

Memorandum



INCLUDED WITH FRIDAY MEMOS ON June 28, 2019

CITY OF DALLAS

DATE June 26, 2019

TO Honorable Mayor and Members of the City Council

SUBJECT **Moody's Investor Service Downgrades Dallas Water Utilities Following Review Resulting from Court Ruling in Puerto Rico – RATING ACTION**

On May 13, 2019, I sent a memorandum explaining that Moody's Investor Service (Moody's) had placed seven water and sewer utilities systems, including Dallas Water Utilities, and one special assessment district under review for downgrade, following a ruling on Puerto Rico from the US Court of Appeals for the First Circuit. According to Moody's, the review was driven by rating differentials between the utilities and their "parent" issuer.

Today, Moody's downgraded to Aa2 from Aa1, the City's Waterworks and Sewer Enterprise, TX revenue bonds, as well as the contract revenue bonds issued through the Tarrant Regional Water District. This downgrade was a result of Moody's decision to use the Court's ruling on the Puerto Rico case to project what might occur under similar circumstances in Dallas. Moody's states, "the risks to bondholders of the strong interrelatedness between the city and its utility is highlighted by the March 26th ruling by the 1st Circuit Court of Appeals," that upheld a lower court ruling that Puerto Rico is not required to pay debt service on special revenue bonds during the pendency of bankruptcy proceedings.

The City has made no fundamental changes to the Dallas Waterworks and Sewer System during the period of review, and Moody's maintains that "the Aa2 rating reflects the system's extremely large service area, healthy asset condition, robust capital program, ample water supply and treatment capacity, strong financial performance, and slightly elevated, though manageable, debt burden as the system continues to carry out a robust capital plan." Notably, "the rating also considers strong legal protections for creditors ... in the form of a statute that secures the systems net-revenue pledge." Moody's states that the outlook for the revenue bonds is stable.

DATE June 26, 2019
SUBJECT Moody's Investors Service Downgrades Dallas Water Utilities Following Review Resulting from Court Ruling in Puerto Rice – RATING ACTION

Please find attached the press release provided by Moody's today. If you have any questions or need further information, please do not hesitate to contact me.



M. Elizabeth Reich
Chief Financial Officer

[Attachment]

c: T.C. Broadnax, City Manager
Chris Caso, Interim City Attorney
Mark Swann, City Auditor
Billierae Johnson, City Secretary
Preston Robinson, Administrative Judge
Kimberly Bizer Tolbert, Chief of Staff to the City Manager
Majed A. Al-Ghafry, Assistant City Manager

Jon Fortune, Assistant City Manager
Joey Zapata, Assistant City Manager
Nadia Chandler Hardy, Assistant City Manager and Chief Resilience Officer
Michael Mendoza, Chief of Economic Development and Neighborhood Services
Laila Alequresh, Chief Innovation Officer
Liz Cedillo-Pereira, Chief of Equity and Inclusion
Directors and Assistant Directors

Rating Action: Moody's downgrades to Aa2 Dallas Waterworks & Sewer Enterprise, TX's revenue bonds; outlook stable

26 Jun 2019

Water Transmission Facilities Contract Revenue Bonds (City of Dallas Project) also downgraded to Aa2

New York, June 26, 2019 -- Moody's Investors Service has downgraded to Aa2, from Aa1, the rating on the Moody's rated City of Dallas Waterworks and Sewer Enterprise, TX revenue bonds, as well as the Water Transmission Facilities Contract Revenue Bonds (City of Dallas Project) issued through the Tarrant Regional Water District (City of Dallas Project). The rating action impacts \$1.4 billion in Moody's rated revenue bonds and \$426 million in Moody's rated contract revenue bonds. The outlook is stable. This concludes our review of the utility revenue bond rating, which was placed under review on May 13, 2019.

RATINGS RATIONALE

The downgrade to Aa2 aligns the rating of the water and sewer system more closely to the city of Dallas' (A1 stable) rating, bringing the utility's rating to two notches above the city's general obligation limited tax (GOLT) rating. The downgrade is being driven by the strong legal and governance linkages between the city and the water and sewer system; the system is ultimately a department of the city, despite having a service area that is two times the city's geographic limits.

The risks to bondholders of the strong interrelatedness between the city and its utility is highlighted by the March 26th ruling by the 1st Circuit Court of Appeals that upheld a lower court ruling that the Commonwealth of Puerto Rico (Ca negative) is not required to pay debt service on "special revenue" bonds of Puerto Rico Highway & Transportation Authority (C negative) during the pendency of the bankruptcy proceedings. In the event of serious fiscal stress of the city, there is greater risk for system creditors that the city could impair pledged revenue than if the system were legally independent of the city.

The two-notch rating distinction between the rating of the system and the city reflects primarily the healthy credit fundamentals of the system, including the system's extremely large service area, healthy asset condition, robust capital program, ample water supply and treatment capacity, strong financial performance, and slightly elevated, though manageable, debt burden as the system continues to carry out a robust capital plan. The rating also considers strong legal protections for creditors both in the form of a statute that secures the systems net-revenue pledge, and through the "closed loop" structure of the indenture/resolution and as required by the city's voter-approved charter. Finally, the rating incorporates the system's exposure to the Dallas Employees' Retirement Fund.

RATING OUTLOOK

The stable outlook reflects the likelihood that favorable demographic trends and city council support for as-needed rate increases will result in the system maintaining its strong financial position and adequate debt service coverage levels. The stable outlook also incorporates the likelihood that rising pension costs associated with the Dallas Employees' Retirement Fund will remain manageable compared to its impact on the city's finances.

FACTORS THAT COULD LEAD TO AN UPGRADE

- Upgrade of the city's GOLT rating
- Reduced ratio of debt to operating revenues
- Significant improvement to debt service coverage

FACTORS THAT COULD LEAD TO A DOWNGRADE

- Trend of declining system liquidity

- Downgrade of the city's GOLT rating; material increases to the unfunded pension liability associated with ERF

LEGAL SECURITY

The revenue bonds are secured by net revenues of the water and sewer system.

USE OF PROCEEDS

Not applicable.

PROFILE

The City of Dallas Waterworks and Sewer Enterprise is a large water and sewer utility serving 300,000 retail accounts within the city of Dallas. The system also provides wholesale water and wastewater treatment to numerous local governments in the Dallas - Fort Worth metroplex.

METHODOLOGY

The principal methodology used in these ratings was US Municipal Utility Revenue Debt published in October 2017. Please see the Rating Methodologies page on www.moodys.com for a copy of this methodology.

REGULATORY DISCLOSURES

For ratings issued on a program, series or category/class of debt, this announcement provides certain regulatory disclosures in relation to each rating of a subsequently issued bond or note of the same series or category/class of debt or pursuant to a program for which the ratings are derived exclusively from existing ratings in accordance with Moody's rating practices. For ratings issued on a support provider, this announcement provides certain regulatory disclosures in relation to the credit rating action on the support provider and in relation to each particular credit rating action for securities that derive their credit ratings from the support provider's credit rating. For provisional ratings, this announcement provides certain regulatory disclosures in relation to the provisional rating assigned, and in relation to a definitive rating that may be assigned subsequent to the final issuance of the debt, in each case where the transaction structure and terms have not changed prior to the assignment of the definitive rating in a manner that would have affected the rating. For further information please see the ratings tab on the issuer/entity page for the respective issuer on www.moodys.com.

Regulatory disclosures contained in this press release apply to the credit rating and, if applicable, the related rating outlook or rating review.

Please see www.moodys.com for any updates on changes to the lead rating analyst and to the Moody's legal entity that has issued the rating.

Please see the ratings tab on the issuer/entity page on www.moodys.com for additional regulatory disclosures for each credit rating.

Denise Rappmund
Lead Analyst
Regional PFG Dallas
Moody's Investors Service, Inc.
Plaza Of The Americas
600 North Pearl St. Suite 2165
Dallas 75201
US
JOURNALISTS: 1 212 553 0376
Client Service: 1 212 553 1653

Gera McGuire
Additional Contact
Regional PFG Dallas
JOURNALISTS: 1 212 553 0376
Client Service: 1 212 553 1653

Releasing Office:
Moody's Investors Service, Inc.
250 Greenwich Street
New York, NY 10007
U.S.A
JOURNALISTS: 1 212 553 0376
Client Service: 1 212 553 1653



© 2019 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND ITS RATINGS AFFILIATES ("MIS") ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MOODY'S PUBLICATIONS MAY INCLUDE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS AND MOODY'S OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. CREDIT RATINGS AND MOODY'S PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. NEITHER CREDIT RATINGS NOR MOODY'S PUBLICATIONS COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS AND PUBLISHES MOODY'S PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS OR MOODY'S PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources

MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing the Moody's publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any rating, agreed to pay to Moody's Investors Service, Inc. for ratings opinions and services rendered by it fees ranging from \$1,000 to approximately \$2,700,000. MCO and MIS also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moodys.com under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any rating, agreed to pay to MJKK or MSFJ (as applicable) for ratings opinions and services rendered by it fees ranging from JPY125,000 to approximately JPY250,000,000.

MJKB and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.

CREDIT OPINION

27 June 2019



Contacts

Denise Rappmund +1.214.979.6865
VP-Senior Analyst
denise.rappmund@moody.com

Heather Guss +1.214.979.6881
Analyst
heather.guss@moody.com

Gera M. McGuire +1.214.979.6850
VP-Sr Credit Officer/Manager
gera.mcguire@moody.com

CLIENT SERVICES

Americas 1-212-553-1653

Asia Pacific 852-3551-3077

Japan 81-3-5408-4100

EMEA 44-20-7772-5454

Dallas (City of) TX Waterworks & Sewer Ent.

Update to credit analysis following downgrade to Aa2

Summary

The Dallas Waterwork and Sewer Enterprise (“the system” or “the enterprise”) (Aa2 stable) credit profile considers the close credit relationship between the city of Dallas (A1 stable) and the system, as well as the strong credit fundamentals of the system. The linkage between the two entities is driven by its shared governance, as the city council is the responsible body over general city operations as well as the enterprise system. This credit link between a parent government and its enterprise was highlighted by the March 26th ruling by the 1st Circuit Court of Appeals that upheld a lower court ruling that the Commonwealth of Puerto Rico (Ca negative) is not required to pay special revenue debt service on bonds of Puerto Rico Highway & Transportation Authority (C negative) during the pendency of the bankruptcy proceedings. Following this ruling, in the event of serious fiscal stress, the risk remains that the system could be adversely impacted by actions taken by the city in such an unprecedented scenario.

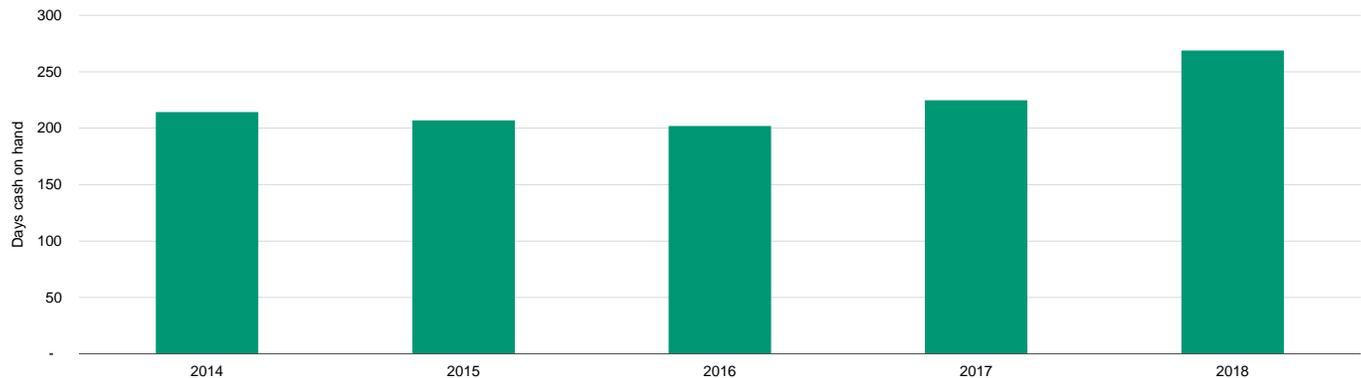
However, the enterprise system exhibits credit strengths that bolster the profile, including both legal protections and system fundamentals. Specifically, the legal framework protecting bondholders is strong, both in state legislation and the bond legal documents, including secured pledge of net revenues and the closed loop of funds as required in the city’s voter-approved charter. Additionally, the system exhibits healthy credit fundamentals. The system is a very large, regional water and wastewater service provider with a healthy asset condition, ample water supply and system capacity, and strong financial performance. Being a large provider, system management exhibits robust and long-range capital planning to access additional water supply and replace aging infrastructure, though this has resulted in a slightly elevated debt level relative to revenues. The profile is also constrained by its exposure to the Dallas Employees’s Retirement Fund, though allocated pension leverage and annual pension costs to the system are manageable.

On June 26, 2019 we downgraded the Dallas Waterworks and Sewer Enterprise revenue bond rating to Aa2, as well as contract revenue bonds issued through the Tarrant Regional Water District (City of Dallas Project).

Exhibit 1

Key credit fundamentals of the enterprise system remain strong

Days cash on hand improved since 2016



Source: Moody's Investors Service, city audited financial reports

Credit strengths

- » Large service area that is nearly double the size of the city of Dallas
- » DFW region exhibits strong economic indicators
- » Long history of rate increases to support capital needs
- » Strong bond holder legal protections

Credit challenges

- » Slightly elevated ratio of debt to operating revenues
- » Exposure to ERF unfunded pension liability

Rating outlook

The stable outlook reflects the expectation that favorable demographic trends, strong financial management and strategic planning, and ongoing city council support of rate increases as needed will lead to maintenance of solid liquidity and adequate debt service coverage levels for the system. The stable outlook also incorporates the expectation that rising pension costs associated with the Dallas Employees' Retirement Fund, and allocated to the system, will remain a small percentage of operating expenses.

Factors that could lead to an upgrade

- » Reduced ratio of debt to operating revenues
- » Significant improvement to debt service coverage
- » Upgrade of the city's GOLT rating

Factors that could lead to a downgrade

- » Trend of declining system liquidity
- » Downgrade of the city's GOLT; material increases to the unfunded pension liability associated with ERF

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moody's.com for the most updated credit rating action information and rating history.

Key indicators

Exhibit 2

Dallas (City of) TX Waterworks & Sewer Ent.

System Characteristics					
Asset Condition (Net Fixed Assets / Annual Depreciation)	42 years				
System Size - O&M (in \$000s)	\$300,230				
Service Area Wealth: MFI % of US median	72.29%				
Legal Provisions					
Rate Covenant (x)	1.25				
Debt Service Reserve Requirement	DSRF funded at less than 3-prong test OR springing DSRF (A)				
Management					
Rate Management	Aa				
Regulatory Compliance and Capital Planning	Aaa				
Financial Strength					
	2014	2015	2016	2017	2018
Operating Revenue (\$000)	\$564,546	\$573,327	\$607,329	\$632,469	\$668,624
System Size - O&M (\$000)	\$251,181	\$295,619	\$313,288	\$284,684	\$300,230
Net Revenues (\$000)	\$315,300	\$281,743	\$298,142	\$374,285	\$376,168
Net Funded Debt (\$000)	\$2,193,658	\$2,327,609	\$2,405,576	\$2,468,023	\$2,573,544
Annual Debt Service (\$000)	\$185,852	\$178,354	\$182,900	\$182,000	\$202,597
Annual Debt Service Coverage (x)	1.7x	1.6x	1.6x	2.1x	1.9x
Cash on Hand	214 days	207 days	202 days	225 days	269 days
Debt to Operating Revenues (x)	3.9x	4.1x	4.0x	3.9x	3.8x

Source: Moody's Investors Service, city audited financial reports, bond legal documents

Profile

The City of Dallas Waterworks and Sewer Enterprise is a large water and sewer utility serving 300,000 retail accounts within the city of Dallas. The system also provides wholesale water and wastewater treatment to numerous local governments in the Dallas - Fort Worth metroplex.

Detailed credit considerations

Service area and customer base: large wholesale and retail service base; strong planning for long-term water resources

The Dallas waterworks and sewer system serves a growing area of residential, commercial and retail development. The system has 300,000 water accounts and provides water on a wholesale basis to 27 local governments in the metro area (23 treated, and 5 untreated water). Water supply is available from six surface water impoundments and from water in the Elm Fork of the Trinity River. All of the sources are located in north central and east Texas. The city's dependable connected water supply yield is 431 million gallons per day (MGD) from current connections, and increases to 604 MGD including available but not yet connected supply. As of 2017, the average demand on the system was 372 MGD and the peak was 511 MGD. Future surface water impoundments are anticipated, including an important connection to Lake Palestine which is under construction and expected to be available after 2020, though not needed until 2027. The city's current water supply is estimated to be adequate until about the year 2027 which increases to 2050 upon completion of the connection to Lake Palestine. Long-term affordable water supply options continue to be identified – the city updated their long range water supply plan in fiscal 2014 in order to secure water through 2070.

The system also includes wastewater collection and treatment, and serves the City of Dallas on a retail basis, and provides treatment services to 11 local governments in the area. Wastewater infrastructure includes over 4,020 miles of pipe and two treatment plants. The plants are permitted to treat 280 MGD on an average daily basis. As of 2017, the average daily usage was 162 MGD and the peak usage of 302 MGD.

Debt service coverage and net working capital: healthy debt service coverage supported by regular rate increases

The city's trend of annually raising rates is prudent and a favorable credit factor given the utility's increasing expenditure requirements. The City Council, who approves water and sewer rates, has demonstrated willingness to increase rates as needed. Both water and sewer rates for retail service (which represents the majority of system revenues) have increased by 1.6-5.3% over the past three fiscal years, wholesale rates have also increased similarly over the period, though increased a higher 7.2% in fiscal 2018. Rates are proposed to remain flat in fiscal 2020, and increase by 1-4.6% annually through 2024.

In fiscal 2018, net revenues available for debt service totaled \$376.2 million, which covered annual debt service requirements of \$202.6 million by 1.86 times. City officials have a goal to maintain fiscal year-end maximum debt service coverage of 1.5 times. Prudently, the target is used for budgeting purposes in order to account for any reductions in water revenues and still sufficiently meet the rate covenant and additional bonds test.

In fiscal 2019, revenues are forecast to be \$30.7 million under budget due to wholesale customers receiving a credit to revenues as a result of the Sabine River Authority (SRA) settlement, which will be offset by fund balance, and decreased water consumption. Expenditures are projected to be \$24.4 million below budget primarily due to a decreased capital construction transfer to offset the consumption-related revenue reduction.

LIQUIDITY

The system's liquidity has improved, with cash increasing from \$145.9 million in 2013 to \$221.1 million in fiscal 2018, representing a healthy 269 days of operating expenditures. The city has also adopted a financial policy to maintain an unreserved cash balance that provides a minimum quick ratio of 1.50 times and 30 days of budgeted expenditures. Based on year to date financial information as of April 2019, there is a planned used of \$6.8 million of reserves, though even with the draw reserves will remain healthy.

Debt and legal covenants: substantial capital plan to replace aging infrastructure and source additional water supply; strong legal structure

The systems' debt to revenues ratio will likely remain elevated though manageable in the near term given additional borrowing plans. The fiscal 2018 ratio of debt to revenues has come down slightly over the past few years, though remains moderately elevated at 3.9 times revenues, which is in line with similarly sized enterprises with substantial capital needs to serve a regional population. The system has undertaken a robust capital improvement plan for the system to replace aging infrastructure and expand to accommodate growth. The current annual CIP investment requires \$315-\$395 million annually through 2023. The city uses a combination of commercial paper, revenue bonds and cash contributions from current revenues to fund annual capital needs. The current city council authorization for the CP program is \$600 million. The system's total debt includes is approximately \$2.2 billion in revenue bonds and \$426.3 million in contract revenue bonds associated with the integrated pipeline project.

DEBT STRUCTURE

The system issues 30 year, fixed rate, revenue bonds to take out the outstanding CP. Overall revenue bond debt structure descends over time. As May 2019, MADS of approximately \$199.6 million occurs in 2022, while average annual debt service is about \$113.5 million. Approximately 36% of principal will amortize within 10 years with a final maturity in 2049.

LEGAL STRUCTURE

The bonds are secured by a first lien on the net revenues of the system. The contract revenue bonds are secured by a pledge of gross operating revenues and are considered an O&M expense.

Legal provisions associated with the revenue bonds provide strong bondholder security. Texas government code 1208 perfects the lien on pledged revenues, which can point to increased bondholder recovery in the event of severe fiscal distress of the city. Additionally, per the current city charter and management practices, there exists a strict separation of accounts and assets between general city operations and the system, except for payments in lieu of taxes, street rental fees, and charges for services rendered. While the charter may be amended by a vote of the residents, an amendment impacting the system is not currently contemplated.

The bond documents include a rate covenant that requires net revenues to produce 1.25 times peak debt service, and the additional bonds test is 1.25 times average annual debt service. A reserve fund is required to be maintained at 100% average annual debt service funded over 60 months. All of the debt service reserves have been cash funded. As of September 2018 the balance in the DSRF was

\$102 million. Outstanding CP notes (rated P-1) have a subordinate lien on system net revenues. Finally, the Bond Ordinance requires equal monthly installments for the next payment of principal and interest due.

DEBT-RELATED DERIVATIVES

The system is not a party to debt-related derivative agreements.

PENSIONS AND OPEB

The system funds a portion of the city's single-employer Employee Retirement Fund ("ERF"). As of fiscal 2018, the system was allocated 21.4% of the reported ERF net pension liability of \$765.6 million, based on a 7.75% discount rate. The Moody's Adjusted Net Pension Liability ("ANPL") of the ERF as of fiscal 2018 was \$3.3 billion, based on an assumed rate of return of 3.6%. Based on an assumed 21.4% share, the ANPL attributable to the system is \$713.9 million, or 1.1 times revenues.

Based on the water system's share of the pension liability, the contribution from the system in 2018 would have been about \$13 million, or a small 1.9% of revenues. The annual contributions to ERF fall below an amount that would prevent the liability from growing or "treading water", based on reported assumptions. In order to tread water on the liability, the contribution from the system would need have needed to increase by \$5.7 million in 2018, for a total of \$18.7 million, or 2.8% of revenues. Assuming a pension contribution equal to the tread water indicator were made, coverage in 2018 would have decreased only slightly, to 1.83 times from the actual 1.86 times.

Management and governance: sophisticated management team

Management of the Dallas Waterworks and Sewer System provide departmental administration within the framework of the city's council-manager form of government. Subject to the direction and supervision of the Office of the City Manager, the Director of Water Utilities is charged with management of the system. The system demonstrates good governance through annual adoption of rate increases to support system needs, and maintenance of policies for debt service coverage and liquidity.

© 2019 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND ITS RATINGS AFFILIATES ("MIS") ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MOODY'S PUBLICATIONS MAY INCLUDE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS AND MOODY'S OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. CREDIT RATINGS AND MOODY'S PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. NEITHER CREDIT RATINGS NOR MOODY'S PUBLICATIONS COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS AND PUBLISHES MOODY'S PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS OR MOODY'S PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER. ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing the Moody's publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any rating, agreed to pay to Moody's Investors Service, Inc. for ratings opinions and services rendered by it fees ranging from \$1,000 to approximately \$2,700,000. MCO and MIS also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moody.com under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657 AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any rating, agreed to pay to MJKK or MSFJ (as applicable) for ratings opinions and services rendered by it fees ranging from JPY125,000 to approximately JPY250,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.

Contacts

Denise Rappmund
VP-Senior Analyst
denise.rappmund@moodys.com

+1.214.979.6865

Heather Guss
Analyst
heather.guss@moodys.com

+1.214.979.6881

Gera M. McGuire
*VP-Sr Credit Officer/
Manager*
gera.mcguire@moodys.com

+1.214.979.6850

CLIENT SERVICES

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