MOODY'S
INVESTORS SERVICE

ASSESSMENT
5 April 2018

TABLE OF CONTENTS

Analyst Contacts

Matthew Kuchtyak +1.212.553.6930
Analyst
matthew.kuchtyak@moodys.com

Nicholas Samuels +1.212.553.7121
VP-Sr Credit Officer
nicholas.samuels@moodys.com

Rahul Ghosh +44.20.7772.1059
SVP - ESG
rahul.ghosh@moodys.com

Swami Venkataraman, CFA +1.212.553.7950
Senior Vice President
swami.venkat@moodys.com

Jim Hempstead +1.212.553.4318
MD-Utilities
james.hempstead@moodys.com

District of Columbia Water & Sewer Authority

Green Bond Assessment - Series 2018A Green Bonds

Summary analysis

GB1	GB2	GB3	GB4	GB5
Excellent	Very Good	Good	Fair	Poor

Summary opinion

A GB1 (Excellent) Green Bond Assessment (GBA) on the District of Columbia Water & Sewer Authority's (DC Water, Aa1 stable) $100 million Public Utility Senior Lien Revenue Bonds, Series 2018A (Green Bonds) reflects the following considerations:

» Full allocation of green bond proceeds to the DC Clean Rivers Project, a sustainable water construction project to reduce and control combined sewer overflow (CSO) discharges into the District of Columbia's (Aa1 stable) waterways and improve water quality

» Effective organization and governance, including a management team with a broad range of private and public sector utility experience

» Very strong disclosure and ongoing reporting practices with clear articulation of how proceeds are spent and what quantifiable environmental benefits are achieved

» Good proceeds management practices including segregation of green bond proceeds and clear guidelines on investment of cash balances

Factor	Factor Weights	Score	Weighted Score
Organization	15%	1	0.15
Use of Proceeds	40%	1	0.40
Disclosure on the Use of Proceeds	10%	1	0.10
Management of Proceeds	15%	1	0.15
Ongoing Reporting and Disclosure	20%	2	0.40
Weighted Score			1.20

The transaction's weighted score, based on our GBA methodology scorecard, is 1.20. This, in turn, corresponds to a composite grade of GB1. We also maintain the GB1 and 1.20 weighted score assigned to DC Water's Series 2017A bonds issued in February 2017. For our original analysis of that transaction, please see our in-depth report published in January 2017. For an update to our analysis of that transaction, please see the update to GBA published in March 2018.

Profile

DC Water is an independent authority created in 1996 to operate the District of Columbia's Department of Public Works. Operationally, it is responsible for the repair, replacement, rehabilitation, modernization and extension of existing water distribution and collection, treatment and disposal systems. DC Water provides retail water and wastewater service to a population of nearly 700,000 in the District of Columbia, and wholesale wastewater service to four suburban counties – Fairfax (Aaa stable) and Loudoun (Aaa stable) Counties in Virginia, and Montgomery (Aaa stable) and Prince George's (Aaa stable) Counties in Maryland – with an additional 1.6 million people.

DC Water operates the Blue Plains Advanced Sewage Treatment Plant that, in addition to the DC retail base, treats wastewater from jurisdictions in Maryland and Virginia (see Exhibit 1). Covering 153 acres on the banks of the Potomac River at the southernmost tip of the District, Blue Plains has developed cutting-edge technologies and is considered one of the largest and most advanced wastewater treatment facilities in the US.

Exhibit 1
DC Water service area covers nearly 2.5 million people

Source: DC Water Fiscal 2017 green bond report

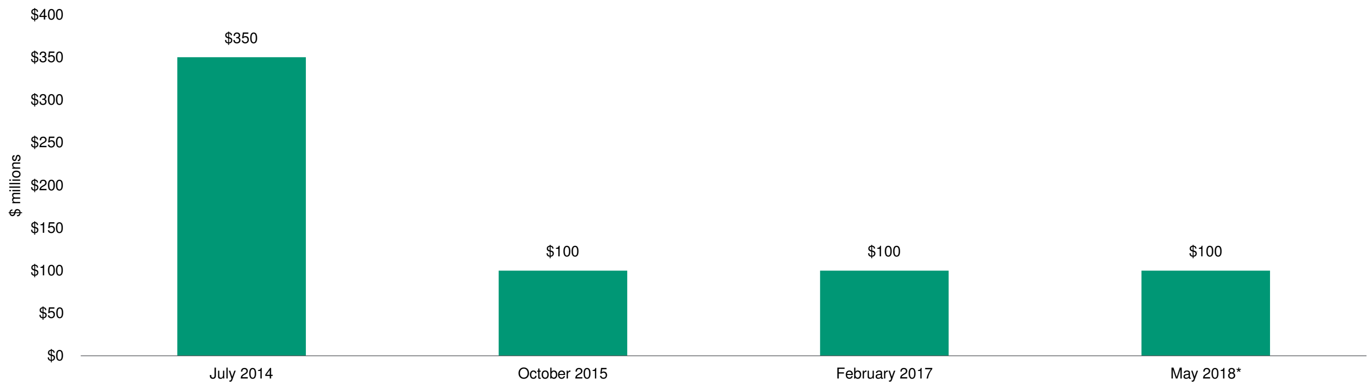
Transaction summary

DC Water is issuing a total of $300 million of Series 2018 Public Utility Senior Lien Revenue Bonds, including $100 million of Series 2018A as green bonds. The Series 2018A bonds will have final maturity in October 2049. The transaction is expected to price on or around April 17 and close on or around May 1.

This is DC Water's fourth green bond offering, which will represent a combined $650 million issued since July 2014 (see Exhibit 2). The proceeds will be used entirely to finance the DC Clean Rivers Project which is projected to have a useful life of over 100 years and be completed around 2030. To date, the project has cost about $1.2 billion, and DC Water expects to finance at least a portion of the remaining construction through the yearly issuance of green bonds. The total lifetime projected cost for the project is $2.8 billion.

Exhibit 2

DC Water cumulative green bond issuance to total $650 million with Series 2018A issuance



*Projected Series 2018A issuance

Sources: DC Water, Moody's Investors Service

Strengths and weaknesses

Strengths	Weaknesses
Effective governance, organization and management processes overseeing a singular but sizeable long-term project with US Environmental Protection Agency oversight	Reporting commitment applies until the bond proceeds are fully allocated rather than over the life of the bonds
Net proceeds allocated in their entirety to finance the DC Clean Rivers Project, a sustainable water management initiative that is expected to produce measurable results in terms of improved water quality	
Demonstrated history of timely annual reporting on the use of proceeds and on certain environmental, social and governance outcomes, accompanied by an independent auditor attestation	
Clear and transparent practices and procedures related to the management of bond proceeds, including the establishment of a segregated account, transparent investment guidelines and independent attestation	

Organization

DC Water evidences highly effective organization and governance around its green bond program, driven by a management team with a broad range of private and public sector utility experience. As an experienced green bond issuer with its first issuance in July 2014, DC Water has committed to best practices around disclosure, transparency and proceeds management, and it has a multi-year track record of executing on its commitments.

The authority's decision to direct green bond proceeds fully to the DC Clean Rivers Project is aligned with its objective to provide investors the most comfort, clarity and transparency around how the proceeds will be allocated. The decision also eases the authority's administrative burden while allowing clear linkage between the program parameters and the achievement of measurable environmental benefits around water quality. The DC Clean Rivers Project forms part of the authority's 10-year capital improvement program that is updated annually through a systematic process.

DC Water is governed by a 22-member board of directors, consisting of 11 principal and 11 alternate members, each appointed for a staggered four-year term. The board establishes policies and guides the strategic planning process while day-to-day operations are managed by the CEO, who is appointed by the board.

The current interim CEO was appointed to that role in January 2018 after having rejoined DC Water in March 2016 as general counsel. He was previously general counsel between 1994-2004. The current CFO was appointed to that role in 2017 after serving as Chair of the Board in the previous three years. The senior management team also includes DC Water's chief engineer, who oversees the DC Clean Rivers Project, and was appointed to the position on a permanent basis in 2010.

DC Water relies on an in-house staff working with consultants, contractors, design engineers and environmental experts, among others, to ensure the successful implementation of capital improvement projects. The DC Clean Rivers Project is also subject to close oversight by the US Environmental Protection Agency (EPA) to ensure compliance with an outstanding consent decree between DC Water and the federal government. DC Water must report quarterly to the EPA on the implementation of its long-term plan for controlling CSOs under the consent decree.

Factor 1: Organization (15%)	Yes	No
Environmental governance and organization structure appear to be effective	●	
Policies and procedures enable rigorous review and decision making process	●	
Qualified and experienced personnel and/or reliance on qualified third parties	●	
Explicit and comprehensive criteria for investment selection, including measurable impact results	●	
External evaluations for decision making in line with project characteristics	●	
Factor Score	1	

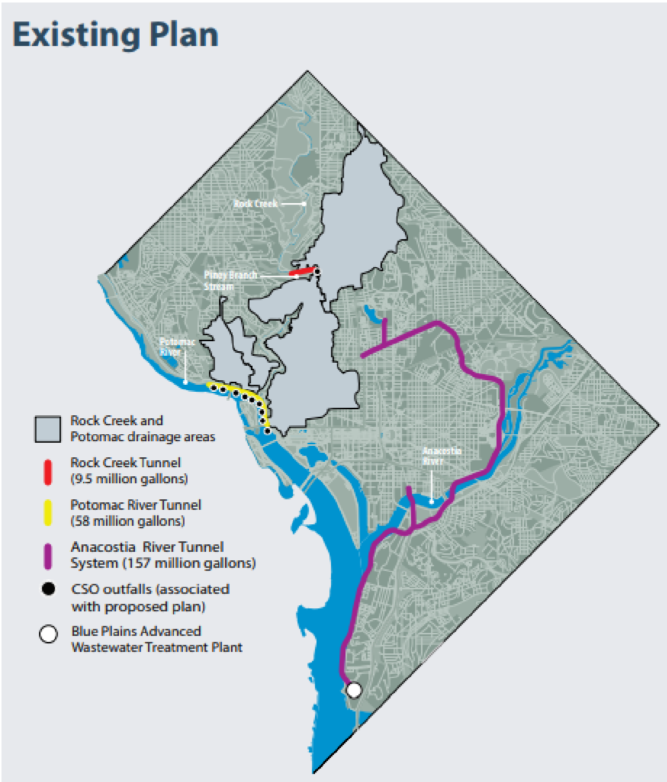
Use of proceeds

Proceeds from this green bond offering, as well as previous green bonds, will be fully allocated to finance the DC Clean Rivers Project. This is a singular but sizable long-term initiative intended to control CSOs to the DC area waterways, including the Anacostia and Potomac rivers and Rock Creek, while also including selected projects intended to relieve and mitigate flooding in certain areas of the District of Columbia. In addition, the project now includes green infrastructure across DC Water's service territory to promote rainwater detention and infiltration in the soil with techniques such as rain gardens, porous pavements, green roofs and other technologies.

Although the technology and facilities at the Blue Plains Advanced Sewage Treatment Plant are up-to-date, the sewer infrastructure that feeds the DC Water service area has been aging and requires updates and improvements. In March 2005, DC Water and the district government entered into a consent decree with the Department of Justice and the EPA. This consent decree establishes a strict schedule for the implementation of a long-term plan to reduce CSOs. In 2010, DC Water renamed this long-term plan the DC Clean Rivers Project.

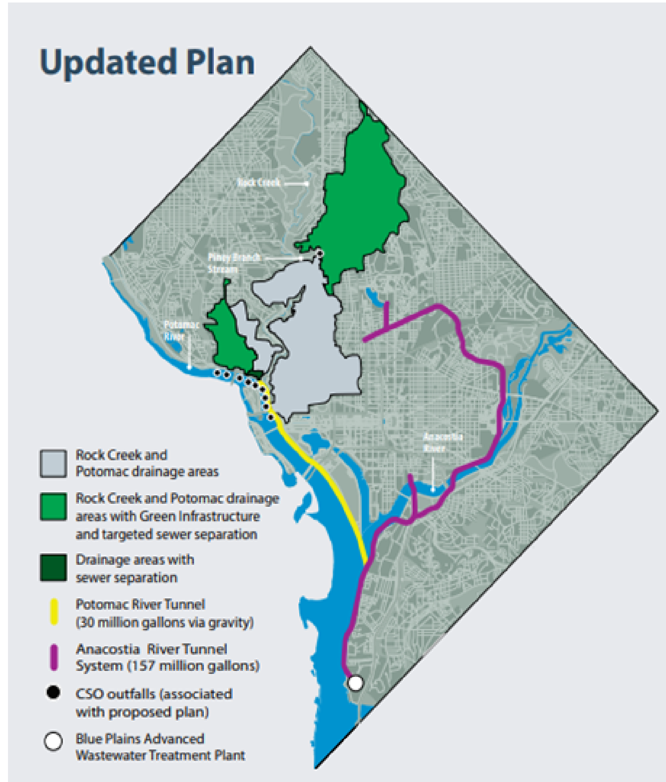
In January 2016, DC Water modified the 2005 federal consent decree to incorporate green infrastructure in its long-term strategy for curtailing CSOs. The modification authorizes DC Water to pursue an integrated green/gray infrastructure approach to address water quality issues resulting from CSOs in the Rock Creek and Potomac watersheds. With the adoption of green infrastructure in the modified consent decree, DC Water updated the details of the DC Clean Rivers Project (see Exhibits 3 and 4).

Exhibit 3
Original plan excluded green infrastructure



Source: DC Water Fiscal 2017 green bond report

Exhibit 4
Updated plan reflects modified consent decree



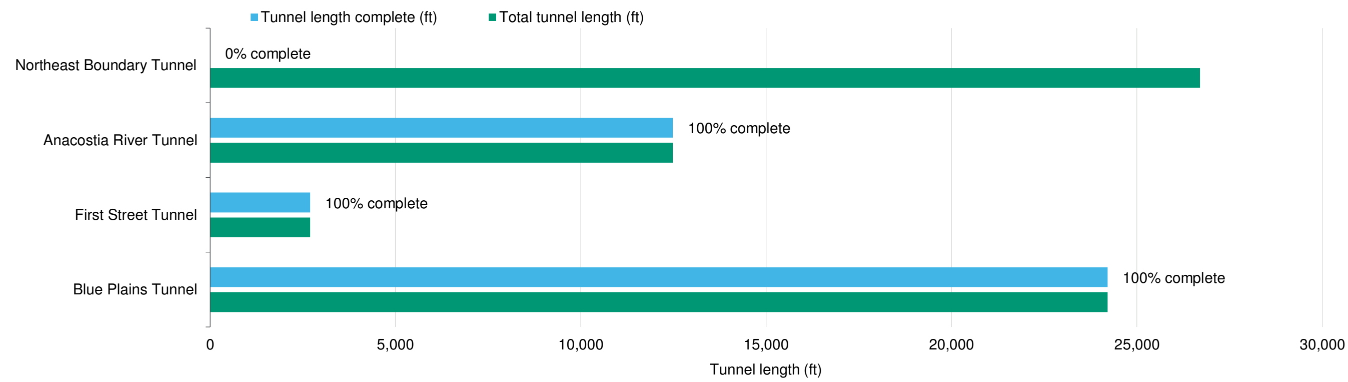
Source: DC Water Fiscal 2017 green bond report

When fully implemented around 2030, the DC Clean Rivers Project will result in the reduction of CSOs by a projected 96% (exceeding the EPA standard of 85%), and in some instances even higher, resulting in improved water quality. The project will achieve significant and measurable results, as measured by the reduction in predicted pollutants, significant reduction in debris in the district's waterways and flooding relief. These projects fall into the sustainable water management category of the Green Bond Principles.

The DC Clean Rivers Project consists of a variety of projects, including pumping stations rehabilitations, targeted sewer separation and a system of underground storage/conveyance tunnels to control CSOs. The construction of the deep tunnel system will allow for the capture and diversion of CSOs into underground sewer structures to reduce CSO discharges into the Anacostia and Potomac Rivers, and the Rock Creek. As of the fiscal 2017 green bond report, the authority has completed construction on the Blue Plains, First Street and Anacostia River tunnels (see Exhibit 5). The First Street tunnel was put into operation in 2016, and the Blue Plains and Anacostia River tunnels will be put into operation in 2018. Contracts totaling $597 million related to the Northeast Boundary tunnel were finalized in November 2017, and the tunnel is scheduled to be completed and placed into service in 2023.

Exhibit 5

Construction on three of four tunnels associated with the DC Clean Rivers Project has been completed



Source: DC Water Fiscal 2017 green bond report

To update the progress on the DC Clean Rivers Project, which is being financed in part by green bonds, DC Water outlines in its green bond reports how much of the green bond proceeds have been allocated to the project. As of the most recent fiscal 2017 green bond report, the authority has drawn a cumulative $552 million of net proceeds from its Series 2014A, Series 2015A and Series 2017A green bonds, with a remaining $19 million of unspent bond proceeds from these three transactions.

Factor 2: Use of Proceeds	Yes	No
>95% - 100% of proceeds allocated to eligible project categories that are determined based on the issuer's adopted policies and the categories established under the Green Bond Principles that will be further informed by one or more robust and widely recognized green bond frameworks or taxonomies that qualify eligible projects, including any applicable regulatory guidelines.	•	
Factor Score	1	

Disclosure on the use of proceeds

DC Water has committed to report annually on the allocation of net green bond proceeds, as well as certain environmental, social and governance outcomes of the DC Clean Rivers Project, until bond proceeds are fully allocated. The authority's track record of publishing timely annual green bond reports is a strong indicator that disclosure practices around the green bond program will continue to be robust.

For its Series 2014A issuance, DC Water secured a second party opinion from Vigeo, a Paris-based ESG firm. Vigeo's opinion extends to social and management considerations that reflect DC Water's responsible management practices, including quality of life, human rights and human resource considerations. DC Water's annual green bond report includes a number of such factors that are organized into five criteria including human rights, human resources, environment, business behavior and community involvement. Exhibit 6 highlights the various indicators on which the authority reports.

Exhibit 6
DC Water reports on a variety of environmental, social and governance indicators

Category	Indicator
Human Rights	DC Clean Rivers Project full-time employees by gender, age, and ethnicity (indicators of diversity)
Human Rights	Total number of incidents of discrimination and actions taken
Human Resources	Percent of DC Clean Rivers Project employees receiving a performance review during the fiscal year
Human Resources	Number of project person hours spent on the DC Clean Rivers Project
Human Resources	Number of safety committee meetings
Human Resources	Number of safety observation reports
Human Resources	DC Clean Rivers Project recorded injuries incident rate
Human Resources	Health and safety incidents for contractors
Environment	Volume of CSO discharged per average rainfall year
Business Behavior	Percent of all DC Water invoices paid within 30 days
Business Behavior	Percentage of EPA Fair Share Objective construction contracts awarded to Women and Minority Business Enterprises
Community Involvement	Total number of contractors employed by the DC Clean Rivers Project; Percentage of DC Clean Rivers Project contractors that reside within the District or DC Water's service territory
Community Involvement	Number of public meetings

Source: DC Water Fiscal 2017 green bond report

For a full description of the criteria for the indicators and the various results achieved, see the full fiscal 2017 DC Water green bond report.

Factor 3: Disclosure on the Use of Proceeds	Yes	No
Description of green projects, including portfolio level descriptions, actual or intended	●	
Adequacy of funding and/or strategies to complete projects	●	
Quantitative and/or qualitative descriptions for targeted environmental results	●	
Methods and criteria, both quantitative and qualitative, for calculating performance against targeted environmental results	●	
Issuer relies on external assurances: Second Party reviews, audits and/or third party certfications	●	
Factor Score	1	

Management of proceeds

The practices and procedures employed by DC Water in the management of bond proceeds are robust. The net proceeds derived from the Series 2018A bonds will be deposited into a segregated construction account established by the indenture. As is the case for the processing of all capital expenditures, DC Water's operating fund is used to initially pay invoices after they have been properly classified, reviewed and signed off on as eligible expenditures by the DC Clean Rivers Project team. Once approved, these are rerouted to the finance group which, in turn, draws down eligible expenses from the bond fund and reimburses DC Water.

At the end of each fiscal year, the transaction activity and corresponding flows are subject to a dual verification process. First, independent auditors conduct testing on controls and the segregation of accounts to determine if funds were drawn down from the correct accounts. Second, KPMG conducts a review and provides an attestation specifically related to the disclosures in the green bond report. That said, sources and uses of green bond proceeds are disclosed selectively and not in their entirety in the annual green bond reports.

DC Water has adopted a comprehensive and transparent investment policy that sets forth the investment and operational policies for the management of its public funds. These policies are applicable to all monies including, but not limited to, all operating funds, debt service funds, capital project funds and grant money. The statement is available on DC Water's website.

Guided by investment objectives that are intended to achieve, first and foremost, safety of principal, liquidity and return on investment, DC Water may invest in a variety of instruments that include US Treasury obligations; money market mutual funds; repurchase agreements; US federal agency obligations, including mortgage-backed securities, bankers acceptances, commercial paper, and collateralized as well as federally insured CDs; negotiable CDs and bank deposits; supranational bonds; corporate notes; and municipal obligations. These investments are restricted based on further strategies with regard to portfolio diversification, maximum maturity and credit quality.

DC Water publishes a monthly investment performance report that includes a detailed listing of securities held within each account as of month-end, along with a quarterly list of transactions. For each account, including construction fund accounts established for each successive green bond, individual investments held as of month-end are listed along with the total outstanding balance. The reports are posted on DC Water's website in conjunction with the monthly finance and budget committee meeting minutes of the board of directors.

Factor 4: Management of Proceeds	Yes	No
Bond proceeds are segregated and separately tracked on an accounting basis or via a method by which proceeds are earmarked	●	
Application of proceeds is tracked by environmental category and project type	●	
Robust process for reconciling planned investments against actual allocations	●	
Clear eligibility rules for investment of cash balances	●	
Audit by external organization or independent internal audit unit	●	
Factor Score	1	

Ongoing reporting and disclosure

DC Water is committed to reporting on each bond series until the proceeds are fully expended, but not over the life of the bonds. The authority expects to continue to report annually at least until the completion of construction, scheduled for 2030. At that point, DC Water may decide to issue a final green bond report summarizing the environmental outcomes achieved by the project.

With respect to its green bond program, DC Water has evidenced strong disclosure on proceeds allocation and the environmental and social benefits of financed projects. DC Water has published four green bond reports to date. These reports cover fiscal 2014 (published February 2015), fiscal 2015 (published April 2016), fiscal 2016 (published May 2017) and fiscal 2017 (published March 2018). Published in a consistently timely manner, these reports are robust and cover a number of topics, including an overview of the DC Clean Rivers Project, use of green bond proceeds, progress on the project, environmental and social outcomes, as well as detail around the responsible management of the project.

In addition to reporting on the use of green bond funds and progress of various components of the project (see "Use of proceeds" section above), the authority reports on quantifiable environmental and social goals of the project. The authority reports improvements to water quality based on the capture and treatment of CSOs before entering the district's rivers and waterways. The latest report highlights improvements in predicted discharge of pollutants in fiscal 2017, compared to predicted discharges of these materials in 1996, prior to the start of the project (see Exhibit 7). As an example, the project has resulted in a reduction of predicted discharge of nitrogen to 79,720 pounds in fiscal 2017 from 127,550 pounds in 1996. The predicted discharge numbers are based off average rainfall figures, though the district also reports predicted discharges based off actual rainfall, which was lower than the baseline in fiscal 2017.

Exhibit 7

DC Clean Rivers Project is leading to reductions in pollutants in the district's water

	Average year rainfall			2017 actual rainfall
Pollutants	Predicted discharge in FY 2017 (lbs)	Predicted discharge in 1996 (prior to Clean Rivers Project (lbs))	Percent reduction	Predicted discharge in FY 2017 (lbs)
Total nitrogen	79,720	127,550	38%	71,576
Total phosphorus	16,889	27,138	38%	15,229
Total suspended solids	2,195,505	3,527,987	38%	1,979,771

Average year rainfall conditions are defined as the average of the rainfall in the years 1988, 1989 and 1990, or about 41 inches of rain per calendar year. In fiscal year 2017, total rainfall as measured at Ronald Reagan Washington National Airport was 35 inches.
Source: DC Water Fiscal 2017 green bond report

Similarly, DC Water also reports the percentage removal of contaminants and pollutants by the DC Water Advanced Wastewater Treatment Plant at Blue Plains (see Exhibit 8). Reporting on this metric is part of the authority's commitment to report on how the green bond funds are helping to improve quality of life of the district's residents. As of September 30, 2017, the percent removal of nitrogen, phosphorus and suspended solids totaled 93.0%, 98.0% and 99.6%, respectively.

Exhibit 8

DC Clean Rivers Project improving quality of life through contaminant removal

Parameter	Influent (lbs)	Effluent (lbs)	Percent removed
Total nitrogen	40,745,957	2,848,868	93.0%
Total phosphorus	3,698,920	75,569	98.0%
Total suspended solids	219,138,076	871,423	99.6%

Source: DC Water Fiscal 2017 green bond report

Beyond reporting on project status and environmental benefits being achieved, DC Water also discloses information on other environmental, social and governance criteria related to the project as part of its commitment to disclose detail on responsible management of the project (see "Disclosure on the use of proceeds" section above).

DC Water has sought a statement from its auditor, KPMG, beginning with the fiscal 2015 green bond report, attesting to the veracity of the content in the reports, including the various indicators cited in the reports. This auditor statement adds an additional level of assurance to the market that the information presented is accurate, and distinguishes DC Water from other green bond issuers that have not sought such a post-issuance report assurance.

Factor 5: Ongoing Reporting and Disclosure	Yes	No
Reporting and disclosure post issuance provides/to be provided detailed and timely status updates on projects	●	
Ongoing annual reporting is expected over the life of the bond		●
Disclosures provide granular detail on the nature of the investments and their expected environmental impacts	●	
Reporting provides/to be provided a quantiative and/or qualitative assessment of the environmental impacts actually realized to-date	●	
Reporting includes/to include quantitative and/or qualitative explanation of how the realized environmental impacts compare to projections at the time the bonds were sold	●	
Factor Score	2	

Moody's Green Bond Assessment (GBA)

Moody's GBA represents a forward-looking, transaction-oriented opinion on the relative effectiveness of the issuer's approach to manage, administer and allocate assets to, and report on, environmental projects financed by proceeds from green bond offerings. GBAs are expressed using a five-point relative scale, ranging from GB1 (Excellent) to GB5 (Poor). A GBA does not constitute a credit rating.

Moody's related publications

Methodology:

» Green Bonds Assessment (GBA), March 30, 2016

Credit Opinion:

» District of Columbia Water & Sewer Authority: Update to credit analysis, April 5, 2018

Green Bond Assessment:

» Ligonier Valley School District, PA: Green Bond Assessment - General Obligation Bonds, Series A of 2018 (Green Bonds), January 12, 2018

» East Bay Regional Park District, CA: Green Bond Assessment - Series 2017A-2 and Series 2017B-2 General Obligation Bonds, November 9, 2017

» Metro. Gov't. of Nashville & Davidson Cnty., TN Water & Sewer Enterprise: Green Bond Assessment, October 16, 2017

» Upper Mohawk Valley Regional Water Finance Authority - New York: Green Bond Assessment, June 30, 2017

» District of Columbia Water and Sewer Authority (DC Water): Green Bond Assessment, January 27, 2017

Update to Green Bond Assessment:

» District of Columbia Water & Sewer Authority: Update to Green Bond Assessment - Series 2017A Public Utility Senior Lien Revenue Bonds, March 16, 2018

Sector In-Depth:

» Green Bonds - Global: Global municipal green bond issuance will continue to rise, March 19, 2018

» Green Bonds - Global: Global green bond issuance set to eclipse $250 billion in 2018, January 31, 2018

» Cross-sector - Global: FAQ: The green bond market and Moody's Green Bonds Assessment, November 29, 2017

» Green Bond Assessments - Global: Issuers exhibit strong organizational frameworks but differ on disclosure, September 19, 2017

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

REPORT NUMBER 1115856

Analyst Contacts

Matthew Kuchtyak +1.212.553.6930
Analyst
matthew.kuchtyak@moodys.com

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

MOODY'S
INVESTORS SERVICE