

FINAL 2007 FAD

# **New York City Filtration Avoidance Determination**

**Prepared By  
USEPA in consultation with NYSDOH  
July 2007**

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

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### **Final Filtration Avoidance Determination – July 2007**

The United States Environmental Protection Agency (EPA), in consultation with the New York State Department of Health (NYSDOH), has made a determination that New York City has an adequate long-term watershed protection program for its Catskill/Delaware water supply that meets the requirements of the Surface Water Treatment Rule (SWTR) and the Interim Enhanced Surface Water Treatment Rule (IESWTR) for unfiltered water supply systems. This document, the Final 2007 Filtration Avoidance Determination (FAD), covers a watershed protection program to be undertaken by the City over the next ten years, consisting of two five year periods: (i) 2007-2012 (“First Five Year Period”), and (ii) 2012-2017 (“Second Five Year Period”).

Originally, the 2007 FAD was planned to cover a five-year term. Consistent with this expectation, the City developed its 2006 Long-Term Watershed Protection Program with proposed program activities for five years. Subsequently, after further discussion among the City, EPA and the State, agreement was reached on the framework for a ten-year land acquisition program. The 2007 FAD requires the City to undertake a ten-year land acquisition program, in accordance with the terms and milestones described herein, which builds upon and expands the land acquisition provisions contained in the City's 2006 Long-Term Watershed Protection Program.

The 2007 FAD requires the City to undertake a series of watershed protection initiatives and activities. During the entire ten years covered by the 2007 FAD, the City will undertake a land acquisition program, for the acquisition of fee title to, or conservation easements on, sensitive watershed lands, as described in this document. This program continues the City's successful land acquisition efforts over the past decade, but includes certain enhancements including additional funding commitments and a plan to substantially increase the use of land trusts and other non-government organizations to identify and help the City acquire eligible lands.

In addition, during the First Five Year Period, the City will complete a series of additional programs and activities other than land acquisition (“Other Programs”) which are described in detail in this document. Prior to the commencement of the Second Five Year Period, the City shall, in consultation with EPA and NYSDOH, evaluate which of the Other Programs should be continued into the Second Five Year Period, whether and how the Other Programs to be continued should be revised, and/or whether additional programs are necessary to ensure that the City continues to have an adequate long-term watershed protection program that meets the requirements of the SWTR and the IESWTR for unfiltered water supply systems. By December 15, 2011, the City shall provide its 2011 Revised Long-Term Watershed Protection Program for the Second Five Year Period with proposed commitments for the Other Programs. The City's proposed commitments will be subject to EPA/NYSDOH<sup>1</sup> review and approval. Following review and approval, the City will be required to meet the commitments for the Other Programs

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<sup>1</sup> As used in this document, the term EPA/NYSDOH means the primacy agency, in consultation with the cooperating regulatory agency.

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in order for the FAD to continue for the duration of the Second Five Year Period. EPA/NYSDOH will seek input from watershed stakeholders regarding the commitments to be established for the Second Five Year Period and will issue a mid-term revision to the FAD in 2012 memorializing the new commitments.

The City's comprehensive watershed protection program has been established within the context of the 1997 New York City Watershed Memorandum of Agreement (MOA), previous Filtration Avoidance Determinations, and the 2002 FAD. In December 2006, the New York City Department of Environmental Protection (NYCDEP) provided its 2006 Long-Term Watershed Protection Program, which summarizes all the program activities proposed by the City to protect the water supply and the watershed over the First Five Year Period of this FAD. Many of the activities described in the report will be implemented through continued partnerships with watershed stakeholders the City has developed and maintained since the signing of the Watershed MOA. Full implementation of the commitments contained in the 2006 Long-Term Watershed Protection Program (which is included in this document by reference), including continued implementation of the Watershed Rules and Regulations (effective May 1, 1997), and compliance with the State's water supply permit (for land acquisition), is required by this Filtration Avoidance Determination. EPA notes that the City is required to meet the milestone date or requirement as set forth in this determination in instances where it differs from that in the City's Long-Term Watershed Protection Program. This determination also requires that New York City continue to meet the filtration avoidance criteria, detailed in 40 CFR §141.71 and 40 CFR §141.171.

The Final 2007 FAD supersedes the November 2002 FAD and will be applicable until a further determination is made, currently scheduled for May 2017. As explained above, however, continuation of this FAD during the Second Five Year Period is contingent upon the City and EPA/NYSDOH agreeing upon, and the City meeting its commitments with respect to, those programs and activities other than land acquisition that the City and EPA/NYSDOH agree should be undertaken during the Second Five Year Period. In addition, at anytime, the primacy agency may make a determination that the City's watershed program no longer provides adequate protection of the City's water supply, pursuant to the SWTR/IESWTR and/or other avoidance criteria in the SWTR/IESWTR, and require the City to filter its Catskill/Delaware water supply.

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### 1. Background and Basis for Determination

As required under the Safe Drinking Water Act (SDWA) Amendments of 1986, EPA 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 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 which make filtration unnecessary.

In response to requirements set forth in the 1996 Amendments to the SDWA, EPA amended the SWTR on December 16, 1998, with the Interim Enhanced Surface Water Treatment Rule (IESWTR), which is codified in Subpart P 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 and the requirement to address *Cryptosporidium* in their watershed control programs. Filtration avoidance criteria established in the SWTR (40 CFR §141.71) and the IESWTR (40 CFR §141.171) are outlined below.

Source water quality conditions:

§141.71 (a)(1): Fecal coliform concentration requirements

§141.71 (a)(2): Turbidity level requirements

Site-specific conditions:

§141.71 (b)(1)(i)/§141.72(a)(1): Disinfection, CT requirements

§141.71 (b)(1)(ii)/§141.72(a)(2): Redundant disinfection and auxiliary power

§141.71 (b)(1)(iii)/141.72(a)(3): Entry point disinfectant residual requirements

§141.71 (b)(1)(iv)/§141.72(a)(4): Disinfectant residual in distribution system

§141.71(b)(2): Watershed control program which minimizes contamination by *Giardia lamblia* cysts and viruses, and through which the public water system operator demonstrates adequate control over activities which may have an adverse impact on the microbiological quality of the source water

- (i) Characterize watershed hydrology and land ownership;
- (ii) Identify watershed characteristics and activities which may have an adverse effect on source water quality; and

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- (iii) Monitor the occurrence of activities which may have an adverse effect on source water quality.

- §141.71 (b)(3) and §141.171(b): Annual on-site inspection
- §141.71 (b)(4): System is not a source of a waterborne disease outbreak
- §141.71 (b)(5): System meets coliform maximum contaminant level eleven months of the year
- §141.71 (b)(6): System complies with disinfection byproduct requirements (this provision of Subpart H was amended as part of the IESWTR).
- §141.171(a): 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.

There are additional, recent rules under the National Primary Drinking Water Regulations that establish requirements pertinent to unfiltered systems, although they are not specifically identified as filtration avoidance criteria. The Stage 2 Disinfectants and Disinfection Byproducts Rule 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, and then must comply with maximum contaminant levels for TTHM and HAA5 based on a locational running annual average (rather than the previous allowance for averaging of all monitoring locations across the system). April 1, 2012 is the compliance date for these tighter monitoring and compliance requirements. The Long Term 2 Enhanced Surface Water Treatment Rule establishes some important new requirements for both filtered and unfiltered systems. All systems are required to conduct source water sampling and provide effective treatment for *Cryptosporidium*. For unfiltered systems, the rule requires use of two disinfectants. April 1, 2012 is the compliance date for this rule, although up to two additional years may be provided for systems making capital improvements.

### **Previous Filtration Avoidance Determinations**

*EPA's First Determination (January 1993):* Following the New York City Department of Environmental Protection's (NYCDEP) July 1992 submission of an application not to filter its Catskill/Delaware water system, EPA began an in-depth review of New York City's water supply in order to determine whether the Catskill/Delaware system could fully meet the avoidance criteria. EPA concluded that the system met each of the objective criteria for filtration avoidance. EPA also concluded that the City's existing



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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, EPA issued its conditional determination granting filtration avoidance until a further determination was made, on or before December 31, 1993, or earlier if the City failed to meet the conditions for avoidance.

*EPA's Second Determination (December 1993):* In September 1993, NYCDEP 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. EPA 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 EPA's January 19, 1993 conditional determination, the EPA March 23, 1993 Expert Panel Report, public comments received, and additional documentation submitted by the NYCDEP and interested parties relating to the watershed. EPA concluded that the Catskill/Delaware system met each of the SWTR objective criteria for filtration avoidance. EPA also concluded that NYCDEP'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. EPA determined that progress had been made toward enhanced watershed protection programs. However, EPA sought a more refined characterization of the watershed and more specific data concerning the identification and location of the activities within the watershed. EPA also wanted the watershed protection programs to operate for a longer time period in order to evaluate the effectiveness of the programs' long-term abilities to monitor and control activities which have the potential to pollute the water supply.

On December 30, 1993, EPA issued a second conditional determination which allowed New York 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, and 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 also included continued design of filtration facilities should EPA 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 a NYCDEP/NYSDOH Administrative Order on Consent and are, therefore, no longer FAD requirements.)

*EPA's Third and Fourth Determinations (January and May 1997):* By 1995, implementation of a number of conditions of the 1993 determination had not yet occurred. At that time, EPA and other interested stakeholders urged the Governor of New York State to intercede. Former Governor 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, New York City,

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watershed towns and counties, environmental parties and EPA, enabled NYCDEP to implement watershed protection programs necessary to continue to avoid filtration. On January 21, 1997, NYCDEP received a water supply permit from the New York State Department of Environmental Conservation (NYSDEC), which authorized NYCDEP to acquire land and conservation easements in the watershed of the New York City 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 upgrades, non-point source pollution controls, and the review of the existing monitoring program.

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

*EPA's Fifth Determination (November 2002):* Based on NYCDEP's December 2001 Long-Term Watershed Protection Program, EPA 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 and the Watershed Agricultural Council) 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 farms; commitment to seven new wastewater projects for communities on the MOA prioritized list; an expanded stream management program; study of Catskill turbidity and evaluation of control alternatives; and commitment to construction of an ultraviolet light disinfection plant for the Catskill/Delaware water supply.

### **EPA's 2007 Filtration Avoidance 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. This report briefly summarized the City's protection programs and included results of a status and trends analysis of water quality throughout the watershed. This report served as a reference for the FAD development activities which followed.

In the spring of 2006, EPA began substantive discussions with NYCDEP and New York State about the 2007 FAD. In addition, EPA and NYSDOH reached out to watershed stakeholders and the public in an effort to gain input about various issues and programs. Discussions were held with watershed stakeholders, and four public meetings were conducted.

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The following issues received significant attention in the outreach process:

***Land Acquisition:*** Widely divergent recommendations were provided about this program. Some watershed officials and residents raised concerns about how continuation of this program could impede future growth, while some in the environmental community recommended significantly more activity by the City to acquire land and to better coordinate with land trusts. Based on further discussions, the City, EPA, and NYSDOH have agreed upon a land acquisition program covering ten years, with commitments from the City for additional funding and a plan to substantially increase the use of land trusts and other non-government organizations to identify and help the City acquire eligible lands. In addition, the FAD includes a strategic land acquisition study through which the City will evaluate various factors and will outline its vision for the future scope of the program. See section captioned “Developments after Submission of City’s Long-Term Program” for a summary of the land acquisition program as now committed to by the City during the ten-year period covered by this FAD.

***Recreational Use on City-Owned Land:*** Most of the input received from watershed residents and stakeholders about the recreational use of City-owned lands favored expanded opportunities for the benefit of residents and visitors alike. The City responded by initiating a pilot small game hunting program, providing for internet-based access permits, and developing revised rules which incorporated the expanded recreational use provisions.

***Belleayre Resort Project:*** Widely divergent recommendations were provided about this proposed project. Some watershed officials, business leaders and residents urged approval of this project, while other residents and some environmental organizations urged sharp reductions to the scale of the proposed project. In the fall of 2006, the project developer announced that a reduced scale project was under consideration, and select watershed stakeholders were engaged in discussions with the developer, the City, and the State about a potential consensus project. Looking ahead, decisions about this project will be made within the framework of the State Environmental Quality Review Act (SEQRA) process, and through the regulatory permitting processes administered by NYSDEC and NYCDEP.

***Partnership Programs:*** Outreach meetings with the Catskill Watershed Corporation and the Watershed Agricultural Council allowed for open dialogue about past accomplishments and future program opportunities. The information gained at these meetings allowed EPA and NYSDOH to engage in productive discussions with NYCDEP, and assisted with development of enhanced program commitments.

***Croton Watershed Planning for Westchester and Putnam Counties:*** Meetings with Westchester and Putnam County officials provided an opportunity for

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discussion about Croton planning matters. Delays in completing County Croton Plans are acknowledged. Nonetheless, the work completed to date by the City and the Counties forms the basis for action on projects and programs to improve wastewater and stormwater infrastructure in the east-of-Hudson watershed.

***Stormwater Infrastructure:*** Concerns were raised by west-of-Hudson officials and residents regarding stormwater regulatory requirements. In general, complaints focused on NYCDEP requirements and lengthy reviews. NYCDEP is working towards a revision of the Watershed Rules and Regulations that will address some of the stated concerns and that will provide for greater consistency with the State's regulatory program for stormwater. EPA and NYSDOH have committed to follow-up with NYCDEP after issuance of the FAD in order to ensure adequate progress on this rule update.

In the Croton watershed, attention has been focused on the costs and responsibilities associated with reducing stormwater phosphorus discharges in order to meet requirements of the Total Maximum Daily Load (TMDL) and the NYSDEC municipal storm water permit. Although this overall issue extends beyond the scope of the FAD, agreement was reached among EPA, NYSDOH and the City to establish a \$4.5 million funding program to assist municipalities in the Cross River and Croton Falls basins with implementation of projects to reduce stormwater pollutant loadings.

***Catskill Turbidity:*** Concerns about Catskill turbidity, and about the City's reliance on treatment with alum (and the resultant accumulation of alum sludge in Kensico Reservoir), were voiced by certain watershed stakeholders. The City is engaged in a Catskill Turbidity Control Program to address this problem, and the FAD includes a continuation of this program. In addition, removal of the alum sludge will be accomplished through a State-mandated dredging project.

***Catskill/Delaware Filtration/UV Disinfection Facilities:*** The importance of the City's planned UV Treatment Plant was highlighted by certain watershed stakeholders. EPA and NYSDOH agree that this is a critically important project that will provide enhanced public health protection by operation of a second disinfection process. The FAD includes a project schedule, consistent with a recently negotiated Administrative Order on Consent between EPA and the City, which requires full UV treatment of the Catskill/Delaware water supply by August 31, 2012.

In August of 2006, EPA, with assistance from NYSDOH, issued its "Report on the City of New York's Progress in Implementing the Watershed Protection Program, and Complying with the Filtration Avoidance Determination." This report found that the City had "successfully satisfied the obligations specified in the 2002 FAD." Highlighted strengths included the land acquisition and small farm programs, while certain delays were noted in the wastewater and stream management programs.

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In December 2006, NYCDEP submitted to EPA and NYSDOH its Long-Term Watershed Protection Program. In this report, the City confirmed its long-term commitment to safeguard and improve the water supply and its continuing commitment to partnership programs.

The City's 2006 Long-Term Watershed Protection Program continues virtually all of the existing program components and includes enhancements to many of them. Some of the program elements are highlighted below:

### ***Watershed Rules and Regulations***

NYCDEP has committed to participate in a roundtable discussion with EPA, NYSDOH and NYSDEC regarding progress of proposed changes to the Watershed Rules and Regulations, including stormwater requirements, and to develop a timeline for completion of the proposed revisions.

Also with regard to stormwater, NYCDEP, NYSDEC, and the State Attorney General's office will continue to improve coordination of stormwater enforcement efforts to ensure compliance with regulatory requirements and to ensure prompt detection and remediation of water quality violations.

NYCDEP will continue its enhanced participation in reviewing projects under the State Environmental Quality Review Act (SEQRA) by actively participating at the earliest possible time in the SEQRA planning process, identifying broader water quality concerns raised by such projects, and encouraging consideration of alternatives.

### ***Land Acquisition***

In its 2006 Long-Term Watershed Protection Program, the City proposed a continuation of its existing land acquisition program for five years, with commitments for additional funding and a strategic review to help establish the future shape of the program. Based on further discussions with EPA and the State, this subsequently evolved into a land acquisition program covering ten years, with further commitments described below. See section captioned "Developments after Submission of City's Long-Term Program" for a summary of the land acquisition program as now committed to by the City during the ten-year period covered by this FAD.

### ***Kensico Basin***

NYCDEP continues to build on its comprehensive program to protect and improve water quality in the Kensico basin. For the existing stormwater management facilities, turbidity curtain, and spill control measures, the City will regularly inspect and maintain the infrastructure. Further protection will be

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afforded through the implementation of pollution remediation practices under the Kensico Action Plan. In addition, a new septic repair program will be developed and implemented in the Kensico basin.

### ***Septic System Program (west-of-Hudson)***

The City's Long-Term Watershed Protection Program builds on the existing program to address failing septic systems in the watershed. The Catskill Watershed Corporation's (CWC) Septic Rehabilitation and Replacement Program and Septic Maintenance Program will continue. The program will continue to support the rehabilitation or replacement of approximately 300 septic systems per year. A new initiative will evaluate the need for and feasibility of a septic cluster system program. CWC program rules will be amended to allow for funding of cluster systems, and funding needs will be assessed to evaluate whether additional monies are required to address the identified needs.

### ***New Sewage Infrastructure and Community Wastewater***

Continued support for ongoing projects will allow for completion of seven wastewater treatment plants (or sewer extension projects) in the New Sewage Infrastructure Program and construction of six community wastewater projects for which the City has made previous commitments. In addition, the City has committed to substantial program enhancements. The City will: (1) provide additional funding for the Community Wastewater Management Program to provide wastewater solutions to address three additional communities on the MOA list, and (2) provide funding for two new sewer extension projects to serve the Showers Road (Hunter) and Hubbell Corners (Roxbury) communities.

### ***Wastewater Treatment Plant (WWTP) Upgrades***

The WWTP Upgrade Program consists of: (1) the installation of advanced tertiary treatment (microfiltration or approved equivalent) and phosphorus removal at all surface water discharging WWTPs, (2) the decommissioning and connection of certain existing WWTPs to existing or new sewage treatment facilities, and (3) the installation of phosphorus removal and disinfection, where applicable, at all subsurface discharging WWTPs within the New York City watershed. The City has completed the upgrade of WWTPs that account for approximately 97% of the flow from plants in the west-of-Hudson watershed. The FAD includes revised schedules to complete the remaining west-of-Hudson upgrades. Facility-specific schedules are also included in the FAD (for the first time) for upgrade projects in the Cross River and Croton Falls basins. Water from these two basins may be pumped into the Delaware Aqueduct on an emergency basis following regulatory approval.

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### ***Stream Management Program***

As described in the City's Long-Term Watershed Protection Program, the Stream Management Program is meant to protect and restore stream stability and ecological integrity by facilitating the long-term stewardship of streams and floodplains. Program goals include: 1) promoting stream stewardship ethics and developing an informed constituency; 2) promoting community-based actions; and, 3) using the principles of fluvial geomorphology as the scientific basis for the program.

Under the 2002 FAD, NYCDEP significantly scaled up its commitment to this program through the implementation of more stream restoration projects and the completion of a number of stream management plans. Over the past five years, eight of the twelve specified restoration projects were completed. The Red Falls project was no longer pursued due to engineering and geological concerns. All nine of the required stream management plans were submitted.

The 2007 FAD sets out an active plan and schedule for this program. The remaining three restoration projects identified in the 2002 FAD, along with seven additional projects and two new stream management plans, will be completed. The FAD also includes commitments to implement stream management plan recommendations. Much of this implementation will be accomplished through a new funding program for which the program structure will be established by March 31, 2008. In the Ashokan basin, at least \$2 million will be provided for implementation of stream management plan recommendations.

The City will coordinate the implementation of the Stream Management Program with local Soil and Water Conservation Districts, county planning agencies and other watershed partners, which will implement various aspects of this program. The City will also implement a special monitoring study on the Batavia Kill (at the Conine site) to evaluate whether water quality improvements can be quantified for this restoration project.

### ***Riparian Buffer Protection Program***

The Riparian Buffer Protection Program, which developed as an outgrowth of the Stream Management Program, is a new watershed protection initiative. The key substantive element of this program is the streamside assistance program, which will provide technical assistance to riparian landowners. Guidance and assistance will be available to streamside landowners who seek to implement stabilization and planting plans to enhance riparian buffers. The Riparian Buffer Protection Program will also provide for improved coordination and communication

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among the various partners who are active in stream management and riparian buffer protection efforts.

### ***Agricultural Program***

The Watershed Agricultural Program is a voluntary partnership, between the City and farmers in the watershed, and is implemented by the Watershed Agricultural Council (WAC), a farmer-led, local, non-profit organization. The overall objective of the program is to prevent pollution and improve water quality by reducing pollutants leaving the farm through the implementation of best management practices. The program is designed to meet these objectives through the development and implementation of Whole Farm Plans (WFPs) on each participating farm.

The 2002 FAD established a schedule for implementation of WFPs on large farms, and it also required development of a small farm program and an east-of-Hudson program. The Watershed Agricultural Program has exceeded its overall goal of 85% participation by large farms in the west-of-Hudson watershed. In addition, the Small farm and east-of-Hudson programs have been successfully implemented. Although the numeric goals, set in the 2002 FAD, for large farm implementation of WFPs have not been met, much progress has been made, and EPA and NYSDOH believe that overall the program has successfully met expectations.

The 2007 FAD requires continued expansion of the agricultural program through continued recruitment of the remaining non-participating large farms in the west-of-Hudson watershed, and expansion of the Small farms and east-of-Hudson programs. In addition, the 2007 FAD establishes a revised metric for large farm implementation. 90% of the large farms in the west-of-Hudson watershed will achieve and maintain “substantially implemented” status with regard to implementation of WFPs.

### ***Watershed Forestry Program***

The Watershed Forestry Program, administered by WAC, is a voluntary partnership between New York City and the forestry community to support and maintain well-managed forests in the watershed. The primary objective of the program is to maintain unfragmented forested land and promote the use of management practices to prevent non-point source pollution during timber harvests. Key elements of this program include development of forest management plans, logger training, support for model forests, and best management practices (BMP) implementation.

The 2007 FAD carries forward all key elements of this program. In addition, through a new initiative called the Management Assistance Program, additional support for BMP implementation by forest



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landowners will be provided.

### ***Non-Point Source Programs – East-of-Hudson (EOH)***

Under the 2002 FAD, NYCDEP expanded a number of programs into the Catskill/Delaware basins east-of-Hudson (West Branch and Boyd's Corner) as well as into the Croton watershed. Programs which are implemented across the east-of-Hudson watersheds include the agricultural program, forestry program, and the regulatory programs. In addition, targeted septic and stormwater initiatives were initiated in the Catskill/Delaware and Cross River/Croton Falls watersheds over the past few years.

The 2007 FAD requires continuation of the efforts noted above, and includes an additional funding initiative for municipal stormwater control projects designed to reduce phosphorus and other pollutant loadings. This \$4.5 million program is targeted at the Cross River and Croton Falls basins (and the upstream basins which flow into these reservoirs), in order to enhance water quality and to serve as an incentive for municipal action to meet the phosphorus reduction requirements of the State stormwater program. NYSDEC is moving forward with municipal storm water permit requirements, and this funding program will be available for projects mandated by the State program. Program enhancement for the Cross River and Croton Falls basins is appropriate because water from these two reservoirs may be pumped into the Delaware Aqueduct on an emergency basis, with EPA/NYSDOH approval.

### ***Catskill Turbidity***

The Catskill system is prone to elevated turbidity levels due to the underlying geology. Periodically, storm events result in high turbidity, which triggers NYCDEP's need to treat water in the Catskill Aqueduct with a coagulating agent (alum) in order to meet the SWTR turbidity standard at the Kensico Reservoir effluents (Catskill Lower Effluent Chamber and Delaware Aqueduct Shaft 18). This practice results in settling of alum sludge in the northern part of Kensico Reservoir, which has prompted the State to require dredging. EPA and NYSDOH do not believe that NYCDEP should rely extensively or exclusively on this alum treatment practice to control turbidity.

Although a number of City programs can contribute to turbidity control, the primary means to address this problem is the ongoing Catskill Turbidity Control Program. Under this program, NYCDEP is completing comprehensive analyses of engineering and structural alternatives which may reduce turbidity in the Catskill system. Under the 2007 FAD, NYCDEP is required to submit a "Phase III" report for the Ashokan Reservoir basin, and to develop a plan, subject to EPA, NYSDOH and NYSDEC approval, for the implementation of any feasible,

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cost-effective measures (including interim measures) identified by the engineering studies.

In EPA and NYSDOH's view, significant improvement to the City's ability to prevent, manage, and control turbidity in the Catskill system is required in order to maintain filtration avoidance for the long-term. Therefore, the Phase III report and the implementation plan which follows it, are critical elements of the City's filtration avoidance program.

### ***Wetlands Protection Program***

The City's Wetlands Protection Strategy was first implemented in 1996 and was updated in 2001. The strategy includes research and mapping programs such as the National Wetlands Inventory (NWI), wetland status and trends, wetland monitoring and functional assessment, all of which support protection programs such as wetland permit review, land acquisition, and watershed agricultural programs. The Wetlands Protection Strategy will continue to be implemented as a requirement of the 2007 FAD. One noteworthy element of the program is the west-of-Hudson "status and trends" analysis that will be completed by the end of 2008.

### ***Waterfowl Management Program***

The objective of the Waterfowl Management Program is to minimize the fecal coliform loads to the City's reservoirs that result from roosting birds during the migratory season. The program includes three activities: avian population monitoring, avian harassment activities and avian deterrence. NYCDEP will continue its expanded implementation of this program for the following reservoirs: Kensico, West Branch, Rondout, Ashokan, and Hillview, as well as the Croton Falls and Cross River reservoirs when water from those reservoirs is pumped into the Delaware Aqueduct.

### ***Stormwater Control Program***

The City will continue to support the future stormwater controls programs and will provide additional financial support for the stormwater retrofit program. The stormwater retrofit program is designed to fund stormwater best management practices at existing stormwater runoff problem areas throughout the west-of-Hudson watershed, thereby reducing the input of suspended solids, pathogens and excessive nutrients into the reservoir system. In addition, the City will continue to support municipal stormwater planning activities to identify and prioritize community stormwater needs. These programs are implemented through the Catskill Watershed Corporation.

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### ***Monitoring, Modeling and Geographic Information System (GIS)***

NYCDEP's watershed monitoring and modeling programs form the basis of the City's ongoing assessment of watershed conditions, and are used by the City to evaluate and guide watershed protection programs and the overall management of its water supply. The City's capability to manipulate spatial databases with GIS is critical to these efforts.

The City will continue to enhance and refine its terrestrial and reservoir models to better estimate the impacts of watershed protection and management activities. Model enhancements may also be used to support the implementation and evaluation of the total maximum daily load (TMDL) program in the watershed. Overall, these programs will support the City's effort to improve its ability to evaluate program effectiveness. In addition, through these programs, NYCDEP can provide access to, and actively disseminate to watershed stakeholders, a significant amount of data developed with these tools.

The application of the modeling, monitoring and GIS programs is integral to the City's preparation of its annual report, which summarizes water quality data throughout the watershed and analyzes trends. In addition, the application of these tools will support the periodic Watershed Protection Program Assessment, to be conducted by the City every five years. The assessment provides a comprehensive, basin-by-basin integrated analysis of watershed protection programs and accompanying data. The City's March 2006 assessment report was a useful reference for NYCDEP and the regulatory agencies during discussions about the 2007 FAD.

### ***Filtration and Ultraviolet (UV) Disinfection Facilities***

As a condition of relief from FAD requirements relating to the final design of filtration facilities for the Catskill/Delaware water supply system, the City agreed to a schedule for the feasibility study, design and construction of UV disinfection facilities. This additional disinfection barrier will significantly enhance the City's water supply protection program. In addition, to ensure that the Catskill/Delaware filtration plant preliminary design documents do not become obsolete, the City will update the design every two years.

The UV plant schedule was extended in a FAD modification issued in 2006, and was extended again through an Administrative Order on Consent signed by both NYCDEP and EPA, which became effective on February 7, 2007. This Order requires full UV treatment of the Catskill/Delaware water supply by August 31, 2012.

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### *Education and Outreach*

The City will continue and, in certain areas, expand its education and outreach efforts both in the City and throughout the watershed. In addition to the ongoing general education programs delivered by the Catskill Watershed Corporation, the City will deliver education and outreach as part of its stream management, riparian buffer protection, agriculture and forestry programs. Special efforts will be made to collaborate with local and regional highway officials to promote the integration of stream corridor and stormwater management principles with road maintenance practices. As noted above, the Long-Term Watershed Protection Program includes the production of two major reports that will provide watershed stakeholders with comprehensive information on watershed water quality and on the status/evaluation of watershed protection programs. In addition, the City will publish a watershed newsletter and will continue to expand the amount of information that it provides on its website.

In addition to the above, the City will continue to implement and refine important in-City programs such as its Waterborne Disease Risk Assessment and Cross Connection Programs, both necessary for maintaining filtration avoidance.

The December 2006 Long-Term Watershed Protection Program also provides a description of the various units within NYCDEP that support its watershed protection program and how they interact to accomplish program goals along with partner organizations. The City is “committed to maintaining the level of staffing, funding and expertise necessary to support all elements of the watershed protection program and to meet all associated milestones.” On a yearly basis, it will update a detailed staffing table and provide written documentation confirming that resource and funding levels are adequate to support the watershed protection program. EPA and NYSDOH will track the City’s resource levels closely since full implementation of the City’s Long-Term Watershed Protection Program, along with continued filtration avoidance, is dependent upon the City’s ability to maintain staff levels, with the necessary expertise, to effectively conduct the program.

### **Developments after Submission of City’s Long-Term Program**

The City’s 2006 Long-Term Watershed Protection Program was a comprehensive effort, arrived at after extensive consultation with EPA, NYSDOH and NYSDEC. It was premised on the 2007 FAD being issued for a period of five years and thus geared its various programs and activities, described above, to such a five-year period.

Subsequent to submission of the City’s 2006 Long-Term Watershed Protection Program, and based on further discussions among the City, EPA, and the State, as well as input received from interested stakeholders, the City, EPA, and NYSDOH agreed that the 2007

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FAD should cover a term of ten years, consisting of two five-year periods: (i) 2007-2012 (“First Five Year Period”), and (ii) 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. Pursuant to this program, the City will: (1) continue to solicit land in accordance with the FAD and the MOA; (2) periodically reevaluate its solicitation/resolicitation plans and establish plans that include a minimum of 50,000 acres to be solicited annually<sup>1</sup>; (3) commit, upon request by the primacy agency, the remaining \$23 million of supplementary funds, and commit an additional \$241 million to the program in three phases: \$72.5 million by December 31, 2008, \$90 million by December 31, 2011, and \$78.5 million by December 31, 2014; (4) consult with EPA/NYSDOH regarding the need for additional funding and secure funds as needed; (5) continue its best efforts to acquire land in the critical Kensico and West Branch basins; (6) develop and implement a plan to significantly increase participation by land trusts and other non-governmental organizations in identifying and helping the City acquire eligible lands; and (7) complete a strategic review to help establish the future shape of the program. In addition, by January 21, 2010, the City will request/apply for a water supply permit from NYSDEC covering a ten-year period.

In addition, the City, EPA, and NYSDOH agreed that while the programs and activities described in the City’s 2006 Long-Term submission were adequate for purposes of a five year FAD, given that the 2007 FAD is now planned as having a ten-year term overall, an agreement would need to be reached for the second five years of the FAD, on which of such programs, other than land acquisition, should be continued during such period; whether and how any of the programs to be so continued should be modified; and/or whether additional programs are needed to justify the continuation of the FAD for the second five years of its term. Hence, this FAD requires that such an agreement be reached for the Second Five Year Period, as a condition to the 2007 FAD continuing through such period. In consultation with EPA and NYSDOH, NYCDEP will develop proposed program commitments which will be subject to EPA/NYSDOH review and approval. Once the program commitments are established, the City will be required to meet its commitments on the agreed-upon programs in order for the FAD to continue for the duration of the Second Five Year Period. EPA/NYSDOH will seek input from watershed stakeholders regarding the commitments to be established for the Second Five Year Period and will issue a mid-term revision to the FAD in 2012 memorializing the new commitments.

### **Developments after Release of Draft 2007 FAD**

On April 12, 2007, EPA released a draft FAD which incorporated a land acquisition program covering ten years, as described above. EPA invited written public comment on the draft FAD, and accepted comments until May 31, 2007.

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<sup>1</sup> “Solicitation” as used herein is defined by the NYC Watershed MOA and includes (1) newly solicited land (contacts with owners of land that was never previously solicited) as well as (2) re-solicited lands (contacts with owners of land that has previously been solicited).

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A substantial number of comments were received. This prompted EPA and NYSDOH to initiate further discussions with the City, aimed at exploring improvements to the draft FAD, to address certain comments that were received from interested parties. These discussions resulted in the City making several additional commitments to enhance its watershed protection program.

These commitments, which are incorporated into this final 2007 FAD, include the following, among others:

- The City will expand the scope of the Septic System Remediation and Replacement Program to encompass failing septic systems serving small businesses in the west-of-Hudson watershed, and to provide certain additional funds for remediation or replacement of such systems.
- The City will, assuming there is no impediment to continued filtration avoidance, provide funding, during the Second Five Year Period, for the Community Wastewater Management Program, to design and construct projects in the final five communities that are identified in Paragraph 122 of the Watershed MOA.
- The City will provide additional funds to pay for SPDES Upgrades at existing wastewater treatment plants in the west-of-Hudson watershed.
- The City will fund one additional engineering position at the Catskill Watershed Corporation to assist applicants undertaking regulated activities in complying with the stormwater provisions of the City's Watershed Rules and Regulations.
- The City will provide additional funding to the Watershed Agricultural Council to implement a pilot program for forestry easements and to support easement stewardship activities.
- The City will continue to make available the Nutrient Management Credit to approximately 80 participating farms in the Cannonsville reservoir basin.
- The City will provide additional funds for local consultation activities to support review of proposed City land acquisitions.
- The City has agreed to provide certain additional funds to implement a program to assist institutions (e.g., colleges, schools, and hospitals) in the west-of-Hudson Watershed in complying with the provisions of the Watershed Rules and Regulations governing the storage of sand, salt and other road de-icing materials.
- The City has agreed to review and evaluate the results of a study being undertaken by Delaware County of Precision Feed Management, and will report to EPA/NYSDOH on which elements of such a program may merit implementation in the watershed.

EPA and NYSDOH acknowledge the City's willingness to consider, and agree to, these improvements in an effort to address public comments and produce a more robust watershed protection program.

## **Water Supply Security**

Water supply security is also an important component of water supply protection. The City has undertaken a significant effort in recent years to enhance the security of the water supply system, both through increases in security-related staffing and implementation of security measures at critical water supply facilities. The City will continue to work with the Army Corps of Engineers and appropriate local, State and federal agencies to ensure that tools are in place and resources are available to safeguard the City's drinking water supply. The City will provide annual updates to EPA and NYSDOH on its progress in implementing previously identified security measures and in identifying and implementing measures to address new security needs. Such updates shall maintain the confidentiality of security-sensitive information and shall provide sufficient information to evaluate the City's progress on both an individual facility and an aggregate basis.

## **2007 Determination**

EPA, in consultation with NYSDOH, has determined that the City's 2006 Long-Term Watershed Protection Program, along with the milestones and clarifications/additions set forth in this determination, if complied with, will achieve the objectives of the Safe Drinking Water Act and the Surface Water Treatment Rule for unfiltered systems. This determination requires that NYCDEP fully implement the 2006 Long-Term Watershed Protection Program and that it meet the milestones and clarifications/additions set forth in this determination. (EPA notes that the City is required to meet the milestone date or requirement as set forth in this determination in instances where it differs from that in the City's Long-Term Watershed Protection Program.)

In developing its 2006 Long-Term Watershed Protection Plan, the City has, among other things, committed to take additional steps to address several significant issues and challenges that have arisen over the course of the past five years and that are important to the continuation of filtration avoidance.

The first issue is excessive turbidity in the Catskill system that is produced by large storm events. The City's existing Catskill Turbidity Control Program is targeted at this problem. Over the next year, the City will expand on the work previously done to analyze turbidity in the Schoharie Reservoir basin by undertaking additional engineering and scientific studies in the Ashokan Reservoir basin, including the evaluation and identification of recommended steps to reduce turbidity levels in Catskill water leaving the Ashokan Reservoir for delivery to the City.

The second issue is compliance with new, more stringent national standards for disinfection byproducts. The City has begun to study this requirement and to develop a strategy for compliance, and the FAD includes a special report on this topic.

The third issue is the potential emergence of a significant increase in development, and

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how the City's land acquisition program can address this matter. To ensure the continued success of the program, the City will (i) make additional funding available for the program (the City's 2006 Long-Term Watershed Protection Program included a commitment for additional funding; this FAD requires further funding above and beyond the level set out in that submission, consistent with the land acquisition program being moved from a five-year to a ten-year effort); (ii) implement a \$6 million pilot program, to be administered by the Watershed Agricultural Council, for forestry easements (this commitment was added subsequent to release of the draft FAD); (iii) develop and implement a strategy to substantially increase the use of land trusts and other non-government organizations to identify and help the City acquire eligible lands (this commitment was added by this FAD, subsequent to the City's 2006 Long-Term submission); and (iv) develop a land acquisition strategy and plan, for the period 2012-2022, comprising the Second Five Year Period and five years thereafter. In developing this strategy, NYCDEP shall consider a wide range of available information, including but not limited to, development trends, agricultural trends, urbanization, impervious cover, local land use policies, parcelization, and forest cover. NYCDEP shall use in-house resources from the monitoring, modeling and GIS programs to assist with the evaluation of management strategies. Land acquisition mechanisms (purchase in fee, use of easements, and coordination with land trusts) shall be re-evaluated. NYCDEP will seek input, as appropriate, from other interested parties such as local governments, landowners, and land trusts, and will develop a strategy document for submission to EPA and NYSDOH by September 30, 2009. Completion of this strategy by 2009 will assist the City in its application for a water supply permit in early 2010.

At present, EPA, NYSDOH and NYCDEP see no impediment to the continuation of filtration avoidance for the Catskill/Delaware system, despite the challenges described above. Prior to developing the Revised Long-Term Watershed Protection Program, NYCDEP will undertake a comprehensive evaluation of its watershed protection program, and will provide an evaluation and assessment report by March 31, 2011. This evaluation should serve as a useful reference during the development of revised program commitments for the Second Five Year Period of the FAD. With the primacy agency taking the lead, EPA and NYSDOH will conduct a compliance review and will issue a report by July 31, 2011 regarding the City's implementation of its December 2006 Long-Term Watershed Protection Program. This review will evaluate: (1) the progress the City is making in implementing its Long-Term Watershed Protection Program and meeting the program's objectives during the First Five Year Period; (2) the City's compliance with this filtration avoidance determination during the First Five Year Period; and, (3) potential revisions for all FAD programs (except land acquisition) for the Second Five Year Period. The report will also assist the City in its development of a Revised Long-Term Watershed Protection Program which will be submitted by December 15, 2011, and used as the basis for EPA/NYSDOH determining the programs and activities, other than land acquisition, required to be undertaken by the City so as to support the continuation of this FAD into the Second Five Year Period.

Looking ahead to the transition from the 2007 FAD into the 2017 FAD, EPA and NYSDOH expect that NYCDEP would undertake a second comprehensive evaluation of



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its watershed protection program to be completed by March 31, 2016 covering the Second Five Year Period. With the primacy agency taking the lead, EPA and NYSDOH would conduct a second compliance review report by July 31, 2016. This report would assist the City in its development of a new Long-Term Watershed Protection Program due on December 15, 2016, which would serve as the reference in developing and reaching agreement on the next renewal of this determination, scheduled for May 2017. The dates above are tentative and will be re-evaluated by EPA/NYSDOH at a later date.

At any time, EPA/NYSDOH may make a determination that the City's watershed program no longer provides adequate protection of the City's water supply, pursuant to the SWTR and/or other avoidance criteria in the SWTR and require the City to filter its Catskill/Delaware water supply.

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### 2. SWTR Objective Criteria Compliance

The Surface Water Treatment Rule at 40 CFR §141.71 and the Interim Enhanced Surface Water Treatment Rule at 40 CFR §141.171 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 Total Coliform Rule, and (2) the Stage 1 Disinfectant and Disinfection Byproducts Rule. Further, the Stage 2 Disinfectant and Disinfection Byproducts Rule and the Long Term 2 Enhanced Surface Water Treatment Rule establish additional important requirements for unfiltered systems, although these provisions are not identified in EPA regulations as filtration avoidance criteria. The 2002 FAD required ongoing monitoring and periodic reporting related to SDWA compliance activities.

The 2007 FAD requires the continuation of the above monitoring requirements as specified in Section 2.2 of the City's Long-Term Watershed Protection Program (SWTR Objective Criteria Compliance) and in accordance with the milestones contained therein, and in accordance with any additions/clarifications below:

Requirement	Due Date
<p>Continue to meet SWTR Objective Criteria (Sections §141.71 and §141.171) and submit reports and certification of compliance on:</p> <ul style="list-style-type: none"> <li>• §141.71(a)(1) - raw water fecal coliform concentrations</li> <li>• §141.71(a)(2) - raw water turbidity sampling</li> <li>• §141.71(b)(1)(i)/§141.72(a)(1) - raw water disinfection CT values</li> <li>• §141.71(b)(1)(ii)/§141.72(a)(2) - operational status of Kensico and Hillview disinfection facilities including generators and alarm systems</li> <li>• §141.71(b)(1)(iii)/§141.72(a)(3) - entry point chlorine residual levels</li> <li>• §141.71(b)(1)(iv)/§141.72(a)(4) - distribution system disinfection levels (NYCDEP will include a discussion of any remedial measures taken if chlorine residual levels are not maintained throughout system)</li> <li>• §141.71(b)(5) - 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 <i>E. coli</i> positive. For each <i>E. coli</i> 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.</li> <li>• operational status of UV facilities (upon start-up - expected in 2012) including generators and alarm systems</li> </ul>	<p>monthly</p>

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Requirement	Due Date
All requirements described in Section § 141.71(b)(4) must continue to be met. Notify EPA and NYSDOH within twenty-four hours of any suspected waterborne disease outbreak.	continuous
All requirements described in Section §141.71(b)(6) and §141.171 must continue to be met. Submit report on disinfection byproduct monitoring results.	quarterly
Notify EPA and NYSDOH within twenty-four hours, if at any time the chlorine residual falls below 0.2 mg/l in the water entering the distribution system.	continuous
Notify EPA and NYSDOH by the close of the next business day whether or not the chlorine residual was restored within 4 hours.	continuous
Notify EPA and NYSDOH by the end of the day when a sample tested positive for <i>E. coli</i> .	continuous
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 problems.	monthly
The City will continue working with the U.S. Army Corps of Engineers on a comprehensive program to evaluate any additional water supply security needs, and to implement those measures determined by the City to be cost effective in addressing such needs.	continuous
The City shall provide a short report on activities related to compliance with the Stage 2 Disinfectants and Disinfection Byproducts Rule. The report shall summarize monitoring results and any planning activities related to compliance with the maximum contaminant levels based on locational running averages for total trihalomethanes and haloacetic acids.	06/30/10
<p>Regarding the emergency/dependability use of Croton Falls and Cross River source water:</p> <p>(A) 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 EPA/NYSDOH</p> <p>(B) 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.</p> <p>(C) Until filtration of the Croton system has been achieved under the Judicial Order on Consent, including any supplements, in United States v. City of New York, 97-CV-2154 (NG), the City must meet, at a minimum, the following additional condition for EPA/NYSDOH</p>	continuous

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Requirement	Due Date
<p>to consider approving the introduction into the Catskill/Delaware water supply system of water from the Croton Falls and Cross River watersheds: the City has submitted all relevant water quality data as specified in the Judicial Order.</p> <p>(D) In order to address data needs following expiration of the Judicial Order, the City shall provide, by 3/31/10, a report detailing the water quality data that will be collected and submitted in support of a request for approval under this Section. This report is subject to EPA/NYSDOH review and approval, and following such approval the City must meet the applicable terms as a condition for EPA/NYSDOH to consider approving the introduction into the Catskill/Delaware water supply system of water from the Croton Falls and Cross River watersheds.</p> <p>(E) EPA/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).</p> <p>(F) As used in this Section, the term “EPA/NYSDOH” is defined as the primacy agency. In evaluating requests for approval from the City, the primacy agency shall consult with the cooperating regulatory agency.</p>	

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## 3. Environmental Infrastructure

### 3.1 Septic and Sewer Programs

EPA requires NYCDEP to identify failing or potentially failing individual residential septic systems and to prioritize their rehabilitation or replacement throughout the watershed. Since the 1997 FAD, NYCDEP has worked closely with the Catskill Watershed Corporation (CWC) to implement the program west-of-Hudson. Also integral to the program are the implementation and enforcement of the current New York City Watershed Rules and Regulations in effect since May 1, 1997.

NYCDEP developed a comprehensive Septic Program to achieve the objective of detecting and remediating failing or potentially failing systems that were included in the 2002 FAD. Overall, the Septic and Sewer Programs are composed of the following elements:

- Septic Remediation and Replacement Program
- Septic Maintenance Program
- Sewer Extension Program
- New Sewage Treatment Infrastructure Program
- Community Wastewater Management Program.

There are several new initiatives relating to the Septic Remediation and Replacement Program. First, the program will be expanded to include commercial systems operated by small businesses. Second, the program will encompass cluster systems that can serve more than one residence, or that serve residences and small businesses. The City has committed to work with CWC to amend the program rules to address these extensions of the current program, consistent with the priority system established under that program. Also, the City will provide a report assessing further needs for remediation and replacement of cluster systems. Following receipt of the July 2009 assessment report, EPA/NYSDOH expect to engage in discussions with the City about whether additional program funding should be provided to address the identified needs. The Septic Remediation and Replacement Program is expected to be continued during the Second Five Year Period of this FAD, provided that the level of funding, focus and prioritization of the program will be re-evaluated and, if appropriate, revised prior to commencement of the Second Five Year Period. This review will be undertaken in conjunction with defining the other programs and measures for the Second Five Year Period, to ensure that the City continues to have an adequate long-term watershed protection program that meets the requirements of the SWTR and IESWTR for unfiltered water supply systems.

In addition, septic programs are being implemented or developed east-of-Hudson. Additional details are provided in the Kensico and East-of-Hudson sections of the 2007 FAD.

The 2007 FAD requires that NYCDEP continue to implement the Septic and Sewer Programs as detailed in Section 2.2.1 of the City's 2006 Long-Term Watershed Protection Program in accordance with the milestones contained therein and in accordance with any additions/clarifications below:

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### *Septic Remediation and Replacement Program - Milestone/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Execute contract changes with CWC in support of the Septic Remediation and Replacement Program that include funding levels sufficient to address approximately 300 septic systems per year. NYCDEP will work with CWC to continue the hardship component of the Septic Remediation and Replacement Program for critical septic system remediations/replacements in non-priority areas. Work with CWC to amend Septic Program contract and/or rules to allow funding to be used for needed cluster systems and provide \$2 million for this purpose.	2/28/08
<p>Work with CWC to amend program contract and/or rules for the Septic Remediation and Replacement Program to allow funding to be used for repairing or replacing existing, or creating new, cluster systems. Eligible cluster systems may serve residences or small businesses (e.g., a new cluster system may be created in lieu of remediating/replacing the existing commercial septic system serving a small business) where appropriate for water quality reasons. The following special provisions are to be applied to small businesses included in a cluster system:</p> <ul style="list-style-type: none"> <li>• Small business will be defined in a manner consistent with the definition of small business as applied under MOA Paragraph 145.</li> <li>• The City will work with CWC to develop a range of cost-sharing based on need, etc. The City is expected to require a minimum cost share of 25% of the small business's allocable share of the costs of the cluster system, based on flow.</li> </ul>	2/28/08
Utilizing existing information from both in-house and watershed partner sources, identify and submit report on areas/small hamlets, within current septic priority areas, that may be candidates for/in need of cluster systems.	12/31/07
Determine feasibility and install cluster systems as appropriate.	Ongoing



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### *Septic Maintenance Program - Milestone/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Work with CWC on continuation of, and enhancements to, the program.	Ongoing
Work with CWC to modify program rules to include pump-outs for septic systems within cluster systems.	2/28/08
Submit report on implementation of Septic Maintenance Program.	Semi-annually

### *Sewer Extension Program - Milestone/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Complete construction of sewer extension projects in the Towns of Roxbury, Neversink, Margaretville/Middletown, and Shandaken, including new sewer lines in the Village of Hunter's Showers Road area:	
Roxbury (Grand Gorge).....	11/30/08
Shandaken (Pine Hill).....	11/30/08
Neversink (Grahamsville).....	12/31/08
Middletown (Margaretville).....	12/31/09
Village of Hunter – Showers Road area.....	11/30/10
Submit report on implementation of the Sewer Extension Program, including the adoption and maintenance of sewer use ordinances and the progress in meeting FAD implementation milestones.	Semi-annually

### *Alternate Design and Other Septic Programs*

<b>Requirement</b>	<b>Due Date</b>
The City shall complete its obligations under the Watershed MOA to fund the eligible incremental costs to comply with the septic provisions of the WR&Rs to the extent they exceed state and federal requirements.	As Required
Report on implementation of the program.	Annually



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### 3.2 *New Sewage Treatment Infrastructure Program*

The City will implement the New Sewage Treatment Infrastructure Program (NIP) in accordance with the City’s December 2006 Long-Term Watershed Protection Program (Section 2.2.2) with clarifications below:

NYCDEP will execute contract changes with New York State Environmental Facilities Corporation (EFC) and CWC that include funding levels sufficient to complete projects in Phoenicia and Hubbell Corners. Projects currently under construction at Fleischmanns and Prattsville shall be completed in accordance with their existing contracts.

NYCDEP will provide approval of functional completion and will provide authorization to begin start up & performance testing (to be followed by building/house sewer lateral installation along the sewer mains within the sewer district) within 45 days of engineer’s submittal of Functional Completion Certification;

NYCDEP will work with communities to ensure milestones are met and will review and provide regulatory or document approval in a timely manner;

and in accordance with the following milestones.

#### *Activity Milestones/Reporting Requirements*

<b>Activity and Reporting Requirements</b>	<b>Due Date</b>
<u>Phoenicia Project</u> <sup>1</sup> TBD (Pending)	TBD (Pending)
<u>Fleischmanns and Prattsville Projects</u> Functional Completion.....	11/30/07
<u>Hubbell Corners Project</u> Execute design/construction contract agreement..... Complete Final Design..... Execute construction contract..... Functional Completion.....	12/31/07 6/30/09 6/30/10 12/31/11
Submit report on implementation of the program, including progress in executing operation and maintenance agreements with applicable town or village, adoption and maintenance of sewer use ordinances.	Semi-annually

<sup>1</sup> The community has decided to continue discussions with the City on an appropriate wastewater solution. The City will continue these discussions until June 2008, or until a later date at the City’s discretion. EPA continues to support the preferred solution for a WWTP project for Phoenicia. If the City and the community agree on a wastewater project, the project schedule will be incorporated into the FAD.

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<b>Activity and Reporting Requirements</b>	<b>Due Date</b>
<p>Submit report, in spreadsheet format, on the progress in meeting program milestones. For each milestone missed or anticipated to be missed, include in the report an explanation for the delay and actions taken or to be taken to bring the program back on schedule.</p> <p>Continue to report on previous NIP projects (Roxbury, Andes, Windham &amp; Hunter) until all lateral connections are completed.</p>	Semi-annually

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### ***3.3 Community Wastewater Management Program***

The Community Wastewater Management Program provides funding for the design and construction of community septic systems, including related sewerage collection systems, and/or the creation of septic maintenance districts, including septic system replacement, rehabilitation and upgrades as well as operation and maintenance of the district.

The City will implement the Community Wastewater Management Program in accordance with Section 2.2.3 of the City's December 2006 Long-Term Watershed Protection Program with clarifications below:

- NYCDEP will provide sufficient funding to complete projects for Bloomville, Boiceville, Hamden, Delancey, Ashland, and to complete study, design and construction in three additional communities in accordance with Section 2.2.3 of the City's 2006 Long-Term Watershed Protection Program and as identified, and prioritized, in Paragraph 122(c) of the Watershed MOA;
- To improve the flow of funding during project implementation, for new Community Wastewater Management Program projects undertaken pursuant to this FAD, NYCDEP will, upon its approval of the final design for a project, provide the balance of the block grant for such project to CWC, to be used to construct the project in accordance with the approved design or, if the community elects not to proceed, to be returned to NYCDEP. In the event a community elects not to proceed with project construction, such balance together with any interest earned thereon, is to be returned to NYCDEP.
- EPA, NYSDOH and NYCDEP will monitor the adequacy of funding for this program and will specifically evaluate funding needs for the three additional communities in the 2009/2010 time frame;
- NYCDEP will work with communities to ensure milestones are met and will review and provide regulatory or document approval in a timely manner;
- The City will provide, during the Second Five Year Period, sufficient additional funding to design and complete appropriate projects for the five remaining communities on the list set out in MOA Paragraph 122 (Shandaken; West Conesville; Claryville; Halcottsville; and New Kingston);

and in accordance with the following schedules:

#### *Milestone/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Execute contract changes with CWC in support of the Community Wastewater Management Program that (i) include sufficient funding to complete projects in Bloomville, Boiceville, Hamden, Delancey, Ashland, and to complete design and construction in three additional communities in	12/31/07

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Requirement	Due Date
accordance with the following schedules, and (ii) incorporate the improvement in flow of funding (payment of balance of block grant upon approval of final design) described above.	
<u>Bloomville, Hamden, Delancey</u> Final Design complete..... Functional Completion.....	5/31/07 11/30/09
<u>Boiceville</u> Final Design complete..... Functional Completion.....	6/30/08 12/31/10
<u>Ashland</u> Study Phase complete..... Final Design complete..... Functional Completion.....	12/31/07 12/31/08 6/30/11
<u>Two Additional Communities</u> Study Phases complete..... Final Designs complete..... Start Construction ..... Functional Completion.....	12/31/09 12/31/10 6/30/11 6/30/13
<u>Third Additional Community</u> Study Phase complete..... Final Design complete..... Start Construction ..... Functional Completion.....	6/30/10 6/30/11 12/31/11 12/31/13
Submit report, in spreadsheet format, on the progress in meeting program milestones. For each milestone missed or anticipated to be missed, include in the report an explanation for the delay and actions taken or to be taken to bring the program back on schedule.	Semi-annually
Convene meetings between EPA, NYSDOH, NYSDEC, and NYCDEP to discuss progress and technical decisions related to the Community Wastewater Management Program.	As needed/requested
NYCDEP to determine level of additional funding required for continuation of the program through the Second Five Year Period as described above, and submit same to EPA/NYSDOH for review and approval. In addition, NYCDEP is to propose appropriate dates for study phase completion, design phase completion, start construction, and functional completion for each of the projects in the five remaining communities. This report will be included in the Revised Long-Term Watershed Protection Program to be submitted by December 15, 2011.	12/15/11

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Requirement	Due Date
Execute contract changes with CWC in support of Community Wastewater Management Program that include sufficient funding to complete projects in such five remaining communities, in accordance with agreed upon project schedules. Funding to be provided during, and as part of City's programmatic commitments for, the Second Five Year Period <sup>1</sup> .	Date of commencement of Second Five Year Period + 6 months

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<sup>1</sup> Provision of additional funding not required if relief is provided by the primacy agency. Relief will be provided if 1) through the 2011 compliance review process, the primacy agency or NYCDEP concludes that there are substantial impediments to continued filtration avoidance for the Second Five Year Period, and 2) the City provides written notice to the primacy agency that the City no longer seeks filtration avoidance.

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### ***3.4 Wastewater Treatment Plant Upgrade Program***

The WWTP Upgrade Program consists of the installation of advanced tertiary treatment (microfiltration or approved equivalent) and phosphorus removal at all surface water discharging WWTPs, the decommissioning and connection of certain existing WWTPs to existing or new sewage treatment infrastructure facilities, and the installation of phosphorus removal and disinfection, where applicable, at all subsurface discharging WWTPs within the New York City watershed. NYCDEP, with the assistance of NYSEFC, will administer the City's WWTP Upgrade Program in accordance with Chapter 2.2.4 of the City's 2006 Long-Term Watershed Protection Program with the following clarifications/additions:

- For all WWTPs identified in the "WWTP Upgrade Milestone Schedule" tables below, State Pollutant Discharge Elimination System (SPDES) permits require WWTP owners to comply with final effluent discharge requirements six months from the date of NYCDEP's approval of Functional Completion Certification of the facility's upgrade. The approval dates specified in the tables below, require NYCDEP to provide approval of functional completion and authorization to begin in start-up and performance testing within 45 days of the engineer's submittal of Functional Completion Certification. It is possible that for some seasonal facilities, construction may be completed during the off season; in those cases authorization to begin start-up and performance testing will be within 45 days of the engineer's Functional Completion Certification, or at the start of the next seasonal operations.
- NYCDEP and NYSEFC will assist all WWTP owners in developing and implementing appropriate operation and maintenance (O&M) agreements in accordance with NYSEFC/WWTP owner upgrade contracts. Consistent with SPDES permits and NYS 6NYCRR Part 650 regulations, NYCDEP will ensure that O&M agreements provide for adequate WWTP operator certification and plant supervision/coverage.
- NYCDEP will work with NYSDEC to ensure proper decommissioning and connection of existing WWTPs to other (new or existing) WWTP facilities. Upon proper decommissioning and connection, NYSDEC will retire SPDES permits as appropriate.
- NYCDEP will provide an upgrade schedule for a WWTP facility within 60 days of a determination that such facility is required to be upgraded pursuant the Watershed Rules and Regulations.
- As further explained below, NYCDEP will provide an additional \$1 million in funding to pay for the costs of "SPDES Upgrades" at existing WWTPs in the west-of-Hudson watershed.

and in accordance with the following program requirements and associated milestones:

**Milestone Requirements:** NYCDEP will work with NYSEFC and non-New York City WWTP owners to obtain functional completion of Regulatory Upgrades and to comply with all advanced treatment requirements (i.e., microfiltration or approved equivalent) and phosphorus removal, as required by the Watershed Rules and Regulations, NYSEFC-WWTP Owner Upgrade Agreements, and NYSDEC SPDES permits, in accordance with the following modified milestone table below:

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### Schedules for West-of-Hudson WWTP Upgrades

WWTP	WWTP Upgrade Milestone Schedule					
	PUP Approval	FUP Approval	Construction Start Up	Certification of Functional Completion	NYCDEP Approval of Functional Completion	Flow (MGD)
Batavia Kill Recreational Area	2 <sup>nd</sup> Qtr. 2007	4 <sup>th</sup> Qtr. 2007	2 <sup>nd</sup> Qtr. 2008	2 <sup>nd</sup> Qtr. 2009	8/15/09	0.005
Camp Nubar <sup>1</sup>	completed	completed	completed	2 <sup>nd</sup> Qtr. 2007 4 <sup>th</sup> Qtr. 2007	8/15/07 2/15/08	0.0125
Camp Oh-Neh-Tah	3 <sup>rd</sup> Qtr. 2008	4 <sup>th</sup> Qtr. 2008	1 <sup>st</sup> Qtr. 2009	2 <sup>nd</sup> Qtr. 2010	8/15/10	0.0075
Crystal Pond	3 <sup>rd</sup> Qtr. 2007	4 <sup>th</sup> Qtr. 2007	1 <sup>st</sup> Qtr. 2008	1 <sup>st</sup> Qtr. 2009	5/15/09	0.036
Elka Park	completed	completed	completed	4 <sup>th</sup> Qtr. 2007	2/15/08	0.010
Mountain View Estates #1 and #2	completed	completed	completed	3 <sup>rd</sup> Qtr. 2008	11/15/08	0.013
Olive Woods	completed	1 <sup>st</sup> Qtr. 2007	3 <sup>rd</sup> Qtr. 2007	4 <sup>th</sup> Qtr. 2008	2/15/09	0.0127
Onteora Central School District <sup>2</sup>	---	---	---	---	See footnote 2	0.027
SEVA Institute	4 <sup>th</sup> Qtr. 2006	1 <sup>st</sup> Qtr. 2007	3 <sup>rd</sup> Qtr. 2007	4 <sup>th</sup> Qtr. 2008	2/15/09	0.0078
Whistle Tree Development	---	---	---	completed	completed	0.0125
Camp Loyaltown <sup>3</sup>	---	---	---	---	See footnote 3	0.021
Regis Hotel <sup>3</sup>	---	---	---	---	See footnote 3	0.0096

<sup>1</sup> Weather could affect completion date. Camp will not allow construction between June and the end of August; therefore two functional completion dates are listed.

<sup>2</sup> Stand Alone Upgrade” on hold pending approval of the Boiceville Wastewater Treatment Plant (WWTP) project. In the interim, NYCDEP will provide available SPDES upgrade funds to address any sand filter breakouts. This facility will be connected to the Boiceville WWTP within 6 months after the Boiceville WWTP is operational.

<sup>3</sup> Enhanced UV treatment installed. Camp Loyaltown is expected to be connected to the Hunter NIP facility by June 30, 2007, and Regis Hotel is scheduled to be connected to the Fleischmanns NIP facility by June 30, 2008.

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### Schedules for East-of-Hudson WWTP Upgrades

WWTP	WWTP Upgrade Milestone Schedule					
	PUP Approval	FUP Approval	Construction Start Up	Engineer's Cert. of Functional Completion	NYCDEP Approval of Functional Completion	Flow (MGD)
Carmel SD #2 <sup>1</sup>	Completed	Completed	Completed	2 <sup>nd</sup> Qtr. 2007 4 <sup>th</sup> Qtr. 2007	8/15/07 2/15/08	1.100
Fulmer Road Elementary School <sup>2</sup>	4 <sup>th</sup> Qtr. 2006 1 <sup>st</sup> Qtr. 2008	2 <sup>nd</sup> Qtr. 2007 2 <sup>nd</sup> Qtr. 2008	1 Qtr. 2008 4 <sup>th</sup> Qtr. 2008	3 <sup>rd</sup> Qtr. 2008 3 <sup>rd</sup> Qtr. 2010	11/15/08 11/15/10	0.019
Lake Plaza & Ralph Morando Bldg. <sup>3</sup>	1 <sup>st</sup> Qtr. 2008	2 <sup>nd</sup> Qtr. 2008	4 <sup>th</sup> Qtr. 2008	1 <sup>st</sup> Qtr. 2010	5/15/10	0.0218
Lewisboro Elementary School	2 <sup>nd</sup> Qtr. 2007	4 <sup>th</sup> Qtr. 2007	2 <sup>nd</sup> Qtr. 2008	3 <sup>rd</sup> Qtr. 2009	11/15/09	0.010
Meadows at Cross River	completed	4 <sup>th</sup> Qtr. 2007	2 <sup>nd</sup> Qtr. 2008	3 <sup>rd</sup> Qtr. 2009	11/15/09	0.059
Michelle Estates	2 <sup>nd</sup> Qtr. 2007	4 <sup>th</sup> Qtr. 2007	2 <sup>nd</sup> Qtr. 2008	3 <sup>rd</sup> Qtr. 2009	11/15/09	0.060
The Fairways/Hill & Dale	2 <sup>nd</sup> Qtr. 2007	4 <sup>th</sup> Qtr. 2007	2 <sup>nd</sup> Qtr. 2008	3 <sup>rd</sup> Qtr. 2009	11/15/09	0.065
Waccabuc Country Club	4 <sup>th</sup> Qtr. 2007	2 <sup>nd</sup> Qtr. 2008	4 <sup>th</sup> Qtr. 2008	2 <sup>nd</sup> Qtr. 2010	8/15/10	0.008

<sup>1</sup> 2<sup>nd</sup> Qtr. 2007 Functional Completion date is for the Regulatory Upgrade. The 4<sup>th</sup> Qtr. 2007 date includes UV installation which is an August 28, 2006 add on. The completion of the UV installation could delay the project engineer from issuing the Functional Completion certification until the 4<sup>th</sup> Qtr. 2007.

<sup>2</sup> Two schedules have been provided: connection to the NYCDEP Mahopac WWTP (3<sup>rd</sup> Qtr. 2008), or "Stand Alone Upgrade" (3<sup>rd</sup> Qtr. 2010)

<sup>3</sup> Stated schedule is for a "Stand Alone Upgrade." If an alternative project (connection to NYCDEP Mahopac WWTP) is selected, the City will coordinate with the Town of Carmel on a sewer extension and shall complete connection no later than the 1<sup>st</sup> Qtr. 2010.



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*Activity and Reporting Requirements:*

<b>Requirement</b>	<b>Due Date</b>
Execute contract changes with NYSEFC to provide an additional \$1 million in funding to be used to rehabilitate, replace or upgrade equipment at existing WWTPs, public or private, located in the west-of-Hudson watershed, that is unreliable, failing or nearing the end of its useful life and is necessary to the treatment process, where such measures are not required solely by the City's Watershed Rules and Regulations, and where such upgrades will allow the WWTPs to reliably meet the conditions of their respective SPDES permits. Such additional funding is to be administered and applied in a manner consistent with previous SPDES Upgrade Funds provided under MOA Paragraph 121. Eligible projects may include new work to correct infiltration and inflow problems at such existing WWTPs.	2/28/08
Complete construction/functional completion of remaining west-of-Hudson (Catskill and Delaware) WWTP Upgrades in accordance with schedules above.	Ongoing
Complete construction/functional completion of east-of-Hudson (Croton Falls and Cross River basins) WWTP Upgrades in accordance with schedules above.	Ongoing
Submit report, in spreadsheet format, on the status of the program in meeting milestones for both west-of-Hudson and east-of-Hudson WWTPs listed in the tables above.	Monthly
Submit report on all components of the program. In addition, for each WWTP in which a milestone is missed or anticipated to be missed, provide an explanation for the delay or anticipated delay and actions taken or to be taken to bring the facility back on schedule.	Quarterly

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### **3.5 Stormwater Programs**

As a result of the MOA, NYCDEP established the following programs: (1) Future Stormwater Controls paid for by the City for Single Family Houses, Small Businesses and Low Income Housing Program, and, (2) the west-of-Hudson Future Stormwater Controls Program (administered by the CWC). These programs provide financial support for the cost of designing, constructing and, in some cases, maintaining stormwater controls that are required by the 1997 Watershed Rules and Regulations (WR&Rs), but not otherwise required by Federal or State law, for certain new development projects. In addition, the Stormwater Retrofit Program, also administered by CWC, was established in the MOA to address existing stormwater runoff problems through the construction of stormwater best management practices in concentrated areas of impervious surfaces in the west-of-Hudson watershed.

Section 2.2.5 of the City’s 2006 Long-Term Watershed Protection Program includes details of its revised Stormwater Programs. NYCDEP will continue to provide support for the Future Stormwater Programs through existing funding commitments. NYCDEP will provide additional funding to the Stormwater Retrofit Program to sufficiently sustain the historical project activity level of the program. In addition, the City will continue to fund the Stormwater Retrofit Program that will support the performance of community-wide stormwater infrastructure assessments and planning.

NYCDEP has also agreed to enhance its stormwater programs in a number of ways. NYCDEP will enhance its Stormwater Cost-Sharing Programs by funding an additional position at CWC to assist the regulated community in complying with the stormwater provisions of the City’s WR&Rs, as described below. NYCDEP will also work with CWC to explore ways to expand the effectiveness of its Stormwater Retrofit Program, and will work with NYSDEC to explore ways to better coordinate stormwater enforcement activities in the City’s watersheds.

The 2007 FAD requires the City to implement Section 2.2.5 (Stormwater Programs) of its 2006 Long-Term Watershed Protection Program in accordance with the activity and reporting requirements therein, and with the program enhancement identified below:

*Activity and Reporting Requirements:*

**Stormwater Cost-Sharing Programs**

<b>Requirement</b>	<b>Due Date</b>
The City shall complete its obligations under the Watershed MOA to fund the eligible incremental costs to comply with the stormwater provisions of the WR&Rs to the extent they exceed state and federal requirements.	As Required
Program Enhancement: Enter into contract or contract amendment with CWC to provide additional funding, during the First Five Year Period, for one additional engineering position at CWC (salary plus cost of standard fringe benefits), to assist applicants undertaking regulated activities to comply with the stormwater provisions of the City’s WR&Rs.	2/28/08

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Requirement	Due Date
Review effectiveness of such additional position and make recommendation to EPA/NYSDOH as to whether funding should continue for the Second Five Year Period <sup>1</sup> .	6/30/11
Submit report on the Future Stormwater Controls Program implementation including stormwater controls paid for by the City for single family houses, small businesses, and low income housing program.	Annually

### Stormwater Retrofit Program

Requirement	Due Date
Continue funding the installation of stormwater best management practices; community-wide stormwater infrastructure assessment and planning; and the installation of stormwater best management practices throughout the west-of-Hudson watershed. Continue to explore ways of expanding the program, including modifications to contracts/program rules so as to allow for consideration and funding of multi-year projects, and to increase the allowable amount of grants for individual projects up to a maximum of \$100,000.	Ongoing
Submit report on the implementation of stormwater best management practices, the implementation of community-wide stormwater infrastructure assessment and planning program, and efforts to expand the program.	Semi-annually

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<sup>1</sup> Prior to commencement of the Second Five Year Period, the primacy agency will determine whether funding for the position should be continued for the Second Five Year Period. The City shall be obligated to provide additional funding for the Second Five Year Period in accordance with such determination, unless relief is provided by the primacy agency. Relief will be provided if 1) through the 2011 compliance review process, the primacy agency or NYCDEP concludes that there are substantial impediments to continued filtration avoidance for the Second Five Year Period, and 2) the City provides written notice to the primacy agency that the City no longer seeks filtration avoidance.

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## 4. Protection and Remediation Programs

### 4.1 Waterfowl Management Program

The Waterfowl Management Program was initiated in 1993 by the City for the Kensico Reservoir in response to elevated coliform bacteria levels contained in the Reservoir. The 2002 FAD required that the City continue this program for the Kensico Reservoir on a routine basis and expand the program on an “as needed” basis for five additional reservoirs. Three of these five reservoirs (West Branch, Rondout and Ashokan) routinely serve Kensico with its source water. The remaining two (Cross River and Croton Falls), while in the Croton system, may serve Kensico with source water under special circumstances. The objective of the program is to minimize the fecal coliform loading to the reservoirs that result from roosting birds during the migratory season. The program includes three activities: avian population monitoring, avian harassment activities (motorboats, air boats, and pyrotechnics) and avian deterrence (depredation of nests and eggs, bird exclusion wires, and netting at critical intake chambers.) All avian harassment techniques and deterrence activities have been approved by the United States Department of Agriculture Wildlife Services and NYSDEC.

The City’s 2006 Long-Term Watershed Protection Program expands the Waterfowl Management Program on an “as needed” basis to include avian harassment activities for the Hillview Reservoir as well as avian deterrent measures for Hillview and other City reservoirs.

The term "as needed" refers to implementation of avian management measures based on the following criteria:

- Current bird populations, including roosting or staging locations relative to water intakes;
- Fecal coliform bacteria concentrations approaching or exceeding 20 colony-forming units at reservoir effluent structures coincident with elevated bird populations;
- Recent weather events;
- Operational flow conditions within the reservoir (i.e. elevations and flow patterns and amounts);
- 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 2007 FAD requires that NYCDEP continue implementation of its Waterfowl Management Program in accordance with Section 2.3.1 of the City’s 2006 Long-Term Watershed Protection Program and the milestones therein with the following clarification:

- NYCDEP will perform avian population monitoring in accordance with the frequencies specified in the City’s 2001 Watershed Protection Program Summary, Assessment and Long-term Plan.

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Requirement	Due Date
Active Bird Harassment – Kensico Reservoir	8/1 to 3/31; Annually
“As needed” Bird Harassment – West Branch, Rondout, Ashokan, Cross River, Croton Falls and Hillview Reservoirs	8/1 to 4/15; Annually
Avian Deterrent Measures – Kensico, West Branch, Rondout, Ashokan, Cross River, Croton Falls, Hillview Reservoirs and other City reservoirs as needed	Year-round; Annually
Submit annual summary of Waterfowl Management Program activities including contract status, and implementation and analysis of all program elements (including special studies)	7/31; Annually

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### *4.2 Land Acquisition*

Land acquisition is one of the most effective, and therefore, important mechanisms to permanently protect the City's Catskill/Delaware watershed. The Land Acquisition and Stewardship Program, which is described in detail in the New York City Watershed MOA, seeks to prevent future degradation of water quality by acquiring sensitive lands and by managing the uses on these lands. The overarching goal of the program is to ensure that undeveloped, environmentally-sensitive watershed lands remain protected and that the watershed continues to be a source of high-quality drinking water to the City and upstate counties. The City's 2006 Long-Term Watershed Protection Program includes land acquisition and land management as separate, supporting programs, and this structure has been adopted in the 2007 FAD.

The 2007 FAD provides for continuation of the land acquisition program but with several modifications and enhancements based on the program now being designed to cover ten years rather than five. These include, among others:

- A commitment of \$241 million of new funding, bringing the total amount available for land acquisition, over the full ten-year term of this FAD, to \$300 million. \$72.5 million in new funding will be required to be sequestered prior to December 31, 2008, \$90 million prior to December 31, 2011, and \$78.5 million prior to December 31, 2014, subject to relief as provided below.
- Development and implementation of a plan to substantially increase the use of land trusts and other non-government organizations to identify and help the City acquire eligible lands. In addition, NYCDEP will provide \$6 million in funding to the Watershed Agricultural Council (WAC) to undertake a pilot program for the acquisition of conservation easements, by WAC, on forested portions of non-agricultural properties.
- An agreement by the City to provide an additional \$500,000 for Local Consultation on proposed acquisitions of land by the City under its Land Acquisition program.
- A strategic review that will help establish the shape of the program, for the second five years of this FAD and for a further five years after this FAD.

The FAD requires that the City continue to implement its Land Acquisition Program, (Section 6.4.2 of its Long-Term Watershed Protection Program, as modified by the modifications and enhancements contained herein), in accordance with the MOA, the Water Supply Permit and the following clarifications/additions:

- Upon receipt of a positive response from a landowner to a solicitation from the City, begin to proceed through a specified series of steps to acquire an interest in such parcel in perpetuity. The City may petition the primacy agency for relief from the requirement that it purchase a parcel of property where the cost of the property is disproportionate to the water quality benefits obtained by the acquisition of that parcel.

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### *Activity Milestone/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Re-evaluate solicitation <sup>1</sup> plan for 2007. Revised plan(s) will include at least 50,000 acres to be solicited annually.	Complete
<p>Develop and submit a Programmatic Strategy for augmenting land acquisition efforts through increased participation of land trusts and other non-governmental organizations. Such Strategy will include a description of:</p> <ul style="list-style-type: none"> <li>• how participating land trusts will be selected</li> <li>• how they will be utilized to complement NYCDEP land acquisition efforts (e.g., defined areas of solicitation)</li> <li>• the procedures to be used so that the terms and conditions of the Watershed MOA and NYSDEC Water Supply Permit are adhered to</li> <li>• the amount of funding to be made available for land acquisition by land trusts from funds already allocated for land acquisition in this FAD</li> <li>• schedule for implementation of the Strategy</li> </ul> <p>In developing such Strategy, NYCDEP will consult with and seek input from EPA, NYSDOH/NYSDEC, and representative land trust organizations.</p>	11/15/07
Implement Programmatic Strategy based on schedule contained therein.	Commencing 2/26/08 & ongoing.
Execute a contract or contract amendment with the Watershed Agricultural Council (WAC) to provide \$6 million in funding for WAC to undertake a pilot program to acquire conservation easements on forested portions of non-agricultural properties. Funding is to be drawn from the \$300 million committed by the City for land acquisition over the term of the FAD.	4/30/08
Submit written evaluation of pilot program to EPA/NYSDOH making recommendations as to whether the program should be continued for the Second Five Year Period or terminated. If a determination is made by EPA/NYSDOH and NYCDEP not to continue the program, all unused funds, with any earnings thereon, are to be returned to the City and returned to the funding available for land acquisition.	6/30/11
Re-evaluate solicitation plan for 2008-10 and submit to EPA/NYSDOH/NYSDEC. WAC acreage to be included. Revised plan(s) will include at least 50,000 acres to be solicited annually.	1/15/08

<sup>1</sup> “Solicitation” as used herein is defined by the NYC Watershed MOA and includes (1) newly solicited land (contacts with owners of land that was previously unsolicited) as well as (2) re-solicited land (contacts with owners of land that has been previously solicited).

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Requirement	Due Date
Re-evaluate solicitation plan for 2011-12 and submit to EPA/NYSDOH/NYSDEC. WAC acreage to be included. Revised annual plan(s) will include at least 50,000 acres to be solicited annually.	10/1/10
Upon receipt of written direction from EPA/NYSDOH regarding the remaining \$23 million of supplementary funds, NYCDEP shall sequester the funds.	Within one year of receipt
Meet with EPA/NYSDOH/NYSDEC to review status of WAC's agricultural easement program; consider additional funding for WAC's program from funds already allocated for land acquisition in this FAD, in the context of the objectives and strategy of the overall land acquisition program.	Biennially, beginning 12/07
The City shall deposit or cause to be deposited \$72.5 million into the land acquisition segregated account.	12/31/08
Consult with EPA/NYSDOH/NYSDEC regarding the potential need for any additional monies beyond that already committed to land acquisition; if such funding is needed, sequester the funds.	As needed
Submit long-term land acquisition strategy and plan to EPA, NYSDOH and NYSDEC, covering the period 2012-2022. In developing this plan, the City shall seek input from interested parties and shall consider a wide range of information, including development trends, agricultural trends, urbanization, local land use policies, parcelization, and forest cover.	9/30/09
Request/apply for water supply permit from NYSDEC covering a ten-year term	1/21/10
The City shall deposit \$90 million into the land acquisition program segregated account <sup>1</sup> .	12/31/11
The City shall deposit \$78.5 million into the land acquisition program segregated account <sup>2</sup> .	12/31/14
Execute contract changes with CWC to provide for an additional \$500,000 in Local Consultation Funds, to allow west-of-Hudson towns and villages to review and comment on proposed City acquisitions of fee title to, or conservation easements on, watershed lands, in accordance with existing program contract except that maximum amount of Local Consultation Funds payable to any one town or village under such contract shall be increased to \$30,000.	2/28/08

<sup>1</sup> The City will deposit or cause to be deposited such funds by the due date indicated, unless relief is provided by the primacy agency. Relief will be provided if 1) through the 2011 compliance review process, the primacy agency or NYCDEP concludes that there are substantial impediments to continued filtration avoidance for the Second Five Year Period, and 2) NYCDEP provides written notice to the primacy agency that the City will no longer seek filtration avoidance. Further, if such funds are deposited, their expenditure for land acquisition beyond the First Five Year Period is conditioned on this FAD being continued for the Second Five Year Period and the issuance of a NYSDEC Water Supply Permit authorizing continuation of the Land Acquisition Program for the Second Five Year Period.

<sup>2</sup> The City will deposit or cause to be deposited such funds by the due date indicated, provided this FAD has been continued for the Second Five Year Period and a NYSDEC Water Supply Permit has been issued authorizing continuation of the Land Acquisition Program for the Second Five Year Period.



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<b>Requirement</b>	<b>Due Date</b>
Submit semi-annual report. Report shall include an assessment of land acquisition efforts undertaken by land trusts and/or non-governmental organizations, including acreage solicited and acreage acquired by such entities, funds expended by and funds available to such entities, and a discussion of advantages/disadvantages of participation of such entities in overall land acquisition program.	Semi-annually

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### ***4.3 Land Management***

In recognition of the City's growing holdings of watershed lands owned in fee, and expanding stewardship responsibilities for conservation easements, the 2007 FAD contains a new land management section. The City's 2006 Long-Term Watershed Protection Program report details the responsibilities of the City's land management program, including property management, natural resources management, implementing/administering the recreational use program, and monitoring conservation easements. The stated goals are to:

- Monitor and coordinate the use of City lands to meet multiple objectives, including water supply infrastructure, forest and soil health, stream protection, and community benefits such as recreational use;
- Bring the power of the City's GIS as decision-support to field level operations in a way that maximizes the effectiveness of the City's lands for filtration avoidance;
- Establish and maintain a goal-driven planning process for optimizing the contributions of the City's forest lands to the protection of water quality and public health; and
- Continue to monitor and enforce the growing portfolio of City watershed conservation easements to ensure long-term water quality benefits.

The 2007 FAD requires implementation of the Land Management Program (Section 2.3.3 of the 2006 Long-Term Watershed Protection Program) in accordance with the activities and milestones therein:

#### *Activity Milestone/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Monitor water supply lands.	Ongoing
Monitor and enforce watershed conservation easements.	Ongoing
Maintain a watershed land information system.	Ongoing
Develop and submit a forest management plan.	11/30/11
Provide EPA, NYSDOH and NYSDEC opportunities to review and comment on modifications to plans for land management.	As modifications are made to such plans
Submit report on all aspects of land management.	Annually
Submit reports on modifications made to plans for land management.	Ongoing

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### ***4.4 Watershed Agricultural Program***

The overall objective of the Watershed Agricultural Program (WAP) is to prevent pollution and improve water quality by reducing pollutants leaving farms through the implementation of best management practices (BMPs). The WAP is designed to meet these objectives by establishing a goal of having at least 85% of the large farms in the New York City watershed participating in the program. The 2002 FAD required the continued implementation of the WAP with an evaluation of the program every two years. In addition, the 2002 FAD formally recognized and incorporated the Small Farms Program that the City had developed and established, working with its watershed partners. The WAP has exceeded its 85% large farm participation goal, and the Small Farms Program is being actively implemented. Recruitment of additional large farms into the program will continue, and expansion of the Small Farm and east-of-Hudson programs is expected.

After considering the success the program has had in recruiting large farms, and based on projections of BMP implementation over the next few years, EPA and NYSDOH have established a new metric for the WAP. The 2007 FAD requires, by 9/30/10, that 90% of all active large farms in the west-of-Hudson watershed have substantially implemented Whole Farm Plans (WFPs). As the program continues to mature and additional information becomes available, there is a potential that the WAP metric may be revisited and revised.

The City will submit a Small Farms Assessment Report in 2009 to determine the number, extent, and potential impact of small farms on water quality in the west-of-Hudson Watershed. Following receipt of the Small Farms Assessment Report, EPA and NYSDOH expect to engage in discussions with the City about the appropriate level of effort for enrolling new small farms in the program.

In addition, the City will enhance the WAP through three new commitments:

- The City will evaluate and report on a study, currently being conducted by Delaware County, on the potential benefits of a Precision Feed Management Program in reducing pollutant loadings from farm livestock through careful selection and control of animal feed.
- The City will continue to make available the Nutrient Management Credit to the approximately 80 participating farms in the Cannonsville Reservoir Basin, so that it continues to be an optional credit for such farms during the First Five Year Period.
- The City will also provide certain funding for long-term stewardship of Watershed Agricultural Easements acquired by WAC, to ensure that such easements are monitored and enforced perpetually.

The continued success of the WAP is accomplished through partnerships between the farmers, and the Watershed Agricultural Council, as well as, local agencies such as Cornell Cooperative Extensions, and Soil and Water Conservation Districts, and Federal/State agencies such as USDA/NRCS, and USDA/FSA. It is anticipated that the WAP will continue to be managed for the City by the Watershed Agricultural Council (WAC), through contractual arrangements with the City.

The City's 2006 Long-Term Watershed Protection Program includes a modified and expanded WAP with specified program goals (Section 2.3.4). The 2007 FAD requires the City to implement the Watershed Agricultural Program as detailed in Section 2.3.4 of the City's 2006

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Long-Term Watershed Protection Program, in accordance with the milestones therein, the enhancements described above, and the clarifications below:

- Whole Farm Plans (WFPs) are “substantially implemented” when seven of the nine highest priority pollutant categories have been addressed and the remaining two pollutant categories BMPs are scheduled for implementation within the next two years, at which time the farms will be considered “fully implemented.”

### *Milestone/Reporting Requirements*

Requirement	Due Date
Support and monitor on-farm maintenance and operation of structural and non-structural BMPs on participating farms. Continue easement stewardship activities.	Ongoing
Conduct status reviews on all farms with substantially implemented WFPs.	Annually
Maintain “substantially implemented” status on 90% of all large farms in the west-of- Hudson Watershed.	Beginning 9/30/10
Develop and submit a draft Programmatic Strategy for the replacement of aging/failing BMPs. In developing this strategy, NYCDEP may consider a range of options including selective, prioritized and cost-shared approaches.	7/31/08
Submit a final Programmatic Strategy for the replacement of aging/failing BMPs.	10/31/08
Replace aging/failing BMPs on participating farms based on the Programmatic Strategy.	Ongoing from 11/1/08
Review and prepare written evaluation of Precision Feed Management study now being conducted by Delaware County. Evaluation will include: <ul style="list-style-type: none"> <li>• An assessment of the potential costs and benefits of such a Program; and</li> <li>• Recommendations by NYCDEP as to whether any elements of the Program, as proposed by the County, merit implementation in all or any portion of the west-of-Hudson Watershed, along with (if applicable) a recommended level of funding and schedule for implementation.</li> </ul>	Delivery of final County study report (expected January 2008) + 9 months

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Requirement	Due Date
Execute contract or contract changes with WAC to continue to make available the Nutrient Management Credit to the approximately 80 participating farms in the Cannonsville Reservoir Basin, so that it continues to be an optional credit for such farms during the First Five Year Period.	2/28/08
Execute contract or contract changes with WAC to provide an additional \$250,000 in funding to WAC for long-term stewardship of Watershed Agricultural Easements already acquired by WAC as of the date of this FAD <sup>1</sup> . NYCDEP and WAC are to develop mutually agreed upon stewardship policies to be adhered to by WAC. These funds are to be combined with the \$100,000 already provided to WAC for easement stewardship, and placed in a separate, interest-bearing account by WAC for easement stewardship, to create an endowment for such purpose only (endowment not to be used for WAC general business purposes). Interest earnings on the account are to be used for monitoring of compliance with the terms of such Watershed Agricultural Easements, and to enforce the terms thereof where necessary.	2/28/08
Execute contract or contract changes with WAC to provide for payment of \$8,000 per Easement, for each Watershed Agricultural Easement acquired by WAC from and after the date of this FAD, for long-term stewardship of such Easements <sup>1</sup> . NYCDEP and WAC are to develop mutually agreed upon stewardship policies to be adhered to by WAC. These funds may be placed in the separate, interest-bearing account to be created by WAC, in accordance with the immediately preceding milestone, subject to the terms and conditions described above, or in a separate interest-bearing account subject to the same terms and conditions.	Effective date of next NYCDEP/WAC contract for funding acquisition of Watershed Agricultural Easements
<p>Continue to develop new and revise existing WFPs, including CREP enrollment, on farms in the west-of-Hudson Watershed</p> <ul style="list-style-type: none"> <li>• Pursue the development of new WFPs on approximately 12 existing “large” farms (farm income &gt; \$10,000) not currently participating in the program.</li> <li>• Develop WFPs on 10 “small” farms (farm income &gt; \$1,000 and &lt; \$10,000) not currently enrolled in the program.</li> </ul>	<p>Ongoing</p> <p>Annually</p>
Submit a Small Farms Assessment Report to determine the number, extent, and potential impact of small farms on water quality in the west-of-Hudson Watershed.	7/31/09

<sup>1</sup> This additional funding may be drawn by NYCDEP from the \$300 Million committed by the City for its Watershed Land Acquisition Program over the full ten-year term of this FAD.

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Requirement	Due Date
<p>Develop new, and revise existing, WFPs and Forest Management Plans in the east-of-Hudson Watershed</p> <ul style="list-style-type: none"> <li>• Develop up to 10 but no less than 6 new WFPs/year with priority placed on farms in West Branch, Boyd Corners, Kensico, Cross River, and Croton Falls basins.</li> <li>• Develop Forest Management Plans (see Forestry Program Section 4.5).</li> </ul>	Ongoing/ Annually
<p>Continue Farmer Education and Outreach initiatives which include, but are not limited to, the following areas of concern:</p> <ul style="list-style-type: none"> <li>• Pathogen Management</li> <li>• Nutrient Management</li> </ul>	Ongoing/ Annually
<p>Continue acquiring Farm Easements (see Land Acquisition Program Section 4.2).</p>	Ongoing/ Annually
<p>Submit a comprehensive Annual Report of program activities including, but not limited to:</p> <ul style="list-style-type: none"> <li>• Progress in achieving FAD program goals</li> <li>• Status of the Large Farms Program (including new WFPs and the implementation of existing WFPs )</li> <li>• Status of the Small Farms Program (including new WFPs and the implementation of existing WFPs)</li> <li>• Status of the East-of-Hudson Program (including new WFPs and the implementation of existing WFPs)</li> <li>• Status and Summary of Annual Status Reviews/Comprehensive Status Reviews for large farms, small farms, and east-of-Hudson farms</li> <li>• WAC farm recruitment activities</li> <li>• Progress in soliciting new acres in the Conservation Reserve Enhancement Program (CREP)</li> <li>• Implementation plan for subsequent year which includes: numbers and types of BMPs to be implemented; estimated cost of those BMPs; nutrient management plans to be created or revised; and WFP revisions to be completed</li> <li>• Progress in the Agricultural Easement Program</li> <li>• Related Research Activities (City and non-City funds)</li> <li>• Evaluation of WAP based on evaluation criteria</li> </ul>	Annually due March 31
<p>Submit five-year plan for the WAP covering the period 2008 through 2013.</p>	1/31/08
<p>Conduct and submit a review of current evaluation criteria with input from Advisory Committee.</p>	12/31/10
<p>Publish draft agricultural regulations, if based on a review the primacy agency determines that the current WAP activities do not adequately control agricultural non-point source pollution, and/or if NYCDEP fails to meet the requirements of the WAP.</p>	within 9 months of primacy agency's determination

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### ***4.5 Watershed Forestry Program***

The Watershed Forestry Program is a voluntary partnership between New York City and the forestry community that supports and maintains well-managed forests as a beneficial land use in the watershed. The primary objective of the program is to maintain unfragmented forested land and promote the use of management practices to prevent non-point source pollution during timber harvests.

The Watershed Forestry Program began as a grass-roots effort and has been administered by the Watershed Agricultural Council (WAC) since 1997. The program provides resources for logger training, forest management planning, implementation of management practices, research, demonstration projects, and educational opportunities. NYCDEP's 2006 Long-Term Watershed Protection Program contains an expanded Watershed Forestry Program (Section 2.3.5).

The 2007 FAD requires that NYCDEP implement the Watershed Forestry Program as detailed in Section 2.3.5 of the City's 2006 Long-Term Watershed Protection Program, in accordance with the milestones therein and the clarifications below:

#### *Milestones/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
<b>Forest Management Planning &amp; Stewardship:</b> <ul style="list-style-type: none"> <li>• Continue enrolling eligible watershed landowners in WAC forestry program and develop new/additional forest management plans (which include specific riparian management recommendations)</li> <li>• Continue evaluating the implementation status of 5-year old WAC forest management plans.</li> <li>• Complete and evaluate the Management Assistance Program (MAP) pilot project during 2007-2008.</li> <li>• Develop a MAP pilot project evaluation report.</li> <li>• Expand and implement MAP on a watershed-wide basis (based on the results of the pilot evaluation) to eligible landowners having a WAC forest management plan.</li> </ul>	<p style="text-align: center;">Ongoing/ Annually</p> <p style="text-align: center;">12/31/08 (MAP pilot evaluation complete and watershed-wide expansion underway)</p>
<b>BMP Implementation:</b> <ul style="list-style-type: none"> <li>• Complete road BMP projects, portable bridge projects, and other forestry BMP projects</li> </ul>	<p style="text-align: center;">Ongoing/ Annually</p>
<b>Logger &amp; Forester Training:</b> <ul style="list-style-type: none"> <li>• Conduct forester and logger training workshops</li> <li>• Support/promote the NYS Trained Logger Certification Program throughout the watershed</li> </ul>	<p style="text-align: center;">Ongoing/ Annually</p>

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Requirement	Due Date
<p>Model Forest Program:</p> <ul style="list-style-type: none"> <li>• Continue research and demonstration projects</li> <li>• Conduct forestry educational events</li> <li>• Establish an east-of-Hudson model forest</li> </ul>	<p>Ongoing/ Annually</p>
<p>Watershed Forestry Education Program:</p> <ul style="list-style-type: none"> <li>• Conduct/hold programs including: annual Watershed Forestry Institute for Teachers, Green Connections Education Program, and Watershed Forestry Bus Tour Program</li> <li>• Conduct landowner education/outreach programs</li> <li>• Support invasive species education/outreach programs</li> </ul>	<p>Ongoing/ Annually</p>
<p>Submit Watershed Forestry Program Annual Report, covering:</p> <ul style="list-style-type: none"> <li>• Forest Management Planning &amp; Stewardship (including riparian buffers)</li> <li>• BMP Implementation</li> <li>• Logger &amp; Forester Training</li> <li>• Model Forest Research and Demonstration Program</li> <li>• Watershed Forestry Education Program</li> </ul>	<p>Annually</p>
<p>Submit Watershed Forestry Program Evaluation Report, covering:</p> <ul style="list-style-type: none"> <li>• Five-Year Implementation Status of WAC Forest Management Plans, including documenting and assessing the degree to which private landowners follow the forestry management practices recommended in their 10-year management plans.</li> </ul>	<p>Annually (due 1/31)</p>
<p>Submit MAP pilot project evaluation report.</p>	<p>12/31/08</p>



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### ***4.6 Stream Management Program***

The overall objectives of the Stream Management Program, established under the 2002 FAD, remain relevant today, and form the basis for program implementation under the 2007 FAD. The goal of the program is to protect and restore stream stability to achievable levels. This will be accomplished through the development and implementation of stream management plans, demonstration projects, and the enhancement of long-term stream stewardship through increased community participation resulting from partnerships (e.g. local Soil and Water Conservation Districts), education and training.

Stabilizing stream reaches is expected to provide multiple environmental benefits including overall water quality improvement and turbidity reduction (on a stream scale) through decreased streambank erosion. The 2007 FAD Stream Management Program places greater emphasis on the implementation of stream management plan recommendations. Much of this implementation will be accomplished through the establishment of a new funding program, for which the program structure will be established by March 31, 2008. The program has been further enhanced through the addition of seven new stream restoration demonstration projects and two new Stream Management Plans (Rondout Creek and Neversink River basins).

The 2007 FAD requires that the NYCDEP implement all elements of the Stream Management Program, in accordance with Section 2.3.6 of its 2006 Long-Term Watershed Protection Program and the milestones therein. EPA and NYSDOH note that, due to an administrative error, the commitment included below regarding completion of five stream restoration projects was excluded from the City's 2006 Long-Term Watershed Protection Program. EPA and NYSDOH consider this commitment to be part of the City's Program.

#### *Milestone/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Complete / submit the remaining 2002 FAD deliverables:	
Stream Management Plan for the East Branch Delaware River and	12/31/07
• A demonstration restoration project in the East Branch Delaware River	12/31/07*
Stream Management Plan for the Schoharie Creek, and	Completed
• A demonstration restoration project in the Schoharie Creek	12/31/07*
• A demonstration restoration project in the Batavia Kill - Conine Project	12/31/07*

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\* Final schedule completion dates may be adjusted due to weather conditions and landowner cooperation.

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Requirement	Due Date
<p>Implement Existing Stream Management Plans:</p> <ul style="list-style-type: none"> <li>• Meet annually with county contracting partners to re-evaluate stream management plan recommendations and priorities and establish a modified schedule for actions to be taken.</li> </ul>	<p>Annually beginning 4/1/07</p>
<p>Design and complete construction of five stream restoration projects on a basin priority basis, no later than 5/15/12. These restoration projects and associated schedules shall be subject to review and approval by EPA, NYSDOH and NYSDEC.</p>	<p>5/15/12*</p>
<p>Establish and implement local funding program for enhanced implementation of recommendations from completed Stream Management Plans:</p> <ul style="list-style-type: none"> <li>• Develop and submit a draft program plan for review and comment</li> <li>• Establish and submit final program plan</li>   <li>• Implement projects; award contracts where necessary</li> </ul> <p>In the Ashokan basin, provide at least \$2 million for implementation of stream management plan recommendations, with preference given to grants for local implementation of projects:</p> <ul style="list-style-type: none"> <li>• Implement projects; award contracts where necessary</li> <li>• Complete commitment of \$2 million</li> </ul>	<p>9/30/07 3/31/08</p> <p>Annually, beginning 12/31/08</p> <p>Annually, beginning 12/31/08 5/15/12</p>
<p>For the Delaware water supply basin, planned activities include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Complete Stream Management Plan for Rondout Creek</li> <li>• Complete a demonstration restoration project for Rondout Creek</li> <li>• Complete Stream Management Plan for Neversink River</li> <li>• Complete a demonstration restoration project for Neversink River</li> </ul>	<p>2/28/10 2/28/11 2/28/11 2/28/12</p>
<p>Provide a coordinated program delivering technical assistance and conservation guidance to riparian landowners through a Streamside Assistance Program. (This program is also included in Section 4.7, the Riparian Buffer Protection Program.)</p>	<p>Ongoing</p>

\* Final schedule completion dates may be adjusted due to weather conditions and landowner cooperation.

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Requirement	Due Date
Review and revise, as appropriate, Addendum A of the 1993 MOU between NYSDEC and NYCDEP as it pertains to the review of Article 15 Stream Disturbance Permits to reflect and enhance coordination between the agencies with the goal of ensuring consistency with the recommendations in Stream Management Plans.	6/30/09
Develop and distribute updated Flood Insurance Rate Maps for the west-of-Hudson watershed in collaboration with NYSDEC.	5/15/12
Submit a report evaluating the overall progress made in implementing the Stream Management Program. The report will provide a discussion of progress made in implementing specific Stream Management Plans, site selection and construction status of all applicable stream restoration projects.	Annually
Submit an “Action Plan” for implementing stream management plan recommendations and establishing priorities, by reservoir basin. NYCDEP shall consider all recommendations made at the annual contracting partners’ planning meeting in the development of the Action Plan.	Biennially, beginning 5/15/07
Submit the Conine Water Quality Report	12/31/12
Convene progress meetings with EPA, NYSDOH and NYSDEC, one meeting of which each year will provide a forum for discussion of the content and outcome of the annual meetings with county contracting partners	Semi-annually

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### ***4.7 Riparian Buffer Protection Program***

The Riparian Buffer Protection Program represents a new initiative under the 2007 FAD, committing the City to continue its riparian buffer protection efforts through existing programs (e.g. Land Acquisition, Watershed Agricultural, Stream Management, and Forestry programs) as well as initiating selected program enhancements. The enhancements will be watershed-wide in scope, focusing on improving riparian buffer protections along privately-owned stream reaches. For example, within the context of the Stream Management Program, NYCDEP will strengthen its landowner agreements by acquiring enhanced management agreements for the protection of riparian buffers for all current and future stream restoration projects. In addition, riparian landowners will have access to technical assistance targeted to their needs. Specifically, enhanced education and training will focus on proper streamside management, including development and design assistance with plans for riparian plantings.

Communication between the landowners and riparian buffer protection experts, along with coordination of the ongoing riparian buffer protection efforts offered by the various watershed protection programs, is essential to the success of the Riparian Buffer Protection Program.

The 2007 FAD requires that NYCDEP implement all elements of the Riparian Buffer Protection Program, in accordance with Section 2.3.7 of its 2006 Long-Term Watershed Protection Program and the milestones therein.

#### *Milestone/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Continue existing programs that are protective of riparian buffers including, but not limited to, watershed regulations, farm and forest programs, land acquisition, stream management, and land management.	Ongoing
Evaluate the Conservation Reserve Enhancement Program (CREP) program in the watershed, including recommendations for enhancements for cropland, application and relation to Whole Farm Planning, better distribution of CREP throughout the watershed, and the addition of permanent CREP.	12/31/09
Continue implementation of the CREP Program.	Ongoing
Develop a streamside assistance program throughout the watershed to provide technical assistance to streamside landowners. Program elements will include: <ul style="list-style-type: none"> <li>• Ongoing coordination with Riparian Buffers Working Group and local partners</li> <li>• Prioritization of potential areas for program activity using Stream Management Plans and other existing resources</li> <li>• Streamside management guidance including design and planting plans for prioritized areas</li> <li>• Exploration of native plants material supply and demand for project implementation</li> <li>• Development of communication materials supporting the program</li> </ul>	12/31/08

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<b>Requirement</b>	<b>Due Date</b>
Require enhanced management agreements (voluntary 10-year or purchased perpetual) for all current and future stream restoration projects.	Ongoing
Develop an enhanced education, outreach, and marketing strategy for riparian landowners.	12/31/09
Report on implementation of all elements of the Riparian Buffer Protection Program, including coordination with other City programs, details of activities in the streamside assistance program, and available quantitative measures. The Report shall also include recommendations for program improvement.	Annually, beginning 3/31/08

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### ***4.8 Wetlands Protection Program***

Wetlands play a major role in watershed protection. From a drinking water perspective, critical functions include their ability to maintain good surface water quality in watercourses and reservoirs and to improve degraded water. Wetlands also moderate peak runoff, recharge groundwater and maintain baseflow in watershed streams.

The City's Wetlands Protection Strategy was first implemented in 1996 and was updated in 2001. The strategy includes research and mapping programs such as the National Wetlands Inventory (NWI), wetland status and trends, wetland monitoring and functional assessment, all of which support protection programs such as wetland permit review, land acquisition, and watershed agricultural programs. The Wetlands Protection Strategy will continue to be implemented as a requirement of the 2007 FAD and will be revised as noted in the table below.

NYCDEP's 2006 Long-Term Watershed Protection Program includes a Wetlands Protection Program (Section 2.3.8). The 2007 FAD requires that NYCDEP implement the Wetlands Protection Program in accordance with Section 2.3.8 of the City's Long-Term Watershed Protection Program and the milestones contained therein.

#### *Milestone/Reporting Requirements*

<b><i>Requirement</i></b>	<b><i>Due Date</i></b>
Continue monitoring of west-of-Hudson reference wetlands to obtain long-term data to assess wetland functions and conditions to provide support to regulatory and non-regulatory wetland protection programs.	Ongoing
Continue review of federal, State, and municipal wetland permit applications to ensure that wetland impacts in the watershed are avoided, minimized, or appropriately mitigated to preserve wetland water quality functions to the maximum extent practicable.	Ongoing
Revise Wetlands Protection Strategy to reflect the programmatic changes and continuations embodied in the 2007 FAD.	12/31/07
Complete a West-of-Hudson Status and Trends Study using the 1990s and 2005 NWI data as endpoints.	12/31/08
Review and revise, as appropriate, Addendum A of the 1993 MOU between NYSDEC and NYCDEP as it pertains to the review of Article 24 Freshwater wetland permits to enhance coordination between the agencies, with the goal of minimizing wetland impacts in the watershed.	6/30/09
Upon completion of the NWI, update and produce the color educational pamphlet that was first produced in 1996. An updated version of this educational tool will include the most current NWI data as well as findings from other programs such as Wetland Monitoring, Functional Assessment, and Status and Trends.	12/31/09

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<i>Requirement</i>	<i>Due Date</i>
Annual Reporting on Wetlands Strategy. Reporting includes updates on mapping/trends and monitoring projects, the number and types of wetland permits reviewed and tracked, wetland-related components of land acquisition, stream management, agricultural programs and associated partnerships and education programs.	Annually (part of FAD Annual Report)

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### ***4.9 East-of-Hudson Non-Point Source Pollution Control Program***

NYCDEP has developed a comprehensive non-point source program for the West Branch, Boyd’s Corner, Croton Falls and Cross River Reservoir basins located east of the Hudson. Under the 2002 FAD, the City began to implement the following program elements in these basins: agricultural program, forestry program, and new septic and stormwater initiatives. Other elements of the program that have been implemented by the City include planning efforts by the City (Croton Watershed Strategy) and the two counties (Westchester and Putnam counties) that will provide for integrated watershed management to protect and improve water quality in the West Branch, Boyd’s Corner, Croton Falls and Cross River Reservoir basins. In addition, NYCDEP will address many concerns in the east-of-Hudson watersheds through the aggressive implementation of the Watershed Rules and Regulations, continued increased involvement in project reviews and through a grant program to assist stormwater districts or municipalities reduce stormwater pollutant loading to the Croton Falls and Cross River basins. The City and Westchester and Putnam County officials shall continue to keep each other informed of planned and ongoing east-of-Hudson non-point source pollution control actions.

The City’s 2006 Long-Term Watershed Protection Program includes a Non-Point Source Pollution Strategy for east-of-Hudson Catskill/Delaware basins and Cross River and Croton Falls basins (Section 2.3.9). The 2007 FAD requires full implementation of the Strategy, in accordance with the milestones therein and the clarifications below:

#### *Milestone/Reporting Requirements for Catskill/Delaware Basins east-of-Hudson and Cross River and Croton Falls*

<b>Requirement</b>	<b>Due Date</b>
East-of-Hudson Stormwater Facility Maintenance for constructed facilities.	Ongoing
Stormwater Remediation Projects: <ul style="list-style-type: none"> <li>• BC-1 (Kent, Putnam County) Cleanout of sediment/debris and stabilize embankment along the stream channel. Install forebays with a drainage ditch.</li> <li>• WB-1 (Kent, Putnam County) Install drainage structures and outlet protection.</li> <li>• WB-2 (Carmel, Putnam County) Install porous pavers. Cleanout sediment/debris buildup.</li> <li>• CF-1 (Carmel, Putnam County) Stream channel embankment stabilization. Michael Brook/Hughson Road Improvements.</li> <li>• CR-1 (Bedford, Westchester County) Construct drainage ditches, culverts, outlet protections, and stabilize steep slopes. Install porous pavers and vegetation.</li> </ul>	Award Contract: 10/31/08  Completion of all projects: 12/31/09



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Requirement	Due Date
<p>Stormwater Retrofit Projects:</p> <ul style="list-style-type: none"> <li>• Design and Construct Hemlock Dam Retrofit – Croton Falls.</li> <li>• Design and Construct Magnetic Mine Road Retrofit – Croton Falls.</li> </ul>	<p>Award Contract: 9/30/08</p> <p>Completion: 12/31/09</p>
<p>Stormwater Remediation Small Projects Program:</p> <ul style="list-style-type: none"> <li>• Complete design and construction of stormwater management practices.</li> <li>• Assess effectiveness of program.</li> <li>• Conduct an assessment and submit a report on the potential value of initiating a pilot study that would evaluate the impacts of stormwater improvements on stream corridors.</li> </ul>	<p>9/30/08</p> <p>1/31/09</p> <p>3/31/09</p>
<p>East-of-Hudson Stormwater Mapping and Inspection:</p> <ul style="list-style-type: none"> <li>• Complete digital mapping and stormwater inspection of Boyd Corners and West Branch basins.</li> <li>• Review results and coordinate with counties to remediate illicit connections in Boyd Corners and West Branch basins.</li> </ul> <p>Stormwater infrastructure capacity evaluation.</p>	<p>Completion: 12/31/07</p> <p>Completion: 12/31/10</p>
<p>East-of-Hudson Stormwater Prioritization Assessment (NYCDEP Properties):</p> <ul style="list-style-type: none"> <li>• Determine prioritization criteria.</li> <li>• Determine location of potential future stormwater projects to be implemented by NYCDEP.</li> </ul> <p>Develop and submit a schedule for implementation of selected practices.</p>	<p>3/31/09</p> <p>9/30/09</p>
<p>Establish a \$4.5 million program to address stormwater pollution in the Croton Falls and Cross River basins and upstream/hydrologically connected basins. These funds are presently intended to provide grants to stormwater districts or municipalities for projects that will reduce stormwater pollutant loading to the Croton Falls and Cross River basins and upstream/hydrologically connected basins,<sup>1</sup> subject to the following terms:</p> <ul style="list-style-type: none"> <li>• Develop program rules, in collaboration with NYSDEC, and model contract, including provision for local match of at least 50%.</li> <li>• Solicit applications from interested parties.</li> <li>• Convene inter-agency technical panel to evaluate and select projects.</li> <li>• Begin process to award selected projects</li> </ul>	<p>3/31/08</p> <p>5/31/08</p> <p>11/30/08</p> <p>1/1/09</p>

<sup>1</sup> The City is empowered to develop program rules that will provide for a phased program with priority given to projects directly affecting Cross River and Croton Falls Reservoirs.

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Requirement	Due Date
<p>Completed projects may be used by the awarded district or municipality toward their efforts to comply with the requirements of the NYSDEC SPDES General Permit, stormwater discharges from Municipal Separate Storm Sewer Systems (MS4).</p> <p>The New York State Departments of Environmental Conservation and State are currently working together to identify potential structures for ensuring appropriate coordination among the east-of-Hudson watershed communities in complying with the NYSDEC SPDES General Permit, stormwater discharges from Municipal Separate Storm Sewer Systems (MS4). EPA and NYSDOH will entertain a joint proposal from NYCDEP and NYSDEC, if submitted no later than 1/31/08, to allocate some portion of this \$4.5 million program toward establishment and start-up of a public benefit corporation, utility, special district, or other entity that would assist with MS4 permit compliance in the east-of-Hudson Watershed.</p> <p>It is understood that the MS4 Requirements are requirements of federal and State law and that responsibility for meeting those requirements rests with the east-of-Hudson watershed communities and not with the City of New York.</p>	
<p>Sanitary Infrastructure Mapping/Inspection:</p> <ul style="list-style-type: none"> <li>• Complete inspection and mapping.</li> <li>• Prepare report identifying defects.</li> <li>• Coordinate with responsible entities to remediate identified deficiencies.</li> </ul>	6/30/09
<p>Septic Program East-of-Hudson:</p> <ul style="list-style-type: none"> <li>• Coordinate with county in prioritizing the program target areas.</li> <li>• Review and approve designs from program participants.</li> </ul>	Ongoing
<p>East-of-Hudson Non-point Source Program Semi-Annual Report – Submit brief report discussing material events in the east-of-Hudson program implementation.</p>	Semi-annually
<p>East-of-Hudson Non-point Source Program Annual Report – Submit report discussing all program elements:</p> <ul style="list-style-type: none"> <li>• Ongoing stormwater facility maintenance;</li> <li>• Stormwater Remediation and Retrofit Projects;</li> <li>• Small Projects Program (include effectiveness assessment in the 2009 Annual Report);</li> <li>• Stormwater Mapping and Inspection;</li> <li>• Sanitary Infrastructure Mapping/Inspection;</li> <li>• East-of-Hudson Septic Program;</li> <li>• Stormwater Capacity Evaluation;</li> </ul>	Annually

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<b>Requirement</b>	<b>Due Date</b>
<ul style="list-style-type: none"><li>• Prioritization Assessment for NYCDEP Properties;</li><li>• Funding Program for Cross River/Croton Falls Basins</li><li>• Croton Strategy and Croton Planning Activities.</li></ul>	

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### ***4.10 Kensico Water Quality Control***

The Kensico Reservoir, located in Westchester County, is the terminal reservoir for the City's Catskill/Delaware water supply system. 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 filtration avoidance for the City. Since the early 1990s, NYCDEP has prioritized watershed protection in the Kensico basin. The 1997 and 2002 FADs built a foundation of expanded watershed protection and pollution prevention initiatives for the Kensico basin. Under the 2007 FAD, the City will institute new watershed protection and remediation programs designed to ensure the continued success of past efforts while providing for new source water protection initiatives that are specifically targeted toward stormwater and wastewater pollution sources.

To achieve the broad goals of reducing non-point source pollution of the Kensico Reservoir, the City will focus on:

- Long-Term Operation and Maintenance – NYCDEP will continue to regularly inspect the existing stormwater management facilities and identify maintenance needs through the life span of each identified facility in order to maximize its removal efficiency.
- Complete Assessment of Kensico – Through the Kensico Action Plan (KAP), NYCDEP will generate the information required to make better strategic decisions on future stormwater and dredging projects. Key elements of the program include mapping Kensico sub-basins based on 2-foot contour topographic coverage, evaluating and modeling stormwater discharges from the catchments, and assessing the need for effluent chamber dredging.
- Reduce the Potential Risk – Implementation of a Septic Repair Program, construction of an early warning sanitary sewer overflow protection system and the annual visual inspection of sanitary sewers will increase NYCDEP’s ability to prevent possible discharges of wastewater to Kensico.

The 2007 FAD requires that the City implement its Kensico Water Quality Control Program in accordance with section 2.3.10 of the City’s 2006 Long-Term Watershed Protection Program and the milestones contained therein:

#### *Milestone/Reporting Requirements*

<b><i>Requirement</i></b>	<b><i>Due Date</i></b>
Maintain Non-point Management Facilities within the Kensico Reservoir Basin: <ul style="list-style-type: none"> <li>• Inspect and maintain stormwater management facilities, turbidity curtain and spill containment measures</li> <li>• Update the computer-assisted facilities management system (CAFM) to track, document and manage the Kensico watershed protection programs</li> </ul>	Ongoing
Stormwater BMP Monitoring: <ul style="list-style-type: none"> <li>• Sample selected BMPs through 2007</li> </ul>	Report findings in 2009 Kensico Programs Annual Report

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<i>Requirement</i>	<i>Due Date</i>
<p>Submit draft Kensico Action Plan (KAP) for review and approval by EPA, NYSDOH. Sections to be included in draft report will detail:</p> <ul style="list-style-type: none"> <li>• Conceptual proposals for up to 4 pollution remediation practices, and</li> <li>• Up to 4 draft water quality risk assessments</li> </ul> <p>Subsequent milestones relating to the KAP are predicated on NYCDEP receiving approval by EPA and NYSDOH no later than 5/15/07.</p>	Completed
<p>Complete the KAP – Submit final KAP which will include:</p> <ul style="list-style-type: none"> <li>• Mapping of Kensico sub-basin based of 2-foot contour topographic coverages</li> <li>• Evaluation (based on modeling) of stormwater discharges from the Kensico catchments</li> <li>• Proposals for up to 4 pollution remediation practices.</li> <li>• Reports of up to 4 water quality risk assessments.</li> <li>• Summary of work performed under separate contract that evaluates the need for effluent chamber dredging</li> </ul>	8/15/07
<p>Evaluate proposals within the KAP for pollution remediation practices and develop a schedule for implementation of selected practices. Schedule subject to approval by EPA and NYSDOH.</p>	12/15/07
<p>Septic Repair Program:</p> <ul style="list-style-type: none"> <li>• Submit survey results and proposed program to EPA and NYSDOH for review and comment. One month scheduled for regulatory agency review.</li> <li>• Initiate contract for septic repair program based on results of existing house to house survey.</li> </ul>	<p>10/31/07</p> <p>Contract Start 11/30/08</p>
<p>Propose to Westchester County DEP installation of a Sanitary Sewer Remote Monitoring System at West Lake Sewer Extension (Early Warning):</p> <ul style="list-style-type: none"> <li>• Secure agreement from County to install system</li> <li>• Update sewer system protocol with County</li> <li>• Coordinate with County to implement maintenance, monitoring and response plan for system</li> <li>• Update regulatory agencies on status of coordination with Westchester County</li> </ul>	Ongoing
<p>Visually Inspect West Lake Sewer Extension:</p> <ul style="list-style-type: none"> <li>• Review and coordinate with County to remediate any identified deficiencies</li> </ul>	Annually

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<i>Requirement</i>	<i>Due Date</i>
<p>Video Sanitary Sewer Inspection Program:</p> <ul style="list-style-type: none"> <li>• Inspection of targeted areas every 5 years</li> </ul>	9/30/10
<p>Continue Westchester County Airport Coordination:</p> <ul style="list-style-type: none"> <li>• Coordinate with County and remain an active stakeholder as projects are proposed</li> </ul>	Ongoing
<p>Continue Route 120 Corridor Coordination:</p> <ul style="list-style-type: none"> <li>• Coordinate with DOT and remain an active stakeholder</li> </ul>	Ongoing
<p>Conduct wind-induced turbidity assessment. Evaluate assessment recommendations. As appropriate, develop a schedule for implementation of selected practices.</p>	8/31/07
<p>Submit Kensico Programs Annual Report – An integrated report including the following:</p> <ul style="list-style-type: none"> <li>• Discuss progress in implementing Kensico protection programs including: <ul style="list-style-type: none"> <li>• Ongoing stormwater facility maintenance</li> <li>• Stormwater BMP monitoring</li> <li>• Septic Repair Program</li> <li>• Kensico Action Plan</li> <li>• Assessment of alum dredging (interval to be based on SPDES permit)</li> <li>• Remote Monitoring System at West Lake Sewer</li> <li>• Sewer inspections</li> </ul> </li> <li>• Presentation, discussion and analysis of monitoring data (e.g. keypoint, reservoir, stream, BMPs); and</li> <li>• Status and application of the Kensico reservoir model</li> </ul>	Annually
<p>Submit Kensico Programs Semi-Annual Report – Brief report discussing material events in Kensico Program implementation.</p>	Semi-annually
<p>Submit Final KAP</p>	8/15/07
<p>Submit KAP Implementation Schedule</p>	12/15/07
<p>Depending on the findings of the KAP, provide a short report evaluating the need, and /or plan, for maintenance dredging of intake channels at Delaware Shaft 18 and Catskill Upper Effluent Chamber, as appropriate</p>	Include in Annual Report for 2010

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### ***4.11 Catskill Turbidity Control***

The Catskill Turbidity Control program was developed to address elevated turbidity in the Catskill watershed. As required by the 2002 FAD, the City completed an analysis of engineering and structural alternatives for turbidity control at the Schoharie Reservoir (Phase II Study). Regulatory review of the City's plan for implementing the recommended measures from this study has been extended to allow for more detailed review of the models used. Dredging of the Schoharie Reservoir intake channel was delayed due to the emergency repairs needed at the Gilboa Dam, and a revised schedule is included herein.

The 2007 FAD includes development and submittal of a Phase III engineering analysis of potential turbidity reduction measures, including interim measures that are both feasible and cost effective, for the Ashokan Reservoir. Alternatives under consideration include: (1) an in-reservoir baffle for the Ashokan Reservoir's East Basin, (2) a new release structure from the Ashokan Reservoir's West Basin, (3) a new intake structure for the East Basin, (4) raising the dividing weir thereby increasing storage capacity of the West Basin and (5) modified operations. Subsequent to submittal of the Phase III report, a plan with appropriate interim milestones will be developed for implementation of the selected turbidity reduction measures.

The 2007 FAD requires that NYCDEP implement all elements of the Catskill Turbidity Control Program, as detailed in Section 2.3.11 of its 2006 Long-Term Watershed Protection Program and the milestones therein:

#### *Milestone/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Complete dredging of the Schoharie Reservoir intake channel	12/31/07
Complete implementation of Phase II Schoharie Reservoir recommendations in accordance with the 12/31/06 Phase II Implementation Plan Report as approved by EPA, NYSDOH and NYSDEC	TBD
Conduct a comprehensive analysis of engineering and structural alternatives at the Ashokan Reservoir that may reduce turbidity levels entering the Catskill Aqueduct (Phase III Study)	Ongoing
Submit final report upon completion of the Phase III study. The report will include detailed conceptual designs and associated cost information for recommended alternatives. The report will also identify any interim turbidity reduction measures that emerge during the course of study.	12/31/07
Develop a plan, subject to EPA, NYSDOH and NYSDEC approval, with appropriate milestones for implementing any feasible, cost effective measures, including interim measures, identified by the comprehensive engineering analysis.	3/31/08
Convene meetings with EPA, NYSDOH and NYSDEC to review progress on all Catskill turbidity control efforts	Semi-annual (one meeting prior to submission of annual report)

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<b>Requirement</b>	<b>Due Date</b>
Report on the implementation of all elements of the Catskill Turbidity Control Program	Annually



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### *4.12 Sand and Salt Storage*

Pursuant to MOA Paragraph 126, NYCDEP previously funded a successful program, administered through CWC, to improve the storage of sand, salt and other road de-icing materials in the west-of-Hudson watershed so as to better protect water quality and to assist local governments in complying with the City's Watershed Rules and Regulations (WR&Rs). NYCDEP initially provided \$10 million to fund such program, all of which has now been spent. Subsequent to the submission of its 2006 Long-Term Watershed Protection Program, and at the request of west-of-Hudson communities, NYCDEP agreed to provide a limited amount of additional funding to establish a follow-on program to assist institutional entities (e.g. colleges, schools and school districts, and hospitals) in complying with the provisions of the WR&Rs governing the storage of sand, salt and such other materials.

The 2007 FAD requires that NYCDEP provide such additional funding, and implement such a program, as follows:

#### *Milestone/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Execute a contract with CWC to establish and implement a program to assist institutions west-of-Hudson in complying with the provisions of the City's WR&Rs governing storage of sand, salt and other road de-icing materials. Contract to provide \$500,000 in funding to CWC for such program.	2/28/08

**5. Watershed Monitoring, Modeling and GIS**

**5.1 Watershed Monitoring Program**

NYCDEP conducts extensive monitoring throughout the watershed. The monitoring framework is defined by the Drinking Water Quality Control (DWQC) Integrated Monitoring Plan which was finalized by the City in October 2003. This Plan describes the City’s hydrology, limnology, and pathogen monitoring programs which support trend analysis, modeling efforts, and reservoir operations. Pathogen reports are provided annually which summarize results at keypoints (Kensico Reservoir intakes) as well as in the west-of-Hudson reservoirs. An annual update on ongoing research activities is provided. The City also submits a monthly report which describes its compliance with the objective regulatory requirements for filtration avoidance, such as turbidity and coliform bacteria levels in source water, and disinfection.

As watershed protection programs develop and analytical techniques for key parameters change, it is necessary to reassess the monitoring program to ensure that it continues to support NYCDEP’s watershed management program and that it can be used to evaluate the effectiveness of programs established under the FAD and MOA. NYCDEP will review the elements of the monitoring program and, based on this review, will update the Integrated Monitoring Plan in 2008.

NYCDEP recognizes the need for regular evaluation and appropriate revision and refinement of its watershed protection program. The watershed protection program includes, but is not limited to, remedial activities, protection activities, land acquisition and the Watershed Rules and Regulations. NYCDEP has committed to undertaking a comprehensive evaluation of the program on a periodic basis. The first evaluation occurred in March 2006 and the next is scheduled for March 31, 2011. The data generated through the City’s monitoring program, in conjunction with other defensible scientific findings, is to be used to conduct the City’s periodic assessment of the effectiveness of the watershed protection program.

NYCDEP’s 2006 Long-Term Watershed Protection Program includes a Watershed Monitoring Program (Section 2.4.1) which provides an overview of the program, details of the monitoring program’s objectives, and program milestones. The 2007 FAD requires that NYCDEP conduct a watershed-wide monitoring program in accordance with Section 2.4.1 of its Long-Term Watershed Protection Program and the milestones therein.

*Milestone/Reporting Requirements*

Requirement	Due Date
Participation in educational seminars on watershed monitoring.	Annually (September)
Coordinate technical Pathogen Working Group meeting to discuss the latest research on pathogen sources, transport and fate in the environment, effectiveness of management practices on reducing pathogen concentrations, and additional monitoring and/or research needs.	Annually (March)

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Requirement	Due Date
Discuss draft contents of Integrated Monitoring Plan with EPA, NYSDOH and NYSDEC	2/28/08
Submit updated Integrated Monitoring Plan.	10/31/08
Submit Watershed Water Quality Annual Report (including comprehensive chapters on pathogens and ongoing research)	Annually (July)
Submit mid-term report on watershed surveillance results (i.e., supplement to FAD monthly) consistent with the Integrated Monitoring Plan for pathogens for WWTPs, upstream source waters and Kensico Reservoir perennial streams.	Annually (January)
Submit Watershed Protection Program Summary and Assessment Report covering the First Five Year Period.	3/31/11
Submit Watershed Protection Program Summary and Assessment Report covering the Second Five Year Period.	3/31/16
Submit after-action reports following chemical treatments, or significant unusual incidents and /or monitoring.	Upon completion as specified for each action

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### ***5.2 Multi-Tiered Water Quality Modeling Program***

NYCDEP has developed a Multi-Tiered Water Quality Modeling Program consisting of integrated reservoir and terrestrial models.

The overall goals of the Program include using models to evaluate watershed management programs, reservoir operations, and long-term water supply planning. Specifically, models have been used to evaluate the effectiveness of various watershed programs to control eutrophication in the Delaware water supply system, and to predict turbidity transport in the Catskill water supply system and Kensico Reservoir.

Under the 2002 FAD, NYCDEP expanded and improved its modeling capabilities, including further calibration and verification for the Generalized Watershed Loading Function models for six reservoirs.

The City's 2006 Long-Term Watershed Protection Program includes a Multi-Tiered Water Quality Modeling Program (Section 2.4.2). The 2007 FAD requires that NYCDEP implement its Multi-Tiered Water Quality Modeling Program in accordance with Section 2.4.2 of the City's 2006 Long-Term Watershed Monitoring Program and the milestone dates therein.

#### *Activity and Milestone/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
<ul style="list-style-type: none"> <li>• Continue model improvements based on ongoing data analyses and research results.</li> <li>• Continue model testing as additional data from NYCDEP's ongoing monitoring programs becomes available.</li> <li>• Update land use, watershed programs, and time series data (meteorological, stream flow and chemistry, reservoir chemistry) to support modeling.</li> <li>• Continue development of data analysis tools for modeling, and software for model connectivity.</li> <li>• Continue model applications to support watershed management, reservoir operations, and long-term planning.</li> <li>• Continue testing and improvements to 1-D reservoir eutrophication models (including Phytoplankton Functional Group Model Application to Cannonsville Reservoir).</li> <li>• Provide modeling support to the Catskill Turbidity Control Program.</li> <li>• Provide technical support to assist NYSDEC in its evaluation of nutrient criteria for reservoirs used for drinking water supply.</li> <li>• Use reservoir turbidity models to support operational decisions in response to unfavorable turbidity conditions.</li> </ul>	Ongoing
<p>Upon request by interested local government agencies, meet with such agencies to present results of NYCDEP modeling programs where relevant to local efforts for improved basin management, and discuss potential collaborative modeling efforts.</p>	Ongoing

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<b>Requirement</b>	<b>Due Date</b>
Submit Annual Status Report. This report will include updates on all of the activities listed above.	Annually (October)
Submit report on Modeling Analysis of FAD Programs in the <i>Watershed Protection Program Summary and Assessment Report</i> .	3/31/11
Submit report on Phytoplankton Functional Group Model Application to Cannonsville Reservoir.	7/31/08
Complete expansion of Nutrient Management Eutrophication Modeling System capabilities for Neversink, Rondout, and Schoharie Reservoirs.	7/31/07

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### 5.3 Geographic Information System

NYCDEP maintains an extensive Geographic Information System (GIS) which is designed for watershed management applications and remote sensing. The GIS's capability to manipulate spatial databases is used to support existing program objectives and terrestrial and reservoir modeling. The GIS staff produces maps, provides training in Geographic Positioning System (GPS) data gathering, and provides satellite imagery analysis. Under the 2002 FAD, NYCDEP further developed the GIS program by completing significant hardware and software upgrades, transitioning the system to an object-oriented data model, retaining full-time in-house contractual support, and acquiring additional data that has been effectively managed and disseminated on a continuous basis. In addition, since the 2002 FAD was signed, several NYCDEP Divisions have begun using GIS applications for diverse program activities.

The City's 2006 Long-Term Watershed Protection Program includes a GIS component (Section 2.4.3). The 2007 FAD requires that NYCDEP continue to upgrade and utilize its capabilities and fully implement the GIS component (Section 2.4.3) of its 2006 Long-Term Watershed Protection Program in accordance with the milestones therein.

#### Reporting Requirements

Requirement	Due Date
Continue to maintain and utilize GIS capabilities to support watershed protection efforts.	Ongoing
Report annually on : <ul style="list-style-type: none"><li>• Progress in using GIS for watershed management applications</li><li>• Completion of new data layers</li><li>• Incorporation of data layers into the modeling database</li><li>• Data dissemination to stakeholders and the public as appropriate, including notification of data availability to communities and requests for data</li><li>• GIS infrastructure maintenance and improvement</li></ul>	Annually

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## 6. Regulatory Programs

### 6.1 Watershed Rules and Regulations and Other Enforcement/Project Review

The 2002 FAD required NYCDEP to administer the New York City Watershed Rules and Regulations (WR&Rs), which were revised and adopted in January 1997 as a result of the New York City Watershed MOA, and to implement other enforcement/project review programs with the assistance of NYSDOH and NYSDEC. The City's 2006 Long-Term Watershed Protection Program outlines how the City will continue these programs. The 2007 FAD requires NYCDEP, with the assistance of NYSDOH and NYSDEC, to administer the City's WR&Rs and other enforcement/project review commitments as specified in Section 2.5.1 of NYCDEP's 2006 Long-Term Watershed Protection Program in accordance with the milestones therein.

#### Activity and Reporting Requirements

Requirement	Due Date
Enforce the WR&Rs and other applicable regulations.	Ongoing
<p>Review best management practice (BMP) monitoring data and BMP performance and effectiveness in the field and, where appropriate, make revisions to stormwater pollution prevention plan (SPPP) guidance. These revisions may include but are not limited to:</p> <ul style="list-style-type: none"> <li>• refinements of BMP assumptions;</li> <li>• creation of performance-based benchmarks;</li> <li>• emphasizing the importance of non-structural BMPs and buffers, and</li> <li>• promotion of innovative site design to meet SPPP requirements.</li> </ul>	Ongoing
<p>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 and municipal separate storm sewer systems. Stormwater Enforcement Coordination Committee meetings with involved agencies will be held at least twice per year or more as needed.</p> <p>Complete modifications to Addendum S of the NYCDEP/NYSDEC Memorandum of Understanding as necessary to incorporate provisions for coordinated enforcement and compliance of the NYSDEC general permit for construction activity and municipal separate storm sewer systems. The additional coordination shall include, but not be limited to, review of stormwater management programs and site inspections, recognizing that responsibility for management and implementation of these permit programs lies with NYSDEC.</p>	<p>Ongoing</p> <p>3/1/08</p>

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Requirement	Due Date
Submit report on project review activities with respect to ongoing and proposed projects that may affect water quality, including variance activities and the review of new/remediated septic systems in the Catskill/Delaware watershed basins as well as Croton Falls and Cross River basins east-of-Hudson. The report shall include a summary table (inventory) of all development projects proposed and their SEQRA status in addition to projects under construction, by basin, with corresponding maps. An up-to-date summary table with corresponding maps will also be made available on NYCDEP's website.	Semi-annually, April and October
Submit report on the status of NYCDEP regulatory enforcement actions in the Catskill/Delaware watershed basins, including Croton Falls and Cross River basins.	Semi-annually, April and October
Conduct a roundtable discussion with EPA, NYSDOH, and NYSDEC regarding progress of proposed changes to the WR&Rs, including stormwater regulations. Develop and submit a timeline for completing proposed changes, which include a target date for final rule issuance.	2007 FAD effective date + 2 months
Hold meeting with west-of-Hudson and east-of-Hudson communities to review, and receive comments on, proposed changes to the WR&Rs.	2007 FAD effective date + 4 months
Develop a guidance document to assist applicants undertaking regulated activities in complying with the stormwater provisions of the WR&Rs. This document will be prepared in consultation with a technical advisory group comprised of appropriate NYCDEP, State, east-of-Hudson west-of-Hudson members.	Effective date of revised stormwater provisions of WR&R + 18 months
Submit report on the progress of proposed changes to the WR&Rs until adopted.	Semi-annually, April and October
Report on the analyses used to determine the phosphorus-restricted and coliform-restricted status of each reservoir.	Annually - July (in Water Quality Report)



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### ***6.2 Wastewater Treatment Plant Inspection Program***

The Wastewater Treatment Plant (WWTP) Inspection Program is comprised of onsite inspections, sample monitoring, compliance assistance, and enforcement of State Pollutant Discharge Elimination System (SPDES) permits for all WWTPs discharging in the New York City watershed. The program is coordinated through an EPA-approved Memorandum of Understanding (MOU) between NYSDEC and NYCDEP. 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.

The 2007 FAD requires that NYCDEP, with the assistance of NYSDEC, administer the WWTP Inspection Program as outlined in Section 2.5.2 of its 2006 Long-Term Watershed Protection Program in accordance with the following requirements and associated milestones.

#### *Activity and Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Perform sample monitoring at all New York City-owned WWTPs in accordance with their SPDES permits and grab sample monitoring twice per month at all non-New York 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. If deemed beneficial for enforcement purposes, samples shall be collected and analyzed more frequently, including weekend and split sampling with the facility when possible, in accordance with the monitoring requirements of the SPDES permit. Submit results to EPA and NYSDEC.	Quarterly with WWTP inspection reports
Continue to take timely and appropriate enforcement action against WWTP non-compliance with the WR&Rs and SPDES discharge permit requirements in accordance with the WECC enforcement coordination protocol of the NYSDEC/NYCDEP MOU.  NYCDEP will assist in the training of small facility operators.	Ongoing: Report quarterly through WECC process.
Conduct at least four on-site inspections for year-round SPDES permitted facilities and at least two on-site inspections for seasonal SPDES permitted facilities per year at all WWTPs in the watershed.  <ul style="list-style-type: none"> <li>• Submit inspection summary reports quarterly.</li> <li>• Submit all sample monitoring data and inspection reports annually.</li> </ul>	Ongoing
Submit report on activities of NYCDEP's Technical Support Plan (Circuit Rider) to assist WWTP owners in the training, certification, and proper operation and maintenance of their facilities.	Annually

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### 7. Catskill/Delaware Filtration and UV Disinfection Facilities

As a condition of relief from completing final design deliverables for the Catskill/Delaware filtration planning process, the 2002 FAD required that the City: (1) move forward with design and construction of Ultra Violet (UV) disinfection facility for the Catskill/Delaware water system, and (2) produce biennial updates to the preliminary design for a Catskill/Delaware filtration plant.

Addition of UV disinfection to the Catskill/Delaware water supply will provide an additional disinfection barrier enhancing the City's water supply protection efforts. Updates every two years to the preliminary design for the Catskill/Delaware filtration plant will ensure that the existing design documents do not become obsolete, thereby minimizing the overall time to commence filtration in the event that NYCDEP or the primacy agency later determines that filtration is necessary.

The construction schedule for UV disinfection facilities was extended under the 2002 FAD through a modification issued in 2006, and was further extended through an Administrative Order on Consent (AOC) signed by both NYCDEP and EPA, which became effective on February 7, 2007. The AOC requires full UV disinfection of the Catskill/Delaware water supply by August 31, 2012. Further, the City's reporting obligations for the UV Facility are governed by the AOC.

The 2007 FAD requires that the City implement its program for the Catskill/Delaware UV Disinfection Facility in accordance with Section 2.6 of the City's 2006 Long-Term Watershed Protection Program and the milestones contained therein, with the following clarifications:

- NYCDEP will submit to EPA and NYSDOH on a biennial basis a report updating the preliminary design of the Catskill/Delaware Filtration Facilities. This report will discuss the analysis and redesign work performed, and contain the issuance of necessary change pages to the final preliminary design, including revisions to drawings.
- NYCDEP will supply NYSDOH, by August 31, 2010, with UV reactor validation and computer model results demonstrating that the UV disinfection units that will be installed are capable of delivering a minimum reduction equivalent dose of 40 mJ/cm<sup>2</sup> as required by condition "e" of the NYSDOH "Approval of Plans for Public Water Supply Improvement," dated January 30, 2006.
- NYCDEP shall also provide NYSDOH with any additional information and data on this project, including bioassay results and dose or flow modeling, that NYSDOH may deem necessary in their review and evaluation of the UV reactor validation and computer model results, within ten days of a request from NYSDOH.
- NYCDEP shall start-up and operate the UV disinfection facility at a dose of 40 mJ/cm<sup>2</sup> unless NYSDOH approves alternative operational parameters.

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### *Milestone/Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
<p>Catskill/Delaware Filtration Facilities – preliminary design update:</p> <ul style="list-style-type: none"> <li>• NYCDEP will issue a report updating the preliminary design for the Catskill/Delaware Filtration Facilities. This report will discuss the analysis and redesign work performed, and contain the issuance of necessary change pages to the final preliminary design, including revisions to drawings.</li> <li>• At the request of EPA or NYSDOH, the NYCDEP will host a presentation highlighting the changes to the preliminary design.</li> </ul>	<p>Biennial beginning 09/30/07</p> <p>As requested</p>
<p>UV Disinfection Facility:</p> <ul style="list-style-type: none"> <li>• Advertise UV Structures Contract</li> <li>• Issue Notice to Proceed for the UV Structures Contract</li> <li>• Complete excavation and commence Installation of Underslab Steel Pipe</li> <li>• Complete Underslab Piping in the First and Second Quadrant</li> <li>• Complete Base Slab of the UV Building</li> <li>• Complete Concrete Slab for Ceiling/Floor at Elevation 334 ft.</li> <li>• Enclose UV Building with Permanent Structure</li> <li>• Complete Installation of Electrical Substation</li> <li>• Confirm that the UV Facility is adequately staffed by Certified Operators as defined by NYSDOH’s Operator Certification Regulation (10 NYCRR Subpart 5-4)</li> <li>• Commence Operation of First Quadrant</li> <li>• Complete Catskill Connection Chamber including its associated conveyance piping and Commence Operation of Second Quadrant and provide UV treatment to all water delivered the Catskill/Delaware System.</li> <li>• Commence Full Operation</li> </ul>	<p>2/27/07</p> <p>12/31/07</p> <p>10/31/08</p> <p>07/01/09</p> <p>12/31/09</p> <p>06/01/10</p> <p>03/30/11</p> <p>03/17/12</p> <p>07/31/12</p> <p>08/03/12</p> <p>08/31/12</p> <p>10/29/12</p>

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## 8. In-City Programs

### 8.1 Waterborne Disease Risk Assessment Program

The overall objective of the Disease Surveillance Program is to track the incidence of, and gather relevant epidemiological data on, two waterborne diseases: giardiasis and cryptosporidiosis. Central goals of the City’s Disease Surveillance Program include tracking the incidence of disease, and developing and maintaining a system to detect disease outbreaks and determine any possibility of waterborne transmission. It is important to know the endemic rates for giardiasis and cryptosporidiosis, as well as any possible association between these diseases and the New York City water supply, so that appropriate steps may be taken by health care professionals and water supply consumers. Surveillance that may help reveal early evidence of a possible waterborne disease outbreak could prevent disease from occurring on a widespread basis.

As a condition of filtration avoidance, in accordance with the SWTR, a public utility must demonstrate that it has not been the source of a waterborne disease outbreak. The 2002 FAD required NYCDEP to maintain a system to detect the presence of waterborne disease outbreaks and to report any evidence of such an outbreak. The program continues to include newer elements that enhance system surveillance and data collection as appropriate.

NYCDEP’s 2006 Long-Term Watershed Protection Program includes a Waterborne Disease Risk Assessment Program (Section 2.7.1). The 2007 FAD requires that NYCDEP implement the Waterborne Disease Risk Assessment Program in accordance with Section 2.7.1 of the City’s Long-Term Watershed Protection Program and the milestones contained therein.

#### *Milestone/Reporting Requirements*

Requirement	Due Date
Continue to operate Waterborne Disease Risk Assessment Program (WDRAP)	On-going
Implement Cryptosporidium Action Plan	Event based
In relation to any water quality “event” involving NYC water supply (e.g., increased turbidity levels, pathogen findings, an operational disruption, or other such event), NYC will provide syndromic surveillance system information (for example, signals and trend data), as requested by either NYSDOH or EPA. Information request will be coordinated through NYCDEP.	Event based
Notify NYSDOH and EPA, whenever NYCDEP is notified by New York City Department of Health and Mental Hygiene, of any significant signs of community gastrointestinal illness in which public drinking water supply appears to be the source of infection	Event based
Cooperate with NYSDOH and EPA on a turbidity action plan.	On-going
Submit Annual Report (on program and program findings, implementation and analysis)	Annually on March 31

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<b>Requirement</b>	<b>Due Date</b>
Submit Interim Report (mid-year brief interim report on program and program findings and implementation)	Annually on August 31

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### ***8.2 Cross Connection Control Program***

Cross connections in a drinking water distribution system are a potential source of contamination. Cross connections can be caused by improper or direct connections, excessive back pressure on the system, back siphonage, and other reasons. It is important to eliminate any areas where such conditions exist in order to eliminate the possibility for cross connection contamination. The 2002 FAD required the submittal of a semi-annual report on implementing revised cross connection activities. The City’s 2006 Long-Term Watershed Protection Program contains a detailed inspection and reporting schedule for the Cross Connection Control Program (Section 2.7.2).

The 2007 FAD requires that NYCDEP implement the Cross Connection Control Program as detailed in Section 2.7.2 of the City’s 2006 Long-Term Watershed Protection Program and in accordance with the milestones contained therein. Some activities performed by the Cross Connection Control Program are on an as-needed basis; consequently, milestones for these activities are given as “anticipated frequencies”, which are estimates based on current programmatic participation of the NYC community.

#### *Activity and Reporting Requirements*

<b>Requirement</b>	<b>Frequency/ Due Date</b>
Respond to cross connection control complaints	Anticipated 1-2/year
Initiate enforcement for non-compliant hazardous premises	Anticipated 225/year
Backflow preventer plans approved	Anticipated 400/year
Backflow preventer plans accepted with self-certification	TBD
Notices of Violation issued for failure to test annually	Anticipated 200/year
Review requests for exemption from cross connection control requirements	Anticipated 400/year
Perform full inspection of potentially hazardous premises	300 to 450 per year
Submit Annual Report on implementation of the Cross Connection Control Program and on progress in meeting all associated milestones, including a report on high hazard buildings.	Annually (January)
Submit Semi-Annual Report for the Cross Connection Control Program, which will include information on high hazard buildings.	Semi-annual (July)

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### 9. Administration

The FAD requires NYCDEP to maintain the level of staffing, funding and expertise necessary to support all elements of the City’s Long-Term Watershed Protection Program and all requirements under this determination, in accordance with the milestones contained or referenced therein. The FAD requires the City to achieve this requirement in accordance with its 2006 Long-Term Watershed Program, Section 2.8 and the following additional activity and reporting requirements.

#### *Activity and Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Identify actual filled staff position levels vs. available positions for each division and section involved in supporting the watershed protection program, and confirm that resource levels are adequate to ensure that all program goals/FAD requirements are met. Contractor support staff should be noted. If resources are not currently adequate, discuss the status of actions taken to bring more staff on board, and any remedial measures taken, to ensure that all program goals/FAD requirements are met.	Annually
Provide written notification as to whether the City budget for the upcoming fiscal year includes sufficient funding to allow the City to meet its obligations under this determination. Also include in the notification the amount (capital and expense) spent during the previous year and the amount appropriated for watershed protection programs for the current year and planned for the year thereafter. The amount spent, appropriated and planned should be broken down by program, to the extent practicable. The notification should also include costs for technical consultant contracts identified in the FAD.	Annually - within 30 days after the start of each City fiscal year
NYCDEP, in consultation with the New York City Office of Management and Budget, will make a presentation to EPA/NYSDOH/NYSDEC on the amount of money appropriated and spent for watershed protection programs and its adequacy to meet program objectives and FAD requirements.	Annually - within 30 days after submission of the written notification.

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### 10. Education and Outreach

The objective of the City’s Education and Outreach Program is to assist and advance watershed protection through substantial stakeholder involvement. In order for the City’s watershed protection program to be successful, it must be understood, accepted and ultimately embraced by those who live in the watershed “upstate” and those who drink its water “downstate,” as both are vital stakeholders. EPA and NYSDOH believe that a strong base of knowledge of watershed issues and increased environmental awareness among stakeholders can enhance the chances of program success.

In addition to continuing the broad range of ongoing program-specific, school-based and general outreach activities, NYCDEP will strengthen its partnership with local officials through this program. NYCDEP will assess the watershed stewardship training/educational needs of local officials/communities by making use of existing, or by developing additional, training programs to meet these needs. This will be a collaborative process to promote the merits and principles of land use planning, stream corridor protection, and stormwater management on a local level. It will focus on demonstrating how these general principles can be translated into regular practices. One goal of this program is to promote collaboration between NYCDEP and local and regional highway officials to provide training/education programs that promote the integration of stream corridor protection and stormwater management principles with road maintenance practices.

The City’s 2006 Long-Term Watershed Protection Program includes an Education and Outreach component (Section 2.9). The 2007 FAD requires that NYCDEP implement education and outreach activities in accordance with Section 2.9 of the City’s 2006 Long-Term Watershed Protection Program and the milestones therein.

#### *Activity and Reporting Requirements*

<b>Requirement</b>	<b>Due Date</b>
Continue Education and Outreach initiatives, including: Program Specific Education Efforts: <ul style="list-style-type: none"> <li>• WAP/Forestry</li> <li>• Stream management</li> <li>• Stormwater management</li> <li>• CWC</li> <li>• KEEP/KWIC</li> </ul> School-Based Education Efforts General Outreach <ul style="list-style-type: none"> <li>• Fairs, exhibits and local events</li> <li>• Publications</li> </ul> Web-site Outreach and partnership with regulatory and local government officials	Ongoing
Report on implementation of the Education and Outreach Program	Annually



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### 11. Reporting

The 2007 FAD requires that the City inform EPA and NYSDOH 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 2007 FAD and in the City's 2006 Long-Term Watershed Protection Program, and this reporting section is not an exhaustive list of all reporting obligations. The following tables highlight reports submitted on a periodic as well as a one-time only basis.

For informational purposes, the City will also inform EPA and NYSDOH 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 FAD requires that the City implement the reporting requirements as outlined in Section 2.10 of its 2006 Watershed Protection Program, in accordance with the milestones therein and the modified report list and schedule below:

#### Periodic Submittals by FAD Section:

Section Task	Report Topic	Frequency*
2a	Objective Criteria Compliance	Monthly (quarterly on the 10 <sup>th</sup> of the month in April, July, October and January for disinfection byproduct results)
2b	Report on the operational status of Kensico Reservoir, West Branch Reservoir (on-line or by-pass), Hillview Reservoir	Monthly
3.1a	Septic Programs <ul style="list-style-type: none"> <li>• Septic rehab/replacement and cluster systems one program rules have been amended</li> <li>• Septic maintenance</li> <li>• Sewer extension</li> </ul>	Semi-annually
3.1b	Alternate Design and Other Septic Programs	Annually
3.2	New Sewage Treatment Infrastructure Program (including implementation of the program, progress in meeting milestones, and NIP projects)	Semi-annually

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<b>Section Task</b>	<b>Report Topic</b>	<b>Frequency*</b>
3.3	Community Wastewater Management Program- progress on meeting milestones	Semi-annually
3.4a	WWTP Upgrades on Meeting Milestones	Monthly spreadsheet
3.4b	WWTP Upgrade Program	Quarterly spreadsheet/ comprehensive milestone report
3.5a	Future Stormwater Control Cost-Sharing Program	Annually
3.5b	Stormwater Retrofit Program	Semi-annually
4.1	Waterfowl Program	Annually (July 31)
4.2a	Land Acquisition Program Status	Semi-Annually
4.2b	Review any monies remaining in the “supplementary fund” until depleted; Make recommendations to EPA/NYSDOH/NYSDEC regarding additional funding for WAC’s agricultural easement program.	Biennially (in December)
4.3	Land Management Program status	Annually
4.4	Watershed Agricultural Program (WAP) Comprehensive Annual Report	Annually (March 31)
4.5a	Watershed Forestry Program Annual Report	Annually (March 31)
4.5b	Watershed Forestry Program Evaluation Report	Annually (January 31)
4.6a	Stream Management Program Report	Annually
4.6b	Submit an “Action Plan”, for implementing stream management plan recommendations and establishing priorities, by reservoir basin.	Biennially (commencing 5/15/07)
4.7	Riparian Buffer Protection Program	Annually (beginning 3/31/08)

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Section Task	Report Topic	Frequency*
4.8	Wetlands Protection Program Status	Annually (March 31)
4.9	Non-point Source Pollution Strategy for East-of-Hudson Catskill/Delaware Basins	Annually (Comprehensive Report) Semi-annually (Brief Report)
4.10	Kensico Watershed Programs	Annually (Comprehensive Report) Semi-annually (Brief Report)
4.11	Catskill Turbidity Control Program	Annually
5.1a	Watershed Water Quality Annual Report	Annually (July 31)
5.1b	Mid-term Watershed Surveillance Results	Annually (January 31)
5.1c	Comprehensive Watershed Protection Program Summary and Assessment Report	Every 5 years (March 31, 2011)
5.2	Water Quality Modeling Status	Annually (October 31)
5.3	GIS Program Status	Annually (March 31)
6.1a	WR&Rs Project Review Report	Semi-annually (April 30 / Oct. 31)
6.1b	WR&Rs Enforcement Report	Semi-annually (April 30 / Oct. 31)
6.1c	Proposed Changes to WR&Rs Report (until adopted)	Semi-annually (April 30 / Oct. 31)
6.1d	Analyses used to determine the phosphorus-restricted and coliform-restricted status of each reservoir.	Annually in Water Quality Report (July)
6.2a	WWTP Inspection Program Status Summary <ul style="list-style-type: none"> <li>• Comprehensive Report with all data and inspection reports</li> </ul>	Annually (January 31; inspection summary reports to be submitted quarterly)
6.2b	Technical Support Plan (Circuit Rider)	Annually
7	Catskill/Delaware Filtration Design Update	Biennially (commencing 9/30/07)

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Section Task	Report Topic	Frequency*
8.1a	Waterborne Disease Surveillance Program Interim Results	Annually (August 31)
8.1b	Waterborne Disease Surveillance Program Comprehensive Report	Annually (March 31)
8.2a	Cross-Connection Control (CCC) Program	Semi-annually
8.2b	CCC Implementation Progress Report	Annually
9a	Administration Report	Annually (July 31)
9b	Administration budget notification/presentation	Annually (July 31)
10	Education and Outreach	Annually
11a	Comprehensive FAD Annual Report	Annually (except 2011)
11b	NYCDEP Response to EPA On-site Inspection Report	Annually (within 60 days of EPA's report)

\* Annually means submittal of reports for the previous calendar year due no later than March 31, unless otherwise stated in the FAD.

Semi-annually means submittal of reports for the six month period ending the last day of the month prior to the due date, due no later than January 31 and July 31, unless otherwise stated in the FAD.

Quarterly means submittal of reports for the three month period ending the last day of the month prior to the due date, due no later than April 30, July 31, October 31 and January 31.

Monthly means submittal of reports for the preceding month, due no later than ten days after the end of that month.

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

Section	Description	Due Date
4.10	Draft Kensico Action Plan (KAP).	Completed
4.10	Final Kensico Action Plan (KAP).	8/15/07
4.6	Submit draft program plan for a locally funded program which will implement Stream Management Plan recommendations.	9/30/07
4.10	Submit survey results and proposed program for Kensico Septic Repair Program	10/31/07
4.10	KAP Implementation Schedule.	12/15/07
3.1	Report on areas/small hamlets, within current septic priority areas that may be candidates for/in need of cluster systems.	12/31/07
4.8	Revise Wetlands Protection Strategy	12/31/07
4.11	Final Phase III Catskill Turbidity Report.	12/31/07
4.2	Re-evaluation of solicitation plan for land acquisition covering 2008 through 2010.	1/15/08
4.4	Submit five-year plan for the WAP covering the period 2008 thru 2013.	1/31/08
6.1	Submit revised stormwater Addendum S of the NYCDEP/NYSDEC MOU	3/1/08
4.6	Submit final program plan for a locally funded program which will implement Stream Management Plan recommendations.	3/31/08
4.11	Catskill Turbidity Implementation Plan.	3/31/08
4.4	Develop and submit a draft Programmatic Strategy for the replacement of aging/failing agricultural BMPs.	7/31/08
5.2	Phytoplankton Functional Group Model Application to Cannonsville Reservoir.	7/31/08
4.4	Delaware County Precision Feed Management Study evaluation report	Delivery of final County study report (expected 1/08) + 9 months

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Section	Description	Due Date
4.4	Submit final Programmatic Strategy for the replacement of aging/failing agricultural BMPs	10/31/08
5.1	Updated Integrated Monitoring Plan.	10/31/08
4.5	Forestry Program Management Assistance Program (MAP) pilot project evaluation report.	12/31/08
6.1	Submit Stormwater Guidance Document to the revised WR&Rs stormwater provisions	Effective date of revisions +18 months
3.1	Re-assess and report on adequacy of program funding to address outstanding/remaining cluster septic system areas.	7/1/09
4.4	Submit a Small Farms Assessment Report to determine the number, extent, and potential impact of small farms on water quality in the west-of –Hudson Watershed.	7/31/09
4.2	Final long-term land acquisition strategy and plan covering 2012 through 2022.	9/30/09
4.7	Conservation Reserve Enhancement Program (CREP) evaluation report.	12/31/09
4.2	10-year NYSDEC water supply permit request/application.	1/21/10
2	Report on activities related to compliance with the Stage 2 Disinfectants and Disinfection Byproducts Rule.	6/30/10
4.2	Re-evaluation of solicitation plan for land acquisition covering 2011 through 2012.	10/1/10
4.4	Conduct and submit a review of current WAP evaluation criteria with input from Advisory Committee.	12/31/10
5.1	Watershed Protection Program Summary and Assessment Report for First Five Year Period.	3/31/11
5.2	Submit report on Modeling Analysis of FAD Programs in the <i>Watershed Protection Program Summary and Assessment Report</i> .	3/31/11

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<b>Section</b>	<b>Description</b>	<b>Due Date</b>
3.1	Report on effectiveness of expanded eligibility of commercial septic systems	6/30/11
3.5	Report on effectiveness of stormwater compliance assistance professional	6/30/11
4.2	Evaluation report on the WAC non-agricultural forestry easement pilot program	6/30/11
4.3	Forest Management Plan.	11/30/11
1	NYCDEP 2011 Revised Long-Term Watershed Protection Program for Second Five Year Period which will include the report below.	12/15/11
3.3	Report on completion of remaining five MOA communities (18-22) in CWMP	12/15/11
4.6	Conine Water Quality Report.	12/31/12
5.1	Watershed Protection Program Summary and Assessment Report for Second Five Year Period.	3/31/16 Tentative
1	NYCDEP 2016 Long-Term Watershed Protection Program	12/15/16 Tentative

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## 12. Acronyms

AOC	Administrative Order on Consent
BMPs	Best Management Practices
CAFM	Computer Assisted Facilities Management System
CFR	Code of Federal Regulations
CREP	Conservation Reserve Enhancement Program
CT	Contact Time
CWC	Catskill Watershed Corporation
DOT	United States Department of Transportation
DWQC	Drinking Water Quality Control
EFC	New York State Environmental Facilities Corporation
EOH	East-of-Hudson
EPA	United States Environmental Protection Agency
FAD	Filtration Avoidance Determination
GIS	Geographic Information System
HAA5	Haloacetic Acids
IESWTR	Interim Enhanced Surface Water Treatment Rule
KAP	Kensico Action Plan
KEEP	Kensico Environment Enhancement Program
KWIC	Kensico Watershed Improvement Committee
MAP	Forestry Management Assistance Program
mgd	Million gallons per day
MOA	New York City Watershed Memorandum of Agreement
MOU	Memorandum of Understanding
NIP	New Sewage Treatment Infrastructure Program
NWI	National Wetlands Inventory
NYC	New York City
NYCDEP	New York City Department of Environmental Protection
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSEFC	New York State Environmental Facilities Corporation
O&M	Operation and Maintenance
SDWA	Safe Drinking Water Act
SEQRA	State Environmental Quality Review Act
SPDES	State Pollutant Discharge Elimination System
SPPP	Stormwater Pollution Prevention Plan
SWTR	Surface Water Treatment Rule
TMDL	Total Maximum Daily Loads
TTHM	Trihalomethanes
USEPA	United States Environmental Protection Agency
UV	Ultraviolet
WAC	Watershed Agricultural Council
WAP	Watershed Agricultural Program
WDRA	Waterborne Disease Risk Assessment Program
WECC	Watershed Enforcement Coordination Committee
WFP	Whole Farm Plan
WOH	West-of-Hudson
WR&Rs	Watershed Rules and Regulations
WWTPs	Wastewater treatment plants