80 to 0 MGD: 20 MGD/hour

e. Turbidity: When substantial contrast in turbidity exists with varying depths in the West Basin of the Ashokan Reservoir, DEP will make reasonable efforts to make releases from the elevation with the least turbidity. The frequency of intake changes shall be limited to no more than once per week.

i. November 1 through April 30:

Turbidity	Duration	Comments
0-30 NTU	Unlimited	
>30-60 NTU	12 Days	At the end of the 12 day discharge provide a release of 200 MGD for 36 hours with water of a turbidity of 30 NTU or less (or the best available water that is substantially lower in turbidity from the reservoir) prior to resuming additional Operational Releases
>60-100 NTU	5 Days	At the end of the 5 day discharge provide a release of 200 MGD for with 36 hours of water of a turbidity of 30 NTU or less (or the best available water that is substantially lower in turbidity from the reservoir) prior to resuming additional Operational Releases
>100 NTU	(see Note 1)	

Note 1: The discharge of water with turbidity >100 NTU shall be allowed only on those days where the Esopus Creek, flowing in to the Ashokan Reservoir, has turbidity >100 NTU. If releases are being made and the turbidity of the Esopus Creek flowing into the Ashokan reservoir drops below 100 NTU, DEP shall commence ramping down the releases rate on the next day and shall cease the release as soon as practicable (considering ramping rate requirements contained herein) after the turbidity in the creek fell below such threshold. DEP shall conduct daily turbidity monitoring for the period during which such releases are being made.

ii. May 1 through October 31:

Turbidity	Duration	Comments
0-30 NTU	Unlimited	

>30 NTU	(See Note 1)	
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Note 1: The discharge of water with turbidity >30 NTU shall be allowed only on those days where the Esopus Creek, flowing in to the Ashokan Reservoir, has turbidity >30 NTU. If releases are being made and the turbidity of the Esopus Creek flowing into the Ashokan Reservoir drops below 30 NTU, DEP shall commence ramping down the releases rate on the next day and shall cease the release as soon as practicable (considering ramping rate requirements contained herein) after the turbidity in the creek fell below such threshold. DEP shall conduct daily turbidity monitoring for the period during which such releases are being made.

4. Notification:

- a. Report all operational changes of the release channel to the Ulster County Emergency Management office, Ulster County Department of the Environment, and DEC.
- b. Continue to send operational data to Ulster County and Town officials on a daily basis and provide turbidity data to Ulster County upon written request.
- c. Report all water quality data to DEC promptly after receipt.

5. Monitoring:

- a. **Water Flow:**
 - i. Monitor continuously by the DEP Water Supply Control Center via the Supervisory Control and Data Acquisition System with telemetry from release channel gages.
 - ii. During periods of inoperable continuous monitoring - perform visual gage readings at least once daily and as flow is changed.

6. Water Quality:

Please see attached “Water Quality Monitoring Plan, Ashokan Watershed - Release Channel Operations”

7. Exceptions:

DEP may operate at variance with this Interim Protocol if any of the following conditions are met:

- a. DEP, with concurrence by DEC, determines that additional resources are reasonably necessary for reservoir balancing, for refill of the Ashokan Reservoir, for proper water supply management, or in the case of drought watch, warnings or

emergencies.

- b. DEC in accordance with DEC's existing legal authority directs an emergency action or DEP takes an emergency action.
- c. DEC, or DEP with concurrence by DEC, determines that releases must be changed or interrupted as necessary for inspection, maintenance, testing and repairs (including Delaware Aqueduct repairs).
- d. DEP, with concurrence by DEC, responds to a spill mitigation request (release or request not to release) from Ulster County provided the request will not adversely impact water supply.
- e. DEP responds to a spill mitigation request (release or request not to release) from DEC provided the request will not adversely impact water supply.

8. Utilization of the Shandaken Tunnel:

During Spill Mitigation Releases and after reservoir storage has been reduced to meet the CSSO objectives, the use of the Shandaken Tunnel to provide water to the Ashokan Reservoir will be minimized in keeping with the existing Shandaken SPDES Permit and consistent with proper water supply management. In particular from May 1st through February 1st, for determinations in accordance with footnote 2.J. in the Shandaken Tunnel SPDES permit, the unfilled storage capacity within the Ashokan Reservoir will be calculated from the CSSO curve rather than the spillway elevation for the period.

9. Future Revisions to the IRP

DEC and NYCDEP may agree to modify the IRP as additional modeling and impact assessments are performed and as a result of monitoring and other lessons learned during its implementation, informed by input from the stakeholders.

Water Quality Monitoring Plan

(Ashokan Watershed – Release Channel Operations)

Monitoring Objective

- To monitor water quality in the Lower Esopus Creek (LEC) and other locations in support of analysis of the effects of the operation of the Ashokan Release Channel

Monitoring Sites

- **Condition: Release Channel Not Operating** (Routine monitoring conducted at these sites, regardless of reservoir spill status)
 - Upper Esopus Stream Site
 - Esopus Creek (E16i) – last sampling point prior to entry into Ashokan Reservoir
 - Limnology Sites
 - Ashokan Reservoir Limnology Stations (1EA-4EA) – multiple depths in water column, both basins (reservoir conditions permitting, March-December)
 - Keypoint Sites
 - Ashokan Upper Gatehouse – water at the east and west basin intake levels as follows:
 - ES – East Surface
 - EM – East Middle
 - EB – East Bottom
 - WS – West Surface
 - WM – West Middle
 - WB – West Bottom
 - Ashokan Effluent Sampling Station (EARCM) – final effluent leaving Ashokan via Catskill Aqueduct
- **Condition: Release Channel Operating** - In addition to sites listed above, add these sites:
 - Ashokan Release Channel (M-1) – water released through the release channel to the lower Esopus Creek
 - Lower Esopus Stream Sites
 - Lower Esopus Creek Above Sawkill (LEC AS) – above confluence with Sawkill Creek
 - Lower Esopus Creek at Saugerties Beach (Saugerties Beach) – above Saugerties dam

- **Condition: Release Channel Operating & Ashokan Spilling** (In addition to sites listed above, add these sites:
 - Lower Esopus Stream Sites
 - Ashokan Spill (ASP) – Ashokan Reservoir spill channel below spillway
 - Lower Esopus Creek Confluence (ASP M-1 CONF) – below confluence of Ashokan Reservoir release channel release flow and Ashokan Reservoir spill channel

Monitoring Frequency and Analytes

- **Condition: Release Channel Not Operating** (Routine monitoring at these sites)

Site Type	Sites	Analytes	Frequency
Upper Esopus Creek	E16i	turbidity, temperature	Weekly
		total suspended solids	Monthly
Limnology	1EA-4EA	turbidity, temperature	2x/Month*
		total suspended solids	Monthly*
Keypoints	EARCM	turbidity, temperature	5Days/Week
		total suspended solids	Monthly
Keypoints	ES, EM, EB, WS,WM,WB	turbidity, temperature	Weekly

* Reservoir conditions permitting (March – December)

- **Condition: Release Channel Operating** (In addition to sites listed above, add these sites)

Site Type	Sites	Analytes	Frequency
Keypoints	M-1	turbidity, temperature, total suspended solids	Weekly
Lower Esopus Creek	LEC AS, Saugerties Beach	turbidity, temperature, total suspended solids	Weekly

- **Condition: Release Channel Operating & Ashokan Spilling** (In addition to sites listed above, add these sites
 -

Site Type	Sites	Analytes	Frequency
Lower Esopus Creek	ASP, ASP M-1 CONF	turbidity, temperature, total suspended solids	Weekly