BLACKROCK MUNIHOLDINGS NEW YORK QUALITY FUND, INC. Form N-CSR November 03, 2016

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM N-CSR

CERTIFIED SHAREHOLDER REPORT OF REGISTERED MANAGEMENT

INVESTMENT COMPANIES

Investment Company Act file number 811-08217

Name of Fund: BlackRock MuniHoldings New York Quality Fund, Inc. (MHN)

Fund Address: 100 Bellevue Parkway, Wilmington, DE 19809

Name and address of agent for service: John M. Perlowski, Chief Executive Officer, BlackRock

MuniHoldings New York Quality Fund, Inc., 55 East 52nd Street, New York, NY 10055

Registrant s telephone number, including area code: (800) 882-0052, Option 4

Date of fiscal year end: 08/31/2016

Date of reporting period: 08/31/2016

Item 1 Report to Stockholders

AUGUST 31, 2016

ANNUAL REPORT

BlackRock Maryland Municipal Bond Trust (BZM) BlackRock Massachusetts Tax-Exempt Trust (MHE) BlackRock MuniHoldings New York Quality Fund, Inc. (MHN) BlackRock New Jersey Municipal Bond Trust (BLJ) BlackRock New York Municipal Bond Trust (BQH) BlackRock New York Municipal Income Quality Trust (BSE) BlackRock New York Municipal Income Trust II (BFY) BlackRock Virginia Municipal Bond Trust (BHV)

Not FDIC Insured May Lose Value No Bank Guarantee

Table of Contents

| | Page |
|---|------|
| The Markets in Review | 3 |
| Annual Report: | |
| Municipal Market Overview | 4 |
| The Benefits and Risks of Leveraging | 5 |
| Derivative Financial Instruments | 5 |
| Trust Summaries | 6 |
| Financial Statements: | |
| Schedules of Investments | 22 |
| Statements of Assets and Liabilities | 59 |
| Statements of Operations | 61 |
| Statements of Changes in Net Assets | 63 |
| Statements of Cash Flows | 65 |
| Financial Highlights | 67 |
| Notes to Financial Statements | 75 |
| Report of Independent Registered Public Accounting Firm | 86 |
| Disclosure of Investment Advisory Agreements | 87 |
| Automatic Dividend Reinvestment Plans | 92 |
| Officers and Trustees | 93 |
| Additional Information | 96 |

2

ANNUAL REPORT

The Markets in Review

Dear Shareholder,

Uneven economic outlooks and the divergence of monetary policies across regions have been the overarching themes driving financial markets over the past couple of years. In the latter half of 2015, investors were focused largely on the timing of the Federal Reserve s (the Fed) decision to end its near-zero interest rate policy. The Fed ultimately hiked rates in December, while, in contrast, the European Central Bank and the Bank of Japan increased stimulus, even introducing negative interest rates. The U.S. dollar had strengthened considerably, causing profit challenges for U.S. companies that generate revenues overseas, and pressuring emerging market currencies and commodities prices. Also during this time period, oil prices collapsed due to excess global supply. China showed signs of slowing economic growth and declining confidence in the country s policymakers stoked worries about the potential impact on the global economy. Risk assets (such as equities and high yield bonds) struggled as volatility increased.

The elevated market volatility spilled over into 2016, but as the first quarter wore on, fears of a global recession began to fade, allowing markets to calm and risk assets to rebound. Central bank stimulus in Europe and Japan, combined with a more tempered outlook for rate hikes in the United States, helped bolster financial markets. A softening in U.S. dollar strength brought relief to U.S. exporters and emerging market economies, and oil prices rebounded as the world s largest producers agreed to reduce supply.

Volatility spiked in late June when the United Kingdom shocked investors with its vote to leave the European Union. Uncertainty around how the British exit might affect the global economy and political landscape drove investors to high-quality assets, pushing already low global yields to even lower levels. However, risk assets recovered swiftly in July as economic data suggested that the consequences had thus far been contained to the United Kingdom.

With a number of factors holding interest rates down central bank accommodation, an aging population in need of income, and institutions such as insurance companies and pension plans needing to meet liabilities assets offering decent yield have become increasingly scarce. As a result, income-seeking investors have stretched into riskier assets despite high valuations in many sectors.

Market volatility touched a year-to-date low in August, which may be a signal that investors have become complacent given persistent macro risks: Geopolitical turmoil continues to loom. A surprise move from the Fed i.e., raising rates sooner than expected has the potential to roil markets. And perhaps most likely to stir things up the U.S. presidential election.

At BlackRock, we believe investors need to think globally, extend their scope across a broad array of asset classes and be prepared to adjust accordingly as market conditions change over time. We encourage you to talk with your financial advisor and visit blackrock.com for further insight about investing in today s markets.

Sincerely,

Rob Kapito

President, BlackRock Advisors, LLC

Rob Kapito

President, BlackRock Advisors, LLC

Total Returns as of August 31, 2016

| | 6-month | 12-month |
|------------------------------|---------|----------|
| U.S. large cap equities | 13.60% | 12.55% |
| (S&P 500 [®] Index) | | |

| U.S. small cap equities (Russell 2000 [®] Index) | 20.87 | 8.59 |
|--|-------|--------|
| International equities | 10.35 | (0.12) |
| (MSCI Europe, Australasia, | | |
| Far East Index) Emerging market equities | 22.69 | 11.83 |
| (MSCI Emerging Markets Index) | | 1100 |
| 3-month Treasury bills | 0.17 | 0.23 |
| (BofA Merrill Lynch 3-Month U.S. Treasury Bill Index) | | |
| U.S. Treasury securities | 2.22 | 7.35 |
| (BofA Merrill Lynch | | |
| 10-Year U.S. Treasury Index) | | |
| U.S. investment grade bonds | 3.68 | 5.97 |
| (Bloomberg Barclays U.S. | | |
| Aggregate Bond Index) | | |
| Tax-exempt municipal | 3.35 | 7.03 |
| bonds (S&P Municipal Bond Index) | | |
| U.S. high yield bonds | 15.56 | 9.12 |
| (Bloomberg Barclays U.S. Corporate High Yield 2% Issuer | | , |
| Capped Index) | | |

Past performance is no guarantee of future results. Index performance is shown for illustrative purposes only. You cannot invest directly in an index.

THIS PAGE NOT PART OF YOUR FUND REPORT

Municipal Market Overview

For the Reporting Period Ended August 31, 2016 Municipal Market Conditions

Municipal bonds generated positive performance for the period, thanks to falling interest rates and a favorable supply-and-demand environment. Interest rates were volatile in 2015 (bond prices rise as rates fall) leading up to a long-awaited rate hike from the U.S. Federal Reserve (Fed) that ultimately came in December. However, ongoing reassurance from the Fed that rates would be increased gradually and would likely remain low overall resulted in strong demand for fixed income investments. Investors favored the relative yield and stability of municipal bonds amid bouts of volatility resulting from uneven U.S. economic data, volatile oil prices, global growth concerns, geopolitical risks (particularly the United Kingdom s decision to leave the European Union), and widening central bank divergence i.e., policy easing outside the United States while the Fed was posturing to commence policy tightening. During the 12 months ended August 31, 2016, municipal bond funds garnered net inflows of approximately \$57 billion (based on data from the Investment Company Institute).

For the same 12-month period, total new issuance remained relatively strong from a historical perspective at \$393 billion (though lower than the \$425 billion issued in the prior 12-month period). A noteworthy portion of new supply during this period was attributable to refinancing activity (roughly 61%) as issuers continued to take advantage of low interest rates and a flatter yield curve to reduce their borrowing costs.

S&P Municipal Bond Index Total Returns as of August 31, 2016 6 months: 3.35% 12 months: 7.03%

A Closer Look at Yields

From August 31, 2015 to August 31, 2016, yields on AAA-rated 30-year municipal bonds decreased by 98 basis points (bps) from 3.10% to 2.12%, while 10-year rates fell by 74 bps from 2.16% to 1.42% and 5-year rates decreased 47 bps from 1.33% to 0.86% (as measured by Thomson Municipal Market Data). The municipal yield curve experienced significant flattening over the 12-month period with the spread between 2- and 30-year maturities flattening by 100 bps and the spread between 2- and 10-year maturities flattening by 76 bps.

During the same time period, on a relative basis, tax-exempt municipal bonds broadly outperformed U.S. Treasuries with the greatest outperformance experienced in longer-term issues. In absolute terms, the positive performance of muni bonds was driven largely by falling interest rates as well as a supply/demand imbalance within the municipal market as investors sought income and incremental yield in an environment where opportunities became increasingly scarce. More broadly, municipal bonds benefited from the greater appeal of tax-exempt investing in light of the higher tax rates implemented in 2014. The asset class is known for its lower relative volatility and preservation of principal with an emphasis on income as tax rates rise.

Financial Conditions of Municipal Issuers

The majority of municipal credits remain strong, despite well-publicized distress among a few issuers. Four of the five states with the largest amount of debt outstanding California, New York, Texas and Florida have exhibited markedly improved credit fundamentals during the slow national recovery. However, several states with the largest unfunded pension liabilities have seen their bond prices decline noticeably and remain vulnerable to additional price deterioration. On the local level, Chicago s credit quality downgrade is an outlier relative to other cities due to its larger pension liability and inadequate funding remedies. BlackRock maintains the view that municipal bond defaults will remain minimal and in the periphery while the overall market is fundamentally sound. We continue to advocate careful credit research and believe that a thoughtful approach to structure and security selection remains imperative amid uncertainty in a modestly improving economic environment.

The opinions expressed are those of BlackRock as of August 31, 2016, and are subject to change at any time due to changes in market or economic conditions. The comments should not be construed as a recommendation of any individual holdings or market sectors. Investing involves risk including loss of principal. Bond values fluctuate in price so the value of your investment can go down depending on market conditions. Fixed income risks include interest-rate and credit risk. Typically, when interest rates rise, there is a corresponding decline in bond values. Credit risk refers to the possibility that the bond issuer will not be able to make principal and interest payments. There may be less information on the financial condition of municipal issuers than for public corporations. The market for municipal bonds may be less liquid than for taxable bonds. Some investors may be subject to Alternative Minimum Tax (AMT). Capital gains distributions, if any, are taxable.

The Standard & Poor s Municipal Bond Index, a broad, market value-weighted index, seeks to measure the performance of the US municipal bond market. All bonds in the index are exempt from US federal income taxes or subject to the alternative minimum tax. Past performance is no guarantee of future results. Index performance is shown for illustrative purposes only. It is not possible to invest directly in an index.

ANNUAL REPORT

4

The Benefits and Risks of Leveraging

The Trusts may utilize leverage to seek to enhance the distribution rate on, and net asset value (NAV) of, their common shares (Common Shares). However, these objectives cannot be achieved in all interest rate environments.

In general, the concept of leveraging is based on the premise that the financing cost of leverage, which is based on short-term interest rates, is normally lower than the income earned by a Trust on its longer-term portfolio investments purchased with the proceeds from leverage. To the extent that the total assets of the Trusts (including the assets obtained from leverage) are invested in higher-yielding portfolio investments, the Trusts shareholders benefit from the incremental net income. The interest earned on securities purchased with the proceeds from leverage is paid to shareholders in the form of dividends, and the value of these portfolio holdings is reflected in the per share NAV.

To illustrate these concepts, assume a Trust s Common Shares capitalization is \$100 million and it utilizes leverage for an additional \$30 million, creating a total value of \$130 million available for investment in longer-term income securities. If prevailing short-term interest rates are 3% and longer-term interest rates are 6%, the yield curve has a strongly positive slope. In this case, a Trust s financing costs on the \$30 million of proceeds obtained from leverage are based on the lower short-term interest rates. At the same time, the securities purchased by a Trust with the proceeds from leverage earn income based on longer-term interest rates. In this case, a Trust s financing cost of leverage is significantly lower than the income earned on a Trust s longer-term investments acquired from leverage proceeds, and therefore the holders of Common Shares (Common Shareholders) are the beneficiaries of the incremental net income.

However, in order to benefit Common Shareholders, the return on assets purchased with leverage proceeds must exceed the ongoing costs associated with the leverage. If interest and other costs of leverage exceed the Trusts return on assets purchased with leverage proceeds, income to shareholders is lower than if the Trusts had not used leverage. Furthermore, the value of the Trusts portfolio investments generally varies inversely with the direction of long-term interest rates, although other factors can influence the value of portfolio investments. In contrast, the value of the Trusts obligations under their leverage arrangements generally does not fluctuate in relation to interest rates. As a result, changes in interest rates can influence the Trusts NAVs positively or negatively.

Changes in the future direction of interest rates are very difficult to predict accurately, and there is no assurance that a Trust s intended leveraging strategy will be successful.

The use of leverage also generally causes greater changes in each Trust s NAV, market price and dividend rates than comparable portfolios without leverage. In a declining market, leverage is likely to cause a greater decline in the NAV and market price of a Trust s Common Shares than if the Trust were not leveraged. In addition, each Trust may be required to sell portfolio securities at inopportune times or at distressed values in order to comply with regulatory requirements applicable to the use of leverage or as required by the terms of leverage instruments, which may cause the Trusts to incur losses. The use of leverage may limit a Trust s ability to invest in certain types of securities or use certain types of hedging strategies. Each Trust incurs expenses in connection with the use of leverage, all of which are borne by Common Shareholders and may reduce income to the Common Shares. Moreover, to the extent the calculation of the Trusts investment advisory fees includes assets purchased with the proceeds of leverage, the investment advisory fees payable to the Trusts investment adviser will be higher than if the Trusts did not use leverage.

To obtain leverage, each Trust has issued Variable Rate Demand Preferred Shares (VRDP Shares) and/or leveraged its assets through the use of tender option bond trusts (TOB Trusts) as described in the Notes to Financial Statements.

Under the Investment Company Act of 1940, as amended (the 1940 Act), each Trust is permitted to issue debt up to $\frac{33}{3}$ % of its total managed assets or equity securities (e.g., Preferred Shares) up to 50% of its total managed assets. A Trust may voluntarily elect to limit its leverage to less than the maximum amount permitted under the 1940 Act. In addition, a Trust may also be subject to certain asset coverage, leverage or portfolio composition requirements imposed by the Preferred Shares governing instruments or by agencies rating the Preferred Shares, which may be more stringent than those imposed by the 1940 Act.

If a Trust segregates or designates on its books and records cash or liquid assets having a value not less than the value of a Trust s obligations under the TOB Trust (including accrued interest), a TOB Trust is not considered a senior security and is not subject to the foregoing limitations and requirements under the 1940 Act.

Derivative Financial Instruments

The Trusts may invest in various derivative financial instruments. These instruments are used to obtain exposure to a security, commodity, index, market, and/or other asset without owning or taking physical custody of securities, commodities and/or other referenced assets or to manage market, equity, credit, interest rate, foreign currency exchange rate, commodity and/or other risks. Derivative financial instruments may give rise to a form of economic leverage and involve risks, including the imperfect correlation between the value of a derivative financial instrument and the underlying asset, possible default of the counterparty to the

transaction or illiquidity of the instrument. The Trusts successful use of a derivative financial instrument depends on the investment adviser s ability to predict pertinent market movements accurately, which cannot be assured. The use of these instruments may result in losses greater than if they had not been used, may limit the amount of appreciation a Trust can realize on an investment and/or may result in lower distributions paid to shareholders. The Trusts investments in these instruments, if any, are discussed in detail in the Notes to Financial Statements.

ANNUAL REPORT

Trust Summary as of August 31, 2016

BlackRock Maryland Municipal Bond Trust

Trust Overview

BlackRock Maryland Municipal Bond Trust s (BZM) (the Trust) investment objective is to provide current income exempt from regular federal income taxes and Maryland personal income taxes. The Trust seeks to achieve its investment objectives by investing primarily in municipal bonds exempt from federal income taxes (except that the interest may be subject to the federal alternative minimum tax) and Maryland personal income taxes. The Trust invests, under normal market conditions, at least 80% of its managed assets in municipal bonds that are investment grade quality at the time of investment or, if unrated, determined to be of comparable quality by the Trust s investment adviser. The Trust may invest directly in such securities or synthetically through the use of derivatives.

No assurance can be given that the Trust s investment objective will be achieved.

Trust Information

| Symbol on New York Stock Exchange (NYSE) MKT | BZM |
|--|----------------|
| Initial Offering Date | April 30, 2002 |
| Yield on Closing Market Price as of August 31, 2016 (\$16.06) ¹ | 3.54% |
| Tax Equivalent Yield ² | 6.64% |
| Current Monthly Distribution per Common Share ³ | \$0.0474 |
| Current Annualized Distribution per Common Share ³ | \$0.5688 |
| Economic Leverage as of August 31, 2016 ⁴ | 35% |

¹ Yield on closing market price is calculated by dividing the current annualized distribution per share by the closing market price. Past performance does not guarantee future results.

- ² Tax equivalent yield assumes the maximum marginal federal and state tax rate of 46.65%, which includes the 3.8% Medicare tax. Actual tax rates will vary based on income, exemptions and deductions. Lower taxes will result in lower tax equivalent yields.
- ³ The distribution rate is not constant and is subject to change.
- ⁴ Represents VRDP Shares and TOB Trusts as a percentage of total managed assets, which is the total assets of the Trust, including any assets attributable to VRDP Shares and TOB Trusts, minus the sum of accrued liabilities. For a discussion of leveraging techniques utilized by the Trust, please see The Benefits and Risks of Leveraging on page 5.

Performance

Returns for the 12 months ended August 31, 2016 were as follows:

| | Returns Ba | Returns Based On | |
|---|--------------|-------------------------|--|
| | Market Price | NAV | |
| BZM ^{1,2} | 15.80% | 11.15% | |
| Lipper Other States Municipal Debt Funds ³ | 19.90% | 10.53% | |

¹ All returns reflect reinvestment of dividends and/or distributions.

- ² The Trust moved from a discount to NAV to a premium during the period, which accounts for the difference between performance based on price and performance based on NAV.
- ³ Average return.

Performance results may include adjustments made for financial reporting purposes in accordance with U.S. generally accepted accounting principles. The following discussion relates to the Trust s absolute performance based on NAV:

Municipal bonds generated strong performance in the annual period. Municipals were aided by the sharp decline in Treasury yields, which was brought about by the slow global economy and the accommodative policies of the world s central banks. (Bond prices rise as yields fall.) The yield curve flattened, as intermediate- and longer-term bonds generated the largest gains while shorter-term issues produced much smaller returns. In addition, lower-rated securities generally outpaced their higher-quality counterparts.

Despite finishing with a positive return, Maryland underperformed the broader, national tax-exempt market due to the above-average credit quality of the state s bonds. Investor demand shifted in favor of longer-term and lower-quality issues, leading to lower relative returns for AAA rated, general obligation securities a relative headwind for Maryland tax-backed bonds.

The use of leverage helped augment returns at a time of strong market performance. However, leverage had less of an impact in the second half of the period since the Fed s interest rate increase in December 2015 increased the costs of short-term financing.

Given the relative strength of longer-term bonds, the Trust s exposure to longer-duration assets and the long end of the yield curve had a positive impact on performance. Additionally, the Trust s exposure to lower-rated credits aided performance as yield spreads generally tightened over the period.

The Trust utilized U.S. Treasury futures contracts to manage exposure to a potential rise in interest rates, which had a slightly negative impact on performance due to the strength in the Treasury market. In addition, the Trust s yield declined during the period as the proceeds from bonds that were called away were reinvested at lower yields.

6

ANNUAL REPORT

BlackRock Maryland Municipal Bond Trust

Market Price and Net Asset Value Per Share Summary

| | 8/31/16 | 8/31/15 | Change | High | Low |
|-----------------|----------|----------|--------|----------|----------|
| Market Price | \$ 16.06 | \$ 14.44 | 11.22% | \$ 16.84 | \$ 14.28 |
| Net Asset Value | \$ 15.97 | \$ 14.96 | 6.75% | \$ 16.13 | \$ 14.79 |

Market Price and Net Asset Value History For the Past Five Years

Overview of the Trust s Total Investments*

Sector Allocation

| | 8/31/16 | 8/31/15 |
|--|---------|---------|
| Health | 29% | 27% |
| Education | 18 | 21 |
| Transportation | 17 | 19 |
| County/City/Special District/School District | 16 | 16 |
| Housing | 9 | 7 |
| Utilities | 9 | 7 |
| Corporate | 1 | 1 |
| Tobacco | 1 | |

State

For Trust compliance purposes, the Trust s sector classifications refer to any one or more of the sector sub-classifications used by one or more widely recognized market indexes or rating group indexes, and/or as defined by the investment adviser. These definitions may not apply for purposes of this report, which may combine such sector sub-classifications for reporting ease.

Call/Maturity Schedule³ 4% Calendar Year Ended December 31, 4% 2016 4% 2017 3 2018 8 2019 8 2020 11

³ Scheduled maturity dates and/or bonds that are subject to potential calls by issuers over the next five years.

* Excludes short-term securities.

Credit Quality Allocation¹

8/31/16 8/31/15

2

| AAA/Aaa AA/Aa | 10% 36 | 10% 35 |
|------------------|-----------|-----------|
| A | 30 | 30 |
| BBB/Baa | 14 | 15 |
| BB/Ba | 1 | 1 |
| N/R ² | 9 | 9 |

¹ For financial reporting purposes, credit quality ratings shown above reflect the highest rating assigned by either Standard & Poor s (S&P) or Moody s Investors Service (Moody s) if ratings differ. These rating agencies are independent, nationally recognized statistical rating organizations and are widely used. Investment grade ratings are credit ratings of BBB/Baa or higher. Below investment grade ratings are credit ratings of BB/Ba or lower. Investments designated N/R are not rated by either rating agency. Unrated investments do not necessarily indicate low credit quality. Credit quality ratings are subject to change.

² The investment adviser evaluates the credit quality of unrated investments based upon certain factors including, but not limited to, credit ratings for similar investments and financial analysis of sectors and individual investments. Using this approach, the investment adviser has deemed certain of these unrated securities as investment grade quality. As of August 31, 2016 and August 31, 2015, the market value of unrated securities deemed by the investment adviser to be investment grade each represents 2% of the Trust s total investments.

ANNUAL REPORT

AUGUST 31, 2016

7

Trust Summary as of August 31, 2016

BlackRock Massachusetts Tax-Exempt Trust

Trust Overview

BlackRock Massachusetts Tax-Exempt Trust s (MHE) (the Trust) investment objective is to provide as high a level of current income exempt from both regular federal income taxes and Massachusetts personal income taxes as is consistent with the preservation of shareholders capital. The Trust seeks to achieve its investment objective by investing primarily in Massachusetts tax-exempt obligations (including bonds, notes and capital lease obligations). The Trust invests, under normal market conditions, at least 80% of its assets in obligations that are rated investment grade at the time of investment or, if unrated, determined to be of comparable quality by the Trust s investment adviser. Under normal market conditions, the Trust invests its assets so that at least 80% of the income generated by the Trust is exempt from federal income taxes, including federal alternative minimum tax, and Massachusetts personal income taxes. The Trust invests primarily in long term municipal obligations with maturities of more than ten years. The Trust may invest directly in such securities or synthetically through the use of derivatives.

No assurance can be given that the Trust s investment objective will be achieved.

Trust Information

| Symbol on NYSE MKT | MHE |
|--|---------------|
| Initial Offering Date | July 23, 1993 |
| Yield on Closing Market Price as of August 31, 2016 (\$15.32) ¹ | 4.15% |
| Tax Equivalent Yield ² | 7.73% |
| Current Monthly Distribution per Common Share ³ | \$0.0530 |
| Current Annualized Distribution per Common Share ³ | \$0.6360 |
| Economic Leverage as of August 31, 2016 ⁴ | 36% |

¹ Yield on closing market price is calculated by dividing the current annualized distribution per share by