New York City Filtration Avoidance Determination

Prepared By

New York State Department of Health

in consultation with

United States Environmental Protection Agency

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2017 Surface Water Treatment Rule Determination for
New York City's Catskill/Delaware Water Supply System

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Acronyms

AOC	Administrative Order on Consent
BMPs	Best Management Practices
CAP	*Cryptosporidium* Action Plan
CATUEC	Catskill Aqueduct Upper Effluent Chamber
CDUV	Catskill/Delaware Ultraviolet Facility
CCE	Cornell Cooperative Extension
CE	Conservation Easement
CFI	Continuous Forest Inventory
CFR	Code of Federal Regulations
CREP	Conservation Reserve Enhancement Program
CSBI	Catskill Streams Buffer Initiative
CT	Concentration-Time (chlorine contact time)
CWC	Catskill Watershed Corporation
DDBPR	Disinfection and Disinfectant Byproducts Rule
EOH	East-of-Hudson
EOHWC	East-of-Hudson Watershed Corporation
FAD	Filtration Avoidance Determination
FBO	Flood Buy-Out
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
GIS	Geographic Information System
HAA5	Haloacetic Acids (sum of five)
IESWTR	Interim Enhanced Surface Water Treatment Rule
LAP	Land Acquisition Program
LFHMP	Local Flood Hazard Management Program
LT2	Long Term 2 Enhanced Surface Water Treatment Rule
MAP	Forestry Management Assistance Program
MCL	Maximum Contaminant Level
MGD	Million Gallons per Day
MOA	New York City Watershed Memorandum of Agreement
MOU	Memorandum of Understanding
NPS	Nonpoint Source
NYC	New York City
NYCDEP	New York City Department of Environmental Protection
NYCRR	New York [State] Codes, Rules, and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operations and Maintenance
OST	Operations Support Tool
PFM	Precision Feed Management
PHL	Public Health Law
RWBT	Rondout West Branch Tunnel
SAP	Streamside Acquisition Program
SDWA	Safe Drinking Water Act
SEQRA	State Environmental Quality Review Act
SOEM	New York State Office of Emergency Management
SMP	Stream Management Program
SMIP	Stream Management Implementation Grant Program
SPDES	State Pollutant Discharge Elimination System

SWPPP	Stormwater Pollution Prevention Plan
SRP	Septic Repair Program
SWTR	Surface Water Treatment Rule
TAP	Turbidity Action Plan
TCR	Total Coliform Rule
TTHM	Total Trihalomethanes
USEPA	United States Environmental Protection Agency
USGS	Unites States Geological Survey
UV	Ultraviolet
WAC	Watershed Agricultural Council
WAP	Watershed Agricultural Program
WDRAP	Waterborne Disease Risk Assessment Program
WECC	Watershed Enforcement Coordination Committee
WIG	Watershed Inspector General
WFP	Whole Farm Plan
WOH	West-of-Hudson
WPS	Wetlands Protection Strategy
WR&Rs	Watershed Rules and Regulations
WSP	Water Supply Permit
WWTP	Wastewater Treatment Plant
WQIP	Water Quality Investment Program

2017 Filtration Avoidance Determination

Executive Summary

Since 1993, New York City ("the City") has met the requirements of the 1989 Surface Water Treatment Rule (SWTR) and, after 1998, the Interim Enhanced SWTR (IESWTR). This has allowed the City to avoid filtering its Catskill/Delaware water supply. The conditions that the City must meet to maintain filtration avoidance are described in the City's Filtration Avoidance Determination (FAD).

The first FAD was issued by the United States Environmental Protection Agency (USEPA) in 1993, with USEPA issuing subsequent FADs in 1997, 2002, and 2007. The 2007 FAD required the City to undertake a ten-year land acquisition program and included specific commitments to activities in other programs for the first five years. After the 2007 FAD was issued, USEPA transferred primacy for regulatory oversight of the City's FAD to the New York State Department of Health (NYSDOH). In May 2014, NYSDOH, in consultation with USEPA, issued the Revised 2007 FAD, which defined the City's requirements for the remaining period of the 2007 FAD. In accordance with NYSDOH's certification of the 2007 FAD, the next FAD was scheduled to be issued in 2017.

This 2017 FAD supersedes the Revised 2007 FAD and will remain effective until a further determination is made, currently scheduled for July 2027. As the primacy agency, NYSDOH has authority to determine whether the City's Watershed program provides adequate protection of the City's water supply, pursuant to the SWTR/IESWTR and/or other avoidance criteria in the SWTR/IESWTR. If NYSDOH were to determine that the City was not adequately protecting the Catskill/Delaware water supply, NYSDOH also has authority to require the City to filter the water from that water supply.

1. Background and Basis for Determination

As required under the Safe Drinking Water Act (SDWA) Amendments of 1986, USEPA promulgated the SWTR on June 29, 1989, specifying the criteria pursuant to which filtration is required as a treatment technique for public water systems supplied by a surface water source. The SWTR is codified in the Code of Federal Regulations (CFR) at Subpart H of 40 CFR, Part 141 - National Primary Drinking Water Regulations. The SWTR was promulgated to reduce the risk of waterborne disease occurrence from microbial contaminants at public water systems with surface water sources, either through filtration or by meeting the stringent water quality, disinfection, and site-specific avoidance criteria that make filtration unnecessary.

In response to requirements set forth in the 1996 Amendments to the SDWA, USEPA amended the SWTR on December 16, 1998 with the IESWTR, which is codified in Subpart P of 40 CFR, Part 141. USEPA amended the SWTR again on January 5, 2006 with the Long Term 2 Enhanced Surface Water Treatment Rule (LT2), which is codified in Subpart W of 40 CFR, Part 141. The IESWTR requires unfiltered systems to meet additional provisions to remain unfiltered, including compliance with more stringent disinfection byproduct maximum contaminant levels (MCLs) and the requirement to address *Cryptosporidium* in their watershed control programs. The LT2 provisions for unfiltered systems are not specifically identified as requirements for filtration avoidance, but do require that unfiltered systems provide treatment for *Cryptosporidium*.

The following sections of the SWTR (40 CFR §141.71 and §141.72) and the IESWTR (40 CFR §141.171), define the criteria that must be met to maintain filtration avoidance. Applicable sections of Title 10 of the New York State Codes, Rules and Regulations (NYCRR), Subpart 5-1 are cited following the corresponding federal code citations.

Source water quality conditions:

§141.71 (a)(1), §5-1.30(c)(1):	Fecal or total coliform concentration requirements
§141.71 (a)(2), §5-1.30(c)(2):	Turbidity level requirements

Site-specific conditions:

§141.71 (b)(1)(i)/§141.72(a)(1), §5-1.30(c)(3):	Disinfection and CT requirements.
§141.71 (b)(1)(ii)/§141.72(a)(2), §5-1.30(c)(4):	Redundant disinfection components and auxiliary power supply requirements.
§141.71 (b)(1)(iii)/141.72(a)(3), §5-1.30(c)(5):	Entry point residual disinfectant concentration requirements.
§141.71 (b)(1)(iv)/§141.72(a)(4), §5-1.30(c)(6):	Distribution system residual disinfectant concentration requirements.
§141.71(b)(2), §5-1.30(c)(7)(*i*)-(*vii*):	Maintain a watershed control program which minimizes contamination by *Giardia lamblia* cysts and viruses.
§141.71 (b)(3) and §141.171(b):	Be subject to an annual on-site inspection, which includes determination of adequacy of the watershed protection

	program to limit potential contamination from *Cryptosporidium.*
§141.71 (b)(4), §5-1.30(c)(8):	Must not be identified as a source of a waterborne disease outbreak.
§141.71 (b)(5), §5-1.30(c)(10):	Must comply with the MCL for total coliforms in at least 11 of the 12 previous months (starting April 1, 2016, comply with MCL for *Escherichia coli).*
§141.71 (b)(6), §5-1.30(c)(9):	Must comply with disinfection byproduct requirements (this provision of Subpart H was amended as part of the IESWTR).
§141.171(a), §5-1.30(c)(7):	Minimize the potential for contamination by *Cryptosporidium* oocysts in the source water.

If, at any time, a system fails to meet the avoidance criteria, it will be required to provide filtration within 18 months of such failure.

Additional National Primary Drinking Water Regulations that apply to unfiltered systems, but that are not specifically identified as filtration avoidance criteria, are included in the Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2) and LT2. The Stage 2 DDBPR strengthens public health protection by tightening compliance monitoring requirements for trihalomethanes (TTHM) and haloacetic acids (HAA5). Systems must identify specific locations in the distribution system with the highest disinfection byproduct concentrations. Systems must further comply with MCLs for TTHM and HAA5 based on a locational running annual average, rather than averaging all monitoring locations across the system, as was previously allowed. April 1, 2012 was the compliance date for these tighter monitoring and compliance requirements. Although implementation of Stage 2 has changed which sites are being sampled, unfiltered systems are still required to calculate a system-wide running annual average based on the results from the Stage 2 sample sites. These averages must comply with the TTHM and HAA5 MCLs for the water system to maintain filtration avoidance.

LT2 established important new requirements for both filtered and unfiltered systems. LT2 requires all systems to conduct source water sampling and provide effective treatment for *Cryptosporidium*. For unfiltered systems, LT2 requires use of two disinfectants. April 1, 2012 was the compliance date for this rule, although up to two additional years were provided for certain systems that were making capital improvements. A schedule for the City's compliance with LT2 requirements was established by an Administrative Order on Consent (AOC) that was issued by the USEPA in February 2007. Milestones for this AOC were also included in the 2007 FAD. The City selected water treatment using ultraviolet (UV) light, in addition to chlorine disinfection, to meet the LT2 requirements. The AOC was revised in September 2012 to accommodate the need for additional UV light treatment unit validation testing. The revised UV AOC terminated upon the City's completion of all activities required by the AOC, and as reflected in a USEPA letter dated July 7, 2016. The Catskill/Delaware UV (CDUV) facility has been on line since December 1, 2012, providing UV treatment to all Catskill/Delaware water delivered to the City.

Revisions to the 1989 Total Coliform Rule (TCR) were published February 13, 2013. Starting April 1, 2016, compliance with the Revised TCR is based on an MCL for *Escherichia coli* (§141.63(c)), rather than total coliforms.

Previous Filtration Avoidance Determinations

USEPA's January 1993 Determination: Following the City's July 1992 submission of an application not to filter its Catskill/Delaware water system, USEPA began an in-depth review of the City's water supply to determine whether the Catskill/Delaware system could fully meet the avoidance criteria. USEPA concluded that the system met each of the objective criteria for filtration avoidance. USEPA also concluded that the City's existing Watershed protection programs were adequate and met the SWTR goal for a Watershed control program, but that the program's ability to meet the criteria in the future was uncertain. Accordingly, on January 19, 1993, USEPA issued a conditional determination granting filtration avoidance until a further determination was made, on or before December 31, 1993.

USEPA's December 1993 Determination: In September 1993, the City submitted *New York City's 1993 Long-Term Watershed Protection and Filtration Avoidance Program* to demonstrate that the Catskill/Delaware system could and would continue to meet the filtration avoidance criteria in the future. USEPA reviewed historic and 1993 water quality data, *New York City's 1993 Long-Term Watershed Protection and Filtration Avoidance Program*, the City's achievements meeting the conditions contained in USEPA's January 19, 1993 conditional determination, the USEPA March 23, 1993 Expert Panel Report, public comments received, and additional documentation submitted by the City and interested parties relating to the Watershed. USEPA concluded that the Catskill/Delaware system met each of the SWTR objective criteria for filtration avoidance. USEPA also concluded that the City's existing Watershed protection programs continued to be adequate and met the SWTR's criteria for a Watershed control program, but that the program's ability to meet the criteria in the future was still uncertain. USEPA determined that progress had been made toward enhanced Watershed protection programs. However, USEPA sought a more refined characterization of the Watershed and more specific data concerning the identification and location of the activities within the Watershed. USEPA also wanted the City's Watershed protection programs to operate for a longer time period, to evaluate the effectiveness of the programs' long-term ability to monitor and control activities that have the potential to pollute the water supply.

On December 30, 1993, USEPA issued a second conditional determination which allowed the City's Catskill/Delaware public water system to remain unfiltered. This second determination was intended to be effective until a further determination was made, scheduled for December 15, 1996. The second determination also contained conditions primarily related to enhanced Watershed protection and monitoring programs, pathogen studies, reservoir modeling, and other efforts to characterize the Watershed and human activities. The conditions included continued design of filtration facilities should USEPA deem filtration necessary in the future, as well as a requirement that the City remove bottom sediment from and cover Hillview Reservoir. Hillview Reservoir was believed to be the cause of violations of the Total Coliform Rule in 1993 and again in 1994. Hillview remediation requirements are now part of an AOC that was issued by

USEPA. The milestones of USEPA's AOC have also been incorporated into an AOC issued by NYSDOH and, therefore, are no longer FAD requirements.

USEPA's January and May 1997 Determinations: By 1995, implementation of a number of conditions of the 1993 determination had not yet occurred. At that time, USEPA and other interested stakeholders urged the Governor of New York State to intercede. Then Governor George E. Pataki brought the parties together in a consensus-building approach to negotiate reasonable, effective, and scientifically-defensible Watershed protection programs.

The January 1997 New York City Watershed Memorandum of Agreement (MOA), signed by New York State, the City, Watershed towns and counties, environmental parties, and USEPA, enabled the City to implement Watershed protection programs necessary to continue to avoid filtration. On January 21, 1997, the New York City Department of Environmental Protection (NYCDEP), which operates the Catskill/Delaware system, received a Water Supply Permit (WSP) from the New York State Department of Environmental Conservation (NYSDEC). This permit authorized NYCDEP to acquire land and conservation easements in the Watershed of the City's water supply system. The City promulgated new Watershed Rules and Regulations (effective on May 1, 1997) and established economic partnerships with Watershed communities to assist the City and stakeholders in their efforts to protect the Watershed. In addition, the MOA mandated wastewater treatment plant (WWTP) upgrades, nonpoint source pollution controls, and the review of the existing monitoring program.

USEPA issued a four-month interim FAD on January 21, 1997, followed by a FAD in May 1997, granting the City conditional relief from filtering its Catskill/Delaware water system until the agency made a further determination, scheduled for April 15, 2002.

USEPA's November 2002 Determination: Based on NYCDEP's *2001 Long-Term Watershed Protection Program*, USEPA issued a FAD in November 2002, which included significant enhancements to the overall Watershed protection program. In addition, the 2002 FAD highlighted two major themes in the City's program: a long-term commitment to Watershed protection programs, and a reliance on Watershed partners (such as the Catskill Watershed Corporation (CWC) and the Watershed Agricultural Council (WAC)) to enhance program acceptance and implementation.

Program enhancements in the 2002 FAD included expansion of the agricultural program to include small farms and East-of-Hudson (EOH) farms; commitment to seven new wastewater projects for communities on the MOA prioritized list; an expanded stream management program (SMP); study of Catskill turbidity and evaluation of control alternatives; and commitment to construction of a UV light disinfection plant for the Catskill/Delaware water supply.

USEPA's July 2007 Determination: In accordance with the provisions of the 2002 FAD, the 2007 FAD development process was initiated by the City's submittal of a report entitled *2006 Watershed Protection Program Summary and Assessment* in March 2006. After extensive consultation with USEPA, NYSDOH and NYSDEC, the City submitted its *2006 Long-Term Watershed Protection Program* in December 2006. In developing its *2006 Long-Term Watershed Protection Program*, the City, among other things, committed to take additional steps to address

several significant issues and challenges that are important to the continuation of filtration avoidance: 1) excessive turbidity in the Catskill system that is produced by large storm events; 2) compliance with new, more stringent national standards for disinfection byproducts; and 3) the potential for changes in development patterns, and how to refine the City's land acquisition program. The *2006 Long-Term Watershed Protection Program* was premised on the 2007 FAD being issued for a period of five years and thus geared its various programs and activities to such a five-year period.

After the City submitted its *2006 Long-Term Watershed Protection Program*, and based on input received from interested stakeholders and discussions among the parties, the City, USEPA, and NYSDOH agreed that the 2007 FAD would cover a term of ten years, consisting of two five-year periods: 2007-2012 ("First Five Year Period"), and 2012-2017 ("Second Five Year Period"). As part of this agreement, the City committed to a land acquisition program covering ten years, rather than five as originally proposed. The City also agreed that, by January 21, 2010, it would apply for a WSP from NYSDEC covering a ten-year period. The 2007 FAD included requirements for programs other than land acquisition for the First Five Year Period, with provisions for developing program commitments for the Second Five Year Period. A mid-term review of the 2007 FAD would consider what programs should be continued during the Second Five Year Period; whether and how any of the continuing programs should be modified; and/or whether additional programs were needed to justify the continuation of the FAD for the second five years of its term. Proposed requirements for the Second Five Year Period were subject to USEPA and NYSDOH review and approval. USEPA and NYSDOH would seek input from Watershed stakeholders regarding the commitments to be established for the Second Five Year Period and would then issue a mid-term revision to the FAD in 2012 memorializing the new commitments.

On April 12, 2007, USEPA released a draft 2007 FAD which incorporated a land acquisition program covering ten years, as described above. Based on public response to this draft, the City made several additional commitments to enhance its Watershed protection program. Program enhancements in the 2007 FAD included:

- expanding the Septic Remediation and Replacement Program to include cluster systems and small businesses;
- funding wastewater management systems in the final five communities listed in Paragraph 122 of the Watershed MOA;
- providing additional funds for wastewater treatment plant upgrades West-of-Hudson (WOH);
- funding an additional engineering position at the CWC to assist applicants in complying with storm water provisions of the Watershed Rules and Regulations (WR&Rs);
- funding WAC to: implement a forest easement program, support easement stewardship activities, make the Nutrient Management Credit more widely available, and report on a study of Precision Feed Management (PFM); and
- funding local consultation activities to support review of proposed City land acquisitions.

In July 2007, USEPA, in consultation with NYSDOH, determined that the City's *2006 Long-Term Watershed Protection Program*, along with the milestones, clarifications, and additions set

forth in the 2007 determination, would achieve the objectives of the SDWA and the SWTR for unfiltered systems.

Developments Following the Issuance of the 2007 FAD: In September 2007, USEPA granted NYSDOH primary regulatory responsibility for the SWTR as it applies to the Catskill/Delaware water supply, making NYSDOH the primacy agency for oversight of the City's FAD.

On April 4, 2010, the City adopted amendments to its *Rules and Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and Its Sources* (WR&Rs). These amendments made the City's WR&Rs consistent with the State's requirements for storm water pollution prevention plans (SWPPPs), and revised the definition of "phosphorus-restricted basin" to include basins for source water reservoirs whose phosphorus levels exceed 15 micrograms/liter.

After significant discussion among the City, the State, USEPA, and Watershed stakeholders on the conditions that would apply to the City's Land Acquisition Program, the City applied to NYSDEC for a WSP in 2010, and the City was issued a fifteen-year WSP on December 24, 2010.

NYSDOH's Revised 2007 FAD: At the end of the First Five-Year Period, NYSDOH, as the recently-designated primacy agency, took the lead on conducting a review of the City's implementation of its *2006 Long-Term Watershed Protection Plan* and compliance with the requirements of the FAD. NYSDOH, in consultation with USEPA, issued an assessment in September 2011. This assessment, along with multiple meetings with the City, stakeholder outreach and public input, formed the basis for the Revised 2007 FAD.

In May 2014, NYSDOH issued the Revised 2007 FAD. In general, the activities set forth for the First Five Year Period of the 2007 FAD remained relevant and formed the basis for program implementation during the remaining period of the 2007 FAD. However, a number of program requirements were revised to enhance program effectiveness or to improve efficiency of implementation. In particular, severe flooding due to tropical storms that occurred in 2011 demonstrated the detrimental impacts flooding can have on water quality. In response, a new focus was placed on flood hazard mitigation in the Revised 2007 FAD. A City-funded Flood Buy-Out (NYCFFBO) program and Local Flood Hazard Mitigation Programs (LFHMPs) associated with the Stream Management Program (SMP) and CWC were developed to address flood-related water quality issues. Other program enhancements included a Septic Repair Program for the EOH FAD Basins (i.e., West Branch, Boyd Corners, Croton Falls, and Cross River Reservoirs and Lake Gleneida), a requirement to work with the National Research Council (NRC) to convene an Expert Panel to review the City's use of the Operations Support Tool (OST), and a requirement to begin the process of convening an Expert Panel to review the City's overall Watershed protection strategy and provide recommendations for improving Watershed protection programs.

NYSDOH's 2017 FAD: With the next determination regarding the City's filtration avoidance status scheduled for July 2017, preparations began for development of the 2017 FAD in early 2016. As required by the Revised 2007 FAD, the City submitted its *2016 Watershed Protection*

Program Summary and Assessment (March 2016). Based on this report, ongoing review of the City's Watershed protection activities, and water system inspections, NYSDOH issued its report entitled *Implementation of New York City's Watershed Protection Program and Compliance with the Revised 2007 Filtration Avoidance Determination* (July 2016). This report concluded that "NYSDOH finds that the City has a comprehensive and robust Watershed protection program, which, overall, is being effectively implemented by the City and its partners. The City continues to provide drinking water to NYC and upstate consumers that meets all requirements of the Surface Water Treatment Rule (SWTR)."

Other key components of the NYSDOH FAD reissuance process include:

- Multiple meetings with the City, including USEPA and NYSDEC, to discuss and come to agreement on proposed FAD program requirements;
- Outreach to Watershed Stakeholders;
- Public Information Sessions in June and July of 2016, held in Delhi, Hunter, Somers, New York City, and by webinar;
- *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* ("2016 Long-Term Plan," submitted by the City on December 15, 2016), which compiled the City's proposed commitments for FAD programs for a ten-year period;
- NYSDOH's Draft 2017 FAD, the requirements of which are based on the City's 2016 Long-Term Plan and subsequent input;
- A 45-day public comment period; and
- State Environmental Quality Review Act (SEQRA) review of the City's 2016 Long-Term Plan, amended as necessary to reflect the requirements of the 2017 FAD.

In 2015, representatives from WOH communities expressed concerns about the City's implementation and enforcement of its WR&Rs. Community representatives requested that the City commit to addressing these concerns in a supplemental side agreement to a modification to the City's WSP, which was required for the City to implement a City-Funded Flood Buy-Out Program. This side agreement, then under negotiation, followed on two prior agreements relating to the City's WSP and memorialized commitments by the City, the WOH communities and partner organizations, and a number of environmental stakeholders. These supplemental agreements essentially serve as updates to the MOA.

In early 2016, community representatives and the CWC met with NYSDOH, USEPA and NYSDEC to discuss these issues. Subsequently, many more meetings were held with WOH community representatives, later including the City and representatives from key Watershed stakeholder environmental groups, with the scope of the topics discussed expanding to include issues related to the City's Watershed program partnerships and to FAD programs. The results of these discussions have been documented in a Supplemental Agreement associated with the 2017 FAD. Many of the resolutions resulting from these discussions have been included in the 2017 FAD as new or revised program requirements.

The City's 2016 Long-Term Plan and the 2017 FAD have been developed to cover a ten-year period from 2017-2027, documenting the City's long-term commitment to its Watershed

protection programs. Unlike the 2007 FAD, the 2017 provides for a ten-year commitment for all Watershed protection programs. The 2017 FAD also provides for a focused review of the City's Watershed protection programs around the halfway point of the FAD term to ensure that the programs are adequate for the City to continue to meet the requirements of filtration avoidance in the future. This review will be informed by the findings of an independent panel of experts ("Expert Panel"), who will be convened by the National Academies of Sciences or NRC (now called the National Academies of Sciences, Engineering, and Medicine (NASEM)). The City was required to engage with the NRC by the Revised 2007 FAD. A similar review was conducted by the NRC as the City was developing its Watershed protection programs in the late 1990s. Stakeholder input received during the development of the Revised 2007 FAD suggested that, as nearly 20 years had passed since that review was conducted, a new review was timely. In early 2015, NYSDOH solicited input from stakeholders on the scope of work for this review and worked with the City to develop a scope of work.

The 2017 FAD requires the City to commence the Expert Panel review by January 31, 2018. The Panel is anticipated to issue a report on its findings 33 months after it commences work (anticipated by October 31, 2020). Four months after the release of the report (anticipated late February 2021), the City, in cooperation with NYSDOH, will convene a meeting or meetings of Watershed stakeholders to present the Expert Panel's findings and solicit stakeholder input. Stakeholder input on the findings of the NASEM review and matters relevant to the FAD programs will be accepted during a 60-day comment period following the stakeholder meeting(s). The City, in consultation with regulators, will evaluate the Expert Panel findings, along with stakeholder input relevant to the FAD programs. NYSDOH will review the Expert Panel report, the March 2021 Watershed Protection Program Summary and Assessment Report, and stakeholder input. If NYSDOH, in consultation with USEPA, determines that changes to the Long-Term Watershed Protection Plan are warranted and necessary to ensure that filtration avoidance criteria continue to be met, NYSDOH will instruct the City to incorporate these changes into the 2021 Long-Term Watershed Protection Plan. The City will submit the 2021 Long-Term Watershed Protection Plan to NYSDOH by December 15, 2021. Concurrently, NYSDOH, in consultation with USEPA, will complete a FAD compliance assessment report, which is a comprehensive review of the City's performance in meeting the terms of the 2017 FAD. It is anticipated that this report will be issued in July 2021. Any revisions to the City's Long-Term Watershed Protection Plan will be incorporated into a draft Revised 2017 FAD, which will be made available for a 45-day public comment period. A final Revised 2017 FAD is scheduled to be issued in July 2022.

In general, the activities set forth in the Revised 2007 FAD remain relevant and form the basis for program implementation during the 2017 FAD period. However, several program requirements have been revised to enhance program effectiveness or to improve efficiency of implementation. The following new or revised program elements have been included in the 2017 FAD:

Septic System and Sewer Programs: The City's various Septic System and Sewer Programs have successfully reduced the potential for sanitary waste from failing septic systems to contaminate the City's Catskill/Delaware water supply. However, during the 2016 WOH stakeholder meetings, community representatives noted that there were gaps in who could

receive assistance from the City's Septic System and Sewer Programs, and suggested that in some cases the high cost of septic system rehabilitation or replacement in the NYC Watershed deterred these system owners from implementing repairs or, in the case of business owners, compelled them to go out of business or leave the Watershed. To address these gaps, the City has modified its Small Business Septic System Rehabilitation and Replacement Program to now cover not-for-profit and government-owned facilities (including firehouses), and all or some of the costs of qualifying alterations or modifications to existing septic systems covered by the program. In addition, the communities and the City agreed that the CWC would be given discretion to cover costs associated with seasonal high groundwater level determinations made by the City, when such a determination is disputed by an applicant's professional engineer. Funding to support such determinations would be allocated from the CWC's Alternate Septic Fund. These new program elements have been included as commitments in the 2017 FAD.

The 2017 FAD has clarified that in all the septic system programs, where sewer extensions to City-owned WWTPs or to WWTPs not owned by the City are more cost-effective than stand-alone solutions, the City will support the design and construction of such sewer extensions. The City will charge households served by a sewer extension to a City-owned WWTP no more in annual operation and maintenance costs than the maximum for households served by WWTPs in the New Infrastructure and Community Wastewater Management Programs pursuant to MOA Paragraph 122. Where a sewer extension to a WWTP not owned by the City is warranted, the City will provide additional funding to the owner of the WWTP to cover any annual operation and maintenance costs above the household maximum established in MOA Paragraph 122. Where a sewer extension serves an entity other than a household, the City will provide supplemental funding to ensure that the entity's annual operation and maintenance costs are comparable to those of non-residential sewer users served by WWTPs in the New Infrastructure or Community Wastewater Management Programs.

Community Wastewater Management Program: The Revised 2007 FAD required the City to complete a study to determine the need for a community wastewater management system for the Hamlet of Shokan. Based on available data, NYSDOH has required the City to provide funding for development and installation of an appropriate wastewater management solution for Shokan pursuant to a timeline defined in the 2017 FAD.

Stormwater Programs: Included in the list of concerns from the WOH communities, raised in 2015, was the City's enforcement of its WR&Rs in regard to stormwater management issues. In some instances, the communities and the City disagreed as to which components of the Storm Water Pollution Prevention Plan (SWPPP) design and implementation constituted incremental differences between State-required measures and City-required measures. In accordance with the MOA, the City is required to compensate for the costs of such incremental differences. The City and CWC are developing a more effective way to identify incremental costs for reimbursement under this program. In addition, certain Future Stormwater costs that the City, in accordance with paragraph 145 of the MOA, had formerly paid directly to applicants, will now be addressed through the CWC's program. The 2017 FAD commits the City to replenishing the CWC's Future Stormwater Fund to ensure continuity of the Future Stormwater Programs.

Land Acquisition Program: The Environmental Impact Statement (EIS) completed by the City in conjunction with issuance of its WSP in 2010 analyzed the potential impacts of the City's Land Acquisition Program (LAP) on selected towns in the Watershed. The EIS determined there would be no adverse environmental impacts at the levels of acreage projected for the analysis. During the 2016 WOH stakeholder meetings, the WOH communities expressed concern that the City was nearing the projected levels of acquisition in some towns. In response, the City committed to updating or completing assessments for 21 towns. The City accepted public comments for 180 days following the release of those updated assessments, until October 31, 2017. Based on the updated Town Level Assessments and its review of comments received, the City will consider whether it should modify its 2012-2022 Long-Term Land Acquisition Plan and discuss its conclusions with NYSDOH, USEPA, and NYSDEC. The City will share any proposed modifications to its solicitation plan, or the basis for a conclusion that no modifications are warranted, with the WOH stakeholders. While the study was being conducted and until the City's adoption of a modified solicitation plan or conclusion that no modifications are necessary, the City agreed to stop or reduce solicitation of land in Delhi, Windham, Andes, Roxbury, Walton, Kortright, Bovina, Middletown, and Halcott. The City will continue solicitation in those towns for the Streamside Acquisition Program (SAP) and the City-Funded Flood Buy-Out Program (NYCFFBO), and the City may accept incoming solicitations initiated by landowners. To continue to ensure that Watershed communities have adequate funding to review the City's land acquisitions, the City will increase the cap on local consultation funding from $30,000 to $40,000 per incorporated town and village, and funding will be available for towns to review the updated town level assessments.

The 2017 FAD commits the City to continue to solicit landowners for a total of 350,000 acres over the seven-year period, 2017 through 2024; however, some changes have been made to the LAP. The credit allowed for solicitation done under WAC's easement programs, NYCFFBO Program, and SAP has been increased from 10,000 acres per year in the Revised 2007 FAD to 20,000 acres per year in the 2017 FAD. The City will now receive five acres credit for every one acre solicited under the NYCFFBO program and the SAP. Although the 2017 FAD covers program requirements through 2027, the FAD acknowledges that the City's WSP, which permits the City to conduct a land acquisition program, expires in 2025. To address this, the 2017 FAD provides that the City solicit landowners only through 2024 and assess funding annually, with review by NYSDOH, USEPA, and NYSDEC, to ensure program funds are adequate to cover program needs. In addition, all FAD requirements for this program beyond 2025 are conditioned upon reissuance of the City's WSP. However, NYSDOH anticipates that land acquisition will continue to be an important component of the City's overall Watershed protection strategy. To avoid a potential gap in program activities, and to allow adequate time for stakeholder input on the LAP, the 2017 FAD requires that the City apply in 2022 for a water supply permit to succeed the 2010 WSP, three and a half years before the permit expires. In addition, the City must develop a Long-Term Land Acquisition Plan covering the period 2023-2033. This long-term plan will provide continuity as the City transitions from the City's last plan, covering the period 2012-2022, and will consider the findings of the NASEM Expert Panel regarding the LAP. The Expert Panel findings, the Long-Term Land Acquisition Plan, and public input will also help inform the conditions of the WSP reissuance.

The 2017 FAD continues to require the City to support WAC's Agricultural Easement Program and a stewardship fund to provide for continuing oversight of WAC's acquisitions. The 2017 FAD also ensures that adequate funding will be available for the WAC Forest Easement Program, in anticipation that this program will be continued beyond its pilot phase.

The 2017 FAD commits the City to providing additional funding to support the SAP. The 2017 FAD acknowledges that, in accordance with the City's WSP, and in consultation with NYSDOH, NYCDEP and other agencies or local governments, NYSDEC may make a written determination whether or not the SAP should be expanded beyond the Schoharie Reservoir Basin. A workgroup will be convened to explore payment approaches or incentives that may be applied to purchasing streamside lands.

The City commits to continue to explore opportunities to enhance the LAP through partnerships with land trusts, including a new program that may help protect farms that are not currently protected by an easement, when the current owners no longer wish to farm. This program will help transition these farms to new farm owners, with a conservation easement in place.

The City will also work with stakeholders to explore opportunities to use certain City-owned lands that have lower water quality protection values to facilitate relocation of development out of the floodplain.

Watershed Agricultural Program: As the Watershed Agricultural Program (WAP) has developed and matured over two decades, the metrics employed to measure the achievements of this program have evolved. The focus of the WAP has moved from maximizing farmer participation and development of Whole Farm Plans (WFPs) to implementing, maintaining, and repairing the Best Management Practices (BMP) that have been recommended by the WFPs. The 2017 FAD requires that the program implement at least 50% of the new BMPs that have been identified and repair 50% of the BMPs in need of repair by the end of 2024. Program funding will be reviewed to allow for greater levels of implementation and repair if feasible. WAP metrics will be evaluated in 2023 to determine if they are adequate to assess program efficacy and whether the metrics should be continued or modified.

Watershed Forestry Program: The Watershed Forestry Program continues to develop new ways to engage foresters and forest landowners and promote the stewardship of healthy, sustainable forests in the Watershed. The 2017 FAD promotes the use of tools like NYS's forest tax abatement program, the MyWoodlot.com website, and the Conservation Awareness Index to achieve program goals.

Stream Management Program: The Stream Management Program will continue to inventory stream features in the Watershed and work to prioritize stream restoration work based on water quality protection benefits. To support these efforts, the City will continue to pursue a study evaluating stream management projects' effectiveness in turbidity reduction. The 2017 FAD sets requirements for accomplishments for the Stream Management Program, including completing 24 stream projects, revegetating at least 5 miles of streambanks through the Catskill Streams Buffer Initiative (CSBI), and funding at least 100 community-driven projects through the Stream Management Implementation Program (SMIP). Through programs administered by both the

SMP partners and the CWC, the City also commits to funding flood mitigation projects that are generated from the Local Flood Analyses (LFAs) that have been done in a number of WOH communities.

A few issues related to the SMP were identified by stakeholders during the 2016 WOH stakeholder meetings. Stakeholders raised concerns that the City was requiring LFA-generated projects to undergo a benefit-cost analysis (BCA), using a procedure developed for the Federal Emergency Management Agency (FEMA), and meet a cost-benefit ratio (BCR) greater than 1.0. The City and WOH stakeholders have agreed that projects generated from the LFAs will undergo a FEMA BCA for the purposes of applying for State and federal funds, should they become available. However, projects will not be required to meet a specific FEMA BCR to be eligible for SMIP or CWC funding. The stakeholders will continue to work to develop a method for evaluating water quality benefits of LFA-generated projects to help prioritize project implementation.

Delaware County and WAC proposed a pilot program to make use of a new funding opportunity from the Conservation Reserve Enhancement Program (CREP). CREP now provides funding to vegetate riparian buffers on fallow agricultural lands. The City and stakeholders have agreed that Delaware County will use SMP funds allocated to DCSWD to implement a pilot program to integrate this new CREP program with the CSBI. The City will work with the CSBI programs in Greene, Schoharie, Sullivan, and Ulster Counties to make use of CREP where applicable through the CSBI framework.

Representatives from environmental advocacy groups suggested that the City participate in a workgroup composed of regulators and Watershed stakeholders to develop a plan for in-stream and riparian emergency recovery procedures following flood events. The plan would identify the locations of equipment and other key resources, provide contact information for local professionals trained to perform emergency recovery procedures, and outline a regulatory approval process that expedites emergency stream work while maintaining water resource protection. A requirement to participate in such a workgroup has been added to the 2017 FAD. The City will continue to support emergency stream intervention training in furtherance of these efforts.

Ecosystem Protection Program: The City's 2016 *Long-Term Watershed Protection Plan* introduced a new program, the Ecosystem Protection Program, which is a combination of several of the City's existing programs. Watershed protection efforts under the Forestry, Wetlands, and Invasive Species programs have been brought together under the Ecosystems Protection Program. During the term of the 2017 FAD, the City will submit updated Watershed Forest Management Plans and updated strategies for implementation of the Wetlands Protection and Invasive Species program elements.

East-of-Hudson (EOH) Nonpoint Source Pollution Control Program: The 2017 FAD commits the City to continue to implement an EOH Septic Repair Program in the four Catskill/Delaware FAD basins (West Branch, Boyd's Corner, Croton Falls, and Cross River Reservoirs), and will extend the availability of this program to the basins that are upstream and hydrologically connected to the Croton Falls Reservoir. To date, the existing program, as established by the

Revised 2007 FAD, has had little participation. The 2017 FAD requires the City to continue to provide funding to cover at least 50% of the cost of repair or replacement of 35 septic systems per year. The City will also report on efforts to enhance the awareness of potential program participants to program availability.

The 2007 FAD included a requirement that the City provide $4.5 million to address stormwater pollution in the Cross River and Croton Falls Reservoir basins, as well as the basins upstream/hydrologically connected to these reservoirs. This funding was to be used to provide a 50% match to local funding, and was directed at funding stormwater retrofit projects that would help EOH communities meet their requirements under the NYSDEC Municipal Separate Storm Sewer Systems (MS4) State Pollutant Discharge Elimination System (SPDES) general permit. The requirements for the MS4 permit are based on meeting specified phosphorus reduction goals. The Revised 2007 FAD included reference to additional funding for these projects, specifically $15.5 million that had been committed by the City's 2010 WSP. The $20 million previously allocated has been spent by the EOH communities to meet the requirements set for the first five-year period of the MS4 general permit. The 2017 FAD requires the City to provide $22 million of additional funding to EOH communities to continue efforts to reduce phosphorus inputs to EOH FAD basins. The City will also provide a new source of funds to facilitate the preliminary planning of community wastewater solutions for areas in the EOH FAD basins where poorly functioning individual septic systems have the potential to impact water quality. These stormwater and wastewater programs will work together to provide the most benefit toward achieving the goal of reducing phosphorus inputs, as well as other pollutants, to the City's EOH FAD reservoirs.

Catskill Turbidity Control Program: The Revised 2007 FAD required the City to fund an Expert Panel review of its use of the Operations Support Tool (OST). The City has contracted with the NASEM to convene a panel to conduct this review. The first meetings of the Expert Panel, which included public participation, were held in Kingston, NY on January 5 and 6, and April 24 and 25, 2017. The 2017 FAD continues the requirement for the Expert Panel review. The 2017 FAD also continues requirements for the City to report and meet with regulators on the EIS being done in relation to proposed modifications to the City's Catalum SPDES permit. Modifications to the City's Catskill turbidity control strategies may result from this environmental impact study.

Multi-tiered Water Quality Modeling Program: At the request of NYSDOH, the City has added a commitment to this program to hold an annual progress meeting with the regulators to present and discuss results of the modeling program's work. As the activity in this program continues to expand and as modeling has become an increasingly important tool used in planning for, managing, and operating the Catskill/Delaware water system, these meetings will help ensure that NYSDOH is up-to-date and understands the modeling the City uses to meet its Watershed protection goals.

Watershed Rules and Regulations: Many of the issues raised during the 2016 WOH stakeholder meetings pertained to the City's WR&Rs, in particular those related to septic systems, sewer systems, and stormwater. Working with the WOH stakeholders, and in consultation with NYSDOH and NYSDEC, the City has proposed revisions to the WR&Rs to address these concerns and to ensure that the WR&Rs incorporate the most recent State wastewater and

stormwater requirements. The 2017 FAD requires the City to report semi-annually on the progress of the proposed changes to the WR&Rs until they are adopted.

Within this program, the City also commits to provide NYSDOH with an annual update on the capital replacement of equipment and methods at eligible WWTPs that are required by the WR&Rs and not otherwise required by State or federal law.

Catskill/Delaware Filtration Plant Design: Since the 2002 FAD, the City has been required to report on any updates to its preliminary design for filtration facilities for the Catskill/Delaware water supply, which was initially required by the 1993 FAD. While some updates to the preliminary design have been made, the City has determined, and NYSDOH agrees, that a comprehensive review of this design should be conducted and that a new conceptual design should be developed, using the knowledge and technologies that are currently available. The 2017 FAD requires the City to report on the status of the design development process, conduct bench-scale and larger scale pilot studies and submit a conceptual design in 2026.

FAD Administration: During the 2016 WOH stakeholder meetings, the City's Watershed program partners (i.e., the County Soil and Water Conservation Districts, Cornell Cooperative Extension (CCE), WAC, and CWC) noted some commonly-experienced issues with the City's contracting and funding processes. In some cases, these issues have led to delays in program implementation. The City has initiated dialog between its partners and its contract and budget staff to better identify and address these issues to the extent possible. Consequently, the 2017 FAD requires the City to report annually on the status of key partnership contracts and funding projections. In addition, NYSDOH may request to meet with the City and program partners to discuss and foster resolution to any contract or funding issues that may be interfering with FAD program implementation.

References to program partner contracts throughout this FAD require the City to "execute and register" the contract by the specified due date. In accordance with the City's contracting procedures, an "executed" contract has been signed by the City and the program partner. Once an executed contract has been "registered", funding becomes available so that the program partner may begin invoicing to fund program activities.

Co-location of NYCDEP and CWC staff in the Watershed: NYSDOH recognizes that the success of many of the City's Watershed protection efforts relies on cooperation from the City's FAD program partners and Watershed stakeholders. The City has proposed to enhance opportunities for collaboration and cooperation with WOH partners and communities by co-locating some of the NYCDEP staff with CWC staff in a new office planned to be constructed in Arkville, NY. NYSDOH supports this effort in the FAD with the recognition that it may help facilitate Watershed protection program implementation. The 2017 FAD requires the City to sign a binding commitment to lease space in the new Arkville office building and to assign at least 40 NYCDEP staff to this location by December 31, 2026.

Other Stakeholder Issues: The WOH stakeholders also discussed efforts to enhance communication and coordination during emergencies related to the City's reservoir dams and forest fires on City lands. The City has agreed to meet with emergency management staff to

discuss these issues. While these efforts are outside of the scope of the FAD, NYSDOH recognizes that such coordination activities are integral to maintaining relationships that will sustain the City's ability to manage its water supply system into the future.

Revisions Made in Response to Public Comments

The Draft 2017 FAD was released to the public for review and comment July 21, 2017, followed by a 45-day comment period, which ended on September 5, 2017. Several revisions were made to the FAD in response to those public comments. Most of comments focused on the need for a midterm, or 5-year, review of the 2017 FAD. The text on page 8 and 15 of this FAD was revised to make clear the timeline of activities following the release of the NASEM Expert Panel report and the formal midterm review.

The Office of the Watershed Inspector General (WIG) submitted several recommendations related to the evaluation and regulation of stormwater associated with new development in the City's Watershed and the particular practices used in phosphorus-restricted basins. This submission included a report commissioned by the WIG titled, "Review of Stormwater Phosphorus Characteristics and Treatment for New Development in the New York City Watershed." Stormwater in the Watershed is regulated by NYSDEC and by the City's Watershed Rules and Regulations. The information submitted by the WIG, along with all other comments submitted during the 45-day comment period for the draft 2017 FAD, will be provided to the NASEM Expert Panel for consideration in its evaluation of the City's Watershed Protection Program. NYSDOH encourages the WIG to continue to work with the City and NYSDEC on new scientific developments related to stormwater practices and enhanced phosphorus removal.

In Conclusion

The 2017 FAD is one component of the City's comprehensive Watershed protection program, which has been established within the context of the MOA and previous FADs. Many of the program activities will be implemented through partnerships with Watershed stakeholders that the City has developed and maintained since the signing of the Watershed MOA. This FAD includes all the commitments made by the City in their 2016 Long-Term Plan. Note that the City is required to meet the requirements and due dates as set forth in this determination, rather than those in the 2016 Long-Term Plan, in instances where they differ from those in the 2016 Long-Term Plan.

In addition, the 2017 FAD requires continued implementation of the WR&Rs (effective May 1, 1997 and amended April 4, 2010) and compliance with the WSP issued by NYSDEC for land acquisition (last reissued December 24, 2010). The 2017 FAD also requires that the City continue to meet the filtration avoidance criteria, detailed in 40 CFR §§141.71, 141.72, 141.171, and 141.712; and 10 NYCRR Part 5, Subpart 5-1, Section 1.30(c).

The 2017 FAD supersedes the Revised 2007 FAD and will be effective until a further determination is made, currently scheduled for July 2027. Looking ahead, NYSDOH, in consultation with USEPA, will commence a mid-term review of the City's compliance with the

terms of the 2017 FAD, and issue a compliance assessment report on this review by July 31, 2021. By December 15, 2021, the City will submit the 2021 Long-Term Watershed Protection Plan to NYSDOH for review, which will address the findings of the compliance assessment report and incorporate any FAD program changes required by NYSDOH. These changes will then be incorporated into a draft Revised 2017 FAD, with a final Revised 2017 FAD scheduled for issuance in July 2022. To transition from the Revised 2017 FAD into the 2027 FAD, NYSDOH expects that the City will undertake a comprehensive evaluation of its Watershed protection program to be completed by March 31, 2026. NYSDOH will conduct a FAD compliance review, and issue a compliance assessment report on this review by July 31, 2026. This report will assist the City in its development of a new Long-Term Watershed Protection Plan due on December 15, 2026. The 2026 Long-Term Watershed Protection Plan will serve as the principal reference for the next FAD reissuance, scheduled for July 2027. The dates above are tentative and may be re-evaluated by NYSDOH as necessary.

Regulatory Authority

NYSDOH possesses authority under both State and federal law to enforce the 2017 FAD and the City's Long-Term Watershed Protection Plan, as revised in December 2016. Collectively, these documents, along with the City's WR&Rs and related requirements of the State Sanitary Code, *see* 10 NYCRR § 5-1.30, and federal regulations, *see* 40 CFR § 141.71(b), and 141.171, embody the "watershed control program" for filtration avoidance under State law and under the federal Safe Drinking Water Act, 42 USC § 300f *et seq.*

The City would be in violation of State and federal filtration avoidance requirements if it failed to comply with its obligations to fully maintain the watershed control program, including any failure by the City to make adequate, timely, and approvable submissions to NYSDOH required by that program. *See* 40 CFR § 141.71(b)(2) and (3) (watershed control program and disinfection treatment process must be "adequately designed and maintained" to "the State's satisfaction"); 10 NYCRR § 5-1.30(d). The City also would be in violation of State and federal filtration avoidance requirements if it were to fail to meet applicable standards for water quality and disinfection. *See* 40 CFR § 141.71(a)(1) and (2); 141.71(b)(1), (4), (5), and (6); 141.71(c)(2); 10 NYCRR § 5-1.30(d).

NYSDOH may take enforcement action against the City to address any such violations through the Commissioner's assessment of civil penalties of up to $25,000 per day for each violation, *see* Public Health Law § 206(4)(d), and in a State or federal court action brought by the Attorney General on NYSDOH's behalf to compel the City to comply with the watershed control program or, in the alternative, to compel the City to filter its Catskill/Delaware water supply.

2. SWTR Filtration Avoidance Criteria Requirements

The Surface Water Treatment Rule (SWTR) at 40 CFR §141.71, the Interim Enhanced Surface Water Treatment Rule (IESWTR) at 40 CFR §141.171, and 10 NYCRR, Subpart 5-1, §5-1.30 require that all surface water supplies provide filtration unless certain source water quality, disinfection, and site-specific avoidance criteria are met. In addition, the supplier must comply with: (1) the Revised Total Coliform Rule (RTCR); and (2) the Stage 1 Disinfectants and Disinfection Byproducts Rule. Further, the Stage 2 Disinfectants and Disinfection Byproducts Rule and the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) establish additional important requirements for unfiltered systems, although these provisions are not identified in USEPA regulations as filtration avoidance criteria.

The City will continue to report to NYSDOH and USEPA on two items not specifically required by the SWTR as conditions of filtration avoidance. The requirements are to: (1) report on the operational status of the Catskill/Delaware Ultraviolet Disinfection Facility, as required by LT2; and (2) notify NYSDOH and USEPA within 24 hours of learning that a sample from a distribution system RTCR compliance site has tested positive for *E. coli*.

Expert Panel Review

The 2017 FAD continues the requirement from the Revised 2007 FAD that the City convene an Expert Panel to review the City's Long-Term Watershed Protection Plan, water quality and water quality trends, and anticipated future activities that might adversely impact the City's water supply. The City will contract with the National Academies of Science, Engineering, and Medicine (NASEM) to conduct this review. Following the release of the Expert Panel's final report, the City will convene a public meeting with NYSDOH, USEPA, NYSDEC, and Watershed stakeholders to discuss the findings and recommendations of the Expert Panel. NYSDOH may request additional stakeholder meetings if necessary.

NYSDOH expects that this process will inform changes to the City's Long-Term Watershed Protection Plan and, correspondingly, some requirements of this FAD. The anticipated timeline for these activities would see revisions to the City's Long-Term Watershed Protection Plan in late 2021, and revisions to this FAD in mid-2022. Any revisions to this FAD would be subject to a 45-day public comment period.

The City's Filtration Avoidance Criteria Requirements are described in Section 2.1 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the SWTR Objective Criteria requirements in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Continue to meet SWTR filtration avoidance criteria (40 CFR §141.71 and §141.171, and 10 NYCRR §5-1.30) and submit reports and certification of compliance on: • §141.71(a)(1) and §5-1.30(c)(1) – raw water fecal coliform concentrations • §141.71(a)(2) and §5-1.30(c)(2) – raw water turbidity sampling • §141.71(b)(1)(i)/§141.72(a)(1) and §5-1.30(c)(3) – raw water disinfection CT values • §141.71(b)(1)(ii)/§141.72(a)(2) and §5-1.30(c)(4) – operational status of Kensico and Hillview disinfection facilities, including generators and alarm systems • §141.71(b)(1)(iii)/§141.72(a)(3) and §5-1.30(c)(5) – entry point chlorine residual levels • §141.71(b)(1)(iv)/§141.72(a)(4) and §5-1.30(c)(6) – distribution system disinfection levels (the City will include a discussion of any remedial measures taken if chlorine residual levels are not maintained throughout the distribution system) • §141.71(b)(5) and §5-1.30(c)(10) – distribution system coliform monitoring, including a summary of the number of samples taken, how many tested positive for total coliform, whether the required number of repeat samples were taken at the required locations, and which, if any, total coliform positive samples were also *E. coli* positive. For each *E. coli* positive sample, include the investigation of potential causes, problems identified and what has or will be done to remediate problems. Include copies of any public notices issued as well as dates and frequency of issuance.	Monthly[1]
All requirements described in §141.71(b)(4) and §5-1.30(c)(8) must continue to be met. Notify NYSDOH and USEPA within twenty-four hours of any suspected waterborne disease outbreak.	Event Based
All requirements described in §141.71(b)(6) and §5-1.30(c)(9) must continue to be met. Submit report on disinfection byproduct monitoring results.	Quarterly[2]

Notify NYSDOH/USEPA within twenty-four hours, if at any time the chlorine residual falls below 0.2 mg/L in the water entering the distribution system.	Event Based
Notify NYSDOH/USEPA by the close of the next business day, whether or not the chlorine residual was restored within four hours.	Event Based
Report on the operational status of Kensico Reservoir, West Branch Reservoir (on-line or by-pass), Hillview Reservoir, and whether any of these reservoirs experienced unusual water quality conditions.	Monthly[1]
Regarding the emergency/dependability use of Croton Falls and Cross River source water: • The City shall not introduce Croton Falls or Cross River source water into the Catskill/Delaware water supply system without the prior written approval of NYSDOH. • As a condition of approval, the City must demonstrate continuing, substantial compliance with the Watershed protection program elements being implemented in the Croton Falls and Cross River watersheds that are contained in this Determination. • As a condition of approval, the City will submit water quality data and monitor water quality at Croton Falls and/or Cross River, pursuant to the approved sampling plan submitted to NYSDOH and USEPA in December 2016, or as revised by the City, and approved by NYSDOH and USEPA, thereafter. NYSDOH approval under this Section may include additional conditions including, but not limited to, project schedules or specific operating goals or parameters for the City's water supply facilities (such as maximizing use of the Croton Filtration Plant, or operation of the Catskill/Delaware UV Plant at 3-log inactivation). In evaluating requests for approval from the City, NYSDOH shall consult with USEPA.	Continuous

Contract with the National Academies to conduct an Expert Panel review of the City's Long-Term Watershed Protection Plan, water quality and water quality trends, and anticipated future activities that might adversely impact the water supply and its ability to comply with 40 CFR §141.71 and §141.171, and 10 NYCRR §5-1.30. Evaluate the adequacy of the City's Watershed Protection Programs for addressing these concerns and provide recommendations, as necessary, for improving programs.	
• Issue Commence Work notice to National Academies.	1/31/2018
• Upon request of the National Academies, provide any necessary background information and respond to any pertinent questions within the scope of the review.	Ongoing
• Ensure the schedule for public meetings is widely available either on a project-specific website, National Academies website or the NYCDEP website.	Ongoing
• Report on the status of the Expert Panel review in the FAD Annual Report.	Annually[3]
• Provide the final report to NYSDOH, USEPA, and NYSDEC.	Commence Work + 33 months
• Convene a public meeting with the regulators and Watershed stakeholders to discuss the major findings and recommendations of the Expert Panel review.	Date of Final Report + 4 months

Report Description	Due Date
Submit 2021 Long-Term Watershed Protection Plan	12/15/2021
Submit 2026 Long-Term Watershed Protection Plan	12/15/2026
Report on program implementation in the FAD Annual Report.	Annually[3]

[1] Monthly means reports for a monthly reporting period must be submitted no later than ten days after the end of each month.
[2] Quarterly means reports for a calendar quarter reporting period must be submitted no later than ten days after the end of each quarter.
[3] Annually means reports for a calendar year reporting period must be submitted no later than March 31 of the following year.

3. Environmental Infrastructure Programs

3.1 Septic and Sewer Programs

The City implements a comprehensive set of programs that serve to reduce the number of failing or potentially failing septic systems in the Watershed.

The goals for the Sewer and Septic Program under the 2017 FAD are to:

- Provide adequate funding for the Septic Remediation and Replacement program.
- Provide adequate funding for the Small Business Program.
- Provide adequate funding for the Cluster System Program.
- Continue to fund the Septic Maintenance Program.
- Complete the currently active Sewer Extension Projects.
- Provide funding for the Alternate Design Septic Program.

In all the septic system programs, where sewer extensions to City-owned WWTPs or to WWTPs not owned by the City are more cost-effective than stand-alone solutions, the City will support the design and construction of such sewer extensions. The City will charge households served by a sewer extension to a City-owned WWTP no more in annual operation and maintenance costs than the maximum for households served by WWTPs in the New Infrastructure and Community Wastewater Management Programs pursuant to MOA Paragraph 122. Where a sewer extension to WWTP not owned by the City is warranted, the City will provide additional funding to the owner of the WWTP to cover any annual operation and maintenance costs above the household maximum established in MOA Paragraph 122. Where a sewer extension serves an entity other than a household, the City will provide supplemental funding to ensure that the entity's annual operation and maintenance costs are comparable to those of non-residential sewer users served by WWTPs in the New Infrastructure or Community Wastewater Management Programs.

Septic Remediation and Replacement Program

The Septic Remediation and Replacement Program provides for pump-outs and inspections of septic systems serving single or two-family residences in the WOH Watershed; upgrades of substandard systems; and remediation or replacement of systems that are failing or reasonably likely to fail in the near future. Participation is currently available to residential properties within 700 feet of a watercourse or within the 60-day Travel Time Area. The goal is to ensure funding is in place to remediate or replace approximately 300 failing or likely-to-fail septic systems per year.

Small Business Program

The Small Business Septic System Rehabilitation and Replacement Program helps pay for repair or replacement of failed septic systems serving small businesses (those employing 100 or fewer people) in the WOH Watershed. Through CWC, eligible business owners are reimbursed for a

percentage of the cost of septic repairs. The goal is to ensure funding is in place to remediate or replace failing septic systems serving small businesses.

As part of discussions with Watershed stakeholders in 2016, the City agreed to fund an expansion of the CWC Small Business Septic System Program. This expansion will include funding 100% of the costs of repairs and qualifying alterations and modifications to septic systems for: small businesses with 20 or fewer employees; not-for-profit organizations with 5 or fewer locally-based employees; and governmental entities. The City will also fund 75% of the costs of repairs of, and qualifying modifications to, septic systems up to $100,000 for a single system, plus 100% of any cost over $100,000 for: small businesses with 21 or more employees; and not-for-profit organizations with 6 or more locally-based employees. For any equipment or methods of operation required solely by the WR&Rs and not otherwise required by State or federal law, the City will fund 100% of the cost for a septic system serving a population center or an entity that is "public" for purposes of Public Health Law (PHL) Section 1104.

Cluster System Program

The Cluster System Program funds the planning, design, and construction of cluster systems in thirteen communities in the WOH Watershed. Through CWC, eligible communities may elect to establish districts that would support cluster systems and tie multiple properties to a single disposal system. This enables communities to locate disposal systems on larger sites in areas where existing structures were sited on insufficiently-sized lots. The goal is to ensure funding is in place to remediate failing septic systems through construction of cluster systems. The City will also work with CWC to modify the program rules and program agreement for this program to help ensure that projects are implemented in a timely manner and that eligible operation and maintenance costs are adequately funded by the City.

Septic Maintenance Program

The Septic System Maintenance Program is a voluntary program open to home owners who constructed new septic systems after 1997 or participated in the septic repair program, and is intended to reduce the occurrence of septic system failures through regular pump-outs and maintenance. Through CWC, home owners are reimbursed 50% of eligible costs for pump-outs and maintenance. As part of the program, CWC also develops and disseminates septic system maintenance educational materials. The goal is to continue to fund 50% of the cost for septic pump-outs to qualified properties to enhance the functioning, and reduce the incidence of failures, of septic systems throughout the WOH Watershed.

Sewer Extension Program

The Sewer Extension Program has funded the design and construction of wastewater sewer extensions connected to City-owned WWTPs discharging in the WOH Watershed. The goal of this program is to reduce the number of failing or potentially failing septic systems by extending WWTP service to priority areas. The City has completed projects in the towns of Roxbury (Grand Gorge WWTP); Hunter-Haines Falls (Tannersville WWTP); Neversink (Grahamsville WWTP); and Hunter-Showers Road (Tannersville WWTP). The City anticipates that the sewer extension projects now under construction in Shandaken (Pine Hill WWTP) and Middletown (Margaretville WWTP) will be completed before the 2017 FAD is in place. The long-term goal for this program will depend upon future determination of need for projects.

Alternate Design Septic Program

The Alternate Design Septic Program funds the eligible incremental compliance costs of the septic provisions of the WR&Rs for new septic systems to the extent they exceed state and federal requirements. The City funded the Alternate Design Septic Program under the Watershed MOA. The goal is to support the use of funding to cover the eligible incremental costs to comply with the septic system provisions of the WR&Rs. This may include, at the CWC Board's discretion, incremental costs associated with a NYCDEP determination of high groundwater based on soils tests, when such a determination is disputed by an applicant's professional engineer.

The City's Septic and Sewer program is described in Section 2.2.1 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Septic and Sewer Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
In accordance with CWC Program Rules, contract with CWC to provide adequate funding in support of the Septic Remediation and Replacement Program at a funding level sufficient to address 300 septic systems per year and to cover the future costs of additional septic systems as they are identified and enrolled in the program.	Ongoing
In accordance with CWC Program Rules, contract with CWC to provide adequate funding in support of the Small Business Septic System Program provided that the need for such funding has been demonstrated. • Make additional funding available to the Small Business Septic System Program to address a total of 15 systems per year. A minimum of $13 million shall be made available to this program through 2027. • Reimburse CWC for funding used to support the Small Business Septic System Program prior to contract execution.	Ongoing 6/30/2019 6/30/2019
In accordance with CWC Program Rules, contract with CWC to provide adequate funding in support of the Cluster System Program component of the Septic Remediation and Replacement Program. • Work with CWC to modify the Cluster System Program Rules, if the City and CWC conclude that modifications are necessary to facilitate implementation of cluster systems. Such modifications may include, but are not limited to: (i)	Ongoing 6/30/2018

incorporating defined time frames for milestones in project schedules (e.g., Study Phase to be completed 1 year after community agrees to participate in the program; funding for project to be approved or denied within 90 days after receipt of completed Study Phase report); (ii) indicating that if the Study Phase determines that a cluster system(s) is not the most cost-effective wastewater solution for an area identified with septic system failures, then the consultant may recommend a more cost-effective solution (e.g., sewer extension or other wastewater management system); (iii) clarifying that where a sewer extension to a City-owned WWTP or to a WWTP not owned by the City is the most cost-effective solution, the City will provide funding to ensure that operation and maintenance costs charged to the entities served by such a sewer extension are comparable to what they would be under the New Infrastructure and Community Wastewater Management Programs; and (iv) identifying operation and maintenance costs of cluster systems that are eligible for funding under the program. • Make an additional $1 million available to the Cluster System Program to cover the eligible operation and maintenance costs of cluster systems that are implemented under the program. The need for additional funding for this program will be assessed annually.	6/30/2019
Contract with CWC to provide funding, if necessary, to allow maintenance each year of 20% of the total number of septic systems eligible under the Septic Maintenance Program Rules.	Ongoing
Construct sewer extension projects in Shandaken (Pine Hill WWTP), Middletown (Margaretville WWTP).	Completed
Support the use of the already provided funding to cover the eligible incremental costs for septic systems serving population centers or entities that are “public” for purposes of PHL Section 1104 to comply with the septic system provisions of the WR&Rs to the extent that they are not otherwise required by state or federal regulations.	Ongoing

Report Description	Due Date
Report on program implementation in the FAD Annual Report: • Septic Remediation and Replacement Program • Small Business Program • Cluster System Program • Septic Maintenance Program • Sewer Extension Program • Alternate Design and Other Septic Systems	Annually, 3/31

3.2 New Sewage Treatment Infrastructure Program

This program was concluded under the Revised 2007 FAD.

3.3 Community Wastewater Management Program

The Community Wastewater Management Program (CWMP) funds construction of community septic systems and/or septic maintenance districts in communities identified in Paragraph 122 of the MOA (the 8-22 communities). This program is designed to improve water quality and protect public health by reducing the transport of pathogens, nutrients and organic matter into waterways. Much of this work has already been completed under prior FADs, and final projects have been completed for the following communities: Bloomville, Boiceville, Hamden, DeLancey, Bovina, Ashland, Haines Falls, Trout Creek, Lexington, and South Kortright. The Shandaken, Claryville, West Conesville, and Halcottsville projects have received block grant approval and are eligible to start the Design Phase. The remaining of the MOA-identified communities (New Kingston) is currently in the Study Phase. For all projects, the timeline of the Design Phase commences when the proposed project outlined in the Study Phase is approved by the parties, the timeline of the Construction Phase commences when the plans drafted during the Design Phase are approved.

The potential need for a community wastewater management system for the Hamlet of Shokan was identified subsequent to the MOA. The Revised 2007 FAD required the City to complete a study to determine that potential need. Under the 2017 FAD, NYSDOH, in consultation with NYSDEC, has directed the City to fund an engineering study to determine the appropriate community wastewater management system to serve the hamlet of Shokan in the Town of Olive, as well as to fund the design and construction of that system.

The City's CWMP is described in Section 2.2.2 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the CWMP in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Complete preliminary study for Halcottsville and New Kingston.	Completed
Approve block grant for Halcottsville.	Completed
Approve block grant for New Kingston.	Six months from date of completed Study Phase (estimated 3/31/2018)
Complete design for the following projects: • Shandaken • Claryville • West Conesville • Halcottsville • New Kingston	One year from date of town approval to enter Design Phase Estimated 9/30/2018 Estimated 10/31/2018 Estimated 12/31/2018 Estimated 12/31/2018 Estimated 6/30/2019
Complete construction for the following projects: • Shandaken • Claryville • West Conesville • Halcottsville • New Kingston	Two years from date of completed Design Phase) Estimated 9/30/2020 Estimated 10/31/2020 Estimated 12/31/2020 Estimated 12/31/2020 Estimated 6/30/2021

Community Wastewater System for the Hamlet of Shokan	
• Work with CWC to provide funding for the engineering study for a community wastewater system for the Hamlet of Shokan.	Completed
• Contract with CWC to provide funding to implement the Shokan project.	12/31/2018
• Complete preliminary study for Shokan, which includes the proposed service area to be approved by NYSDOH, USEPA and NYSDEC.	3/31/2019
• Approve block grant for Shokan project.	Six months from date of completed Study Phase (estimated 9/30/2019)
• Complete design for Shokan.	One year from date of town approval to enter Design Phase (estimated 12/31/2020)
• Complete construction for Shokan.	Two years from date of completed Design Phase (estimated 12/31/2022)

Report Description	**Due Date**
Report on program implementation in the FAD Annual Report: • Shandaken • West Conesville • Claryville • Halcottsville • New Kingston • Shokan	Annually, 3/31

3.4 Wastewater Treatment Plant Upgrade Program

As of the Revised 2007 FAD, this program was concluded. The City's commitment to pay for Capital Replacement of Watershed Equipment and Methods at eligible WWTPs can be found in Section 6.1 of this FAD.

3.5 Stormwater Programs

As part of the MOA, the City established two Stormwater Cost-Sharing Programs: (1) Future Stormwater Controls paid for by the City for Single Family Houses; Small Businesses and Low Income Housing Program; and (2) the WOH Future Stormwater Controls Program. These programs provide financial support for the cost of designing, constructing and, in some cases, maintaining stormwater controls that are required by the WR&Rs, but not otherwise required by federal or State law, for certain new development projects.

The City has committed to replenish funding for the Future Stormwater Controls Program, in the amount of $4,720,869, based on projected needs for the program.

The Stormwater Retrofit Program, also administered by the CWC, was established in the MOA. The program addresses existing stormwater runoff problems in the WOH Watershed through the construction of stormwater BMPs. Funding is provided for design, permitting, construction, and maintenance of BMPs that address runoff from concentrated areas of impervious surfaces, as well as community-wide stormwater infrastructure assessment and planning. Program funding can also be used for retrofit projects installed in coordination with the CWMP.

The goals for the Stormwater Program under the 2017 FAD are to:

- Fund eligible incremental costs to comply with the stormwater provisions of the City's WR&Rs.
- Ensure funding for a position at CWC to assist applicants in complying with the stormwater provisions of the City's WR&Rs.
- Provide funding for nine stormwater retrofit projects per year.
- Fund operations and maintenance of retrofit projects completed under the Stormwater Retrofit Program.
- Contract with CWC to fund payments under MOA Paragraph 145 via CWC instead of directly from the City.

The City's Stormwater Programs are described in Section 2.2.3 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Stormwater Programs in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Contract with CWC to provide $4,720,869 to CWC to replenish the Future Stormwater Funds to be used in accordance with MOA Paragraph 128.	On or Before 5/31/2019

Fund, in accordance with the MOA, and consistent with the CWC program rules, as amended, the eligible incremental costs to comply with the stormwater provisions of the WR&Rs to the extent that they are not otherwise required by federal or State law.	Ongoing
Contract with CWC to provide adequate funding for an appropriate position at CWC to assist applicants undertaking regulated activities to comply with the stormwater provisions of the WR&Rs.	Ongoing
Continue to contract with CWC to provide the funding needed to allow the Stormwater Retrofit Program to construct nine (9) stormwater retrofit projects per year, consistent with the Stormwater Retrofit Program Rules. Selection and implementation of eligible projects will be based on potential to benefit water quality protection. These projects are in addition to those installed in coordination with CWMP projects.	Ongoing
Support the use of program funding for retrofit projects installed in coordination with CWMP projects.	Ongoing
Continue to contract with CWC to provide the funding needed for the operations and maintenance of retrofit projects funded through the Stormwater Retrofit Program consistent with the Stormwater Retrofit Program Rules, provided the demonstrated need for such funding continues.	Ongoing

Report Description	Due Date
Report on implementation of the Future Stormwater Controls Programs and the Stormwater Retrofit Program in the FAD Annual Report.	Annually, 3/31

4. Protection and Remediation Programs

4.1 Waterfowl Management Program

Surveys of Kensico Reservoir in 1992 established a strong relationship between avian populations and bacteria (fecal coliform) levels in untreated water. As a result, the City instituted a Waterfowl Management Program to reduce or eliminate, where possible, all waterbird activity in order to mitigate seasonal elevations of fecal coliform bacteria. A similar program was established at Hillview Reservoir, and was expanded on an "as needed" basis to several more reservoirs.

"Bird dispersal" refers to use of pyrotechnics, motorboats, airboats, remote control motorboats, propane cannons, and other methods employed to physically chase or deter waterbirds from inhabiting the reservoirs.

"Bird deterrence" refers to preventative methods employed to prevent waterbirds from inhabiting the reservoirs, such as: nest and egg depredation, overhead bird deterrent wires, bird netting on shaft buildings, meadow maintenance, and other methods.

"As needed" refers to implementation of bird management measures based on criteria including fecal coliform concentrations approaching or exceeding 20 colony-forming units at reservoir effluent structures coincident with elevated bird populations. Other criteria include current bird populations, recent weather events, operations flow conditions within the reservoir, reservoir ice coverage and Watershed snow cover, and determination that active bird management measures would be effective in reducing bird populations and fecal coliform bacteria levels.

The goals for the Waterfowl Management Program under the 2017 FAD are to:

- Continue active and "as needed" waterbird management through dispersal and deterrent methods at Kensico Reservoir and Hillview Reservoir.
- Continue "as needed" management at other City Reservoirs.

The City's Waterfowl Management Program is described in Section 2.3.1 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Waterfowl Management Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Active Waterbird Dispersal – Kensico Reservoir.	Annually, 8/1 to 3/31
Active Waterbird Dispersal – Hillview Reservoir.	Year-round
"As Needed" Bird Dispersal – West Branch, Rondout, Ashokan, Croton Falls, and Cross River Reservoirs.	Annually, 8/1 to 4/15
"As Needed" Bird Deterrent Measures – Kensico, West Branch, Rondout, Ashokan, Croton Falls, Cross River, and Hillview.	Year-round

Report Description	Due Date
Summary of Waterfowl Management Program activities at all reservoirs, including wildlife management at Hillview Reservoir (8/1 to 7/31).	Annually, 10/31

4.2 Land Acquisition Program

The Land Acquisition Program (LAP) seeks to prevent future degradation of water quality by acquiring environmentally-sensitive lands. The overarching goal of the LAP is to ensure that these high priority Watershed lands are placed into permanently protected status, either through fee simple purchase or conservation easements (CEs), so that the Watershed continues to be a source of high-quality drinking water for the City and upstate counties. In pursuit of this goal, since 1997 the City has secured over 140,000 acres of land and CEs. Prior to 1997, the City owned 34,193 acres of reservoir buffer land. Now more than 38% of the more than one million acres covered by the Catskill/Delaware Watershed is currently protected by the City, the State, and/or other entities such as municipalities and land trusts.

The City's strategy for prioritizing lands for acquisition is defined in its 2012-2022 Long-Term Land Acquisition Plan. This plan focuses its core land acquisition activities for this period toward less-protected basins and sub-basins, in particular the Schoharie, Pepacton, and Cannonsville Reservoir basins. The plan also seeks to develop parcel selection procedures that will maximize the water quality benefits of acquisitions. While the long-term plan favors the purchase of more cost-effective parcels in the less protected areas of the Watershed, the City has continued to look for opportunities to acquire properties in the well-protected Kensico and EOH FAD basins when properties important to water quality protection become available.

In addition to the City's core land acquisition activities, the LAP includes some other important land acquisition efforts in the Watershed. The City-funded Flood Buy-Out (NYCFFBO) Program was initiated by the Revised 2007 FAD and allows the City to acquire high-priority improved parcels that are important from a flood mitigation and water-quality perspective, but which did not participate in or qualify for a federal and/or State flood buy-out program. The City supports, through partnership with WAC, an Agricultural and a Forest Easement Program. The Revised 2007 FAD committed the City to fund the costs of stewardship and enforcement of the current and future portfolio of these CEs. The Streamside Acquisition Program (SAP) is being piloted by the Catskill Center, in partnership with the City, to focus on securing, in fee simple or CE, streamside (riparian) buffer lands and floodplains in the Schoharie Reservoir basin. The City will convene a work group to explore payment approaches or incentives that might increase participation in this program. This FAD requires that an additional $3 million will be committed to support the SAP pilot. If it is determined that a streamside acquisition program should be continued for the duration of the FAD, the 2017 FAD requires the City to commit an additional $8 million to the program. If needed, additional funding for acquisitions made under the SAP may be drawn from the funding appropriated for the core LAP.

The City will continue to work with land trusts to explore and implement additional ways to enhance the efforts of the LAP. A focus for this FAD period will be to consider the feasibility of a program, in partnership with land trusts and stakeholders, that will protect the majority of each transitioning farm (for example, a farm that is at risk of foreclosure or farms with retiring farmers). This program would seek to secure a conservation easement on the majority of the farm.

The City is authorized to implement the LAP by a Water Supply Permit (WSP) issued by NYSDEC. The current WSP became effective December 2010 and expires in 2025. While the term of the 2017 FAD extends into 2027, solicitation and funding requirements for the LAP beyond 2024 are contingent upon reissuance of the WSP. Application for a WSP to succeed the 2010 WSP is required by June 2022 to ensure adequate time for stakeholder input on the conditions of the successor WSP. In addition, the FAD requires the City to develop a new Long-Term Land Acquisition Plan, which will cover the period 2023-2033 and will consider the findings of the National Academies Expert Panel review of the City's Watershed Protection Program. It is anticipated that the long-term plan and the Expert Panel findings will also help inform the conditions of the successor WSP.

NYSDOH projects that the funding needed to support the level of solicitation required through 2024 for the City's core LAP will be a minimum of $69.3 million. The City shall deposit $23 million into a segregated account for land acquisition funds every two years starting in July 2018 through 2022. Funding for the remaining term of the 2017 FAD will be based on projections for program activity consistent with the 2023-2033 Long-Term Land Acquisition Plan.

Pursuant to discussions with WOH stakeholders, on April 28, 2017, the City provided new or updated Town Level Assessments for 21 WOH towns to NYSDOH, USEPA, NYSDEC, and WOH stakeholders. Following the release of those assessments, the City will accept stakeholder comments for 180 days. Based on the updated Town Level Assessments and its review of comments received, the City will evaluate the need for modification of its 2012-2022 Long-Term Land Acquisition Plan and discuss its conclusions with NYSDOH, USEPA, and NYSDEC. The City will share any proposed modifications to its solicitation plan, or the basis for a conclusion that no modifications are warranted, with the WOH stakeholders. During the period between February 14, 2017 and the City's adoption of a modified solicitation plan or conclusion that no modifications are necessary, the City agreed to limit solicitations in certain towns.

The City provides funding through the Local Consultation Funds program, administered by the CWC, to cover the eligible costs to communities related to their review of the City's proposed land acquisitions. The cap on this funding will be increased from $30,000 to $40,000 for each incorporated town and village, and up to $5,000 will be made available for municipalities to review the updated Town Level Assessments.

The goals for the LAP under the 2017 FAD are to:

- Continue to acquire land and CEs in accordance with all program requirements set forth in the MOA, FAD, and WSP;
- Develop a new Long-Term Land Acquisition Plan for the period 2023-2033, which will consider the recommendations of the Expert Panel review of the City's Watershed Protection Program;
- Continue to work with and support partners to secure properties and CEs pursuant to the applicable programs (i.e., the NYCFFBO Program, the Agricultural and Forest Easement Programs, and the SAP, which are funded outside the traditional land acquisition segregated account) and related requirements.

The City's LAP is described in Section 2.3.2 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the LAP in accordance with the milestones below.

Activity	Due Date
Continue to provide sufficient funding to support the LAP in accordance with the 2010 Water Supply Permit (WSP) and program objectives. • The City shall deposit or cause to be deposited $23 million into the land acquisition segregated account. • The City shall deposit or cause to be deposited $23 million into the land acquisition segregated account. • The City shall deposit or cause to be deposited $23 million into the land acquisition segregated account.	7/01/2018 7/01/2020 7/01/2022
During annual budget discussions with NYSDOH, USEPA and NYSDEC, discuss potential need for any additional monies beyond that already committed to all land acquisition programs. If such funding is needed, sequester the funds within six (6) months from written request by NYSDOH.	Annually, 11/30
Submit plans for each two-year period to solicit 350,000 acres through 2024.[1] SAP and NYCFFBO acres may be credited 5 acres for every 1 acre solicited pursuant to the agreed methodology. Up to a total of 20,000 acres per year of WAC, SAP, and NYCFFBO acres may be credited towards solicitation goals.	Biennially, beginning October 2018
Accept stakeholder comments on updated Town Level Assessments. If warranted based on the updated Town Level Assessments and comments received, modify the 2012-2022 Long-Term Land Acquisition Plan and submit to NYSDOH for approval. Such a submission may include recommendations for modifications to the solicitation and funding milestones for the core LAP.	Completed 4/30/2018

Submit a Long-Term Land Acquisition Plan, subject to NYSDOH approval, for the period 2023-2033. This plan will consider the findings of the National Academies Expert Panel review of the City's Watershed protection programs, including the LAP, as well as public input received in response to the Expert Panel review. Based on the approved plan, solicitation rates for 2025 through 2027 will be determined by NYSDOH, in consultation with USEPA and NYSDEC.[2]	5/31/2022
Submit application for a WSP to succeed the 2010 WSP.	6/30/2022
Contingent upon issuance of a successor WSP to the 2010 WSP, continue to implement the LAP for the remainder of the 2017 FAD term.	Upon issuance of a successor WSP
The City shall deposit or cause to be deposited into the land acquisition segregated account sufficient funds to support projected program activity based on solicitation rates approved for 2025 through 2027.[3]	6/30/2025
Revise program rules for the Local Consultation Funds Program and execute and register contract change with CWC to increase the cap on funding to $40,000 per incorporated town or village. Amend agreement with CWC for the Local Consultation Funds Program to provide $5,000 per municipality to review updated Town Level Assessments.	6/30/2018 6/30/2018
Continue to work with land trusts regarding large properties with dwellings that could be pre-acquired by land trusts and vacant portions conveyed to the City, subject to support by the local town and interested land trust(s).	Ongoing, in accordance with the 2010 WSP
Execute and register a contract or contract amendment with WAC to provide $11 million in funding to continue the WAC Agricultural Easement program for the entire duration of the 2017 FAD.[3]	3/31/2020

Continue to work with stakeholders to explore the feasibility of a program that will protect the majority of each transitioning farm (agricultural land that is at risk of foreclosure or farms with retiring farmers). This program would seek to secure a conservation easement on the majority of the farm.	
• Report on the findings of this workgroup.	6/30/2018
• Meet with NYSDOH, USEPA, and NYSDEC to discuss findings of the workgroup.	7/31/2018
• If NYSDOH determines, informed by the findings of the workgroup, that a farm transition program would be feasible, compatible with Community goals, and beneficial to Watershed protection, the City, in consultation with NYSDOH, USEPA, NYSDEC, and stakeholders, shall propose a plan to implement such a program in the Watershed.	1/31/2019
• If required, submit a request to NYSDEC to modify the Water Supply Permit to incorporate this new program.	2/28/2019
Based on the requirements of the 2010 WSP, submit a program evaluation report on the NYCFFBO Program.	
• First evaluation report	6/15/2018
• Second evaluation report	6/15/2021
The City shall ensure that funding for full implementation of this program is continued during the evaluation period.	

<u>WAC Forest Conservation Easement</u> Based on the requirements of the 2010 WSP, submit a written evaluation of the WAC Forest Conservation Easement acquisition program, making recommendations as to whether the program should be continued, modified, or terminated, as well as any proposed improvements to the program.	Completed
If, in accordance with the City's 2010 WSP, a written determination is made by NYSDEC, in consultation with NYSDOH, the City, and other agencies or local governments, to authorize that the WAC Forest Easement Program be continued, the City shall provide WAC a minimum of $8 million to continue the program for the remainder of the 2017 FAD.[3] Such determination will consider the recommendations of the City's evaluation of its ancillary programs.	
• Complete contract amendment with WAC, including the transfer of funds.	Within 18 months from written determination
If authorization is not given to continue the program, all unused funds, with any earnings thereon, are to be returned to the City to be deposited in the LAP-segregated account for use by the LAP.	
Submit a status report on the WAC Forest Conservation Easement acquisition program.	12/15/2020
<u>SAP</u> Continue implementation of a $5 million Pilot SAP.	Ongoing, in accordance with the 2010 WSP
Based on the requirements of the 2010 WSP, submit a written evaluation of the SAP, making recommendations as to whether the program should be continued, modified, or terminated, as well as any proposed improvements to the program.	Completed
The City shall execute and register a contract or contract amendment to make an additional $3 million available to the Catskill Center to continue to implement the SAP through at least 2022.[3]	6/30/2019
Submit a status report on the SAP.	12/15/2020

If, in accordance with the City's 2010 WSP, a written determination is made by NYSDEC, in consultation with NYSDOH, the City, and other agencies or local governments, to authorize that a streamside acquisition program be continued and expanded beyond the Schoharie Reservoir Basin, execute and register a contract to make a minimum of $8 million available to the Catskill Center to implement or continue to implement such a program for the remainder of the 2017 FAD.[3] Consistent with the WSP, such written determination will include addressing the City's recommendations for the program. If authorization is not given to continue the program, all unused funds, with any earnings there on, are to be returned to the City to be deposited in the LAP-segregated account for use by the LAP.	Within 18 months of such written determination
If NYSDOH determines that additional funding is required for acquisitions under the SAP or other streamside acquisition program, funds may be drawn from the City's LAP-segregated account.	As needed
The City shall convene a working group of stakeholders to explore payment approaches or incentives that might increase participation by landowners in SAP. • Convene stakeholder group. • Submit to NYSDOH, USEPA, and NYSDEC for review and NYSDOH approval a proposed approach to provide payment or incentives to increase participation in SAP. If a WSP modification is required to implement this new approach, submit a request to NYSDEC to modify the WSP.	2/28/2018 3/31/2019
Submit a report that evaluates the need, opportunities, and options for enhancing riparian buffer protection efforts in the Kensico and EOH FAD Basins, including, but not limited to, establishing a riparian acquisition program for these basins, either through the City's existing programs or another entity. The report shall discuss the metrics used for evaluating these options.	9/30/2018
Participate in a workgroup convened to assess opportunities to use certain potentially developable LAP-acquired lands that have lower water quality protection value to facilitate relocation of development out of floodplains. • Report on the progress of this workgroup.	6/30/2018

If requested by a local governmental entity which has applied to FEMA for funding, the City will engage in good faith negotiations to participate in any future FEMA/SOEM Flood Buy-out (FBO) Program, providing up to 25% of the eligible costs as the local match for each NYC Watershed property that is participating in the program and deemed eligible and acceptable by the willing buyer, whether it be the City or local community.	As required by FEMA/SOEM FBO program rules
Continue to implement a NYCFFBO program pursuant to the 2010 WSP, as amended, and agreements with local stakeholders. Properties may be eligible for the Program based on municipal concurrence, referral, expected flood mitigation, and water quality benefits derived.	Ongoing

[1] Solicitation beyond 2024 is contingent upon re-issuance of a NYSDEC WSP authorizing continuation of the LAP beyond 2025. Solicitation rates beyond 2024 will be evaluated based on the NASEM Expert Panel review of the City's Watershed protection programs and public input and will be consistent with the Long-Term Land Acquisition Plan.

[2] Implementation of this Long-Term Land Acquisition Plan beyond 2025 will be contingent upon re-issuance of a NYSDEC WSP authorizing continuation of the LAP beyond 2025.

[3] The requirement to allocate funding for purchases beyond 2025 is contingent upon re-issuance of a NYSDEC WSP authorizing continuation of the LAP beyond 2025. Funding amounts may be re-assessed by NYSDOH based upon the 2023-2033 Long-Term Land Acquisition Plan. With respect to the determinations following the evaluations of the WAC Forest Conservation Easement program and the SAP, the City will not be required to allocate additional funds for those programs unless and until such acquisitions are also authorized under a NYSDEC WSP.

Report Description	Due Date
Submit a modified solicitation plan or a statement that the City does not intend to modify the 2012-2022 Long-Term Land Acquisition Plan at this time.	Completed
Submit the first evaluation report on the NYCFFBO Program.	6/15/2018
Report on progress of workgroup convened to assess opportunities to use LAP-acquired lands to facilitate relocation of development out of the floodplain.	6/30/2018
Submit report evaluating need, opportunities, and options for enhancing riparian buffer protection efforts in Kensico and EOH FAD Basins.	9/30/2018
Submit proposed approach for providing payments or incentives that might increase participation by landowners in SAP.	3/31/2019
Submit a status report on the WAC Forest Conservation Easement acquisition program.	12/15/2020
Submit a status report on the SAP.	12/15/2020
Submit the second evaluation report on the NYCFFBO Program.	6/15/2021
Submit a Long-Term Land Acquisition Plan for the period 2023-2033.	5/31/2022
Submit semi-annual reports on program activities and status.	Semi-annually, 3/31 in FAD Annual Report and 7/31

4.3 Land Management Program

The City has made a significant investment in purchasing water supply lands and conservation easements. However, to maximize the utility of these lands in protecting the long-term water supply for the City, they must be monitored, managed and secured properly. Effective and routine monitoring of lands and easements is vital to discovering encroachments, timber trespass, and overuse of lands that the City has purchased, and potential violations for easements. The City inspects the lands it has purchased on a prioritized basis per its fee monitoring policy (up to once per year) and easements semi-annually, which enables the City to identify and address encroachments expeditiously.

The City supports and provides for many recreational uses of its land. As the second largest public land holder in the Watershed, the City has been successful in opening many of its lands and waters for expanded recreational uses, consistent with its mission to protect water quality. Improving some of these lands for recreational access, particularly along the reservoirs can help address the impacts of overuse if they arise. City lands can also be an important economic component to local communities, and the City continues to allow various uses of its lands, such as for agriculture, and issues revocable land use permits.

The goals for the Land Management Program under the 2017 FAD are to:

- Conduct routine monitoring and inspection of City Watershed protection lands to meet the primary mission of water quality protection.
- Ensure encroachments and other unauthorized uses of City land are dealt with in a timely manner.
- Facilitate and coordinate the protection and wise use of City lands and natural resources.
- Provide community benefits through allowing compatible recreation and agricultural uses and issuing revocable land use permits.
- Ensure the long-term protection and management of the City's significant investment in purchased lands and conservation easements.
- Ensure that conservation easements held by the City and WAC are administered effectively, including regular monitoring, consideration of activity requests, and documentation and correction of any violations that occur; provide for stewardship funding to WAC as previously agreed.
- Engage recreational users through education and outreach.

The City's Land Management Program is described in Section 2.3.3 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Land Management Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Monitor and actively manage water supply lands.	Ongoing
Monitor and enforce City Watershed conservation easements, including those held by WAC.	Ongoing
Continue to assess and implement strategies to increase the public's recreational use of water supply lands.	Ongoing
Inform regulators when recreational use policies or proposals are substantively modified.	Ongoing
Engage recreational users of City land through outreach and events.	Ongoing

Report Description	Due Date
Report on program implementation in the FAD Annual report.	Annually, 3/31

4.4 Watershed Agricultural Program

The Watershed Agricultural Program (WAP) is a voluntary program that represents a successful longstanding partnership between the City and the Watershed Agricultural Council (WAC). The program began as a pilot in 1992 with the main goal to reduce pollution associated with agricultural land use and to protect source water quality. The WAP's primary activities include the development of Whole Farm Plans (WFPs) and the implementation of agricultural Best Management Practices (BMPs), along with the establishment of riparian buffers through the federal Conservation Reserve Enhancement Program (CREP). The WAP also supports nutrient management planning, precision feed management, and diverse educational programs that collectively provide farmers with a comprehensive suite of technical assistance and financial incentives to improve farm management and reduce pollution risks.

After two decades of expansion, the WAP has accumulated technical experience, established strong local leadership, and achieved extensive on-the-ground accomplishments. However, the WAP's historical focus on recruiting new participants and developing WFPs for these participants has resulted in the accumulation of a large BMP workload that needs to be addressed and managed in a more sustainable manner moving forward.

During the term of the 2017 FAD, source water quality protection will remain the WAP's programmatic priority. However, the program will continue to be flexible and responsive to participant needs and pollution risks in the context of shifting farmer demographics and evolving agricultural operations. The priority WAP activities will include the need to repair or replace existing BMPs in a timely manner and managing the growing complexity of an extensive portfolio of voluntary WFPs in various stages of implementation. During the 2017 FAD, the WAP will increase its focus on reducing the backlog of BMPs and improving the timeliness of BMP implementation for already approved WFPs.

To assure effective water quality protection and to sustain working relationships with hundreds of WAP's voluntary participants, the goals under the 2017 FAD include:

- Develop a new approach for investigating and repairing certain WAP-implemented BMPs using an in-house field crew of WAP technicians, with a goal of reducing the BMP backlog and becoming more responsive to the BMP repair needs of participants.
- Offer the Nutrient Management Credit Program to all eligible farms.
- Maintain up to 60 eligible farms in the Precision Feed Management Program.
- Engage greater numbers of WAP participants in farmer education programs in order to improve and enhance farm operation decisions and management behaviors.

The City's Watershed Agricultural Program is described in Section 2.3.4 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to contract with WAC to implement the Watershed Agricultural Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Manage the current portfolio of active WFPs, including the revision of existing plans as needed and the development of new plans on eligible priority farms on a case-by-case basis.	Ongoing
Conduct annual status reviews on at least 90% of all active WFPs every calendar year, with a goal of 100%.	Ongoing
Continue to implement new priority BMPs on active participating farms with WFPs, with the dual goals of reducing the existing backlog of new priority BMPs and limiting the potential backlog for newly identified BMPs, according to the following milestones: • Design, encumber, and schedule for implementation within two years of being encumbered at least 50% of all BMPs within pollutant categories I-VI that were identified by WAC as of January 1, 2017. Program funding will be sufficient to achieve a goal of implementing 60% of identified new BMPs based on BMP backlog cost estimates as of January 1, 2017. • Implement all viable BMPs that were designed and encumbered through calendar year 2022.	Ongoing 12/31/2022 12/31/2024
Continue to repair or replace existing BMPs on active participating farms with WFPs, with the dual goals of reducing the backlog of existing BMPs in need of repair or replacement and limiting the potential backlog for newly identified BMPs, according to the following milestones: • Design, encumber, and schedule for implementation within a two-year timeframe at least 50% of all BMPs needing repair or replacement that were identified by WAC as of January 1, 2017. Program funding will be sufficient to achieve a goal of implementing 70% of identified BMPs needing repair or replacement. • Repair or replace all viable BMPs that were designed and encumbered through calendar year 2022.	Ongoing 12/31/2022 12/31/2024
In consultation with WAC, assess the adequacy of current WAP metrics and submit a report that recommends the continuation of current metrics and/or the consideration of potential new metrics.	6/30/2023

Meet with NYSDOH, USEPA, and NYSDEC to discuss the WAP's metrics and future BMP implementation milestones for calendar year 2024 and beyond.	9/30/2023
Continue to develop and update nutrient management plans on active participating farms that require such a plan, with a goal of maintaining current nutrient management plans on 90% of all active participating farms that require one.	Ongoing
Continue to offer the Nutrient Management Credit Program to all eligible farms.	Ongoing
Continue to implement the PFM Program on up to 60 eligible farms.	Ongoing
Continue to develop new CREP contracts and re-enroll expiring contracts as needed.	Ongoing
Continue to implement a Farmer Education Program.	Ongoing
Continue to implement an Economic Viability Program.	Ongoing

Report Description	Due Date
Report on program implementation in the FAD Annual Report including: • Number of new and revised WFPs completed and approved, as well as the total number and percentage of active plans in relation to the current universe of WAP participants. • Number, types and dollar amounts of both new BMPs and repaired or replaced BMPs implemented each year. • Number, types, and dollar amounts of both new BMPs and repaired or replaced BMPs designed and scheduled for implementation in the following year. • Cumulative percentage of BMP backlog reduced (designed, implemented, or scheduled for implementation) in relation to projected BMP implementation milestones for 2022. • Number and percentage of annual status reviews completed on active Whole Farm Plans. • Number of new and updated nutrient management plans completed, as well as the percentage of current plans on all active participating farms that require such a plan. • Number of farms participating in the Nutrient Management Credit Program, including number of farms that are eligible for the program at the time of the report and efforts made to offer Nutrient Management Credit to all eligible farms. • Number of farms participating in the PFM Program and a summary of accomplishments. • Number of new and re-enrolled CREP contracts completed, along with a summary of total enrolled and re-enrolled acres. • Summary of Farmer Education Program accomplishments. • Summary of Economic Viability Program accomplishments.	Annually, 3/31
WAP Metrics Assessment and Recommendations Report.	6/30/2023

4.5 Watershed Forestry Program

The Watershed Forestry Program is a longstanding partnership between the City, WAC, and the United States Forest Service that began in 1997. The primary objective of the Watershed Forestry Program is to encourage long-term management of the Watershed forests for both water quality protection and economic viability purposes. A secondary objective is to promote good forest stewardship through the development and implementation of forest management plans; the implementation of BMPs during and after timber harvesting; professional training for loggers and foresters; educational forums for Watershed landowners; teacher training and educational programs for upstate and downstate students; and coordination of a Watershed model forest program that supports demonstration purposes as well as education and outreach.

The goals of the Watershed Forestry Program under the 2017 FAD are to:

- Continue to monitor the use and progress of the new MyWoodlot.com website as a tool for understanding the needs and interests of Watershed landowners.
- Explore potential modifications and improvements to the Management Assistance Program (MAP) that may be needed to support and compliment the recently redesigned WAC Forest Management Planning Program.

The City's Forest Management Program is described in Section 2.3.5 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to contract with WAC to implement the Watershed Forestry Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Continue to support a Watershed forest management planning program that encourages landowner participation in New York's forest tax abatement program.	Ongoing
Continue to support the development of forest management plans and the implementation of these plans through the Management Assistance Program (MAP), with a goal of completing at least 60 MAP projects per year.	Ongoing
Continue to support the implementation of forestry BMPs, with a focus on road BMP projects and forestry stream crossing projects.	Ongoing
Continue to support the Croton Trees for Tribs Program, enhancing program efforts to promote and install riparian plantings in the Kensico, West Branch, and Boyd's Corner Reservoir basins, with a goal of completing six (6) projects per year in the EOH Watershed.	Ongoing

Use MyWoodlot.com and forest landowner education programs to provide family forest owners access to the knowledge they need to make positive conservation decisions for their Watershed forests.	Ongoing
Evaluate the effectiveness of the Watershed forest management planning program and landowner education programs once every five years using Conservation Awareness Index (CAI).	Ongoing
Continue to support professional training for loggers and foresters.	Ongoing
Continue to support educational programs for landowners.	Ongoing
Continue to support school-based education programs for teachers and students in both the Watershed and New York City.	Ongoing
Continue to support and coordinate four (4) Watershed model forests.	Ongoing

Report Description	Due Date
Report on program implementation in the FAD Annual report including: • Number of forest management plans completed and acres of forestland enrolled in New York's forest tax abatement program. • Number and types of MAP projects completed. • Number and types of forestry BMP projects completed. • Number of Croton Trees for Tribs projects completed. • Summary of logger and forester training accomplishments. • Summary of landowner education accomplishments. • Summary of school-based education accomplishments. • Summary of model forest accomplishments.	Annually, 3/31
Report on CAI evaluation results for the Watershed forest management planning program and landowner education programs.	12/31/2021 and 12/31/2026

4.6 Stream Management Program

The Stream Management Program (SMP) seeks to improve water quality through the protection and restoration of stream stability and ecological integrity for WOH Watershed streams and floodplains. Program components include annual action planning for each reservoir basin based on stream assessments and stakeholder input; water quality-driven Stream Projects; stakeholder-driven Stream Management Implementation Program (SMIP) projects; the Catskill Streams Buffer Initiative (CSBI); Flood Hazard Mitigation projects; and Education, Outreach and Training.

Some of the goals for the SMP under the 2017 FAD include:

- Conduct stream feature inventories to support project site prioritization.
- Construct at least 24 Stream Projects.
- Continue stream studies investigating turbidity reduction from stream projects.
- Complete revegetation of at least five streambank miles in the WOH Watershed.
- Complete Local Flood Analyses (LFAs), and provide funding for the implementation of LFA-recommended projects through SMP and CWC.
- Explore the coordination of CSBI and CREP with local partners to increase riparian buffers on fallow agricultural lands.
- Convene a workgroup to develop a coordinated plan for in-stream and riparian emergency recovery activities that may become necessary following flooding events.
- Evaluate the LFHMP for its contribution to the protection of water quality and recommend steps for enhancing this protection in the future.

The City's SMP is described in Section 2.3.6 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the SMP requirements in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
<u>Ashokan Projects</u> As required by the Revised 2007 FAD, complete the construction of 7 stream management projects within the Ashokan basin with a goal of protecting water quality, in particular by reducing turbidity.	11/30/2018

Execute and register contracts or contract amendments with SMP partners (Delaware County, Greene County, Sullivan County, and Ulster County Soil and Water Conservation Districts and Ulster County Cornell Cooperative Extension) to ensure continuity of funding sufficient to continue all SMP programs for the duration of the 2017 FAD. Funding shall be, at a minimum, equivalent, on an annual basis, to the level of funding provided to the SMP under the Revised 2007 FAD SMP partner contracts (excluding LFHM funding), with the addition of an annual inflation adjustment. Total funding for the 10-year FAD period shall be a minimum of $90 million.	Ongoing
<u>Water-Quality Based Stream Projects and Site Selection</u> • The City and SMP Contract Partners will meet to review water quality analyses to outline the water quality basis for project site selection and to prioritize the main stems and/or sub-basins for stream feature inventories. • Six stream feature inventories will be conducted in the prioritized tributaries/main stems of the major SMP basins (Schoharie, Ashokan, Neversink/Rondout, and Cannonsville/Pepacton) to identify water quality threats and support project site prioritization. • Design and complete construction of at least 24 Stream Projects that have a principal benefit of water quality protection or improvement. A minimum of 3 of the 24 shall be in the Stony Clove watershed (Ashokan) to support the Water Quality Monitoring Study and a total of at least 8 of the 24 projects shall be in the Ashokan watershed. Stream Projects will be selected based on a water quality-based site selection process and in accordance with the review and prioritization of basin-scale water quality priorities described above. Beginning in 2017, projects completed beyond those required for the Revised 2007 FAD will be counted towards this requirement. Stream Projects may be delayed due to flood events, which can change project priorities and temporarily shift the program focus to response and recovery operations, as well as changes in landowner cooperation. • The City will propose projects for FAD approval in November of each year.	12/31/2018 12/31/2022 12/31/2027 Annually, 11/30

CSBI Continue implementation of CSBI by providing technical assistance and conservation guidance to riparian landowners according to the following milestones:	
• Convene annual meetings of the Riparian Buffer Working Group.	Annually, 2/28
• Facilitate the supply of native plant materials to the CSBI.	Ongoing
• Implement Education, Outreach, and Marketing Strategy with partners.	Ongoing
• Seek to establish a partnership between the CSBI program and the CREP program to enable CREP to be implemented on fallow agricultural lands through the CSBI in the WOH Watershed.	Ongoing
• Within Delaware County, support the use of funding for a pilot program to be administered by DCSWCD and WAC that will coordinate CSBI and CREP programs to implement CREP on fallow agricultural lands in Delaware County.	Completed
• Establish metrics, agreed upon by NYSDOH, USEPA, NYSDEC, Delaware County SWCD, WAC, and the City, to evaluate the effectiveness of the Delaware County CSBI/CREP pilot program.	11/30/2018
• Review progress in extending CREP to eligible fallow agricultural lands through CSBI in the WOH Watershed, including progress of the Delaware County CSBI/CREP pilot program.	11/30/2019
• Submit to NYSDOH recommendations for establishment of a permanent program and estimated funding needs, or discontinuation of the program.	11/30/2019
• If NYSDOH determines the Delaware County CSBI/CREP pilot program is an effective tool for riparian buffer protection, execute and register contracts or contract changes with DCSWCD and WAC, if needed, to fund such a program in Delaware County. The City will ensure adequate funding is available to allow continuity of program activities while contract changes are being implemented.	Within 18 months of determination

• Complete revegetation of a minimum of 5 streambank miles throughout the WOH Watershed. This metric may be adjusted following the determination regarding the Delaware County CSBI/CREP pilot program.	11/30/2027
<u>SMIP</u> • Continue the local funding programs for the enhanced implementation of stream management plan recommendations, including LFA recommended projects, in the Schoharie, Cannonsville, Pepacton, Neversink, Rondout and Ashokan basins. • Complete commitment of funds for a minimum of 100 SMIP projects throughout the WOH Watershed.	Ongoing By 5/31/2027

<u>Local Flood Hazard Mitigation Program (LFHMP)</u>
• Complete LFAs and provide funding toward implementation of LFA-recommended projects through both the SMP and the CWC in the WOH Watershed.
  • Execute and register contracts or contract amendments with SMP partners (Delaware County, Greene County, Sullivan County, and Ulster County Soil and Water Conservation Districts and Ulster County Cornell Cooperative Extension) to make $15 million available to support a minimum of 50 LFA-generated projects.
  • Where such projects include relocations of homes and businesses and the corresponding need to relocate sewer infrastructure, the City will support the use of funding either for onsite sewage disposal or for sewer extensions to City-owned WWTPs or to WWTPs not owned by the City, based on what solutions are most cost-effective. If a relocation results in a sewer extension, the City will make funding available to ensure that sewer charges are comparable to what they would be under the New Infrastructure and Community Wastewater Management Programs.
• With NYSDOH, USEPA, and NYSDEC, assess use of $10.1 million committed to the SMP and $17 million committed to the CWC for LFHMPs in accordance with the Revised 2007 FAD, and $15 million committed in 2017 FAD for support of LFA-generated projects, and determine if remaining funding is adequate to meet program needs.
	12/31/2027
	
	Ongoing, as SMP partner contracts are updated
	
	Ongoing
	
	Annually, 11/30 (during FAD annual budget meeting)

• Commit additional LFHMP funding, as needed, to meet program needs.	Within 18 months of determination of need
• Coordinate the LFHMP funding program with State and federal flood hazard mitigation agencies to ensure consistency and thereby maximize funding to the Watershed communities.	Ongoing
• Continue to provide technical support, education, and training to Watershed communities to support their use of Flood Insurance Rate Maps (FIRMs) and their participation in a variety of floodplain management, flood hazard mitigation, and flood preparedness programs.	Ongoing
<u>Water Quality Monitoring Studies</u> • Submit the final Esopus Creek Watershed Turbidity/Suspended Sediment Study Design.	Completed
• Continued collection and analysis of data for the Esopus Creek Watershed Turbidity/Suspended Sediment Study.	Ongoing
• Submit 3 proposed Stony Clove restoration projects for approval.	1/31/2019
<u>Annual Meeting and Action Plans</u> Meet annually with county contracting partners to review progress made in the previous year within each program area (Stream Projects, CSBI, SMIP, LFHMP, and Education/Outreach/Training) and re-evaluate priorities as the basis for preparing new Action Plans for the coming year, especially after major flood events. Action plans and program activities should place priority on projects that will enhance water quality, and restore or protect stream system stability. This meeting will also provide an opportunity for discussion on the research advanced by each basin team and the City during the year, as well as next steps.	Annually, 2/28

Addendum A Coordinate with NYSDEC regarding the implementation of Addendum A to the 1993 Memorandum of Understanding between NYSDEC and the City as it pertains to the review of Article 15 Stream Disturbance Permits, to enhance coordination between the agencies with the goal of ensuring consistency with the recommendations in stream management plans and implementation of stream management projects.	As Needed
Watershed Emergency Stream Response and Recovery Plan • Participate in a workgroup convened by NYSDEC with Watershed stakeholders to develop a coordinated plan for in-stream and riparian emergency recovery activities that may become necessary following flooding events. Consistent with Addendum A to the 1993 Memorandum of Understanding between NYSDEC and the City, the workgroup will provide an opportunity for coordination between the City and NYSDEC on permits NYSDEC issues under Articles 15 and 24 of the Environmental Conservation Law. • Report on the workgroup's development of a Watershed Emergency Stream Response and Recovery Plan.	When convened Within 12 months of NYSDEC convening the workgroup
Education/Outreach/Training Continue to implement the Education/Outreach/Training strategy for municipal officials with program partners and maintain base education and outreach existing programming in the SMP basin programs, including emergency stream intervention training.	Ongoing
Progress Meeting Convene progress meetings with NYSDOH, USEPA, and NYSDEC. An office-based meeting shall be held by 8/30, and a field-based meeting shall be held following the construction season by 10/31.	Twice per year, by 8/30 and 10/31

Report Description	Due Date
Water Quality Based Stream Projects and Site Selection Submit brief basin specific reports outlining the water quality basis for Stream Project Site Selection in the basin during the FAD period and that prioritize main stem and/or sub-basins for stream feature inventories.	6/30/2019
Submit descriptions of proposed stream projects to be considered toward the required 24 Stream Projects.	Annually, 11/30
CSBI • Report on metrics that have been established to evaluate the effectiveness of the Delaware County CSBI/CREP pilot program. • Report on progress in extending CREP to eligible fallow agricultural lands through CSBI in the WOH Watershed, including progress of the Delaware County CSBI/CREP pilot program. Report will include recommendations for establishment of a permanent program and estimated funding needs, or discontinuation of the program.	11/30/2018 11/30/2019
Local Flood Hazard Mitigation Program (LFHMP) Evaluate the LFHMP for its contribution to the protection of water quality and recommend steps for enhancing this protection in the future. • First evaluation • Second evaluation	6/30/2020 6/30/2023
Water Quality Monitoring Studies • Submit biennial status reports on study findings. • Submit first five-year study findings. • Submit final study findings.	Beginning 3/31/2019 11/30/2022 11/30/2027
Action Plans Each year, submit a rolling two-year Action Plan for each basin that outlines the upcoming projects in the program areas (Stream Projects, CSBI, SMIP, Education/Outreach/Training, LFHMP).	Annually, 5/31

<u>Watershed Emergency Stream Response and Recovery Plan</u> • Report on the workgroup's development of a Watershed Emergency Stream Response and Recovery Plan. • Update report on the workgroup's development of a Watershed Emergency Stream Response and Recovery Plan.	12/31/2018 12/31/2023
Report on program implementation in the FAD Annual Report: • Site selection of water quality based projects and status of projects. • CSBI, including miles of streambank revegetated. • Stream Management Implementation Projects, including number of projects funded. • Local Flood Hazard Mitigation Program, including number of LFHM and LFA-generated projects funded, funding amounts, and number of completed projects. • Water Quality studies. • Watershed Emergency Stream Response Plan.	Annually, 3/31

4.7 Riparian Buffer Protection Program

The Riparian Buffer Protection Program, initiated under the 2007 FAD, now consists of several separate efforts undertaken by different City units, including the Land Acquisition, Watershed Agricultural, Stream Management, and Forestry Programs. The multi-program approach to protecting and restoring buffers ensures buffers on both public and private land are protected, managed and in many cases restored.

The Riparian Buffer Protection Program is enhanced by the City's Streamside Acquisition Program (SAP) which is currently piloting the acquisition of riparian buffers in designated areas within the Schoharie Watershed. The requirement to acquire riparian buffers is included in both this section and the LAP section.

The goals for the Riparian Buffer Protection Program under the 2017 FAD are to:

- Continue existing programs that are protective of riparian buffers.
- Continue implementation of the Pilot SAP.
- Explore options for synergies between CREP and CSBI to increase riparian buffers on fallow agricultural lands.

The City's Riparian Buffer Protection Program is described in Section 2.3.7 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Riparian Buffer Protection Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Continue existing programs that are protective of riparian buffers including, but not limited to, Watershed regulations, agricultural programs, land acquisition, stream management, and land management.	Ongoing
Continue implementation of CREP.	Ongoing

CSBI Continue implementation of CSBI by providing technical assistance and conservation guidance to riparian landowners according to the following milestones:	
• Convene annual meetings of the Riparian Buffer Working Group.	Annually, 2/28
• Facilitate the supply of native plant materials to the CSBI.	Ongoing
• Implement Education, Outreach, and Marketing Strategy with partners.	Ongoing
• Seek to establish a partnership between the CSBI program and the CREP program to enable CREP to be implemented on fallow agricultural lands through the CSBI in the WOH Watershed.	Ongoing
• Within Delaware County, support the use of funding for a pilot program to be administered by DCSWCD and WAC that will coordinate CSBI and CREP programs to implement CREP on fallow agricultural lands in Delaware County.	Completed
• Establish metrics, agreed upon by NYSDOH, USEPA, NYSDEC, Delaware County SWCD, WAC, and the City, to evaluate the effectiveness of the Delaware County CSBI/CREP pilot program.	11/30/18
• Review progress in extending CREP to eligible fallow agricultural lands through CSBI in the WOH Watershed, including progress of the Delaware County CSBI/CREP pilot program.	11/30/2019
• Submit to NYSDOH recommendations for establishment of a permanent program and estimated funding needs, or discontinuation of the program.	11/30/2019
• If NYSDOH determines the Delaware County CSBI/CREP pilot program is an effective tool for riparian buffer protection, execute and register contracts or contract changes with DCSWCD and WAC, if needed, to fund such a program in Delaware County. The City will ensure adequate funding is available to allow continuity of program activities while contract changes are being implemented.	Within 18 months of determination

• Complete revegetation of a minimum of 5 streambank miles throughout the WOH Watershed. This metric may be adjusted following the determination regarding the Delaware County CSBI/CREP pilot program.	11/30/2027
• Continue to seek enhanced management agreements (voluntary 10-year or purchased perpetual) for all current and future stream restoration projects.	Ongoing
<u>SAP</u> • Continue implementation of a $5 million Pilot SAP.	Ongoing, in accordance with the 2010 WSP
• Based on the requirements of the 2010 WSP, submit a written evaluation of the SAP, making recommendations as to whether the program should be continued, modified, or terminated, as well as any proposed improvements to the program.	Completed
• The City shall execute and register a contract or contract amendment to make an additional $3 million available to the Catskill Center to continue to implement the SAP through at least 2022.[1]	6/30/2019
• Submit a status report on the SAP.	12/15/2020
• If, in accordance with the City's 2010 WSP, a written determination is made by NYSDEC, in consultation with NYSDOH, the City, and other agencies or local governments, to authorize that a streamside acquisition program be continued and expanded beyond the Schoharie Reservoir Basin, execute and register a contract to make a minimum of $8 million available to the Catskill Center to implement or continue to implement such a program for the remainder of the 2017 FAD.[1] Consistent with the WSP, such written determination will include addressing the City's recommendations for the program. If authorization is not given to continue the program, all unused funds, with any earnings there on, are to be returned to the City to be deposited in the LAP-segregated account for use by the LAP.	Within 18 months of such written determination
• If NYSDOH determines that additional funding is required for acquisitions under the SAP or other streamside acquisition program, funds may be drawn from the City's LAP-segregated account.	As needed

Continue to support the Croton Trees for Tribs Program, enhancing program efforts to promote and install riparian plantings in the Kensico, West Branch, and Boyd's Corner Reservoir basins, with a goal of completing six (6) projects per year in the EOH Watershed.	Ongoing

[1] The requirement to allocate funding for purchases beyond 2025 is contingent upon re-issuance of a NYSDEC WSP authorizing continuation of the LAP beyond 2025. Funding amounts may be re-assessed by NYSDOH based upon the 2023-2033 Long-Term Land Acquisition Plan. The City will not be required to allocate additional funds for this program unless and until such acquisitions are also authorized under a NYSDEC WSP.

Report Description	Due Date
CSBI • Report on metrics that have been established to evaluate the effectiveness of the Delaware County CSBI/CREP pilot program. • Report on progress in extending CREP to eligible fallow agricultural lands through CSBI in the WOH Watershed, including progress of the Delaware County CSBI/CREP pilot program. Report will include recommendations for establishment of a permanent program and estimated funding needs, or discontinuation of the program.	11/30/2018 11/30/2019
Submit a status report on the SAP.	12/15/2020
The FAD annual report will reference the other FAD programs where the completed Riparian Buffer Protection Program details will be described.	Annually, 3/31

4.8 Ecosystem Protection Program

The City owns over 165,000 acres of forests, fields, transitional lands, and wetlands within the watersheds of the Croton, Catskill, and Delaware reservoir systems. Well-functioning, intact natural ecosystems are critical for maintaining and enhancing water quality. The City provides multifaceted programming for the protection of wetlands and fisheries along with stewardship of forests and management of invasive species through a combination of research, inventories, assessment, and outreach programs. The Ecosystem Protection Program combines goals and activities from three principle areas, consisting of forestry, wetlands, and invasive species.

The primary goals of the Ecosystem Protection Program under the 2017 FAD are to:

- Continue silvicultural activities to increase diversity of species and age structure where needed to promote forest resiliency.
- Conduct forest inventories on newly acquired lands and adopt appropriate management strategies.
- Assess management strategies to foster adequate forest regeneration in lands heavily browsed by deer.
- Maintain data collection and analysis for the Continuous Forest Inventory (CFI) Project.
- Expand the pilot LiDAR wetland mapping and stream connectivity assessment to the entire Watershed.
- Enhance the Reference Wetland Monitoring Program.
- Implement key aspects of the Invasive Species Management Strategy to promote sustainable native communities.

The City's Ecosystem Protection Program is described in section 2.3.8 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Ecosystem Protection Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Forestry	
• Implement the Watershed Forest Management Plan.	Ongoing
• Continue to conduct forest inventories on City-owned lands, including long-term CFI plots.	Ongoing
• Continue to assess and mitigate deer impacts on forest regeneration on City-owned lands.	Ongoing
• Update the Watershed Forest Management Plan.	Completed
• Revise Watershed Forest Management Plan.	3/31/2027
Wetlands	
• Update Wetland Protection Strategy.	3/31/2018
• Update the wetland GIS data for the Watershed using LiDAR derived data and high-resolution photography.	3/31/2022
• Continue reference wetland monitoring.	Ongoing
• Review federal, State, and local wetland permit applications.	Ongoing
Invasive Species	
• Continue to implement the Invasive Species Management Strategy.	Ongoing
• Engage Watershed partners and residents to coordinate efforts in invasive species prevention and control.	Ongoing

Report Description	Due Date
Submit updated Watershed Forest Management Plan.	Completed
Submit updated Wetlands Protection Strategy.	3/31/2018
Submit summary of wetland mapping and connectivity assessment results for the Watershed.	3/31/2022
Submit updated Invasive Species Management Strategy.	3/31/2022

Submit revised Watershed Forest Management Plan.	3/31/2027
Report on program implementation in the FAD Annual Report: • Forest inventories • Wetland protection • Wetland mapping • Wetland permit reviews • Invasive species management	Annually, 3/31

4.9 East-of-Hudson Nonpoint Source Pollution Control Program

The East-of-Hudson Nonpoint Source (NPS) Pollution Control Program has been developed to reduce inputs of pathogens and nutrients from sanitary sewers, septic systems, and stormwater to the EOH FAD Basins (Boyd's Corner, West Branch, Cross River, and Croton Falls Reservoirs). The program addresses this concern through the continued implementation of the WR&Rs, involvement in project reviews, and inspection and maintenance of existing stormwater management facilities. The City also supports a grant program to fund the design and construction of stormwater retrofits in the EOH FAD basins.

The goals for the EOH NPS Pollution Control Program under the 2017 FAD are to:

- Maintain EOH Stormwater Facilities.
- Complete construction of two stormwater remediation retrofits remaining from the Revised 2007 FAD.
- Support the EOH Stormwater Retrofit Grant Program.
- Facilitate the preliminary planning of community wastewater solutions for areas in the EOH FAD basins where poorly functioning individual septic systems have the potential to impact water quality.
- Support the EOH Septic Repair Program in the four EOH FAD Basins, Lake Gleneida basin, and the basins upstream/hydrologically connected to Croton Falls Reservoir, as program capacity allows.
- Inspect sanitary sewers.

The City's EOH NPS Pollution Control Program is described in Section 2.3.9 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the EOH NPS Pollution Control Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Maintenance of DEP's EOH Stormwater Facilities.	Ongoing
Complete construction of two stormwater retrofit projects: • Maple Avenue (Cross River) • Drewville Road (Croton Falls)	9/30/2020

<u>EOH Stormwater Retrofit Grant Program</u> Execute and register a contract or contract amendment with the EOH Watershed Corporation to provide $22 million to support the design and construction of stormwater retrofits in the EOH FAD Basins and in basins upstream and hydrologically connected to the Croton Falls Reservoir. A total of $7 million shall be specifically committed to support stormwater retrofits within EOH FAD basins and $15 million shall be specifically committed to support stormwater retrofits within basins upstream and hydrologically connected to the Croton Falls Reservoir or within EOH FAD basins.	9/30/2019
Continue to make City lands available for stormwater retrofit projects constructed by the EOH Watershed communities so long as the City determines that the projects will not pose a threat to water quality or City operations related to the water supply.	Ongoing
<u>EOH Community Wastewater Planning Assistance Grants</u> Execute and register a contract with the Environmental Facilities Corporation (EFC), or any other organization approved by NYSDOH, to develop and administer a grant program that will provide $3 million for preliminary planning for community wastewater solutions for areas in the EOH FAD basins where poorly functioning individual septic systems have the potential to impact water quality. The grant program will require that municipalities who apply for this funding will complete preliminary planning studies within four years from issuance of the 2017 FAD. Based on preliminary studies conducted by NYSDEC, wastewater planning assistance grants will be made available to municipalities ("identified municipalities") in which the following areas have been identified to have the potential to impact water quality from septic systems: areas surrounding Lake Waccabuc, Lake Truesdale, and Lake Kitchawan in the Cross River Reservoir basin; and Palmer Lake, Lake Gilead, Lake Casse, Lake View Road, and Mud Pond Brook in the Croton Falls Reservoir basin. Funds may be used by identified municipalities to finance engineering studies and report generation to assist those municipalities in evaluating wastewater treatment options/solutions that they could undertake to mitigate water quality impacts. The generated reports are intended to be used by the municipalities to appropriately plan and determine costs for the identified wastewater solution project so that municipalities may seek financing through State or federal funding sources, including but not limited to the 2017 Clean Water Infrastructure Act.	12/31/2019

<u>EOH Septic Repair Program (SRP)</u> • The City shall contract with EFC to provide funding to support the repair, replacement, or connection to a WWTP for at least 35 residential septic systems per year in the four EOH FAD basins, including Lake Gleneida basin. • Revise contract with EFC for the EOH SRP to allow eligibility of septic systems located within basins upstream or hydrologically connected to Croton Falls Reservoir. Implementation of the program will be prioritized, with priority given to septic systems in the EOH FAD basins, including Lake Gleneida basin, and expanding within the basins upstream or hydrologically connected to Croton Falls Reservoir as program rules dictate and program capacity allows. • Continue to provide technical assistance in support of EOH septic management programs. • Review strategies used to inform potential SRP participants of the program's availability. Propose ways to improve education and outreach to enhance participation in the program. • Conduct an assessment of the SRP to determine whether funding for at least 35 systems per year is appropriate to meet demand from eligible EOH communities. Funding made available for this program may be increased or decreased based on this assessment.	Ongoing 12/31/2018 Ongoing 3/31/2018 3/31/2022
<u>Video Sanitary Sewer Inspection</u> • Video Sanitary Sewer Inspection of four EOH CAT/DEL basins. • Complete mapping of new sewer areas (if any). • Complete inspection of targeted areas. • Identify potential defects. • Notify entities responsible for remediation of identified deficiencies.	3/31/2021

Report Description	Due Date
Report on implementation of two EOH stormwater retrofit projects (Maple Avenue and Drewville Road).	Quarterly until completed (3/31, 6/30, 9/30, 12/31)
Report on review of strategies used to inform potential SRP participants of the program's availability.	3/31/2018
Report on assessment of funding for the SRP	3/31/2022
Report on program implementation in the FAD Annual Report: • Maintenance of EOH Stormwater Facilities • Stormwater retrofit projects • EOH NPS Stormwater Retrofit Grant Program • EOH Community Wastewater Planning Assistance Program • EOH Septic Repair Program, including education and outreach efforts • Video Sanitary Sewer Inspection	Annually, 3/31

4.10 Kensico Water Quality Control Program

The Kensico Reservoir, located in Westchester County, is the terminal reservoir for the City's Catskill/Delaware water supply. Because it provides the last impoundment of Catskill/Delaware water prior to entering the City's distribution system, protection of this reservoir is critically important to maintaining water quality for the City. The primary goal of the Kensico Water Quality Control Program is to reduce non-point source pollution in the reservoir through implementation of various stormwater and wastewater projects. In addition, the City may conduct wildlife scat surveys around Kensico Reservoir in advance of storm events. These surveys include the recording, collecting, and disposing of wildlife latrines.

The objectives of the Kensico Water Quality Control Program under the 2017 FAD are to:

- Continue proper operation and adequate maintenance through regular inspections of the existing stormwater management facilities and identification of repair needs to maximize pollutant removal efficiency.

- Reduce the risk of water contamination with pathogens through implementation of the Septic Repair Reimbursement Program, monitoring the early warning sanitary sewer overflow protection system, and inspection of targeted sanitary sewers.

- Minimize turbidity levels at effluent chambers by completion of the shoreline stabilization project at Shaft 18 and review timeline for assessing and/or dredging effluent chambers to prevent possible resuspension of sediment.

The City's Kensico Water Quality Control program is described in Section 2.3.10 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Kensico Water Quality Control Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Inspect and maintain non-point source management facilities within the Kensico Reservoir Basin: • Stormwater management facilities • Turbidity curtains • Spill containment measures	Ongoing
Oversee remote monitoring system at Westlake Sewer Extension.	Ongoing
Implement Septic Repair Reimbursement Program.	Ongoing

Conduct the Video Sanitary Sewer Inspection Program to: • Complete mapping of new sewer areas. • Complete reinspection of targeted areas. • Identify potential defects. • Notify entities responsible for remediation of identified deficiencies.	3/31/2021
Complete Shaft 18 shoreline stabilization project.	12/31/2022

Report Description	Due Date
Report on program implementation in the FAD Annual Report, including: • Operation and maintenance of non-point source management facilities • Westlake sewer monitoring program • Shaft 18 shoreline stabilization • Review timeline for assessing or dredging at the effluent chambers • Septic Repair Program • Video Sanitary Sewer Inspection • Kensico Wildlife Scat Sanitary Survey • Westchester County Airport (including capped landfills), as needed	Annually, 3/31

4.11 Catskill Turbidity Control

The underling geology of the Catskill System portion of the NYC Watershed makes its streams naturally prone to periods of elevated turbidity when large runoff events destabilize stream banks, mobilize streambeds, and suspend the glacial clays that underlie the streambed armor. The design of the Catskill System accounts for this effect, and provides for settling within Schoharie Reservoir, Ashokan West Basin, Ashokan East Basin, and the upper reaches of Kensico Reservoir. Under most circumstances, the extended detention time in these reservoirs is sufficient to allow the turbidity-causing clay solids to settle out, and the system easily meets the SWTR turbidity standard (5 NTU) at the Kensico Reservoir effluent.

The City's ability to meet this turbidity standard is occasionally threatened after extreme rain and runoff events. Historically, elevated turbidity has been addressed through the addition of the coagulant aluminum sulfate (alum) near the end of the Catskill Aqueduct. This increases the settling of suspended clays as Catskill water enters Kensico Reservoir. However, concern for potential negative environmental impacts of this practice has compelled the City to seek other turbidity management strategies. The City will continue to maintain its ability to use alum in the event other management alternatives are unable to adequately protect Kensico water quality.

Since, 2002, the City has undertaken a number of studies and implemented significant changes to its operations to better manage turbidity in the Catskill System, while minimizing potentially negative local environmental impacts associated with the operation of the Shandaken Tunnel and the use of alum. The City determined that the most effective measures for controlling turbidity while minimizing alum use were: modification of reservoir operations using an Operations Support Tool (OST), interconnection of the Delaware and Catskill Aqueducts at Delaware Aqueduct Shaft 4, and improvements to stop shutters in the Catskill Aqueduct. The system-wide OST allows the City to optimize reservoir releases and diversions to balance between maximizing water supply storage, optimizing water quality, and achieving other environmental objectives. The City's Multi-Tiered Water Quality Modeling Program makes use of this tool to evaluate a variety of operational and water quality scenarios that are used to help support operational decisions. The interconnection between the Catskill Aqueduct and the Delaware Aqueduct at Shaft 4 was established to allow the increased use of Delaware System water during Catskill turbidity events and improve overall system flexibility. Structural improvements made to the Catskill Aqueduct stop shutter facilities help maintain adequate water depths near the intakes of the wholesale community customers with connections to the Catskill Aqueduct during periods when flows are minimized between Ashokan and Kensico Reservoirs.

Catalum SPDES Permit and Environmental Review

The Catalum SPDES Permit sets forth the conditions under which the City is allowed to treat Catskill Aqueduct water with alum prior to entering Kensico Reservoir. On October 4, 2013, NYSDEC executed an Order on Consent (DEC Case No.: D007-0001-11) (CO) with the City in connection with the Catalum SPDES permit. Incorporated into that CO was a modified version of an interim operating protocol for use of the Ashokan Release Channel (ARC), to which the City and NYSDEC had agreed in October 2011. The ARC provides a mechanism for water to be released from the Ashokan Reservoir to the lower Esopus Creek for environmental or economic benefit, flood mitigation, or to mitigate the impacts of turbidity on water diverted to Kensico

Reservoir. The protocol seeks to enhance community benefits, improve flood attenuation, and provide better water quality.

In June 2012, consistent with the then proposed Catalum CO, the City requested a modification to the Catalum SPDES Permit to incorporate measures to control turbidity in water sent from the Ashokan Reservoir to the Kensico Reservoir via the Catskill Aqueduct, and to postpone dredging of alum floc at Kensico Reservoir until completion of certain infrastructure projects. This proposed modification to the Catalum SPDES permit required that an Environmental Impact Statement (EIS) be conducted under the State Environmental Quality Review Act (SEQRA). NYSDEC is lead agency for this review and issued the final scope of work for the EIS on March 22, 2017. Under the CO, the City is required to prepare a draft EIS (DEIS) and draft of the Final EIS (FEIS), which will analyze the potential environmental and socioeconomic impacts resulting from the proposed modifications. Impacts to the Ashokan Reservoir, lower Esopus Creek, and Kensico Reservoir will be considered. The EIS will evaluate a suite of alternatives that could be executed at Ashokan Reservoir, along the Catskill Aqueduct, and at Kensico Reservoir, as well as implementation of the City's turbidity control measures as a whole. Where potential adverse impacts are indicated, reasonable and practicable measures that have the potential to avoid, mitigate, or minimize these impacts will be identified.

Expert Panel Review

As required by the Revised 2007 FAD, the City contracted with the National Academies of Sciences, Engineering, and Medicine (NASEM, formerly known as the National Research Council) to conduct an expert panel ("Expert Panel") review of the City's use of OST. The NASEM is in a unique position to bring together a group of experts with the breadth of experience and expertise needed to undertake this independent study and to ensure a comprehensive and scientifically objective product.

The goals of the Expert Panel are to:

- Evaluate the effectiveness of the City's use of OST for water supply operations, and identify ways in which the City can more effectively use OST to manage turbidity.
- Evaluate the performance measures and criteria that the City uses to assess the efficacy of the Catskill Turbidity Control Program, and recommend additional performance measures, if necessary.
- Review the City's proposed use of OST in evaluating the proposed modification to the Catalum SPDES Permit as well as the alternatives to be considered in the environmental review of those proposed modifications.
- Review the City's existing studies of the potential effects of climate change on the City's water supply to help identify and enhance understanding of areas of potential future concern regarding the use of OST.

The general goals of Catskill Turbidity Control under the 2017 FAD are to:

- Continue to use OST to manage water system operations to reduce turbidity levels in the Catskill System water entering Kensico Reservoir, while minimizing adverse environmental impacts and alum use.
- Keep NYSDOH informed on plans to manage Catskill turbidity during the planned shutdown of the Rondout-West Branch Tunnel (RWBT) section of the Delaware Aqueduct for repairs.
- Continue to support the Expert Panel review of the City's use of OST.
- Propose, as necessary, alternative measures for achieving turbidity control based on the Catalum EIS.

The City's Catskill Turbidity Control measures are described in Section 2.3.11 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Continue to utilize and update OST.	Ongoing
Conduct the Expert Panel review of the City's use of OST. • Upon request of the Expert Panel, provide any information necessary to assess the City's turbidity and water system modeling programs and to respond to the questions the Panel has been asked to address.	Ongoing
• Provide the final report to NYSDOH, USEPA, and NYSDEC and the Watershed Inspector General (WIG).	Anticipated release by 10/31/2018
• Submit final revised performance measures and criteria for evaluating the efficacy of Catskill Turbidity Control measures, taking into consideration the Expert Panel recommendations, for review and approval by NYSDOH, USEPA, and NYSDEC.	Six months after submission of Expert Panel report

Annually convene a progress meeting with NYSDOH, USEPA, NYSDEC, and the WIG to provide a forum for discussion of the status of the Catskill Turbidity Control measures, management of turbidity events reported in the March Annual Report and subsequent events, use of performance measures to assess program efficacy, status/results of the DEIS and FEIS, and other matters related to turbidity control. In addition, the City will facilitate discussion of the following items: • The Expert Panel Report. This discussion may occur at the next annual meeting after the Report is submitted or NYSDOH may, at its option, request that the City convene a separate meeting to discuss the Expert Panel Report, in addition to the annual meetings. Consistent with NASEM procedures, the City will ask some or all members of the Expert Panel, and/or staff of the organization, to participate in this meeting. • The DEIS. This discussion may occur at the next annual meeting after the DEIS is issued by NYSDEC, or NYSDOH may, at its option, request that the City convene a separate meeting to discuss the DEIS, in addition to the annual meetings. • The Catskill Turbidity Control measures report that is due 3 months after issuance of the FEIS. This discussion may occur at the next annual meeting more than three months after issuance of the FEIS or NYSDOH may, at its option, request that the City convene a separate meeting to discuss this report, in addition to the annual meetings.	Annually, 10/31

Report Description	Due Date
Report on program implementation in the FAD Annual Report.	Annually, 3/31
Provide the final report of National Academies Expert Panel to NYSDOH, USEPA, NYSDEC, and the WIG.	Anticipated release by 10/31/2018
Report on final revised performance measures/criteria for evaluating the efficacy of Catskill Turbidity Controls.	6 months after submission of Expert Panel report
Report on Catskill Turbidity Control Rondout-West Branch Tunnel (RWBT) Shutdown Management Plan, including consideration of maintaining water quality during the RWBT repair and shutdown.	1 year prior to the planned RWBT shutdown
Report on whether, based on the conclusions of the FEIS, the City intends to modify its use of turbidity control measures identified in the Phase III Catskill Turbidity Control Implementation Plan, and/or implement any other turbidity control measures. If so, the City shall submit a modification of the Phase III Plan, proposing alternative measures for achieving turbidity control and a timeline for implementing those alternative measures.	3 months after NYSDEC issuance of FEIS

4.12 Sand and Salt Storage

This program was concluded under the Revised 2007 FAD.

5. Watershed Monitoring, Modeling, and GIS Programs

5.1 Watershed Monitoring Program

The City conducts extensive water quality monitoring throughout the Watershed. Programmatic goals are defined in the 2016 Watershed Water Quality Monitoring Plan, which describes the data gathering protocols for regulatory purposes, FAD program evaluation, modeling, and surveillance (including pathogen surveillance). Significant alterations in the monitoring plan require the City to submit the proposed changes to NYSDOH for review and approval prior to implementation. Changes to the plan are documented using addenda.

Water quality results collected from routine monitoring of reservoirs, streams, and aqueducts throughout the Watershed are stored in a database. The database serves both short- and long-term objectives. The daily results are used for regulatory compliance and operational decisions, and are compiled by the City each year into the Watershed Water Quality Annual Report. Over the longer term, the data generated through the City's monitoring program, in conjunction with other defensible scientific findings, are used to assess water quality status, water quality trends, and the overall effectiveness of the Watershed protection program. This evaluation is described in the Watershed Protection Program Summary and Assessment Report, which is produced every five years. The last submission occurred on March 31, 2016, and the next assessment report shall be submitted by March 31, 2021.

The goals for the Watershed Monitoring Program under the 2017 FAD are to:

- Provide water quality results collected through routine programs.
- Use water quality data to evaluate the source and fate of pollutants.
- Assess the effectiveness of Watershed protection efforts and water supply operations.
- Participate in educational forums on Watershed monitoring, research, and management.
- Coordinate a working group on pathogen research.
- Provide after-action reports to NYSDOH and USEPA on all non-routine chemical treatments and other significant or unusual events that could impact water quality.

The City's Watershed Monitoring Program is described in Section 2.4.1 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

Natural gas drilling using high volume hydraulic fracturing is currently prohibited in New York State[1]. However, as a contingency if natural gas drilling is authorized in the New York City Watershed, the City shall work with regulatory partners to develop parameters to revise and enhance its monitoring plan to include sampling for indicator pollutants.

The 2017 FAD requires the City to implement the Watershed Monitoring Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Annual participation in educational seminars on Watershed monitoring and management.	Ongoing
Coordinate Pathogen Technical Working Group meeting.	Annually, 5/31
Provide after-action reports on all non-routine chemical treatments and other significant or unusual events that have the potential to impact water quality.	Upon completion as specified by NYSDOH for each action

Report Description	Due Date
Submit Watershed Water Quality Annual Report, including comprehensive chapters on: • Kensico Reservoir water quality • Pathogens • Modeling • Educational seminars on Watershed monitoring and management • Ongoing research	Annually, 7/31
Submit the 2021 Watershed Protection Program Summary and Assessment Report.	3/31/2021
Submit the 2026 Watershed Protection Program Summary and Assessment Report.	3/31/2026

[1] On June 29, 2015, NYSDEC officially prohibited high-volume hydraulic fracturing (HVHF) in New York State by issuing its formal Findings Statement, completing the State's seven-year review of this activity.
The Findings Statement concludes that there are no feasible or prudent alternatives that adequately avoid or minimize adverse environmental impacts and address risks to public health from this activity. NYSDEC based the Findings Statement on the vast research included in the NYSDOH Report on the subject and the Final Supplemental Generic Environmental Impact Statement (FSGEIS) released in May 2015. The FSGEIS included consideration of extensive public comment and NYSDOH's Public Health Review, which concluded that there is considerable uncertainty as to potential health impacts from HVHF and that HVHF should not move forward in New York State.

5.2 Multi-Tiered Water Quality Modeling Program

The City conducts extensive modeling analysis to inform long-term water supply planning, Watershed program evaluation, and day-to-day operations to ensure FAD compliance and overall system reliability. The models developed and applied by the Water Quality Modeling Program fall into four general classes:

- Watershed models that simulate hydrology and stream water quality, including processes associated with agricultural, forested, and urban lands, and with water quality including turbidity, nutrients, organic carbon, and disinfection byproduct (DBP) precursors.
- Reservoir models that simulate the effects of Watershed hydrology, nutrient inputs, and operations on reservoir nutrient and chlorophyll levels, the production and loss of organic carbon.
- System operation models that simulate the demands, storage, transfer, and quality of water throughout the entire NYC reservoir system.
- Stochastic weather generators, which generate synthetic time series of weather variables such as precipitation and air temperature; which, when combined with Watershed, reservoir, and system models, allows evaluation of the impacts of climate change and extreme events on supply system operation and water quality.

These models encapsulate the key processes and interactions that control generation and transport of water, sediment, organic carbon and nutrients from the land surface, through the watersheds and reservoirs, and the supply system. Research and development is an integral component of the Water Quality Modeling Section's mission that leads to improvements to existing models, adaptation of new models and development of model applications to support water supply planning and operations by evaluating the impacts of changing and evolving management and protections programs, climate, land use, population, reservoir operations, and regulatory requirements.

The goals for the Multi-Tiered Water Quality Modeling Program under the 2017 FAD are the development and application of models in the following areas:

- Prediction of turbidity transport in the Catskill system, and Kensico and Rondout Reservoirs, and to provide guidance for reservoir operations to minimize the impact of turbidity events.
- Integration of the Rondout turbidity model into the OST.
- Development and testing of turbidity models for other Delaware system reservoirs, beginning with Neversink.
- Evaluation of the effectiveness between and within Watershed management programs implemented through the FAD and MOA on maintenance and improvement of water quality.
- Continuation of model development and application to forecast the effects of climate change on water supply quantity and quality.

- Development and testing of models to simulate Watershed sources, and reservoir fate and transport, of organic carbon and disinfection byproduct precursors.
- Evaluation of impacts of infrastructure improvements (both during and following), including the RWBT repair project.

The City's Multi-Tiered Modeling Program is described in Section 2.4.2 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Multi-Tiered Water Quality Modeling Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Update and enhance data describing land use, Watershed programs, meteorology, stream hydrology and water quality, reservoir quality and operations data to support modeling.	Ongoing
Provide modeling and technical support for Catskill Turbidity Control measures including the applications of OST.	Ongoing
Use reservoir turbidity models and OST to support operational decisions in response to episodes of elevated turbidity.	Ongoing
Apply and test new models to support Watershed management and long-term planning.	Ongoing
Develop and test fate and transport models for organic carbon and disinfection byproduct precursors in Cannonsville and Neversink Reservoirs.	Ongoing
Develop future climate scenarios for use as inputs to the City's Watershed and reservoir models; scenarios may be based on: (a) historic time series, and (b) synthetic weather generators.	Ongoing
Develop model applications that simulate the impacts of future climate change on Watershed hydrology, reservoir water quality, and water system operations.	Ongoing
Hold an annual progress meeting with regulators to present and discuss modeling results.	Annually, 10/31

Report Description	Due Date
Submit program Status Report, including updates on the modeling activities described above in the Watershed Water Quality Annual Report.	Annually, 7/31
Report on Modeling Analysis of FAD Programs as a supplement to the Watershed Protection Program Summary and Assessment Report.	3/31/2021 and 3/31/2026

5.3 Geographic Information System Program

The City's upstate Geographic Information System (GIS) is used to manage the City's interests in the lands and facilities of the upstate water supply system, and to display and evaluate the potential efficacy of Watershed protection programs, through maps, queries, and spatial analyses. The GIS is also used to support Watershed and reservoir modeling of water quantity and quality, as well as modeling of water supply system operations. GIS resources are utilized by staff at offices throughout the Watershed, directly and via the Watershed Lands Information System (WaLIS).

The GIS will continue to be a useful tool in four primary areas:

- Inventory and track water supply lands and facilities.
- Perform analyses of land use and terrain to map development, agriculture, forest and hydrography.
- Provide estimation of the effects of Watershed management programs on long-term water quality.
- Support Watershed and reservoir modeling of water quantity and quality, and modeling of system operations.

The goals for the GIS Program under the 2017 FAD are to:

- Continue to provide GIS technical support for protection programs, monitoring programs, and modeling applications.
- Continue to develop and update GIS data and metadata, including acquisition of high-resolution aerial data and their derived products.
- Continue to improve and maintain GIS infrastructure to evolve with changing technology and growing database needs.
- Continue to fulfill requests for GIS data from other agencies and Watershed stakeholders.

The City's GIS program is described in Section 2.4.3 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Geographic Information System Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Continue to provide GIS technical support for protection programs, monitoring programs, and modeling applications.	Ongoing

Continue to develop and update GIS data and metadata, including acquisition of high-resolution aerial data and their derived products as needed.	Ongoing
Continue to improve and maintain GIS infrastructure to evolve with changing technology and growing database needs.	Ongoing
Continue to fulfill requests for GIS data from other agencies and Watershed stakeholders.	Ongoing

Report Description	Due Date
Report on program implementation in the FAD Annual Report, including: • GIS technical support for protection programs, monitoring programs, and modeling applications • Completion or acquisition of new GIS data layers and aerial products in the City's GIS spatial data libraries • GIS infrastructure improvement • GIS data dissemination summaries	Annually, 3/31

6. Regulatory Programs

6.1 Watershed Rules and Regulations and Other Enforcement/Project Review

The City administers and enforces the City's Watershed Rules and Regulations (WR&Rs), including the regulations and standards incorporated by reference in these regulations. The City also participates in environmental reviews under SEQRA for projects in the Watershed. The majority of the regulated activities reviewed by the City involve subsurface sewage treatment systems or stormwater pollution prevention plans to prevent the discharge of sediment, turbidity, nutrients, and pathogens from entering the reservoirs.

The program is coordinated through a Memorandum of Understanding (MOU) between NYSDEC and the City. The MOU established the Watershed Enforcement Coordination Committee (WECC) which meets quarterly to address non-compliance with stormwater pollution prevention plans through formal enforcement and compliance assistance under specific agency protocols. The WECC process is designed to address instances of significant non-compliance in a timely and appropriate manner.

The City, in accordance with Public Health Law Section 1104 and the MOA, is obligated to pay for capital replacement of Watershed Equipment and Methods at all public wastewater treatment plants (WWTPs), as well as all (public or nonpublic) WWTPs that existed or were under construction as of November 2, 1995, and that are required by the WR&Rs and not otherwise required by federal or State law.

The City is working towards revising the WR&Rs to provide for greater consistency with the State's regulatory program for stormwater and wastewater. Revisions have also been proposed in response to concerns raised by stakeholders in WOH communities, in particular related to noncomplying regulated activities, subsurface sewage treatment systems, holding tanks, SWPPPs, and variances.

The goals for Watershed Rules and Regulations and Other Enforcement/Project Review under the 2017 FAD are to:

- Facilitate optional pre-application meeting requests, receive applications for approval of regulated activities, perform a review of SEQR notices and new projects in accordance with the WR&Rs, and monitor construction activity.
- Investigate possible violations of the WR&Rs, Environmental Conservation Law, and Clean Water Act. Document system failures, illicit discharges, and construction site non-compliance; issue Notices of Violation as necessary, and review corrective action plans for all violations. Observe and document remediation efforts and perform close-out actions.
- Enforce environmental and public health requirements, including petroleum/chemical spills, and hazardous and solid waste dumping.
- Continue the City's commitment to pay for Capital Replacement of Watershed Equipment and Methods at eligible WWTPs.

The City's WR&Rs program is described in Section 2.5.1of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement Watershed Rules and Regulations and Other Enforcement/Project Review in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Enforce the WR&Rs and other applicable regulations. Continue to promote compliance guidance to applicants seeking approval, through pre-application conferences and providing guidance documents.	Ongoing
Work with NYSDEC, in accordance with Addendum S of the NYCDEP/NYSDEC Memorandum of Understanding, to improve coordination of stormwater enforcement and compliance activities between agencies and with the State Attorney General's Office. Such enforcement and compliance coordination will apply, but not be limited to, all effective NYSDEC general permits for construction activity. Stormwater WECC meetings with involved agencies will be held at least twice per year or more as needed.	Ongoing
Submit the proposed changes to the WR&Rs and a timeline for completing the rulemaking process.	2/28/2018
Update guidance documents affected by WR&Rs changes to assist applicants undertaking regulated activities in complying with the WR&Rs. Submit the updated guidance documents in accordance with the MOA.	18 months after effective date of revisions to WR&Rs

Report Description	Due Date
Submit the proposed changes to the WR&Rs and a timeline for completing the rulemaking process.	2/28/18
Submit reports consisting of: • Summary table, with corresponding maps, of new project activities that may affect water quality including variance activities and review of new/remediated septic systems in the Catskill/Delaware Watershed basins as well as in the Croton Falls and Cross River basins east of the Hudson River. • Summary table (inventory) of all development projects proposed and their SEQRA status, with corresponding maps. • Summary table of projects under construction, by basin, with corresponding maps.	Semi-annually, 4/30 and 10/31
Submit reports on the status of the City's regulatory enforcement actions in the Catskill/Delaware Watershed basins, including the Croton Falls and Cross River basins.	Semi-annually, 4/30 and 10/31
Submit report on the progress of the proposed changes to the WR&Rs until adopted.	Semi-annually, 4/30 and 10/31
Submit an update on Capital Replacement of the Watershed Equipment and Methods at eligible WWTPs.	Annually, 3/31
Report on the analyses used to determine the phosphorus-restricted and coliform-restricted status of each reservoir, as part of the Watershed Water Quality Annual Report.	Annually, 7/31

6.2 Wastewater Treatment Plant Compliance and Inspection Program

The goal of the WWTP Compliance and Inspection Program is to prevent degradation of source waters from the threat of contamination from WWTPs discharging in the Watershed. To ensure compliance with the Watershed Regulations and the SPDES permits, the City through the WWTP Compliance and Inspection Group performs onsite inspections, conducts sample monitoring, provides compliance assistance, and takes enforcement actions when needed. The program is coordinated through a Memorandum of Understanding (MOU) between NYSDEC and the City. The MOU established the Watershed Enforcement Coordination Committee (WECC), which meets quarterly to address non-compliance through formal enforcement and/or compliance assistance under specific inter-agency protocols. The WECC process is designed to address instances of significant non-compliance in a timely and appropriate manner. In addition, the City's Water Quality sampling program regularly monitors the effluent of all treatment plants in the Watershed and uses the results of sampling to assist WWTP operators to meet compliance requirements or to initiate enforcement actions as necessary.

The City's WWTP Compliance and Inspection Program is described in Section 2.5.2 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Wastewater Treatment Plant Compliance and Inspection Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Perform monitoring at all City-owned WWTPs in accordance with their SPDES permits, and grab sample monitoring monthly at all non-City-owned WWTPs discharging in the Catskill/Delaware Watershed. At least once annually, for the non-City-owned WWTPs, samples shall be collected and analyzed in accordance with the monitoring requirements of each facility's SPDES permit. Continue to provide technical assistance to owner/operators of non-City-owned WWTPs as needed.	Ongoing
Continue to take timely and appropriate enforcement actions against non-City-owned WWTPs for noncompliance with the City's WR&Rs and SPDES discharge permit requirements, in accordance with the WECC enforcement coordination protocol specified in the MOU between NYSDEC and the City.	Ongoing
Conduct at least four on-site inspections for year-round SPDES permitted facilities and at least two on-site inspections per year for all seasonal SPDES permitted WWTPs in the watershed.	Ongoing

Report Description	Due Date
Report on the WWTP Compliance and Inspection Program, including: • WWTP inspection summary reports • Enforcement actions	Semi-annually, 3/31 (July 1 to Dec 31) 9/30 (Jan 1 to June 30)
Submit WWTP Water Quality Sampling Monitoring Report.	Semi-annually, 3/31 (July 1 to Dec 31) 9/30 (Jan 1 to June 30)
Report by email to NYSDOH all sewage spills exceeding 500 gallons within 24 hours of the City becoming aware of the spill.	Ongoing

7. Catskill/Delaware Filtration Plant Design

The 1997 FAD required the City to produce a Final Design and Final Environmental Impact Statement for filtration facilities for the Catskill/Delaware water supply. The 2002 FAD required the City to provide biennial updates to the preliminary filtration plant design for the Catskill/Delaware system (in addition to constructing an ultraviolet light disinfection facility, which was placed into full service in October 2012). The 2007 FAD maintained the requirement for the City to provide a biennial report that updated the preliminary design for filtration facilities.

In 2013 and 2015, the City proposed, and NYSDOH agreed, that because no design changes to the 2009 preliminary plans for the Catskill/Delaware Filtration Facilities were required or issued, no revisions to the 2009 plans were necessary. In recognition that the work supporting the existing preliminary plans is now over 25 years old, the 2017 FAD requires the City to contract for a comprehensive review of filtration methods and technologies, resulting in the development of a new conceptual design for a filtration facility or facilities. This will minimize the overall time to commence filtration, in the event that the City or NYSDOH determines that filtration is necessary.

It is expected that this design review process will include:

- bench studies and modeling;
- larger scale pilot studies;
- independent review from water treatment experts;
- conceptual design that incorporates the latest filtration methods and technologies.

The City's Catskill/Delaware Filtration Plant Design program is described in Section 2.6 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Catskill/Delaware Filtration Plant Design requirements in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Advertise for Request for Proposals.	Completed
Issue Notice to Proceed.	2/28/2018
Complete paper and bench studies.	6/30/2020
Commence conceptual design and larger scale pilot studies.	12/31/2021

Complete larger scale pilot studies and submit report.	12/31/2024
Submit conceptual design.	12/31/2026

Report Description	Due Date
Report on status of design review.	Annually, 3/31
Submit larger scale pilot studies report.	12/31/2024
Submit Final Report on conceptual design.	12/31/2026

8. In-City Programs

8.1 Waterborne Disease Risk Assessment Program

To maintain filtration avoidance, the City must continue to demonstrate that water consumers served by the NYC water supply are adequately protected against waterborne disease. In particular, the City's water must not be identified as a source of outbreaks of giardiasis or cryptosporidiosis.

Since the promulgation of the SWTR in 1989, and the initiation of the City's Waterborne Disease Risk Assessment Program (WDRAP) in 1993, significant changes in water quality regulation and water treatment have occurred. In the City, the Catskill/Delaware UV plant was constructed and began operation in 2012. Also, the Croton filtration plant began delivering water to areas of the City in 2015. With these treatment facilities now in operation, the City has major additional protection against any risk of waterborne disease due to pathogens such as *Giardia* and *Cryptosporidium*.

Providing an additional level of public health protection, the 2017 FAD continues to require that the WDRAP program assess and ensure the safety of the City's water supply. The main goal of the WDRAP program is to track the incidence of and gather relevant demographic and risk factor data on potentially-waterborne illnesses, in particular giardiasis and cryptosporidiosis, in the population served by the City's water supply. Also under WDRAP, syndromic surveillance programs have been developed and implemented as a means for observing general community gastro-intestinal illness trends in NYC, as an additional assurance of the safety of the water supply.

The City's Waterborne Disease Risk Assessment Program is described in Section 2.7 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the WDRAP in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Continue to operate the Waterborne Disease Risk Assessment Program.	Ongoing
In relation to any water quality "event" involving the NYC water supply (e.g., increased turbidity levels, pathogen detection, disruption of operations), the City will provide NYSDOH and USEPA with syndromic surveillance system information.	Event based

Notify NYSDOH and USEPA whenever the City is notified by the New York City Department of Health and Mental Hygiene of any signs of community gastrointestinal illness in which public drinking water supply appears to be the source of the illness.	Event based
Continue to implement the Turbidity Action Plan and annually update the contact information.	Event based

Report Description	**Due Date**
Submit Annual Report on program and program findings, implementation, and analysis.	Annually, 3/31

8.2 Cross Connection Control Program

A cross connection is a physical connection in a drinking water distribution system through which the water supply can become contaminated. By inspections of potential sources of cross connections and follow-up enforcement to ensure backflow prevention devices are installed where necessary, the Cross Connection Control Program is an important tool for preventing contamination of the City's water in distribution system.

Although this program is an important part of the City's drinking water program, NYSDOH, in consultation with USEPA, has determined that it is no longer a necessary component of the Filtration Avoidance Determination. As a requirement of 10 NYCRR Section 5-1.31 and Title 15, Chapter 20 of the Rules of the City of New York, the City will continue to implement a Cross Connection Control Program. As required by New York City Local Law 76/09, the Program will report semi-annually (January and July) to the New York City Council on: the number of facilities for which one or more backflow devices were installed since the last report; the number of facilities that have been newly notified of the need to install devices; and the number of violations issued for failure to install devices. The City will ensure that this information is also posted on its public website http://www.nyc.gov/html/dep/html/forms_and_permits/cross.shtml#faq, and that NYSDOH and USEPA are copied on the report that is sent to the NYC Council.

9. Administration

In order to successfully implement a comprehensive Watershed protection program, dedicated professionals in a variety of fields are needed. The FAD requires the City to maintain the level of staffing, funding, and expertise necessary to support all elements of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016). Annual reporting of staffing, disbursements, and out-year appropriations is important for determining if the City's committed resource levels are sufficient.

In addition to having adequate staffing and funding, the City and its WOH Watershed partners have recognized that the establishment of a physical office in the WOH Watershed would improve implementation of the City's source water protection programs. Providing a central location for certain operations, maintenance, and infrastructure improvement tasks can help ensure the reliable delivery of water to the City from the Catskill/Delaware Watershed. By sharing a work location, centrally located in the Watershed, the City and CWC can further improve coordination and responsiveness to Watershed communities. The City shall work with CWC to co-locate new offices for certain NYCDEP staff. CWC has begun advancing plans for a new facility in Arkville, NY. The City shall take all necessary steps to obtain required City review and approvals for leasing of approximately 13,000 square feet of office, meeting, and storage space for a 20-25-year term, in a time frame to begin relocation of appropriate staff in 2020. The details of its lease of space, including square footage, revisions, if any, to estimated staffing numbers, and timing of occupation (subsequent to receipt by CWC of a certificate of occupancy), shall be updated and reported annually to NYSDOH.

The 2017 FAD requires a new section in the annual report to provide the status of key partnership contracts, such as those with CWC, SWCDs, and WAC. In addition, upon request from NYSDOH, the City will convene a meeting with FAD program partners, as necessary, to discuss program administrative, contract, and/or funding issues. The goal is to maintain continuity in the Watershed protection programs, and prevent the occurrence of funding gaps.

The City's Administration Program is described in Section 2.8 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Administration requirements in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
NYCDEP, in consultation with the City's Office of Management and Budget, will make a presentation to NYSDOH, USEPA, and NYSDEC on the amount of money appropriated and spent for Watershed protection programs and its adequacy to meet program objectives and FAD requirements.	Within 60 Days after submission of the Annual Report
Co-location of NYCDEP staff with CWC in new office in Arkville, NY:	
• Sign a binding commitment to lease office space in Arkville, NY for relocation of NYCDEP program staff.	By the time the building is complete and ready for occupancy, with best efforts to sign by 12/31/2018
• Assign at least 26 NYCDEP staff to new offices in Arkville, NY.	12/31/2020, provided building is complete and ready for occupancy
• Assign additional staff, as necessary, to ensure that a total of at least 40 NYCDEP staff are assigned to new offices in Arkville, NY.	12/31/2026

Report Description	Due Date
Report annually on: • The actual filled staff position levels versus available staff positions for each division and section involved in supporting FAD Watershed protection programs, and confirm that resource levels are adequate to ensure that all program goals and FAD requirements are met. Contractor support staff will be noted. • The amount appropriated in the City budget for FAD Watershed protection programs for the upcoming fiscal year, specifically the amount (capital and expense) spent during the previous year, the amount appropriated for the current year, and the amount planned for the year thereafter. The amount spent, appropriated, and planned will be broken	Annually, 9/30

down by program, to the extent practicable. The report will also include costs for technical consultant contracts identified in the FAD. • The status of key partnership contracts including contract issues (i.e., change orders, planning for successor contract) and funding projections.	
Report on status of lease details and City approvals, estimated staffing numbers, and timing of occupation of leased space in new offices in Arkville, NY.	Annually, 3/31

10. **Education and Outreach**

The overall goal of the Education and Outreach Program is to raise awareness about the importance of the New York City water supply system and the critical need to protect its sources for current and future generations. Through this collaborative program, the City works with numerous partners in both the Watershed and New York City to educate upstate residents and downstate consumers about the importance of source water protection, and to promote the benefits of environmental protection to public health and quality of life.

Certain elements of the Watershed Education and Outreach Program are achieved through individual Watershed programs and partnerships that target a specific audience, whereas others involve direct stakeholder engagement or active participation in local community events where information can be effectively disseminated to a broad audience. The continued use of websites, press releases, newsletters, publications, and newer technology such as social media and e-news complements all these efforts.

Virtually every Watershed protection program funded or supported by the City accomplishes some degree of public education or outreach, which the City attempts to track and quantify with a focus on characterizing the key target audiences reached. The primary Watershed programs that focus on education and outreach include the CWC Public Education Grants Program, Watershed Agricultural Program, Watershed Forestry Program, Stream Management Program, and Land Management Program (Watershed Recreation).

The goals for the Education and Outreach Program under the 2017 FAD are to:

- Continue to promote environmental stewardship as means of water quality and public health protection.

- Continue to track and document the estimated numbers and types of audiences reached via targeted Watershed education and/or training programs.

- Continue to track and document the diverse range of community public outreach events that are sponsored or attended by the City and its Watershed partners.

The City's Education and Outreach Program is described in Section 2.9 of the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016).

The 2017 FAD requires the City to implement the Education and Outreach Program in accordance with the milestones below.

Activity and Reporting Requirements

Activity	Due Date
Continue to support the following activities: • CWC Public Education Grants Program (through a contract with CWC). • Targeted education and professional training programs for specific adult audiences through the ongoing efforts of existing Watershed protection programs. • School-based education programs for both upstate and downstate audiences (teachers and students). • Watershed community outreach events and public meetings, with participation as needed. • Utilization of websites, press releases, newsletters, publications and social media to disseminate information about the water supply and Watershed protection programs.	Ongoing

Report Description	Due Date
Report on program implementation in the FAD Annual Report, summarizing key activities and accomplishments related to education and outreach in the following programs: • CWC Public Education Grants Program • Watershed Agricultural Program • Watershed Forestry Program • Stream Management Program • Watershed Recreation	Annually, 3/31

11. Reporting

The 2017 FAD continues to require that the City inform NYSDOH and USEPA of its Watershed protection efforts through submittal of reports designed to assist the regulatory community and Watershed stakeholders in their assessment of the overall progress of the City's Watershed Protection Program. The expected content for these reports is described in more detail in each section of this 2017 FAD and in the *New York City Department of Environmental Protection Long-Term Watershed Protection Plan* (December 2016). This reporting section is not an exhaustive list of all reporting obligations. All FAD reports generated by NYCDEP are posted on the NYCDEP website (http://www.nyc.gov/html/dep/html/watershed_protection/fad.shtml). The following tables highlight reports submitted on a periodic as well as one-time only basis.

For informational purposes, the City will also inform NYSDOH and USEPA annually about actions planned and actions taken by the City on water conservation, implementation or revisions to the City's Drought Management Plan, and the elimination of leaks in the Delaware Aqueduct.

The 2017 FAD requires that the City implement the reporting requirements in accordance with the submittal list and schedule below.

Periodic Submittals by FAD Section

Section	Report Topic	Frequency*
2	Continue to meet SWTR filtration avoidance criteria (40 CFR §141.71 and §141.171, and 10 NYCRR §5-1.30) and submit reports and certification of compliance on: • §141.71(a)(1) and §5-1.30(c)(1) – raw water fecal coliform concentrations. • §141.71(a)(2) and §5-1.30(c)(2) – raw water turbidity sampling. • §141.71(b)(1)(i)/§141.72(a)(1) and §5-1.30(c)(3) – raw water disinfection CT values. • §141.71(b)(1)(ii)/§141.72(a)(2) and §5-1.30(c)(4) – operational status of Kensico and Hillview disinfection facilities, including generators and alarm systems. • §141.71(b)(1)(iii)/§141.72(a)(3) and §5-1.30(c)(5) – entry point chlorine residual levels.	Monthly

Section	Report Topic	Frequency*
	• §141.71(b)(1)(iv)/§141.72(a)(4) and §5-1.30(c)(6) – distribution system disinfection levels (the City will include a discussion of any remedial measures taken if chlorine residual levels are not maintained throughout the distribution system). • §141.71(b)(5) and §5-1.30(c)(10) – distribution system coliform monitoring, including a summary of the number of samples taken, how many tested positive for total coliform, whether the required number of repeat samples were taken at the required locations, and which, if any, total coliform positive samples were also *E. coli* positive. For each *E. coli* positive sample, include the investigation of potential causes, problems identified and what has or will be done to remediate problems. Include copies of any public notices issued as well as dates and frequency of issuance. All requirements described in §141.71(b)(6) and §5-1.30(c)(9) must continue to be met. Submit report on disinfection byproduct monitoring results. Report on the operational status of Kensico Reservoir, West Branch Reservoir (on-line or by-pass), Hillview Reservoir, and whether any of these reservoirs experienced unusual water quality conditions. Report on the status of the Expert Panel Review in the FAD Annual Report.	Quarterly Monthly Annually

Section	Report Topic	Frequency*
3.1	Septic and Sewer Programs implementation: • Septic Remediation and Replacement Program • Small Business Program • Cluster System Program • Septic Maintenance Program • Alternate Design and Other Septic Systems	Annually
3.3	Community Wastewater Management Program implementation: • Shandaken • West Conesville • Claryville • Halcottsville • New Kingston • Shokan	Annually
3.5	Implementation of the Future Stormwater Controls Programs and the Stormwater Retrofit Program.	Annually
4.1	Summary of Waterfowl Management Program activities at all reservoirs, including wildlife management at Hillview Reservoir (8/1 to 7/31).	Annually (10/31)
4.2	Semi-annual reports on Land Acquisition Program activities and status.	Semi-annually (3/31 and 7/31)
4.3	Land Management Program implementation.	Annually
4.4	Watershed Agricultural Program implementation including: • Number of new and revised WFPs completed and approved, as well as the total number and percentage of active plans in relation to the current universe of WAP participants.	Annually

Section	Report Topic	Frequency*
	• Number, types and dollar amounts of both new BMPs and repaired or replaced BMPs implemented each year. • Number, types, and dollar amounts of both new BMPs and repaired or replaced BMPs designed and scheduled for implementation in the following year. • Cumulative percentage of BMP backlog reduced (designed, implemented, or scheduled for implementation) in relation to projected BMP implementation milestones for 2022. • Number and percentage of annual status reviews completed on active Whole Farm Plans. • Number of new and updated nutrient management plans completed, as well as the percentage of current plans on all active participating farms that require such a plan. • Number of farms participating in the Nutrient Management Credit Program. • Number of farms participating in the PFM Program and a summary of accomplishments. • Number of new and re-enrolled CREP contracts completed, along with a summary of total enrolled and re-enrolled acres. • Summary of Farmer Education Program accomplishments. • Summary of Economic Viability Program accomplishments.	Annually
4.5	Report on Watershed Forestry Program implementation including: • Number of forest management plans completed and acres of forestland	Annually

Section	Report Topic	Frequency*
	enrolled in New York's forest tax abatement program. • Number and types of MAP projects completed. • Number and types of forestry BMP projects completed. • Number of Croton Trees for Tribs projects completed. • Summary of logger and forester training accomplishments. • Summary of landowner education accomplishments. • Summary of school-based education accomplishments. • Summary of model forest accomplishments.	Annually
4.6	Report on the Stream Management Program implementation including: • Site selection of water quality based projects and status of projects. • Catskill Stream Buffer Initiative, including miles of streambank revegetated. • Stream Management Implementation Projects, including number of projects funded. • Local Flood Hazard Mitigation Program, including number of LFHM and LFA-generated projects funded, funding amounts, and number completed projects. • Water Quality studies. • Watershed Emergency Stream Response Plan.	Annually

Section	Report Topic	Frequency*
	Submit rolling two-year Action Plans for implementing stream management plan recommendations and establishing priorities, by reservoir basin.	Annually (5/31)
	Submit descriptions of proposed stream projects for FAD approval.	Annually (11/30)
	Water Quality Monitoring Studies status reports.	Biennially, beginning 3/31/2019
4.7	Report on Riparian Buffer Protection Program implementation referencing the other FAD programs where the completed Riparian Buffer Protection Program details will be described.	Annually
4.8	Report on Ecosystems Protection Program implementation including: • Forest inventories • Wetland protection • Wetland mapping • Wetland permit reviews • Invasive species management	Annually
4.9	Report on East-of-Hudson Nonpoint Source Pollution Control Program implementation: • Maintenance of EOH Stormwater Facilities • Stormwater Remediation Projects • EOH NPS Stormwater Retrofit Grant Program • EOH Community Wastewater Planning Assistance Program • EOH Septic Repair Program, including education and outreach efforts • Video Sanitary Sewer Inspection	Annually
	Implementation status of two EOH Stormwater Remediation Projects.	Quarterly until completed (3/31, 6/30, 9/30, 12/31)

Section	Report Topic	Frequency*
4.10	Report on Kensico Water Quality Control Program implementation: • Operation and maintenance of non-point source management facilities • Westlake sewer monitoring program • Shaft 18 shoreline stabilization • Review timeline for assessing or dredging at the effluent chambers • Septic Repair Program • Video Sanitary Sewer Inspection • Kensico Wildlife Scat Sanitary Survey • Westchester County Airport (including capped landfills), as needed	Annually
4.11	Report on Catskill Turbidity Control Program.	Annually
5.1	Watershed Water Quality Annual Report, including comprehensive chapters on: • Kensico Reservoir water quality • Pathogens • Modeling • Educational seminars on Watershed monitoring and management • Ongoing research	Annually (7/31)
5.2	Status report on Multi-Tiered Water Quality Modeling Program, including updates on modeling activities in the Watershed Water Quality Annual Report.	Annually (7/31)

Section	Report Topic	Frequency*
5.3	Report on Geographic Information System Program implementation, including: • GIS technical support for protection programs, monitoring programs, and modeling applications. • Completion or acquisition of new GIS data layers and aerial products in the City's GIS spatial data libraries. • GIS infrastructure improvement. • GIS data dissemination summaries.	Annually
6.1	Report on WR&Rs consisting of: • Summary table, with corresponding maps, of new project activities that may affect water quality including variance activities and review of new/remediated septic systems in the Catskill/Delaware Watershed basins as well as in the Croton Falls and Cross River basins east of the Hudson River. • Summary table (inventory) of all development projects proposed and their SEQRA status, with corresponding maps. • Summary table of projects under construction, by basin, with corresponding maps.	Semi-annually (4/30 and 10/31)
	WR&Rs Enforcement Report.	Semi-annually (4/30 and 10/31)
	Progress report on proposed revisions to the City's WR&Rs.	Semi-annually until adopted (4/30 and 10/31)
	Submit an update annually on Capital Replacement of the Watershed Equipment and Methods at eligible WWTPs.	Annually
	Analyses used to determine the phosphorus-restricted and coliform-restricted status of each reservoir.	Annually in Watershed Water Quality Report (7/31)

Section	Report Topic	Frequency*
6.2	WWTP Compliance and Inspection Program • WWTP inspection summary reports • Enforcement actions WWTP Water Quality Sampling Monitoring Report.	Semi-annually (3/31 and 9/30) Semi-annually (3/31 and 9/30)
7	Catskill Delaware Filtration Plant Design Review status.	Annually
8.1	Waterborne Disease Risk Assessment Program findings, implementation, and analysis.	Annually
9	Administration Report on: • The actual filled staff position levels versus available staff positions for each division and section involved in supporting FAD Watershed protection programs, and confirm that resource levels are adequate to ensure that all program goals and FAD requirements are met. Contractor support staff will be noted. • The amount appropriated in the City budget for FAD Watershed protection programs for the upcoming fiscal year, specifically the amount (capital and expense) spent during the previous year, the amount appropriated for the current year, and the amount planned for the year thereafter. The amount spent, appropriated, and planned will be broken down by program, to the extent practicable. The report will also include costs for technical consultant contracts identified in the FAD. • The status of key partnership contracts including contract issues (i.e., change orders, planning for successor contract) and funding projections.	Annually (9/30)

Section	Report Topic	Frequency*
10	Education and Outreach Report on program implementation summarizing key activities and accomplishments: • CWC Public Education Grants Program • Watershed Agricultural Program • Watershed Forestry Program • Stream Management Program • Watershed Recreation	Annually
11	Comprehensive FAD Annual Report. NYCDEP Response to NYSDOH On-site Inspection Report.	Annually Annually (within 60 days following receipt of NYSDOH report)

*Monthly means reports for a monthly reporting period must be submitted no later than ten days after the end of each month.
Quarterly means reports for a calendar quarter reporting period must be submitted no later than ten days after the end of each quarter.
Semi-annually means reports for a January-June reporting period must be submitted no later than July 31 and for a July-December reporting period must be submitted no later than January 31, unless otherwise stated in the FAD.
Annually means reports for a calendar year reporting period must be submitted no later than March 31 of the following year, unless otherwise stated in the FAD.

Significant One-Time Submittals Required under the FAD in Chronological Order

Section	Description	Due Date
4.11	Provide the Final Report of the Expert Panel on the City's OST to NYSDOH, USEPA, NYSDEC, and the WIG.	When released by National Academies (anticipated by 10/31/2018)
4.11	Report on final revised performance measures/criteria for evaluating the efficacy of Catskill Turbidity Controls.	6 months after release of National Academies report
4.11	Report on whether, based on the conclusions of the FEIS, the City intends to modify its use of turbidity control measures identified in the Phase III Catskill Turbidity Control Implementation Plan, and/or implement any other turbidity control measures. If so, the City shall submit a modification of the Phase III Plan, proposing alternative measures for achieving turbidity control and a timeline for implementing those alternative measures.	3 months after NYSDEC issuance of FEIS
2	Provide the Final Report of the Expert Panel on the City's Watershed Protection Plan.	Commence Work date + 33 months
2	Convene a public meeting with the regulators and Watershed stakeholders to discuss the major findings and recommendations of the National Academies Expert Panel review.	Date of Final Report + 4 months
4.8	Submit updated Watershed Forest Management Plan.	Completed
6.1	Submit timeline for completing proposed changes to the WR&Rs.	2/28/18
4.8	Submit updated Wetlands Protection Strategy.	3/31/2018
4.9	Report on review of strategies used to inform potential EOH Septic Repair Program participants of the program's availability	3/31/2018
4.2	Based on the requirements of the 2010 WSP, submit first evaluation report on the NYCFFBO Program	6/15/2018
4.2	Report on progress of workgroup convened to assess opportunities to use LAP-acquired lands to facilitate relocation of development out of floodplain.	6/30/2018

Section	Description	Due Date
4.6	Report on metrics that have been established to evaluate Delaware County CSBI/CREP pilot program	11/30/2018
4.6	Report on development of Watershed Emergency Stream Response and Recovery Plan.	12/31/2018
4.2	Submit proposed approach for providing payments or incentives that might increase participation by landowners in SAP.	3/31/2019
4.6	Submit brief basin specific reports outlining the water quality basis for Stream Project Site Selection in the basin during the FAD period and that prioritize main stem and/or sub-basins for stream feature inventories.	6/30/2019
4.6	Report on progress in extending CREP through CSBI, including Delaware County CSBI/CREP pilot program, and submit recommendations for establishment of a permanent program and estimated funding needs, or discontinuation of the program.	11/30/2019
4.2, 4.7	Submit a status report on the SAP.	12/15/2020
4.2	Submit a status report on the WAC Forest Conservation Easement acquisition program.	12/15/2020
4.6	Submit LFHMP first evaluation.	6/30/2020
5.1	Submit 2021 Watershed Protection Program Summary and Assessment Report.	3/31/2021
5.2	Report on Modeling Analysis of FAD Programs as a supplement to the Watershed Protection Program Summary and Assessment Report.	3/31/2021
4.2	Based on the requirements of the 2010 WSP, submit the second program evaluation report on the NYCFFBO Program.	6/15/2021
2	Submit 2021 Long-Term Watershed Protection Plan.	12/15/2021
4.4	Report on CAI evaluation results for the Watershed forest management planning program and landowner education programs.	12/31/2021

Section	Description	Due Date
4.11	Report on Catskill Turbidity Control RWBT Shutdown Management Plan, including consideration of maintaining water quality during the RWBT repair and shutdown.	1 year prior to planned RWBT shutdown
4.8	Submit summary of wetland mapping and connectivity assessment.	3/31/2022
4.8	Submit updated Invasive Species Implementation Strategy.	3/31/2022
4.9	Report on assessment of funding for the EOH Septic Repair Program.	3/31/2022
4.2	Submit a Long-Term Land Acquisition Plan for the period 2023-2033.	5/31/2022
4.6	Submit Water Quality Monitoring Studies first five-year report.	11/30/2022
4.4	Submit WAP Metrics Assessment and Recommendations Report.	6/30/2023
4.6	Submit LFHMP second evaluation.	6/30/2023
4.6	Update report on development of Watershed Emergency Stream Response and Recovery Plan.	12/31/2023
7	Submit Catskill Delaware Filtration Plant larger scale pilot studies report.	12/31/2024
5.1	Submit 2026 Watershed Protection Program Summary and Assessment Report.	3/31/2026
5.2	Report on Modeling Analysis of FAD Programs as a supplement to the Watershed Protection Program Summary and Assessment Report.	3/31/2026
2	Submit 2026 Long-Term Watershed Protection Plan.	12/15/2026
4.4	Report on CAI evaluation results for the Watershed forest management planning program and landowner education programs.	12/31/2026
7	Submit Final Report on Catskill Delaware Filtration Plant conceptual design.	12/31/2026

Section	Description	Due Date
4.8	Submit revised Watershed Forest Management Plan.	3/31/2027
4.6	Submit Water Quality Monitoring Studies final study findings report.	11/30/2027

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