2018-2019 NYC On-site Water Reuse Systems Grant Application Guide



For More Information:

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Introduction to the On-site Water Reuse Program

Purpose

This guide has been developed for property owners and building managers to navigate New York City's regulations for the design, construction and operation of on-site water reuse systems and determine eligibility for the New York City Department of Environmental Protection (DEP) cost-sharing grant program to incentivize the installation of such systems. Water reuse systems, sometimes referred to as water recycling systems, when properly designed and operated, make more efficient and safe use of rainwater, black water, or gray water.

Background

Through a complex arrangement of dams, reservoirs, tunnels, and aqueducts, the New York City water supply system serves 8.5 million New York City residents, millions of commuters from the tri-state area, and more than one million residents in 55 upstate communities each day. DEP's ongoing sustainability strategy is to optimize the existing system while promoting water conservation and managing a decrease in demand within available supplies. This reduction in demand will ensure the reliability of supply without having to invest significant amounts of money in new supply sources. More needs to be done, however, particularly to ensure adequate supply for a growing population and to promote resiliency to drought and infrastructure impairment.

Since releasing the Water Demand Management Plan DEP has made significant progress toward accomplishing this goal by piloting and implementing integrated water efficiency projects that help both decrease drinking water demand and reduce the amount of sewage entering New York City's combined sewer system. These water efficiency improvements not only help DEP achieve demand and energy management goals, but also help improve city services to much of the population. To continue this progress, DEP started the On-site Water Reuse Grant program in Fall of 2016, a new cost sharing program that provides incentive for commercial, mixed-use, and multi-family residential sectors to install water reuse systems by covering a portion of efficiency technology capital costs. This builds on the Comprehensive Water Reuse Program (CWRP), which offers a 25% discount to customers who install successful water reuse systems. Benefits of incentivizing water reuse and alternative use include: deferred capital costs of large-scale water, wastewater, and stormwater infrastructure; eligibility for the CWRP's longterm water and wastewater fee discounts; reduced loadings to sewers and water bodies; improved environmental stewardship; and increased capability to manage water supply system demand.

Grants for water reuse systems are available at the individual building and district level. District-scale projects involve two or more parcels, such as a housing development, where the project reduces demand in the shared distribution system. Individual building-scale projects are eligible to receive up to \$250,000 in reimbursement for a system designed to save at least 32,000 gallons per day (gpd), and district-scale projects are eligible to receive up to \$500,000 in reimbursement for a system designed to save at least 94,000 gpd.

Property owners or managers interested in participating in the On-site Water Reuse Grant program should carefully read through this guide. The On-site Water Reuse Grant makes two reimbursements to the Grantee: first, when an application with the New York City Department of Buildings (DOB) permitted designs is received, selected for funding, and an executed Grantee Agreement is signed and approved (please note this process may take several months); and second, when the DEP Project Manager receives the DOB System Certification at the completion of the project. Grantee must submit copies of invoices to DEP in order to receive reimbursement. The Grantee agrees to complete construction within four years of the Grantee Agreement approval, and operate the system for a period of at least 10 years from the date of completion. More On-site Water Reuse Grant program details are listed in Section 5.

Regulatory Framework

Water reuse systems are regulated by DOB, pursuant to the 2014 NYC Construction Codes and per guidance or bulletins issued by DOB. Some water reuse systems may also require review and approval by the New York City Department of Health and Mental Hygiene (DOHMH). Property owners or managers interested in the Grant program will also need approval by DEP, as discussed in Section 5 of this guide.

Definition of Terms: Alternative Water Sources

The 2014 NYC Construction Codes regulates two types of on-site water reuse systems: wastewater and rainwater. The non-potable alternative water sources approved for on-site water reuse systems are described on the next page. As indicated, the level of treatment depends upon the alternate water source and the end uses for the treated water.

Alternative Water Sources



Black Water

Discharge from water closets, urinals, bathtubs, showers, clothes washers, and laundry trays, washdown water and blowdown water from cooling towers, and any other fixtures discharging animal or vegetable mater in suspension or solution.

Gray Water

Discharge from lavatories¹and condensate water. Discharge does not include wastewater from toilets.

1. Does not include wastewater from toilets.

Treatment Overview

W **Black Water** Black water is the most contaminated source of water available on-site; however, it is often one of the easiest to collect as it does not require a separate collection system and can typically be collected at a single location prior to discharge to the sewer. In addition to the filtration and disinfection requirements for all other alternate water sources, black water systems also require biological treatment to lower the levels of organic material in the water. This is typically achieved by introducing simple bacteria into the wastewater to e r w a digest the organic material. The bacteria are then filtered out in a downstream treatment process. **Gray Water** Gray water quality is highly variable and site- specific. Gray water contains many of the same contaminates as black water, but in much lower quantities because it has not come into contact with food or human waste. Filtration and disinfection is usually sufficient, without further treatment, to meet water quality criteria. е Precipitation is typically clean when if falls from the sky; however, rainwater may become contaminated during collection Rainwater

Precipitation is typically clean when if falls from the sky; however, rainwater may become contaminated during collection or from particulate matter in the atmosphere. Rainwater systems typically require the least amount of treatment. In general, debris excluders, first flush diverters, and filtration provide adequate treatment to maintain a rainwater system. **Disinfection of rainwater may be required for some uses.**

2 Water Reuse Design and Construction Considerations

Alternate Water Source Collection System

This includes infrastructure such as rainwater gutters, or gray water piping systems that are installed to collect an alternate water source on-site. This may also include equalization storage to help level flow prior to treatment as supply and demand vary throughout the

day.



Treatment is dependent on both the alternative water source and the end use. Rainwater is relatively clean and requires little treatment, while black water requires disinfection and biological treatment to remove organic contaminants.

Design Components

On-site water reuse systems typically have four major components that should be considered in the design phase. The NYC Plumbing Code should be consulted for specific requirements.

Treated Water Storage

Treated water storage is needed to meet the varying demands of the non-potable system. For example, in an office building that uses non-potable water for toilet flushing, most demand is during the day and water is usually stored at night when demand is low.

Non-potable Distribution System Piping and Plumbing Requirements

The distribution system and reservoirs need to be identified as containing non-potable water and are commonly known as purple piping or dual-plumbing. Non-potable piping is required to be colored or marked purple to distinguish it from a potable water system. This protects the fixtures that use potable water, including sinks, showers and the public drinking water supply.

Allowed Usages and Treatment Requirements for Water Reuse Systems Recognized in New York City

The 2014 NYC Construction Codes regulates two types of on-site water reuse systems; references are provided below.

On-site Water Reuse System Type	Allowed Source Water	Allowed Usage	Governing Code
Wastewater Reuse Systems	Black Water Gray Water Rainwater	 Flushing of water closets and urinals; Cooling tower makeup¹; Washing of sidewalks, streets or buildings Laundry; Subsurface or drip irrigation systems, watering plants with a hose; and Other approved uses that are located on the same lot as the water reuse system. 	2014 NYC Construction Codes PC C102
Rainwater Reuse Systems	Rainwater Cooling Tower Condensate	 Used solely for cooling tower makeup¹; and Subsurface irrigation and drip irrigation. 	2014 NYC Construction Codes PC C103

1. Facilities seeking to utilize rainwater capture or recycling water systems as a source of cooling tower system makeup water need to consult with and obtain approval from DOHMH regarding specific water quality standards and other requirements that may be required by DOHMH for cooling tower makeup water, per NYCRR, Title 24, Chapter 8.

Water Quality Standards

Per the 2014 Construction Codes, all on-site water reuse systems (other than systems collecting only rainwater and/or condensate used solely for cooling tower makeup and/ or subsurface and drip irrigation) must achieve the following minimum effluent water quality standards during operation (2014 NYC Construction Codes PC Table C102.1). The following provides a summary of those minimum standards, as well as the monitoring and reporting frequencies:

Permit Limits, Levels, and Monitoring ¹		
Effluent Limit		ıt Limit
rarameter	Limit	Unit
BOD ²	<10	mg/L
TSS	<10	mg/L
Total Coliform	<100	No./100 mL
E. Coli	<2.2	No./100 mL
рН	6.5 - 8.0	SU
Turbidity ³	<2.0	NTU

 Facilities seeking to utilize rainwater capture or recycling water systems as a source of cooling tower system makeup water need to consult with and obtain approval from DOHMH regarding specific water quality standards and other requirements that may be required by DOHMH for cooling tower makeup water, per NYCRR, Title 24, Chapter 8.

Effluent from rainwater and condensate collected in separate tanks or compartments from wastewater shall not be required to meet the BOD limitations indicated above.

3. The wastewater facility effluent must meet the performance standards of < 2.0 NTU for turbidity for 95% of the measurements At no time can the turbidity result be above 5 NTU. These results shall be recorded and compiled in the annual report.

Key Water Quality Parameters

- Biochemical Oxygen Demand (BOD): The amount of dissolved oxygen needed by an aerobic organism to breakdown organic material in water.
- Total Suspended Solids (TSS): The measurement of total solid material suspended in the water.
- Total Coliform: Indicator organisms for microbial contamination. UV, Chlorine, and ozone disinfection are highly effective at removing microbes and the associated public health risk.
- E. Coli: Indicator organisms for microbial contamination. UV, Chlorine, and ozone disinfection are highly effective at removing microbes and the associated public health risk.
- pH: Measure of the acidic or basic nature of a solution. pH can be used to gauge wastewater treatment efficiency and the corrosion potential of the water in the distribution system.
- Turbidity: Measure of water clarity and a useful indicator of the likelihood that the water may be contaminated with pathogens. Filtration processes are highly effective at removing turbidity.

Monitoring and Reporting Frequencies

The following table summarizes the water quality monitoring and reporting frequency requirements for systems throughout start-up, temporary use and final acceptance, as outlined in DOB Bulletin 2010-027.

Monitoring and Reporting Frequencies			
Parameter	Sample Frequency and Monitoring Requirements		
raidmeiei	Start-up	Temporary Use	Final Permit
BOD ²	5 days/week	Weekly	Monthly
TSS	5 days/week	Weekly	Monthly
Total Coliform	5 days/week	Weekly	Monthly
E. Coli	5 days/week	Weekly	Monthly
рН	5 days/week	Weekly	Monthly
Turbidity ³	5 days/week	Weekly	Monthly
Phase Duration	Two Weeks	Three Months	N/A
Reporting Frequency	Once, after two week start-up ¹	Monthly over duration of testing period ²	Annually

 Facilities seeking to utilize rainwater capture or recycling water systems as a source of cooling tower system makeup water need to consult with and obtain approval from DOHMH regarding specific water quality standards and other requirements that may be required by DOHMH for cooling tower makeup water, per NYCRR, Title 24, Chapter 8.

2. Effluent from rainwater and condensate collected in separate tanks or compartments from wastewater shall not be required to meet the BOD limitations indicated above.

3. The wastewater facility effluent must meet the performance standards of < 2.0 NTU for turbidity for 95% of the measurements. At no time can the turbidity result be above 5 NTU. These results shall be recorded and compiled in the annual report.



System Bypass

In the event of system malfunction, failure, or any condition that causes the system to exceed the water quality limits outlined by DOB, the system will have to be bypassed. This means that potable water provided by the City would be supplied to the non-potable system and the on-site water would be stored or discharged to the sewer system as required.

Makeup Water

For Wastewater Reuse Systems, City-supplied potable water shall be supplied as a source of makeup water provided that the potable water supply is protected against backflow in accordance with Section PC 608 of the NYC Construction Codes (PC C102.3). Makeup water is not required for Rainwater Reuse Systems providing drip or subsurface landscape irrigation systems (PC C103.3).

Cross Connection Control

A cross connection is a physical connection between the potable water system (drinking water) and a non-potable water system, which is not allowed (NYC PC C101.8).

Piping and Other Identification Requirements



Piping

Distribution piping shall conform to one of the standards listed in Tables 605.4 and 605.5 in the NYC Plumbing Code, shall be painted purple in color or covered in a purple jacket (NYC PC C101.5), and shall be identified as containing non-potable water (NYC PC C101.6). Pipe identification shall be in accordance with section 608.8 of the NYC Plumbing Code (NYC PC C101.6).

NOHPOTABLE WITE

Spigots and Hose Bibs

Spigots and hose bibs dispensing reused water shall be secured from unauthorized use by a locking mechanism. Signage reading "Caution: Non-Potable Water, Do Not Drink" shall be placed above or adjacent to the location of spigots and hose bibs (NYC Plumbing Code C101.6.1).



Coloring

If the treated effluent water is to be dyed, the dye shall be a food grade vegetable dye either blue or green in color and applied before being supplied to the fixtures (NYC PC 102.4).



Design Approval & Permitting

Construction

Submit DEP On-Site Water Reuse Application

Agency: DEP

Outcome: Conditional Acceptance Package pending DOB permitted design

Sign Conditional Acceptance Package

Agency: DEP

Outcome: Applicant confirms they will execute the Funding Agreement and required paperwork

Submit a Copy of Approved DOB Permitted Design to DEP

A copy of the on-site water reuse system may require approval by the Department of Health and Mental Hygiene.

Agency: DEP, DOHMH

Outcome: DEP will send Grant Acceptance Package to Grantee

Submit Signed Grant Acceptance Package to DEP

Includes the Funding Agreement and Restrictive Covenant.

Agency: DEP

Outcome: Upon approval and execution of Grantee Agreement DEP issues initial grant reimbursement (requires copies of invoices)

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Construct System

Inspections shall be conducted during construction, after construction completion and periodically based on the City's discretion.

Agency: DOB

Outcome: Inspection Reports

Reuse System Certification Requirements

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Phase 1, Construction Completion Certification

Verification that system was constructed in accordance with plans, specifications and codes.

Agency: DOB, Office of Technical Certification and Research

Outcome: Construction Completion Certificate from DOB

Phase 2, Wet Testing Certification

The system shall be certified confirming the absence of leaks and the integrity of the system components.

Agency: DOB, Office of Technical Certification and Research

Outcome: Wet Testing Certificate from DOB

Phase 3, Start-up Testing Results

Start-up testing shall continue for a two-week period, demonstrating 100% compliance with the water quality requirements, with the results being submitted to DOB

Agency: DOB, Office of Technical Certification and Research

Outcome: Start-up lab results, on record with DOB demonstrating compliance with quality requirements

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Phase 4, Temporary Use Testing Results

During the temporary use mode, treated water from the system shall be directed into the reuse water reservoirs and shall be utilized for applications identified in Buildings Bulletin 2010-027.

Agency: DOB, Office of Technical Certification and Research

Outcome: Monthly reports of results submitted to DOB, on a weekly basis for initial 3 months

Phase 5, Final Acceptance and System Certification

Agency: DOB, Office of Technical Certification and Research

Outcome: Certificate issued confirming compliance with the 2014 NYC Construction Codes

Submit DOB System Certification to DEP On-site Water Reuse Program Manager

Agency: DOB, Office of Technical Certification and Research

Outcome: Reimbursement of remaining grant value (requires copies of invoices)



Monitoring and Reporting Frequencies

After the final approval, the system shall be operated in the maintenance mode. Testing shall continue on a monthly basis with an annual report of the results forwarded to DOB, along with a certification from the registered design professional stating that the monthly testing result complies with the performance requirements of the protocol outlined in DOB Bulletin 2010-027.

Ongoing Inspections and Testing

Water reuse systems shall be inspected and tested in accordance with Section PC 107 of the 2014 New York City Construction Codes (2014 NYC Construction Code PC C101.7).



Program Objectives

DEP is committed to developing informed, mutually-beneficial policies that incentivize water efficiency, reuse and alternative water use. This grant program promotes the construction of non-potable on-site water reuse systems at both the building and district scale.

DEP has structured the grant program to achieve a total water demand reduction of one million gallons per day. The grant program is designed to facilitate two separate categories of projects: building scale projects are eligible to receive up to \$250,000 in reimbursement for a system designed to save at least 32,000 gpd; and district scale projects are eligible to receive up to \$500,000 in reimbursement for a system designed to save at least 32,000 gpd; and district scale projects are eligible to receive up to \$500,000 in reimbursement for a system designed to save at least 94,000 gpd. District-scale projects involve two or more parcels, such as a housing development, where the project reduces demand in the shared distribution system.

Eligibility

The basic eligibly requirements for the On-site Water Reuse Grant Program are:

- The proposed alternate water source system must be permanent and operational for a minimum of 10 years.
- The proposed project is completed by a water service customer of DEP.
- The Applicant must comply with the DOB Plumbing Code, all applicable rules and regulations required by the DOHMH, and other applicable rules and regulations.
- The Applicant must provide a complete application package, including an application form, CEQR compliance documentation, project work plan, project schedule, budget, and completed DEP Non-Potable Water Calculator workbook.
- The project must be constructed within 4 years of the Funding Agreement approval date and must offset NYC potable water use immediately after the System Certification is issued by DOB.
- Documentation must be provided showing that the Applicant's system consistently replaces at least 32,000 gallons of potable water per day for 10 years.

Additional Eligibility Criteria for Building-scale Projects

- Building should typically include 100,000 square feet or more of residential or commercial occupancy; and
- The proposed activity should replace at least 32,000 gallons per day of the project's potable water use.
- Grantees must provide documentation that their system consistently replaces at least 32,000 gallons of potable water per day for 10 years. If the system does not meet one of these criteria for a minimum of 10 years, the Grantee is required to reimburse DEP the entire grant funding amount received.

Additional Eligibility Criteria for District-scale Projects

- The proposed activity should typically include the sharing of water between two or more parcels, as applicable; and
- The proposed activity should replace at least 94,000 gallons per day of the project's potable water use.
- Grantees must provide documentation that the system replaces at least 94,000 gallons per day of the project's potable water use for 10 years. If the system does not meet these criteria for a minimum of 10 years, the grantee is required to reimburse DEP the entire grant funding amount received.

Grant Funding

Grant Size	Description	Target Water Savings	Funding Amount
Building-scale	Typically 100,000 square feet or more of residential or commercial occupancy.	32,000 gallons per day	Up to \$250,000
District-scale	Typically includes the sharing of water between two or more parcles.	94,000 gallons per day	Up to \$500,000

Grants will be given out for Building-scale projects and District-scale projects.

Program Structure

Application Process

Interested private property owners must complete and submit an application to DEP for funding. A copy of the application form, including a list of all required attachments, can be found in the back of this guide. A link to the DEP Non-Potable Water Calculator, which is to be filled out and submitted with the On-site Water Reuse Grant Application, can be found on the program webpage at http://nyc.gov/dep/reusegrant. Applications will be evaluated for completeness, feasibility, and respective cost/benefit ratio.

If approved, DEP will send a Conditional Acceptance Package to the Applicant. The Applicant must send back the Package to DEP signed, confirming that they are prepared to execute the Funding Agreement and Restrictive Covenant, along with all required paperwork (VENDEX, W-9, Doing Business Data Form, etc.). Grant funding remains conditional until the Applicant submits the DOB approved permitted design to DEP.

Upon receiving the Applicant's permitted design, DEP will send the Grant Acceptance Package. Reimbursement of up to 50% of the total grant will be made upon signature and approval of the package's enclosed Funding Agreement (please note this process may take several months) and submission of all required paperwork, including copies of invoices.

The Grantee must commence construction within 6 months and complete construction and commissioning within 4 years of the Funding Agreement approval date. During construction and commissioning, the Grantee will be required to provide the DEP Project Manager with detailed monthly status reports. System commissioning must be complete within 6 months of the Construction Completion Certification issued by DOB.

Upon completion of the project, the Grantee must complete and mail the Project Completion Form provided by the DEP Project Manager. The final reimbursement of the remaining total grant will be processed once a Project Completion Form and the DOB System Certification are completed and submitted along with copies of invoices.

The number of issued grants may be limited based on available funding.

Monitoring and Reporting

During Construction and Commissioning

Grantees will be required to provide the DEP Project Manager with detailed monthly status reports. Site inspections by DEP staff will be conducted prior to any reimbursement of funds.

After Start-up

Grantees will be required to provide DEP with detailed annual status reports. The annual status reports must be submitted for 10 years, and they must provide proof that the project consistently meets the Grant's eligibility requirements. If the annual status reports show that the system does not consistently meet one of these criteria for a minimum of 10 years, the Grantee is required to reimburse DEP the entire grant funding amount received.

Further Cost Saving Opportunities for On-site Water Reuse Systems

Comprehensive Water Reuse Program

Buildings with successful on-site water reuse systems are eligible for the Comprehensive Water Reuse Program (CWRP). The CWRP provides a 25% water and wastewater fee discount to DEP customers who install water reuse systems that reduce the building's water consumption by at least 25%. A link to the CWRP application can be found at nyc.gov/dep/ reusegrant.



Application Form New York City Department of Environmental Protection On-site Water Reuse Grant Program

Borough:	Block:		Lot:
DEP Account Number(s):			
Service Address (from DEP bill):			
Construction Type (check only one):			
Project Type (check one): D Multi-Family Residential (4 or more units) Commercial (Non-Residential) Mixed Use (Commercial & Residential) Other:			
Residential Occupancy Square Footage:		Commercial Occupancy Square Footage:	
PROPERTY OWNER INFORMATION			
Owner Name:			
Business Address:			
Phone: Fax:			
E-mail:			
MANAGING AGENT INFORMATION			
Owner Name:			
Business Address:			
Phone:		Fax:	
E-mail:			
APPLICATION CONTACT INFORMATI	ION		

If different than the Owner or Managing Agent, the Owner or Managing Agent must complete the attached Owner Authorization Letter.

Owner Name:		
Business Address:		
Phone:	Fax:	
E-mail:		

ON-SITE WATER REUSE SYSTEM DESCRIPTION

Please provide a brief description of on-site water reuse system including: design for non-potable water system – description of alternate water sources to be used, description of treatment, description of non-potable applications.

CHECKLIST FOR THE APPLICATION PACKAGE

- 1. Application Form
- 2. Project Work Plan
- 3. CEQR Compliance Documentation
- 4. Schedule
- 5. Budget
- 6. Completed DEP Non-Potable Water Calculator (download at nyc.gov/dep/reusegrant)

MAILING ADDRESS

Attention: On-site Reuse Grant Program Manager New York City Department of Environmental Protection 59-17 Junction Boulevard, 11th Floor Flushing, NY 11373



