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Release #23-2024
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FOR IMMEDIATE RELEASE
THURSDAY, MAY 16, 2024

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**DOI REPORT FINDS NYCHA MISHANDLED WATER-RELATED CONCERNS
AT JACOB RIIS HOUSES IN 2022; ISSUES 23 REFORMS**

Jocelyn E. Strauber, Commissioner of the New York City Department of Investigation (“DOI”), issued a Report today based on a joint investigation by DOI and the office of Bart M. Schwartz, the former Federal Monitor for the New York City Housing Authority (“NYCHA”). The investigation examined water-related complaints in the summer of 2022 at Jacob Riis Houses in Manhattan, including cloudy water, and the circumstances surrounding subsequent laboratory water testing that produced erroneous results. This investigation determined that a series of missteps by NYCHA due to inadequate training of staff, flawed procedures related to NYCHA’s water distribution system, and general mishandling of water-related concerns, resulted in NYCHA’s failure to identify the cause of the discolored water. DOI also found that NYCHA then selected a prime vendor to test the water for contaminants, which subcontracted with a lab that lacked the required State certification to conduct that testing, and that NYCHA failed to give adequate direction to that prime vendor concerning the appropriate testing to conduct and to otherwise sufficiently oversee the testing process. Test results from the subcontracted laboratory based on samples taken on several dates incorrectly showed the presence of arsenic in Jacob Riis Houses water at levels exceeding federal and State standards. In fact, based on subsequent testing of the water at Jacob Riis Houses, arsenic was not detectable, or was far below levels requiring action by federal and State public health agencies. A copy of the Report is attached to this release and can be found here: <https://www.nyc.gov/site/doi/newsroom/public-reports.page>

DOI Commissioner Jocelyn E. Strauber said, “NYCHA’s inability to properly determine the cause of the water concerns at Jacob Riis Houses was the starting point of the agency’s flawed response, prompting undue anxiety and stress for residents and a delay in resolving their complaints about discolored water — problems that were not caused by arsenic but by a failed house pump. NYCHA also failed to provide adequate guidance to the laboratory that subcontracted out the testing to a vendor that lacked appropriate certification to test for arsenic and other contaminants. The laboratory and its subcontractor also bear responsibility in this troubling incident. DOI’s findings and recommendations have already led to reforms at NYCHA, including strengthening protocols related to emergency response to water problems and improving training for staff on key issues such as NYCHA’s water distribution systems. With this report, DOI makes additional recommendations to NYCHA regarding its handling of water-related issues.”

Arsenic is a naturally occurring element that can be found in the air, water and land. Long-term exposure to arsenic in drinking water and food can cause cancer and other serious health problems, depending on the type and amount of arsenic consumed, how it entered the body, the length of exposure, the individual’s health status, and other factors.

Between June and September 2022, residents of Jacob Riis Houses made approximately 580 complaints regarding water quality issues, including “dirty or brown water,” “low water pressure,” “no hot water,” “no cold water,” and “no water.” NYCHA decided on August 12, 2022, and several instances thereafter, to test the water. NYCHA contracted with LiquiTech, a laboratory which subcontracted with

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Environmental Monitoring and Technologies, Inc. (“EMT”), to conduct testing of the water; however, EMT lacked the required New York State laboratory certification to test for certain contaminants, including arsenic. NYCHA received test results on August 29 and September 1, 2022, incorrectly showing the presence of arsenic in the Jacob Riis Houses’ water at levels exceeding federal and State standards.

NYCHA’s water system is not considered a Public Water System and therefore it is not subject to the requirements imposed on such systems; therefore, even if the test results had been accurate, NYCHA was not required to make any notification or to take any other immediate action. However, NYCHA did take steps to address the supposed arsenic, including reporting to the City Department of Environmental Protection (“DEP”) and the City Department of Health and Mental Hygiene (“DOHMH”) on September 1 the positive test results for arsenic, and on September 2, notifying Jacob Riis Houses’ residents, City Hall, and DOI of the results. NYCHA also began distributing bottled and canned water to residents. On September 3, NYCHA reported the results to the United States Attorney’s Office for the Southern District of New York, the United States Department of Housing and Urban Development, and the former Federal Monitor for NYCHA. Additionally, on September 3, NYCHA contracted with a second laboratory to perform additional testing to confirm the presence of the supposed arsenic.

Subsequent tests of the water showed that the water did not contain detectable levels of arsenic, or contained levels far below those requiring action by federal and State public health agencies. EMT retracted its erroneous test results and NYCHA conveyed to its residents that the water was safe to drink on September 10, 2022. It was later determined that the cause of the water problems at Jacob Riis Houses was a malfunctioning house pump in the water distribution system and that the water, although discolored, was safe to drink.

This investigation found that while NYCHA’s efforts were undertaken in good faith to promptly address the perceived public health issue, NYCHA’s inability to properly determine the cause of the water problems, exacerbated by the erroneous test results, caused unquantifiable stress for residents at the Jacob Riis Houses, and cost NYCHA nearly \$500,000 in unnecessary costs.

Specifically, this investigation found:

- The cloudy water at the Jacob Riis Houses was due to the failure of one of two house pumps in the development, which put stress on the remaining house pump and caused air to be introduced into the water system resulting in aerated water, which has a cloudy appearance.
- NYCHA’s handling of the water-related complaints at Jacob Riis Houses reflected a series of policy and procedural flaws that led to:
 - the continuing presence of cloudy water,
 - the failure to identify the broken house pump as the most likely cause,
 - the executive staff’s failure to closely oversee the water testing process and ensure appropriate water testing was conducted, and
 - the selection of a contractor with a subcontracted laboratory that lacked the appropriate certification and did not properly perform certain lab procedures, ultimately producing an incorrect test result reflecting the presence of arsenic in the water when there was no detectable level, or a level far below that which would require action by federal and State public health agencies.
- NYCHA lacked adequate training for its staff with respect to the maintenance of the water distribution system.
- NYCHA lacked established procedures for emergency water testing in the event of a potential contaminant.

In the wake of these events, the State passed an amendment to its State Public Housing Law that requires NYCHA to provide written notice to residents “as soon as practical but no later than 24 hours” after receiving advice from a government agency that residents should avoid use of water. DOI notes that NYCHA provided notification to residents consistent with that requirement on September 2, 2022, after notifying DOHMH of the positive test result for arsenic and at DOHMH’s direction. The new legislation also requires NYCHA to “establish appropriate measures, procedures, and guidelines ... to ensure that all of its contractors and subcontractors, when collecting or examining water samples on behalf of [NYCHA], comply with all ... laws, rules, and regulations applicable to such collection or examination, including ... the public health law.”

NYCHA has made a number of policy and procedural changes in response to these events, including establishing an Office of Water Quality, contracting with vendors for services related to water testing in the event of future emergencies, and issuing a new Standard Procedure Manual for Domestic Water Service. DOI and the former Federal Monitor made 23 additional recommendations, the majority of which have been accepted by NYCHA, and generally focus on strengthening the role of NYCHA's executive staff in the handling of water-related issues, training of NYCHA staff, notifying residents with respect to water contamination issues, and other matters, including:

- NYCHA should change definitions and designations in NYCHA's Standard Procedure Manual for Domestic Water Service to clarify certain roles and better define certain conditions, such as "low [water] pressure."
- NYCHA should provide clearer guidance on procurement and when a new contract must be executed for services. Old contracts should not be used if the services sought by NYCHA are not expressly covered within the scope of the contract.
- NYCHA should adopt the recommendation of NYCHA's Environmental Health and Safety Department to establish a Water Complaint and Surveillance Program with more accurate classification codes and priority levels.
- NYCHA should require qualified personnel to cover for absent superintendent-colleagues, so that a development is never without a superintendent. Before a superintendent leaves their position, they should be required to conduct an inspection of the property and produce a transition memo to be used by their successor and any interim superintendent.
- NYCHA must clarify in its Standard Procedure Manual for Domestic Water Service the specific executives that must be involved in the decision to test water; the manual should also describe the circumstances in which executive level staff must be notified in the event of a planned water outage, work performed during an unplanned water outage, a low-water pressure issue, or complaints relating to the appearance or condition of the water.
- NYCHA should specify in the Manual (1) the staff at the Office of Water Quality who are responsible for analyzing the results of water quality tests; (2) a procedure for confirmatory/repeat sampling of each contaminant tested, as applicable, if initial test results are positive; (3) that residents be notified of test results for both planned and unplanned testing as soon as the results are available, and in the case of positive test results, as soon as confirmatory results are available.
- NYCHA's contracts with vendors should specify that water will be retested following a positive result indicating the presence of a contaminant and that re-test results should be available as soon as possible, but no later than 24-48 hours thereafter.
- NYCHA should have job-and-site-specific trainings regarding the water distribution systems.

The full list of recommendations is included in the Report, along with NYCHA's responses.

DOI Commissioner Strauber thanks the office of Bart M. Schwartz, the former Federal Monitor for NYCHA, for its partnership on this investigation. Commissioner Strauber also thanks NYCHA CEO Lisa Bova-Hiatt, DOHMH Commissioner Ashwin Vasan, MD, PhD, DEP Commissioner Rohit T. Aggarwala, and their staffs, for their cooperation and assistance in this investigation.

At DOI, the investigation was conducted by Chief Investigator Alfred Carletta and Assistant Counsel Lauren Kropiewnicki, at DOI's Office of the Inspector General for NYCHA, under the supervision of Assistant Inspector General William O'Brien, Deputy Inspector General Osa Omoigui, Inspector General Ralph Iannuzzi, Deputy Commissioner of Strategic Initiatives Christopher Ryan, and Deputy Commissioner/Chief of Investigations Dominick Zarrella.

DOI is one of the oldest law-enforcement agencies in the country and New York City's corruption watchdog. Investigations may involve any agency, officer, elected official or employee of the City, as well as those who do business with or receive benefits from the City. DOI's strategy attacks corruption comprehensively through systemic investigations that lead to high-impact arrests, preventive internal controls and operational reforms that improve the way the City runs.

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New York City
Department of Investigation



Investigation of Water-Related Concerns in 2022 at NYCHA's Jacob Riis Houses

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May 2024

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I. EXECUTIVE SUMMARY

This is the report of the Department of Investigation of the City of New York (“DOI”) on the joint investigation of DOI and the office of Bart M. Schwartz, the former New York City Housing Authority Federal Monitor, into various issues relating to water quality at the Jacob Riis Houses in the summer of 2022.^{1,2}

From June 13 to September 3, 2022, residents of certain buildings in the New York City Housing Authority’s (“NYCHA” or “the Authority”) Jacob Riis Houses (“Riis Houses”) made approximately 580 complaints regarding water quality issues, including for “dirty or brown water,” “low water pressure,” “no hot water,” “no cold water,” and “no water.”³ As explained in detail herein, NYCHA later discovered that the discolored water⁴ and other issues were not caused by contamination; the principle cause instead was a malfunctioning house pump in the Riis Houses water distribution system and the water, although discolored, was safe to drink.

Through a series of missteps resulting from inadequate training, flawed procedures, management’s ad hoc response, and general mishandling of the water-related concerns, among other issues, NYCHA initially failed to determine the cause of the discolored water. On August 12, and on several occasions thereafter, NYCHA decided to test the water for contaminants and for bacteria. NYCHA selected a contractor, LiquiTech, whose subcontracted laboratory, Environmental Monitoring and Technologies, Inc. (“EMT”),⁵ lacked the required New York State laboratory certification to test for certain contaminants. EMT’s test results from two sets of samples taken on different dates, received by NYCHA on August 29 and September 1, incorrectly showed the presence of arsenic in the Riis Houses water at levels exceeding federal and state requirements.⁶

¹ Bart M. Schwartz completed his five-year monitorship of the New York City Housing Authority on February 27, 2024. On February 28, 2024, Neil Barofsky and Matt Cipolla of Jenner & Block LLP assumed their roles as the independent, Federal Co-Monitors of the New York City Housing Authority.

² This investigation did not include the recent claims by certain residents of the Jacob Riis Houses that they have symptoms consistent with arsenic toxicity.

³ Although the water was cloudy, work order requests submitted in the MyNYCHA App or by calling the Property Maintenance Office or Customer Contact Center can only be classified in NYCHA’s work order management system as dirty or brown water, low water pressure, no hot water, no cold water, or no water. *See infra* III, A, Issue 1.

⁴ This report uses “discolored” and “cloudy” interchangeably to describe the water conditions at the Riis Houses.

⁵ LiquiTech uses the following two subcontracted labs: Environmental Monitoring and Technologies, Inc., and Special Pathogens Laboratory.

⁶ As explained in detail herein, the United States Environmental Protection Agency’s Maximum Contaminant Levels (“MCLs”), as well as the New York State requirements, aside from those for *Legionella* and the annual water tank *E. coli* and coliforms testing, do not apply to NYCHA water, because those MCLs apply only to public water systems. While NYCHA gets water from the New York City water system, a public water system, and stores that water in roof water tanks, NYCHA is not a public water system and is not regulated as such. Nonetheless, the regulations are a useful point of comparison for the supposed levels of arsenic found in the water at the Riis Houses. *See infra* II, A, 1, Regulatory Background.

In fact, and as subsequent testing made clear, arsenic was not detectable, or was at levels far below federal and state public health agency standards, in the Riis Houses water.⁷

Arsenic is a naturally occurring chemical element that is widely distributed through the air, water, and land.⁸ Long-term exposure to arsenic from drinking water and food can cause cancer and other serious health problems,⁹ depending on the type and amount of arsenic consumed, how it entered the body, the length of exposure, the individual’s health status, and other factors.¹⁰

After receiving these water test results on August 29 and September 1, NYCHA management reported, on September 1, the supposed presence of arsenic in the water to the New York City Department of Environmental Protection (“N.Y.C. DEP”) and Department of Health and Mental Hygiene (“N.Y.C. DOHMH”), and on September 2, reported the results to the Riis Houses residents, City Hall, and DOI’s Inspector General for NYCHA. On September 3, NYCHA reported the results to the United States Attorney’s Office for the Southern District of New York, the United States Department of Housing and Urban Development, and the former Federal Monitor for NYCHA. As discussed further herein, under the existing federal and state standards the water test results, even if they had in fact accurately shown the presence of arsenic, did not require NYCHA to provide any notification to residents or government agencies, or take any other steps. Nevertheless, NYCHA sought N.Y.C. DEP and N.Y.C. DOHMH’s guidance on the appropriate response to the positive test results and, based on the guidance of N.Y.C. DOHMH, notified Jacob Riis Houses residents of the test results and management distributed clean bottled and canned water to residents and made other efforts to address the supposed arsenic in the Riis Houses water. NYCHA’s efforts, although undertaken in good faith to address what was perceived to be a potentially serious public health issue, caused residents unquantifiable stress, cost NYCHA almost \$500,000,¹¹ and proved unnecessary because the water was not in fact contaminated. After other laboratory tests showed that the water was undetectable for arsenic, or was at levels far below federal and state public health agency standards, and EMT fully retracted its erroneous test results, NYCHA conveyed to the residents that the water was safe to drink on September 10.

⁷ *Results Received: September 5, 6, and 7, 2022*, THE LIRO GROUP, <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/LIRO-Results-Received-090522-090622-and-090722.pdf> (last visited Apr. 29, 2024) (The test results from The LiRo Group—the second company hired by NYCHA to test the Riis Houses water after the Authority learned that EMT potentially had reached incorrect conclusions with respect to the presence of arsenic in NYCHA’s water supply—indicated that the samples were non-detectable for arsenic or were far below levels requiring action by federal and state public health standards); *see infra* II, A, 1, Regulatory Background.

⁸ *Arsenic Fact Sheet*, WORLD HEALTH ORGANIZATION, <https://www.who.int/news-room/fact-sheets/detail/arsenic> (last visited Apr. 29, 2024).

⁹ AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, UNITED STATES CENTERS FOR DISEASE CONTROL AND PREVENTION, CAS # 7440-38-2, ARSENIC - TOXFAQS (2007), <https://www.atsdr.cdc.gov/toxfaqs/tfacts2.pdf> (last visited Apr. 29, 2024).

¹⁰ *Arsenic*, NEW YORK STATE DEPARTMENT OF HEALTH, <https://www.health.ny.gov/publications/0624/> (last visited Apr. 29, 2024).

¹¹ NYCHA initially assessed the cost as \$352,810.78 in March 2023. This figure was revised to \$482,506.45 in August 2023 after invoices and payments to residents were processed. This figure includes overtime costs and 1,684 payments of \$200 to Riis residents, totaling \$336,800.

These events resulted in a joint investigation by NYCHA’s former Federal Monitor Bart M. Schwartz and DOI’s Inspector General for NYCHA. The investigation concluded, as set forth in detail herein, that EMT’s results indicating the presence of arsenic in the water exceeding federal and state standards were incorrect, which was confirmed by another laboratory’s testing. The cloudy water at the Riis Houses was due to the failure of one of the two house pumps in the development, which put stress on the remaining house pump and caused air to be introduced into the water system, resulting in aerated water, which has a cloudy appearance. The investigation further concluded that NYCHA’s handling of the water-related complaints at the Riis Houses reflected a series of policy and procedural flaws and that executive staff at NYCHA failed to closely oversee the water testing process once underway. These flaws and lack of close oversight led to the continuing presence of cloudy water, the failure to identify the broken house pump as the most likely cause, the failure to ensure that the appropriate water testing was conducted, and the selection of a contractor with a subcontracted laboratory to conduct the testing that lacked the appropriate certification and did not properly perform certain lab procedures, ultimately producing an incorrect test result reflecting the presence of arsenic in the water exceeding federal and state standards.¹² In sum, as discussed in detail herein, NYCHA lacked adequate training for its staff with respect to the maintenance of the water distribution system and lacked established procedures for emergency water testing in the event of a potential contaminant.

Following these events, New York State passed an amendment to its State Public Housing Law that requires NYCHA to provide written notice to residents “as soon as practical but no later than twenty-four hours” after receiving advice from a government agency that residents should avoid use of water.¹³ And it is worth noting that NYCHA provided notification to residents consistent with that requirement in the summer of 2022, when N.Y.C. DOHMH directed it to do so on September 2. The new legislation also requires NYCHA to “establish appropriate measures, procedures, and guidelines...to ensure that all of its contractors and subcontractors, when collecting or examining water samples on behalf of [NYCHA], comply with all...laws, rules, and regulations applicable to such collection or examination, including...the public health law.”¹⁴

NYCHA also made a number of policy and procedural changes in response to the events at the Riis Houses. Among other changes, NYCHA established an Office of Water Quality, contracted with vendors for services related to water testing in the event of future emergencies,

¹² *Results Received: September 5, 6, and 7, 2022*, THE LIRO GROUP, <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/LIRO-Results-Received-090522-090622-and-090722.pdf> (last visited Apr. 29, 2024) (The test results from The LiRo Group—the second company hired by NYCHA to test the Riis Houses water after the Authority learned that EMT potentially had reached incorrect conclusions with respect to the presence of arsenic in NYCHA’s water supply—indicated that the samples were non-detectable for arsenic or were far below levels requiring action by federal and state public health standards); *see infra* II, A, 1, Regulatory Background.

¹³ New York State Public Housing Law § 402-e(1)(b) (amended 2023).

¹⁴ *Id.* at (1-a).

and issued a new Standard Procedure Manual for Domestic Water Service (“Manual”).^{15,16} After reviewing a draft of NYCHA’s Manual, DOI and the former NYCHA Federal Monitor made recommendations to NYCHA concerning the Manual’s definitions relating to water issues, procurement, the maintenance of house pumps and roof water tanks, and the role of superintendents—some of which NYCHA has agreed to implement, as noted below. This report makes several additional recommendations concerning the role of NYCHA’s executive staff in the handling of water-related issues, training of NYCHA staff, notification to residents with respect to water contamination issues, and other matters.

Recommendations 1-11 below were made to NYCHA on July 18, 2023, and recommendations 12-23 were made from December 22, 2023, to May 15, 2024.¹⁷

1. The Manual defines *water outage point of contact* as “an employee designated to manage a no water outage, monitor restoration of service, request resources, and provide incident reports. It is usually a property manager, property maintenance supervisor, assistant property maintenance supervisor, or Emergency Management and Services Department supervisor (outside of normal business hours), although it can be any employee as assigned.” The Manual should require that a supervisor serve as the water outage point of contact. Furthermore, the Property Manager should have the responsibility of designating the water outage point of contact. **NYCHA accepted and implemented this change.**
2. *Low pressure* is currently defined in the Manual as “water that comes out of a faucet at a significantly reduced flow.” However, low pressure should be quantified using an objective measurement such as pounds per square inch (“psi”), and NYCHA should determine a baseline water pressure for each development. Once a baseline water pressure has been established for each development, NYCHA should determine a threshold psi that indicates low pressure. **NYCHA accepted in part. NYCHA believes that a measurement such as psi would not be an accurate reflection of low water pressure at NYCHA’s properties because pressure rates greatly vary depending on the apartment’s faucet hardware, the floor on which apartment is located, etc. NYCHA will instead build questions into their Maximo system to prompt property management employees to look at numerous**

¹⁵ NYCHA issues Standard Procedure Manuals which detail protocols that must be followed by NYCHA employees, consultants, contractors, and other third parties who use or are issued any handheld device to access NYCHA information assets.

¹⁶ NEW YORK CITY HOUSING AUTHORITY, INDEX NO. 040:23:1, NYCHA STANDARD PROCEDURE MANUAL: DOMESTIC WATER SERVICE *INTERIM* (2023).

¹⁷ Recommendations 1 and 2 discuss water systems generally and are not directly related to the cloudy water complaints and subsequent events discussed in this report. The former NYCHA Federal Monitor and DOI are making recommendations 1 and 2 because NYCHA should provide clear and sufficiently detailed Manual language concerning all aspects of NYCHA’s water systems and potential water issues—including not only cloudiness, but also low pressure and outages. *See also* Former Federal Monitor Bart M. Schwartz, *Monitor’s Final Quarterly Report for the New York City Housing Authority*, Riis Exhibit Findings and Conclusions of the Monitor, pg. 62 (Feb. 27, 2024), https://img1.wsimg.com/blobby/go/1191cd59-cd0d-4d02-a60c-098cfcfb7ca1/downloads/Riis_Exhibit_-_Monitor_Findings.pdf?ver=1709305398044 (last visited Apr. 29, 2024) (In the Riis Exhibit of the former Federal Monitor’s Final Quarterly Report for the New York City Housing Authority, the former Federal Monitor issued a separate list of recommendations that does not reflect the recommendations that the former Federal Monitor issued with DOI in July 2023).

aspects to determine if the water pressure is in fact low (e.g., is there a pressure difference for hot water versus cold water, does the unit have non-NYCHA-installed faucet hardware, on what floor is the apartment located, etc.).

3. The Standard Procedure Manual defines *root cause* as “the main problem that leads to a water complaint.” NYCHA should adjust the definition to state “the principal phenomenon or circumstance which creates a water quality anomaly requiring responsive action.” **NYCHA accepted and implemented this change.**
4. NYCHA should give clearer guidance on procurement and when a new contract must be executed for services. Old contracts should not be used if the services sought by NYCHA are not expressly covered within the scope of the contract. **NYCHA accepted and implemented this change.**
5. The Manual dictates that, when an accumulation of work orders exists with respect to a particular location, the property maintenance supervisor or assigned employee must immediately visit that location to determine if a water outage exists. NYCHA should also require that the property maintenance supervisor or assigned employee determine if dirty and cloudy water conditions exist at the location in response to an accumulation of work orders. Moreover, a numerical standard is needed, such as a percentage of 10-20% of units, to be an indicator for circumstances when there is an accumulation of work orders at a particular location that suggests that the issue is potentially development-wide. **NYCHA accepted in part. NYCHA does not believe a numerical standard is appropriate for this purpose given the variation in property size but accepted a procedure that requires staff to respond based on an accumulation or findings based on an individual unit.**
6. In the event that only one house pump is operating, the Manual requires that “the Property Management Office performs a house pump watch. This means a qualified employee always must be on duty and in the vicinity of the house pump as long as only one house pump is operating. The qualified employee is someone who has the ability to switch a pump to manual every 30 to 60 minutes to fill water in the roof tank up to the high limit if the low-level alarm goes off.” It is unclear what “in the vicinity of the house pump” and switching the pump to manual means. NYCHA should include more detailed directions for this procedure here. **NYCHA accepted and implemented this change.**
7. Inspections of the house pumps are done daily or monthly, depending on the location of the house pump. House pumps located in a boiler room are inspected daily by an employee of the Heating Management Services Department, while house pumps located anywhere else on the development property are inspected monthly by an employee of the Property Management Office. The expertise of the employees conducting the inspection also varies. The Heating Management Services Department employees have education, certifications, and expertise relevant to the mechanics of the house pump and water distribution system; Property Management Office employees are less likely to have a detailed understanding of the system. There appears to be no logical basis for assigning employees to house pump

inspections based on the location of the house pumps. Therefore, the Heating Management Services Department should handle all house pump inspections daily, no matter where the pump is located. **NYCHA rejected this recommendation. NYCHA is instead rolling out an inspection protocol that will require house pumps to be inspected weekly by superintendents, monthly by electricians, and quarterly by plumbers. The superintendents' inspection will have a checklist with more than a dozen questions about pump room components (e.g., control panels, debris, valves, alarms, etc.).**

8. The Manual describes a vendor's requirement to fill out the *Annual Roof Tank Inspection Report* form and provide that form to the Property Management Office. Certain testing done at NYCHA (e.g., lead-based paint via XFR testing and mold assessments) requires the use of a hand-held device and program. In these instances, the programs generate Maximo Inspection work orders so that, even before test results are received, NYCHA can know which locations were assigned to be tested and the dates of the samplings. The information is stored in NYCHA's system, so that NYCHA does not need to rely on the vendor to self-report. NYCHA should implement the same process for the annual roof tank inspections and for any water testing. **NYCHA accepted but notes that there will always be a paper system outside of Maximo that NYCHA's vendors must use for the N.Y.C. DOHMH filing.**
9. NYCHA should adopt the recommendation of NYCHA's Environmental Health and Safety Department to establish a Water Complaint and Surveillance Program with more accurate classification codes and priority levels.¹⁸ Additionally, the Program should have a percentage threshold, rather than a number. **NYCHA is discussing internally. NYCHA believes that implementing this recommendation would require extensive coding by NYCHA's IT Department and would be a project that NYCHA could develop as the Authority transitions to new IT software.**
10. NYCHA should require qualified personnel to cover for absent superintendent-colleagues, so that a development is never without a superintendent. Before a superintendent leaves their position, they should be required to conduct an inspection of the property and produce a transition memorandum (following a standard template) to be used by their successor and any interim superintendent. **NYCHA accepts.**
11. The Manual should describe the circumstances in which executive level staff must be notified—and identify the members of the executive staff who must be notified—in the event of a planned water outage, work performed during an unplanned water outage, a low water pressure issue, or complaints relating to the appearance or condition of the water. **NYCHA accepted and implemented this change.**

¹⁸ See Appendix, NYCHA's Environmental Health and Safety Department Recommendation.

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12. The Manual is inconsistent about which NYCHA executives must be involved in the decision to test water. Some aspects of that decision-making process, as set forth in the Manual, require the consultation of the Executive Vice President of Property Management Operations, while others do not. NYCHA should create a procedure that clearly describes the decision-making process with respect to water testing. At all stages of that process, water quality experts should be included and should make a recommendation to the ultimate decision-makers as to whether water should be tested for contaminants. NYCHA should consult with N.Y.C. DOHMH regarding the necessity of testing and the type of testing to conduct, and if NYCHA believes there is an issue with the water entering the Authority's building(s) (i.e., not an issue caused by internal conditions of the building(s)), then NYCHA should request that N.Y.C. DEP test the water main nearby the building(s) of concern as soon as reasonably practicable. **NYCHA accepted and implemented this change.**
13. NYCHA should consult with N.Y.C. DOHMH concerning whether NYCHA should disclose to residents a decision to conduct water testing that is prompted by a suspicion of contamination, prior to the receipt of test results. If disclosure is deemed appropriate, NYCHA should consult with N.Y.C. DOHMH as to the content of the disclosure, but any disclosure should be made within 24 hours of the commencement of testing. DOI believes that transparency in these circumstances is paramount and that determinations implicating issues of public health should be made in consultation with the City's public health agency. **NYCHA accepts, but the Authority will need to continue to discuss this recommendation with DOI and N.Y.C. DOHMH during its implementation.**
14. NYCHA's contracts with vendors should specify that water will be retested following a positive result indicating the presence of a contaminant and that re-test results should be provided to NYCHA as soon as possible, but no later than 24-48 hours thereafter. **NYCHA accepts but notes that the 24–48-hour time constraint may not be possible for certain types of bacteriological testing, depending on how the lab conducts the test and handles the samples. NYCHA agrees to have re-test results available as soon as possible after the initial results are received.**
15. NYCHA should specify in the Manual (1) the staff at the Office of Water Quality who are responsible for analyzing the results of water quality tests; (2) a procedure for confirmatory/repeat sampling of each contaminant tested, as applicable, if initial test results are positive; (3) that residents be notified of negative test results for both planned and unplanned testing as soon as reasonably practicable but no later than 24 hours after NYCHA receives the results, and in the case of positive test results, as soon as reasonably practicable but no later than 24 hours after NYCHA receives the confirmatory test results. **NYCHA accepts, but the Authority will need to continue to discuss this recommendation with DOI, N.Y.C. DOHMH, and N.Y.C. DEP during its implementation.**

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16. NYCHA should mandate that the Authority follow the MCLs set by the United States Environmental Protection Agency and New York State Department of Health, or other federal/state action levels as applicable. If the Authority receives a positive confirmatory test result indicating the presence of a contaminant at a concentration above the MCL or action level for that contaminant, then NYCHA should notify residents as soon as reasonably practicable, but no later than 24 hours, after receiving the confirmatory test result. For internal building issues, NYCHA should seek advice from N.Y.C. DOHMH regarding remediation and the contents of notification to residents prior to making notification. For test results related to the City water supply, NYCHA should seek advice from N.Y.C. DEP; N.Y.C. DEP will follow its standard response procedures and public notification requirements in coordination with N.Y.C. DOHMH and the New York State Department of Health. **NYCHA accepts.**

 17. In drafting its notification to residents, as recommended in 15 and 16 above, in addition to consultation with N.Y.C. DOHMH as to the content of the notification, NYCHA should consider the public notification requirements of the United States Environmental Protection Agency and New York State Department of Health (e.g., potential adverse health effects, populations and subpopulations impacted, etc.).¹⁹ **NYCHA accepts, but the Authority will need to continue to discuss this recommendation with DOI and N.Y.C. DOHMH during its implementation.**

 18. NYCHA's new contract for "Specifications for Annual Gravity Water Tank Inspection, Cleaning, Disinfection, Bacteriological Water Sampling and Related Work at Various NYCHA Developments Citywide" should be amended to specify that the contractor must respond to emergency work requests within a certain time period and state a timeframe for commencement and completion of the work. **NYCHA accepts.**

 19. NYCHA should have job-and-site-specific trainings regarding the water distribution systems. **NYCHA accepts.**

 20. Inspections of the house pumps should be properly checked for completeness by the superintendent and the property manager. Additionally, employees should be directed to check the house pump alarm and the roof tank hatch door during inspections. **NYCHA accepts.**

 21. NYCHA should also enable, through Bluetooth or other means, an alert to be received digitally on a NYCHA handheld device when the alarm goes off. **NYCHA accepts but notes that this would require significant investment, which will need to be included within the scope of a larger capital project.**

¹⁹ See Appendix, U.S. EPA's Required Elements of a Public Notice and Provided Example of a Public Notice.

22. NYCHA should impose an automated system-based requirement, through computer coding or otherwise, that ensures a requisition is read by the approver before it is approved. **NYCHA accepts.**
23. NYCHA should include a provision in the Manual requiring a development property management employee to coordinate with the Technical Services Department to obtain a hale pump where a house pump is malfunctioning or removed for service. **NYCHA accepts.**

II. BACKGROUND & SUMMARY OF KEY ISSUES

A. Background

1. Regulatory Background

New York City transports its water supply for its 8.3 million residents²⁰ and approximately 220,000 businesses²¹ from the Croton System, Catskill System, and Delaware System reservoirs.²² From the water’s origin, until it arrives at a building’s point of entry, N.Y.C. DEP is responsible for water quality. Once the water enters a building’s point of entry, the building owner is responsible for water quality issues caused by internal conditions.

The Safe Drinking Water Act (“SDWA”) authorizes the United States Environmental Protection Agency (“U.S. EPA”) to set National Primary Drinking Water Regulations to protect public health—this includes establishing treatment standards and contaminant limits.²³ Under the SDWA, the U.S. EPA sets both unenforceable goals, called Maximum Contaminant Level Goals (“MCLGs”),²⁴ and enforceable standards, called Maximum Contaminant Levels (“MCLs”),²⁵

²⁰ *QuickFacts: New York City, New York*, UNITED STATES CENSUS BUREAU, <https://www.census.gov/quickfacts/newyorkcitynewyork> (last visited Apr. 29, 2024).

²¹ *N.Y.C. Small Business First Report*, N.Y.C. MAYOR’S OFFICE OF OPERATIONS AND N.Y.C. DEPARTMENT OF SMALL BUSINESS SERVICES 3, <https://www.nyc.gov/assets/smallbizfirst/downloads/pdf/small-business-first-report.pdf> (last visited Apr. 29, 2024).

²² *Current Water Distribution*, N.Y.C. DEPARTMENT OF ENVIRONMENTAL PROTECTION, <https://www.nyc.gov/site/dep/water/current-water-distribution.page> (last visited Apr. 29, 2024).

²³ Safe Drinking Water Act, 42 U.S.C. § 300f et seq. (1974).

²⁴ *Id.* at § 300g-1(b)(4)(A) (A Maximum Contaminant Level Goal is the level of a contaminant in drinking water at which there is no known or expected risk to health); *see also How EPA Regulates Drinking Water*, U.S. EPA, <https://www.epa.gov/sdwa/how-epa-regulates-drinking-water-contaminants> (last visited Apr. 29, 2024) (“MCLGs are non-enforceable public health goals. MCLGs consider only public health and not the limits of detection and treatment technology effectiveness. Therefore, they sometimes are set at levels which water systems cannot meet because of technological limitations”).

²⁵ *Id.* at §§ 300f(3) and 300g-1(b)(4)(B) (A Maximum Contaminant Level is the highest concentration of a contaminant that can safely be present in drinking water).

which apply to *public water systems*,²⁶ including *community*;²⁷ *transient, non-community*;²⁸ and *non-transient, non-community*²⁹ water systems. The MCLG is the level of a contaminant in drinking water at which there is no known or expected risk to health.³⁰ The MCL is the highest level of a contaminant that is allowed in drinking water,³¹ and is set as close to the MCLG as feasible using the best available treatment technology and taking cost into consideration.³² The SDWA allows states to promulgate drinking water standards that are no less stringent than the federal drinking water standards.³³ At the state level, the New York State Department of Health (“N.Y.S. DOH”) sets standards for public water systems.³⁴ The New York City Department of Health and Mental Hygiene (N.Y.C. DOHMH) does not set MCLs.

It is important to note that the water systems at NYCHA developments—including the Riis Houses—are not public water systems.³⁵ Therefore, the MCL standards imposed by the U.S. EPA

²⁶ *Id.* at § 300f(4)(A) (The Safe Drinking Water Act defines *public water system* as “a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals. Such term includes (i) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and (ii) any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system”).

²⁷ *Id.* at § 300f(15) (The Safe Drinking Water Act define *community water system* as a “public water system that supplies water to the same population year-round and serves at least 15 service connections used by year-round residents of the area served by the system or regularly serves at least 25 year-round residents”).

²⁸ 40 C.F.R. § 141.2 (A *transient, non-community water system* is defined in the C.F.R. as a “a public water system that provides water in a location where people do not remain for a long time”).

²⁹ *Id.* (A *non-transient, non-community water system* is defined as a “public water system that regularly supplies water to at least 25 of the same people at least six months per year”).

³⁰ 42 U.S.C. § 300g-1(b)(4)(A).

³¹ 40 C.F.R. § 141.153(c)(3)(ii); see U.S. Fish and Wildlife Services, *Glossary for Safe Drinking Water Act*, UNITED STATES DEPARTMENT OF INTERIOR, <https://www.fws.gov/policy-library/e1561fw4> (last visited May 15, 2024) (Action levels are not the same as MCLs. An action level is a concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a community water system must follow. Arsenic does not have an action level).

³² *Id.* at §§ 300f(3) and 300g-1(b)(4)(B)-(D).

³³ *Id.* at § 300g-2(a)(1).

³⁴ 10 N.Y.C.R.R. § 5-1.1(cb) (New York State defines *public water system* as “a community, noncommunity or nontransient noncommunity water system which provides water to the public for human consumption through pipes or other constructed conveyances, if such system has at least five service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year,” including “(1) collection, treatment, storage and distribution facilities under control of the supplier of water of such system and used with such system; and (2) collection or pretreatment storage facilities not under such control which are used with such system”); *Id.* at (n) (A *community water system* is “a public water system which serves at least five service connections used by year-round residents or regularly serves at least 25 year-round residents”); *Id.* at (bn) (A *nontransient noncommunity water system* is “a public water system that is not a community water system but is a subset of a noncommunity water system that regularly serves at least 25 of the same persons, four hours or more per day, for four or more days per week, for 26 or more weeks per year”); *Id.* at (dc) (A *transient noncommunity water system* is “a noncommunity water system that does not regularly serve at least 25 of the same people over six months per year”).

³⁵ See *Safe Drinking Water Search for the State of New York: “New York City,”* U.S. EPA, <https://enviro.epa.gov/envirofacts/sdwis/search/results?q=N4Ig7glgJg5gpgFwMIEMA2aQC4Bm6DOcANCGgPYDGSZUc2IAcgJogIgoJwBOAygJ75OAWwCSUHNBRcKACwBq6eqxAAHMioCuaDhDIA7APIqE%2BBZiwBtEAFYADLeUBmR-eUBGe65IffPD777cOAF0ScioOOBgyLj56QQjldk5eAWEJKVIsUHUEXT0zDTosED04MAACPmiAa3KKCAQ%2BcuUcvPTpGOAVPhUikAAjSIg9AHUGmRAAXxJ63LhTRSxs4zbJDu7e%2BkGYYbGECemQCjINPUB22Tmsk>

and N.Y.S. DOH generally do not apply to NYCHA. However, the arsenic MCL set by the U.S. EPA and N.Y.S. DOH provides context for the events at the Riis Houses and NYCHA's response.

The U.S. EPA has set the MCLG and MCL for arsenic at 0³⁶ and 10³⁷ parts per billion (“ppb”),³⁸ respectively, for community water systems and non-transient, non-community water systems.³⁹ An MCLG of 0 ppb indicates that there is no dose of arsenic without known or anticipated adverse effects.⁴⁰ N.Y.S. DOH has also set the MCL for arsenic at 10 ppb for public water systems.⁴¹ Arsenic's MCLG of 0 ppb means that any amount of arsenic, no matter how small, has known or potential adverse health effects,⁴² and its MCL of 10 ppb means that 10 ppb is the highest concentration of arsenic allowed in drinking water under the applicable standards for public water systems. The U.S. EPA and related regulations also address how a test result indicating a higher concentration of arsenic—that is, above 10 ppb—should be handled. Those regulations are discussed further herein.

N.Y.C. DEP routinely tests more than 1,300 water samples from up to 546 locations each month and analyzes these samples for bacteria, chlorine levels, pH, inorganic and organic compounds, turbidity, odor, and many other water quality indicators.⁴³ N.Y.C. DEP does not routinely test for arsenic. However, N.Y.C. DEP's annual drinking water and quality report includes arsenic as a testing parameter. N.Y.C. DEP did not detect arsenic in any of the 32,300 samples tested in 2022 nor in any of the 44,800 samples tested in 2023.⁴⁴

[Fb9C66evu3d8amSfFS4IR4EDg18IwmK5LG4rfQFPooCi5ABudBItz09w2TyGo1ek0mQA](https://www.nyc.gov/assets/dep/downloads/pdf/water/drinking-water/drinking-water-supply-quality-report/2022-drinking-water-supply-quality-report.pdf) (last visited Apr. 29, 2024) (The only public water system in New York City is the New York City Water Supply System operated by N.Y.C. DEP).

³⁶ 40 C.F.R. § 141.51(b).

³⁷ *Id.* at § 141.62(b)(16).

³⁸ See Assistant Secretary of the Navy (Energy, Installations and Environment), *What do parts per billion (ppb) and parts per trillion (ppt) Concentrations in Drinking Water Mean in Simple Terms*, U.S. NAVY, <https://www.secnav.navy.mil/eie/Pages/DrinkingWaterConcentrations.aspx> (last visited Apr. 29, 2024) (Parts per billion is a measurement used to indicate the concentration of a contaminant in water: one ppb is equal to one microgram of a contaminant per liter of water. For example, one ppb is the equivalent of one drop of impurity in 500 barrels of water).

³⁹ 40 C.F.R. § 141.62(b) (The U.S. EPA's arsenic MCL does not apply to transient, non-community water systems).

⁴⁰ 42 U.S.C. § 300g-1(b)(4)(A) (A Maximum Contaminant Level Goal is the level of a contaminant in drinking water at which there is no known or expected risk to health).

⁴¹ 10 N.Y.C.R.R. §§ 5-1.51(a) and 5-1.52, Table 1 (New York State has not set MCLGs).

⁴² See *supra* notes 8-10.

⁴³ *Water Monitoring*, N.Y.C. DEPARTMENT OF ENVIRONMENTAL PROTECTION, <https://www.nyc.gov/site/dep/water/water-monitoring.page> (last visited Apr. 29, 2024).

⁴⁴ N.Y.C. Department of Environmental Protection, *New York City Drinking Water Supply and Quality Report 2022*, at 15 (2022), <https://www.nyc.gov/assets/dep/downloads/pdf/water/drinking-water/drinking-water-supply-quality-report/2022-drinking-water-supply-quality-report.pdf> (last visited Apr. 29, 2024); N.Y.C. Department of Environmental Protection, *New York City Drinking Water Supply and Quality Report 2023*, at 15 (2023), <https://www.nyc.gov/assets/dep/downloads/pdf/water/drinking-water/drinking-water-supply-quality-report/2023-drinking-water-supply-quality-report.pdf> (last visited Apr. 29, 2024).

2. Riis Houses Water Distribution System⁴⁵

The Jacob Riis Houses is a NYCHA-owned and operated development in the East Village neighborhood of Manhattan, New York. It was completed in 1949 and consists of thirteen buildings, either six or fourteen-stories tall, which occupy the area bounded by 13th Street to the north, 6th Street to the south, Franklin D. Roosevelt Drive to the east, and Avenue D to the west.

The Riis Houses development has 19 buildings; 12 are connected to the two roof water tanks located on Buildings 8 and 11, located at 465 E. 10th St. and 466 E. 10th Street, respectively. Building 8's roof water tank and house pump serve Buildings 2, 3, 5, 6, and 8 and Building 11's roof water tank and house pump serve Buildings 10, 11, 13, 14, 15, 18, and 19. The remaining buildings, 1, 4, 7, 9, 12, 16, and 17, do not utilize a roof water tank.

The Riis Houses buildings that utilize a roof water tank use a water distribution system known as a down-feed system to provide potable water to its residents.⁴⁶ This system uses two mounted roof water tanks, two house pumps, related equipment, and gravity to move the water first to the roof tanks and then to residents' apartments. The system also has an alarm located in the roof tanks, which is triggered to alert if the water levels in the roof tanks drop below a certain point.⁴⁷

The cedar tanks on the roofs of the fourteen-story buildings at the Riis Houses, Buildings 8 and 11, hold up to 20,000 gallons of water each. This water is supplied by the city's water mains and is slowly directed up to the roof water tanks by the centrifugal house pumps located in the buildings' basements. N.Y.C. water has enough pressure to reach up to the sixth floor; the roof tanks and house pumps provide water to the higher floors.⁴⁸

The two house pumps at the Riis Houses are powered by two 40-horsepower motors, one per house pump. These pumps operate sequentially and are regulated by a control panel on the wall adjacent to the pumps. The panel controls the float valves located inside the tanks, which regulate the water flow. The house pumps at NYCHA developments are a critical component in the water distribution systems for NYCHA buildings. Pump malfunctions often cause water quality issues, such as a dirty or cloudy appearance, or low pressure or no water.⁴⁹

⁴⁵ See Appendix, Riis Water Tank System Schematic Drawn by a NYCHA Engineer.

⁴⁶ An up-feed distribution system, by contrast, is used for low height buildings in which the pressure from the public water main is sufficient to achieve the proper flow-pressure.

⁴⁷ See *infra* III, Issue 11.

⁴⁸ *Riis Houses Water Quality Update* (2022), NEW YORK CITY HOUSING AUTHORITY, <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/Riis-Houses-Water-Quality-Update-Eng-Oct-2022.pdf> (last visited Apr. 29, 2024).

⁴⁹ See *Signs that Indicate your House Water Pump is Bad*, PARKER PUMPS, <https://parkerpumps.com.au/signs-that-indicate-your-house-water-pump-is-bad.html> (last visited Apr. 29, 2024); *Cloudy Tap Water: Causes and Solutions*, KINETICO ADVANCED WATER SYSTEMS, <https://www.kineticoadvancedwatersystems.com/water-quality-problems/cloudy-water/> (last visited Apr. 29, 2024).

B. Summary of Key Issues

The investigation found that NYCHA did not provide adequate training for its staff with respect to the maintenance of the water distribution system and lacked established procedures for emergency water testing in the event of potential water contamination. These failures directly contributed to the choice to test the water for contaminants and thus to the incorrect test result that indicated that there were dangerous quantities of arsenic present in the water at the Riis Houses in 2022 when in fact the water was safe to drink.

The lack of training and established procedures resulted in an extended period in the summer of 2022 in which, following the malfunctioning of one of the two Riis Houses house pumps, leading to persistent water quality issues, NYCHA's management responded in an ad hoc manner. The ad hoc response contributed to management's failure to understand the true cause of the water quality issues, and led to errors in the selection of a vendor to conduct water testing and the type of testing conducted, and that vendor's subsequent use of a subcontracted laboratory that did not have the appropriate certification to conduct the testing. The combination of these issues resulted in false positive test results for arsenic, which in turn caused NYCHA to spend \$482,506.45 for testing, bottled and canned water for residents, and other efforts to address the purportedly contaminated water.

The key missteps identified as a result of this joint investigation, which are discussed further herein, are:

- (1) NYCHA did not adequately train the newly promoted Riis Houses Superintendent, who lacked experience with water tanks and house pumps;
- (2) The house pump alarm, which alerts when there are low-water levels, was in the off position, and as a result, was not functional;
- (3) The Superintendent did not suspect, due to his lack of training, that the broken house pump was the reason for the residents' water quality related complaints, and he did not inform his superiors of the broken house pump, which delayed the resolution of the water-related issues;
- (4) The Superintendent submitted an incomplete requisition that omitted the request that the house pump be serviced, which delayed the installation of the repaired house pump and caused the discolored water conditions to persist;
- (5) The Neighborhood Administrator did not open that incomplete requisition for review, relying instead on the requisition's caption and a prior conversation with the Superintendent to approve the requisition—missing an opportunity to correct the omission and avoid the delay in servicing the house pump;
- (6) The hatch door to the roof water tank was erroneously left open, causing the Chief Operating Officer to conclude that the cloudy water might be due to a contaminant, and to conduct water testing for *E. coli* and coliforms;

- (7) NYCHA had no procedures governing when to test water, the type of testing, the contaminants to be tested for, the vendors and/or City entities that should conduct the testing, and the internal approvals that should be sought prior to testing;
- (8) NYCHA superiors failed to closely oversee the water testing process and thus to ensure that the intended testing for *E. coli* and coliforms was performed, as opposed to testing for contaminants such as arsenic;
- (9) Due to NYCHA superiors failing to ensure that the intended testing was performed, subordinates incorrectly relied upon the vendor’s erroneous decision to test the water for numerous contaminants, including arsenic, even though such testing was outside of the vendor’s area of expertise, beyond the scope of its contract with NYCHA, and unwarranted given that cloudy water is not an indicator of the presence of arsenic;
- (10) NYCHA’s vendor LiquiTech, a water testing vendor operating in New York, subcontracted with Environmental Monitoring and Technologies, Inc., which did not have the required New York State Environmental Laboratory Approval Program (“ELAP”) certification and therefore was not certified to conduct arsenic testing;⁵⁰
- (11) EMT incorrectly performed certain lab procedures—resulting in their inaccurate positive test result for arsenic;
- (12) EMT’s failure to follow certain lab procedures required by the U.S. EPA likely would have been discovered by N.Y.S. DOH during its biennial lab assessments of ELAP-certified labs, but the subcontracted lab was not assessed because it did not have the required New York State ELAP certification to conduct arsenic testing; and
- (13) NYCHA did not have a protocol for notifying its residents about the possible or confirmed presence of a contaminant.

III. Chronology

A. Chronology of Key Events & Issues

Issue 1: *The Maximo Work Order Management System imprecisely classifies cloudy water complaints as “dirty or brown water” complaints.*

In June and July 2022, NYCHA received 234 complaints from various Riis Houses buildings, of which 31 were for dirty or brown water, 29 for low pressure, 56 for no hot water, 6 for no cold water, and 112 for no water.⁵¹ Although the water was cloudy, work order requests generated using the MyNYCHA App or by calling the Property Maintenance Office or Customer Contact Center (i.e., having a NYCHA employee assist the resident with generating a work order

⁵⁰ New York State Public Health Law § 502(2).

⁵¹ It is NYCHA’s position that the “no hot water” complaints would most likely be indicative of a failure of the heating system or the annual overhaul of the heating system, not the house pump. Moreover, it is NYCHA’s position that the 171 “no water” complaints were clustered on dates when the roof tanks were drained for cleaning, and thus not directly attributable to the water quality issues at the Riis Houses.

request) can only be classified as dirty or brown water, low water pressure, no hot water, no cold water, or no water in NYCHA's Maximo Work Order Management System. Therefore, the complaints about the cloudy water conditions that were present at the Riis Houses were likely inaccurately classified as dirty or brown water complaints. Had the system not had that limitation, NYCHA personnel might have realized more quickly that the complaints in fact involved cloudy water, and were due to a malfunctioning house pump, which is a common cause of cloudy water.⁵²

On June 13 and 14, the roof water tanks at the Riis Houses were cleaned and inspected by American Pipe and Tank Cleaning Company ("American Pipe"), NYCHA's routine vendor for roof tank cleanings, as a part of their annual cleaning and inspection. Building 8's roof water tank was cleaned on June 13 and Building 11's roof water tank was cleaned on June 14, both of which required a planned water outage.

On July 6, American Pipe sampled water for *E. coli* and coliforms, as required by law.^{53,54} On July 9, the water was deemed fit for drinking.

Issue 2: *The failure to have qualified personnel fill Property Maintenance Supervisor ("superintendent") and Assistant Property Maintenance Supervisor ("assistant superintendent") vacancies at the Riis Houses, and the insufficient training provided to newly hired/promoted employees, including superintendents, negatively impacted the operations of the development and superintendents' knowledge of the water distribution system.*

During a portion of June and July, the Riis Houses operated without a superintendent or assistant superintendent, and the Authority did not have qualified personnel fill these vacancies.

On July 25, 2022, a new Superintendent reported to the Riis Houses. Before being promoted to Superintendent of the Riis Houses, the new Superintendent worked as an Assistant Superintendent at the Lower East Side Houses, a development without a water tank. The new Superintendent did not receive any training relevant to water tanks and their distribution systems when he started at the Riis Houses.⁵⁵

The Superintendent immediately began assigning dirty or brown water work order tickets to his maintenance workers so that they could be addressed. The workers, however, repeatedly

⁵² See *Signs that Indicate your House Water Pump is Bad*, PARKER PUMPS, <https://parkerpumps.com.au/signs-that-indicate-your-house-water-pump-is-bad.html> (last visited Apr. 29, 2024); *Cloudy Tap Water: Causes and Solutions*, KINETICO ADVANCED WATER SYSTEMS, <https://www.kineticoadvancedwatersystems.com/water-quality-problems/cloudy-water/> (last visited Apr. 29, 2024).

⁵³ 24 R.C.N.Y. § 141.07(b) (citing 10 N.Y.C.R.R. Subpart 5-1 regarding sampling parameters).

⁵⁴ American Pipe used the subcontracted lab, Environmental Building Solutions LLC, which is a New York State-certified lab.

⁵⁵ The Superintendent's NYCHA Learning & Development transcript indicates that, as of the fall of 2022, he completed 64 trainings since his hire in February 2010, none of which are relevant to water tanks and their distribution systems, e.g., "Mold Busters" (completed 2019), "Mold Building Science" (completed 2021), "PHAS deceptive practices" (completed 2019), "Maximo 1 & 2" (completed 2019), and "Developing Supervisory and Management Skills" (completed 2017), "Safety Refresher for Supervisors" (completed 2017, 2019, 2021, and 2022), "Supervision 101: What Every NYCHA Leader Needs to Know" (completed 2020), "Managing Public Housing Maintenance" (completed 2020), "Compliance 101" (completed 2021), and "Renovation, Repairs, and Painting Annual Refresher—a course related to lead-based paint practices" (completed 2022).

reported to the Superintendent that the problems were “unfounded” or “previously corrected.” When dirty or brown water is an issue, maintenance workers are directed to run the faucet for a few minutes to see if the water runs clear, which could potentially lead some maintenance workers to inaccurately report that the water complaint was unfounded or previously corrected.

Cloudy water often is a result of aeration, and cloudy water complaints that persist over time can indicate a potential problem with the water distribution system, such as a malfunctioning house pump.⁵⁶ Had the new Superintendent received training on water quality issues, an area in which he lacked prior experience, he might have realized that the water distribution system was a potential cause of the complaints of dirty or brown water and accordingly directed a maintenance worker to examine that system. Moreover, if the Maximo system allowed complaints of cloudy water to be inputted as such, instead of forcing the user to input the complaint as one involving dirty or brown water, NYCHA likely would have been alerted to the malfunctioning house pump, in addition to the indicators from the other complaints.

Issue 3: *The Neighborhood Administrator’s failure to thoroughly review the purchase requisition, which omitted a request for the house pump repair, delayed that repair.*

On July 28, 2022, a maintenance worker at the Riis Houses discovered that the hatch door to Building 11’s roof water tank was left open, potentially causing rainwater to leak into the water tank, which can affect the water’s pH levels and appearance.⁵⁷ The maintenance worker also discovered that Building 11’s house pump was not functioning.

The maintenance worker confirmed with Tri-State, a vendor onsite for exhaust fan work, that the pump was not functioning properly. Tri-State accordingly removed the house pump so that it could be repaired. As a result, the Riis Houses were left with only one functioning house pump (because the development had two house pumps in total), which stressed the water distribution system as the remaining house pump needed to increase its output.

That same day, the Superintendent mistakenly submitted a purchase requisition (i.e., a request to purchase a specific item)⁵⁸ for the exhaust fan service but not for repair of the house pump. The Neighborhood Administrator subsequently approved the incomplete requisition without reviewing it. During the investigation, DOI and the former NYCHA Federal Monitor found that the Superintendent informed the Neighborhood Administrator that the pump motor was removed by Tri-State for repairs. When the Superintendent submitted the requisition to the Neighborhood Administrator for approval, she did not open the requisition to verify its contents. According to the Neighborhood Administrator, she saw that the requisition was related to “Tri-

⁵⁶ See *Signs that Indicate your House Water Pump is Bad*, PARKER PUMPS, <https://parkerpumps.com.au/signs-that-indicate-your-house-water-pump-is-bad.html> (last visited Apr. 29, 2024); *Cloudy Tap Water: Causes and Solutions*, KINETICO ADVANCED WATER SYSTEMS, <https://www.kineticoadvancedwatersystems.com/water-quality-problems/cloudy-water/> (last visited Apr. 29, 2024).

⁵⁷ Denissen et al., *Human Pathogenic Bacteria Detected in Rainwater: Risk Assessment and Correlation to Microbial Source Tracking Markers and Traditional Indicators*, *Frontiers in Microbiology* (2021) (An open roof tank can become contaminated with *E. coli* and coliforms from rainwater, and such contamination can result in cloudy water).

⁵⁸ When a development needs to obtain an item for repair or maintenance, an employee must submit a requisition for purchase, which then must go to the Procurement Department so that a purchase order can be issued.

State Pump and Motor,” and based on her conversation with the Superintendent, the Neighborhood Administrator already was aware of the need for Tri-State to repair the house pump and therefore accepted the requisition without reviewing it. A review likely would have revealed that the requisition’s line items mistakenly did not include the house pump motor repair.⁵⁹

During the entire month of August, NYCHA received 347 water quality complaints from the Riis Houses, of which 44 were for dirty or brown water, 24 for low water pressure, 80 for no hot water, 7 for no cold water, and 192 for no water.

On August 3, the Authority started to receive reports from PIX 11 and Nydia Velázquez’s office regarding the cloudy water at the Riis Houses.

Issue 4: *The Superintendent’s failure to apprise his superiors of the missing house pump delayed NYCHA’s response to the issue, and it is unclear why the Supervisor Plumber delegated the response to the water complaints to the Construction Project Manager.*

On August 4, 2022, the Superintendent spoke to the Supervisor Plumber about the water complaints, and the Supervisor Plumber referred the Superintendent to a Construction Project Manager to address the issue. The Superintendent did not convey to the Supervisor Plumber or the Construction Project Manager that one house pump had been removed for repairs to the motor and that, as a result, the remaining house pump needed to increase output, putting stress on the water distribution system; however, the Superintendent may not have understood that the malfunctioning house pump, which had been removed for service, was relevant to the water complaints, and the Superintendent apparently was not asked by the Supervisor Plumber or the Construction Project Manager to consider whether a house pump might be the cause. Instead, the Superintendent was directed to check the roof tank. The Construction Project Manager advised the Superintendent that he should order another roof tank cleaning if the water conditions didn’t improve within a few days. It is unclear why the Supervisor Plumber assigned a Construction Project Manager to respond to water complaints, and whether a Construction Project Manager is the appropriate officer, or has the appropriate training and experience, to respond to such an issue. The Supervisor Plumber, who does have training and experience with respect to water quality issues, should have reviewed the matter himself, or with the assistance of the appropriate employees.

On August 8, four days after this conversation, and eleven days after the initial discovery that Building 11’s house pump was not working, Tri-State reached out to the Superintendent to inquire about the purchase order for the house pump. The Superintendent then realized that he mistakenly submitted a requisition limited to the exhaust fan service, without including the house pump repair.

On August 9, the Superintendent submitted the corrected requisition to the Neighborhood Administrator, who approved it on August 10.

Issue 5: *NYCHA had no procedures governing when water testing is appropriate, who should approve testing, which contaminants to test for, and which vendors and/or City entities*

⁵⁹ DOI and the former NYCHA Federal Monitor interviewed the Neighborhood Administrator on September 29, 2022.

should conduct the testing. The absence of policies and procedures concerning water quality testing resulted in ad hoc decision-making by the executive staff, who at times acted without the full information.

On August 12, 2022, a NYCHA Deputy Press Secretary emailed a number of NYCHA employees to inform them that PIX 11 was inquiring about the cloudy water issue at the Riis Houses, including Chief Operating Officer (“COO”) Eva Trimble; Deputy Chief Operating Officer (“DCOO”) Marvin Walton; Acting Vice President for Public Housing Operations (“PHO”) for Manhattan⁶⁰ Erenisse Tavarez; PHO Administrator for Manhattan⁶¹ Octavia Hayward; and the substitute Neighborhood Administrator⁶² who was filling in for the aforementioned Neighborhood Administrator that was on leave that day. In the continued email chain, the substitute Neighborhood Administrator explained that the Riis Houses water was tested in early July but the Riis Houses Superintendent learned that a roof tank hatch door was open on July 28, which could cause the water to appear cloudy.⁶³ COO Trimble then discussed these issues on the phone with DCOO Walton, and because CCO Trimble wanted to confirm the timeline, the Riis Houses Superintendent was added to the same email chain. The Superintendent, with the help of Tavarez, clarified the timeline for COO Trimble. The Superintendent did not include the fact about the missing house pump; however, at no point in the email conversation did Tavarez, Hayward, or the substitute Neighborhood Administrator, in light of their responsibilities and experience, ask the Superintendent if he had checked the house pumps.

Issue 6: *NYCHA superiors failed to ensure that the intended testing for *E. coli* and coliforms was performed.*

COO Trimble explained to DOI and the former NYCHA Federal Monitor that she decided it would be beneficial to repeat the sampling and tests conducted on July 6 (i.e., testing for *E. coli* and coliforms), because the hatch door was left open after American Pipe’s July 6, 2022, water testing.⁶⁴ DCOO Walton thereafter called Vice President of Operational Analysis and Contract Management Calcedonio Bruno to arrange water testing at the Riis Houses. Bruno emailed American Pipe but received no response; he then called TSD Director Militano to arrange the testing. Militano did not have the contact information for NYCHA’s two designated water testing companies, American Pipe and LiquiTech, so he directed the TSD Resident Buildings

⁶⁰ The Acting Vice President for Public Housing Operations for Manhattan oversees the property management operations for Manhattan, including all superintendents (e.g., the Riis Houses Superintendent).

⁶¹ The PHO Administrator for Manhattan oversees the Manhattan skilled trades workers (e.g., plumbing). While the PHO Administrator for Manhattan does not supervise the Riis Houses Superintendent, she is senior to the Superintendent and has experience as a former NYCHA Property Manager.

⁶² A Neighborhood Administrator oversees a subset of developments for a borough. The substitute Neighborhood Administrator does not typically oversee the Riis Houses Superintendent; however, the substitute Neighborhood Administrator does oversee the Riis Houses Superintendent in the absence of the assigned Neighborhood Administrator.

⁶³ Denissen et al., *Human Pathogenic Bacteria Detected in Rainwater: Risk Assessment and Correlation to Microbial Source Tracking Markers and Traditional Indicators*, *Frontiers in Microbiology* (2021) (An open roof tank can become contaminated with *E. coli* and coliforms from rainwater, and such contamination can result in cloudy water).

⁶⁴ DOI and the former NYCHA Federal Monitor interviewed COO Trimble on October 11, 2022.

Superintendent (“TSD Superintendent”) to contact these vendors.⁶⁵ Walton and Bruno later stated to DOI and the former NYCHA Federal Monitor that they believed a second roof tank water testing was required (i.e., testing for *E. coli* and coliforms).⁶⁶ In Militano’s interview with DOI and the former NYCHA Federal Monitor, Militano stated that he was not aware of any testing parameters and thought the water quality was generally being tested.⁶⁷ While it is unclear why Militano was not aware that COO Trimble intended the Riis Houses water to be tested for *E. coli* and coliforms, Militano should have asked his supervisors for clarification of the testing parameters; apparently he did not. Furthermore, COO Trimble, DCOO Walton, and/or Vice President of Operational Analysis and Contract Management Bruno should have supervised the testing process more closely, including, at a minimum, clarifying the testing parameters and ensuring that the water was tested as they intended—that is, for *E. coli* and coliforms, rather than other contaminants. There are several ways they might have done so, including by reviewing or being copied on email correspondence with the vendor, or specifying the testing parameters when they received an email concerning the anticipated testing (as detailed in the chronology of relevant events described below) scheduled for the next day.

After Bruno instructed Militano to arrange the testing, Militano directed the TSD Superintendent to call American Pipe. The TSD Superintendent did so, but because he made the call after 5 p.m. on a Friday, the TSD Superintendent was unable to reach them. The TSD Superintendent therefore contacted LiquiTech. LiquiTech and its subcontracted lab, Special Pathogens Laboratory, have historically performed *Legionella* bacteriological testing for the Authority; Special Pathogens Laboratory has the appropriate certifications to conduct *Legionella* testing.⁶⁸

Issue 7: *Due to NYCHA superiors failing to ensure that the intended testing was performed, subordinates incorrectly relied upon the vendor’s erroneous decision to test the water for numerous contaminants, including arsenic, even though such testing was outside of the vendor’s area of expertise, beyond the scope of its contract with NYCHA, and unwarranted given that cloudy water is not an indicator of the presence of arsenic.*

After the TSD Superintendent emphasized the urgent need for testing, the Director of Account Management for LiquiTech contacted a LiquiTech Senior Account Manager, and the Senior Account Manager was scheduled to take water samples at the Riis Houses the next day.

Regarding the parameters for testing, the TSD Superintendent asked an Industrial Hygienist, who was out of town and outside of working hours, to advise him. The Industrial

⁶⁵ In their capacity as TSD Superintendent, the TSD Superintendent frequently was in contact with LiquiTech regarding *Legionella* bacteria testing at NYCHA developments.

⁶⁶ DOI and the former NYCHA Federal Monitor interviewed both DCOO Walton and Vice President of Operational Analysis and Contract Management Bruno, separately, on October 12, 2022.

⁶⁷ DOI and the former Federal Monitor interviewed TSD Director Militano on September 26, 2022.

⁶⁸ Special Pathogens Laboratory has its New York State Environmental Laboratory Approval Program certification to test for *Legionella* bacteria in both potable and non-potable water; see *infra* III, A, Issue 8, for discussion about LiquiTech’s other subcontracted laboratory, EMT, and its lack of required certification.

Hygienist was hired right after his college graduation, had worked for NYCHA for four and a half months, and completed 13 trainings, none of which were specialized for a NYCHA Industrial Hygienist.⁶⁹ The Industrial Hygienist gave the TSD Superintendent web links to the U.S. CDC and U.S. EPA websites for information. Subsequently, the TSD Superintendent generally communicated to LiquiTech that the water should be tested but did not specify the nature of the testing needed, relying instead on LiquiTech's expertise. The TSD Superintendent should, at a minimum, have asked TSD Director Militano (the superior who gave him the instruction to have the water tested), N.Y.C. DEP, N.Y.C. DOHMH, and/or others at NYCHA concerning what contaminants to test for.

The LiquiTech Director of Account Management then sent an email to the TSD Superintendent describing the testing to be conducted the following day:

. . . We plan to run a very comprehensive panel of tests from both a bacteriological as well as a physical perspective. These tests are often what healthcare settings will perform on their water to ensure it is safe for patients. We will also be taking a Coliforms test, one of the parameters of the Safe Water Drinking [sic] Act. In addition to these tests, we will be running a broad-spectrum test which will measure various MCLs⁷⁰ also included in the Safe Water Drinking [sic] Act (for example: Arsenic, Iron, Lead, Copper, etc.).

The TSD Superintendent responded to this email, saying "Thank you. I spoke to [the LiquiTech Senior Account Manager] and confirmed everything for tomorrow." After LiquiTech was scheduled, TSD Director Militano emailed COO Trimble and DCOO Walton the following information, copying Vice President of Operational Analysis and Contract Management Bruno: LiquiTech was scheduled for the next day, the TSD Superintendent will accompany the LiquiTech representative, and "a # of tests [will be] done on the samples and come in indi[vi]dually over the course of approx[imately] 10 days." The COO, DCOO, or Vice President of Operational Analysis and Contract Management did not take this opportunity to clarify the testing parameters, despite the fact that this email did not specify the types of water testing to be conducted, and the fact that NYCHA's senior management intended the water to be tested only for *E. coli* and coliforms.

DOI and the former NYCHA Federal Monitor's investigation also found that Chief Executive Officer and Chairperson of the Board Gregory Russ was not involved with the above

⁶⁹ NYCHA has not provided the Industrial Hygienist any training particular to NYCHA's water tanks and distribution systems. The Industrial Hygienist's NYCHA University transcript indicates that, as of the fall of 2022, he completed the following trainings: "Compliance 101" (NYCHA required training), "Department of Equal Opportunity New Hire Orientation," "New Employee Orientation," "New Employee Safety Orientation," "NYCHA Security Awareness Training: Your Role – Internet Security and You," "DCAS Conflicts of Interest Prevention," "DCAS Conflicts of Interest Prevention 23-25," "DCAS Corruption Prevention Awareness," "DCAS (DOI) Corruption Awareness 23-25," "DCAS (EEO) Everybody Matters: EEO and Diversity & Inclusion 21-23," "DCAS (LGBTQ) The Power of Inclusion 22-24," "DCAS (SHP) Sexual Harassment Prevention 21-22," and "DCAS (SHP) Sexual Harassment Prevention 22-23."

⁷⁰ See *supra* II, A, 1, Regulatory Background.

discussions regarding testing, nor was Russ present for later discussions about re-testing.⁷¹ More importantly, however, Russ did not have a point of contact informing him of updates and/or decisions that were made at the Riis Houses, and Russ did not know who made the decisions to test, and later re-test, the water.⁷²

That night, N.Y.C. DEP flushed the hydrants⁷³ on the east side of Avenue D, north of 9th Street, following a dirty water complaint from NYCHA. COO Trimble also emailed N.Y.C. DEP COO Vincent Sapienza to request testing of the fire hydrant water next to the Riis Houses, and N.Y.C. DEP was scheduled to test the next day. With respect to testing of the fire hydrant, COO Trimble relied on N.Y.C. DEP's expertise to determine which contaminants to test for. After these discussions internally and with N.Y.C. DEP concerning the request to test the water, NYCHA sent the following statement to PIX 11 in response to their August 3 and 12 inquiries:

NYCHA received reports of cloudy water at Jacob Riis Houses and is working with DEP to test the water followed by water tank cleaning. There are no reports of negative water quality impact on residents. We will actively keep residents apprised of the testing status and results.⁷⁴

On August 13, 2022, the TSD Superintendent escorted the LiquiTech Senior Account Manager to collect 20 samples from Buildings 8 and 11; the LiquiTech Senior Account Manager collected two samples from the top, middle, and bottom floors,⁷⁵ and samples from buildings that Building 11's water tank serves.⁷⁶ While at the Riis Houses, the TSD Superintendent also determined that Building 11's house pump was missing and relayed this information to TSD Director Militano, who directed the TSD Superintendent to inspect some apartments to see the water quality throughout the building.⁷⁷ Militano then raised the possibility that the missing house pump was the cause of the cloudy water and expedited the repair of the house pump. Additionally, the LiquiTech Senior Account Manager recommended a more comprehensive set of tests (i.e., broader-spectrum testing)⁷⁸ for the point of entry of Building 11 as a precautionary measure. While

⁷¹ DOI and the former Federal Monitor interviewed former Chief Executive Officer and Chairperson of the Board Gregory Russ on January 23, 2023.

⁷² *Id.*

⁷³ Flushing the hydrants involves flushing sediment from the water main pipes to enhance water quality.

⁷⁴ Magee Hickey, *Cloudy Tap Water has East Village NYCHA Residents Worried*, PIX 11 (August 12, 2022), <https://pix11.com/news/local-news/manhattan/cloudy-tap-water-has-east-village-nycha-residents-worried/>.

⁷⁵ In DOI and the former NYCHA Federal Monitor's interview with the TSD Superintendent on September 26, 2022, the TSD Superintendent referred to this as proximal, distal, and medial testing.

⁷⁶ *Id.* (The TSD Superintendent stated that he believed the samples were from Buildings 18 and 19. It was later clarified by NYCHA that the samples were, in fact, taken from Building 11's point of entry).

⁷⁷ *Id.* (The TSD Superintendent stated that he inspected multiple apartments on Building 8's 11th and 14th floors, based on complaints in the media. It is unclear why the TSD Superintendent did not inspect Building 11's apartments' water quality or the water quality of other buildings' apartments which are served by Building 11's water tank and house pump).

⁷⁸ The broad-spectrum test analyzes the presence of the following bacteria: *Legionella* Culture (includes serotyping); *Pseudomonas aeruginosa*; *Stenotrophomonas maltophilia*; *Acinetobacter spp.*; *Burkholderia cepacian*; *Nontuberculous Mycobacteria* (NTM); Heterotrophic Plate Count (HPC); Coliforms: *E. coli* & Total presence-absence; Iron Related Bacteria; and Slime Forming Bacteria. The broader-spectrum test also analyzes the presence of

LiquiTech’s Director of Account Management stated in his August 12 email that LiquiTech would be testing for coliforms, it does not appear that LiquiTech and its subcontracted lab for bacteriological testing, Special Pathogens Laboratory, tested for coliforms or *E. coli*, as discussed further below.⁷⁹

N.Y.C. DEP also sampled water at the same hydrant that was flushed the prior day, and tested for bacteria, chlorine levels, pH, inorganic and organic compounds, turbidity, and odor—the same parameters that N.Y.C. DEP analyzes daily in water samples that are collected citywide.⁸⁰ As noted above, N.Y.C. DEP did not test for arsenic.⁸¹ There does not appear to have been any discussion at the senior executive level at NYCHA about the discrepancy between the nature of testing conducted by N.Y.C. DEP and the testing conducted by LiquiTech. Indeed, until the test results were provided, it is unclear whether the NYCHA senior executives were aware of precisely what contaminants the water was being tested for, despite intending to test only for *E. coli* and coliforms.

On August 13, Tri-State informed the TSD Superintendent that the house pump was ready to be installed once the purchase order was complete. Thereafter, NYCHA’s Supply Management and Procurement office approved the purchase order for the house pump.⁸²

According to LiquiTech, the TSD Superintendent told the LiquiTech Senior Account Manager on August 14 that “[NYCHA is] going to need to test the buildings we didn’t test on the 13th.” The TSD Superintendent claimed that he was relying on LiquiTech’s expertise; LiquiTech claimed that, to the contrary, the TSD Superintendent was directing LiquiTech with respect to what contaminants to test for and where to test.

On August 15, Tri-State installed the repaired house pump at Building 11, and subsequently, water quality complaints significantly decreased. That same day, DEP took a second sample of the water at the aforementioned fire hydrant; as before, DEP did not test for arsenic.⁸³

That same day, NYCHA deployed a robocall to Riis Houses residents in all covered languages (i.e., English, Spanish, Traditional Chinese, Simplified Chinese, and Russian) to inform them that water sampling was being conducted due to reports of cloudy water.⁸⁴

the following: Arsenic; Cadmium; Calcium; Copper; Iron; Lead; Magnesium; Manganese; Silver; Tin; Zinc; Calcium Hardness (as CaCO₃); Total Hardness (as CaCO₃); Chloride; Nitrogen, Nitrate; Sulfate; pH; Alkalinity, Bicarbonate (as CaCO₃); Alkalinity, Carbonate (as CaCO₃); Alkalinity, Total (as CaCO₃); Total Dissolved Solids (residue, filterable); Suspended Solids (residue, non-filterable); Phosphorus, Total (as P); Sulfide; and Organic Carbon, Total.

⁷⁹ *Non-Tuberculosis Mycobacteria: August 13, 16, and 17, 2022*, SPECIAL PATHOGENS LABORATORY, https://www.nyc.gov/assets/nycha/downloads/pdf/Riis-Houses-Bacteriological-Tests/Non-Tuberculosis_Mycobacteria_8.13_8.16_8.17_Redacted.pdf (last visited Apr. 29, 2024).

⁸⁰ N.Y.C. DEP used the lab, Lefrak, which tested for temperature, specific conductance, field pH, residual chlorine, color, turbidity, coliform, and *E. coli*. Lefrak did not test for metals in the samples.

⁸¹ See *supra* II, A, 1, Regulatory Background.

⁸² When a development needs to obtain an item for repair or maintenance, an employee must submit a requisition for purchase, which then must go to the Procurement Department so that a purchase order can be issued.

⁸³ N.Y.C. DEP used the lab, Lefrak, which tested for temperature, specific conductance, field pH, residual chlorine, color, turbidity, coliform, and *E. coli*. Lefrak did not test for metals in the samples.

⁸⁴ See Appendix, August 15, 2022, Robocall.

On August 16, the LiquiTech Senior Account Manager returned to the Riis Houses with a LiquiTech Operations Engineer to collect samples for bacteriological testing from Building 11's points of entry and the remaining apartments that weren't tested on August 13;⁸⁵ the TSD Superintendent did not escort the LiquiTech Senior Account Manager and the Operations Engineer when they collected samples. That day, N.Y.C. DEP results from the testing of the August 13 and 15 sample collections were returned: sample one had an excess amount of total coliforms and sample two had no issues. As stated above, LiquiTech did not test for *E. coli* or coliforms, contrary to their August 12 email which stated that they would conduct such testing.

Total coliforms are a group of bacteria that are, with few exceptions, not harmful to humans.⁸⁶ However, a positive test for total coliforms is a useful indicator of the presence of other potentially harmful pathogens in drinking water,⁸⁷ and always requires more tests for fecal coliforms or *E. coli*, both of which can be harmful to humans.^{88,89} Thereafter, NYCHA conducted additional testing as required.

American Pipe also drained and re-cleaned the roof water tank. Two days later, on August 18, American Pipe collected samples for bacteriological testing, the results of which indicated that the water was safe to drink.⁹⁰ It is unclear which NYCHA staff requested that American Pipe conduct bacteriological testing.

Issue 8: *EMT, the laboratory used by contractor LiquiTech to test for arsenic and other contaminants, did not have the required New York State Environmental Laboratory Approval Program ("ELAP") certification.⁹¹ When testing the water samples, EMT also did not properly perform certain lab procedures.*

⁸⁵Although not initially collected to test for arsenic, these samples were tested for arsenic. The samples were also tested for *Legionella* culture (includes serotyping); *Pseudomonas aeruginosa*; *Stenotrophomonas maltophilia*; *Acinetobacter spp.*; *Burkholderia cepacian*; *Nontuberculous mycobacteria* (NTM); Lead (Pb); Copper (Cu); Zinc (Zn); Calcium (Ca); Iron (Fe); Magnesium (Mg); and Manganese (Mn). LiquiTech used their subcontracted laboratory, Special Pathogens Laboratory, to conduct this testing.

⁸⁶ Drinking Water Program, *Coliform Bacteria in Drinking Water Supplies*, NEW YORK STATE DEPARTMENT OF HEALTH, https://www.health.ny.gov/environmental/water/drinking/coliform_bacteria.htm (last visited Apr. 29, 2024).

⁸⁷ *Id.*

⁸⁸ *Drinking Water Advisory Communication Toolbox: Frequently Asked Questions about Coliforms and Drinking Water*; UNITED STATES CENTERS FOR DISEASE CONTROL AND PREVENTION AND THE AMERICAN WATER WORKS ASSOCIATION, <https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.cdc.gov%2Fhealthywater%2Femergency%2Fdwa-comm-toolbox%2Fbefore%2Ftools%2Ffaq-groundwater-rule.docx&wdOrigin=BROWSELINK> (last visited Apr. 29, 2024).

⁸⁹ 24 R.C.N.Y. § 141.07; *see also Water Tank Inspection FAQ*, NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE, <https://www.nyc.gov/assets/doh/downloads/pdf/environmental/watertank-insp-faq.pdf> (last visited Apr. 29, 2024) (The legal implications of a positive total coliforms test depend on the context in which the positive result is received. If coliforms are discovered during an annual water tank cleaning and testing, any sample indicating the presence of coliforms bacteria, such as *E. coli*, must be reported to the N.Y.C. Health Department within 24 hours. Necessary corrective actions, such as cleaning and disinfection, must be taken immediately; if the positive result is received other than during an annual water tank cleaning and testing, there is no duty to report).

⁹⁰ American Pipe uses the subcontracted lab, Environmental Building Solutions LLC, which is a New York State-certified lab.

⁹¹ Environmental Monitoring and Technologies, Inc., is certified in other states, including Alaska, Illinois, Texas, Washington, and Wisconsin.

On August 25, 2022, NYCHA contacted LiquiTech to inquire about the results of the testing that was performed at the Riis Houses over ten days prior. NYCHA requested partial results if complete results were not ready, and LiquiTech responded that they would work on it. On August 26, the partial laboratory report was completed but it was *not* provided to NYCHA until three days later, on August 29. The available results for the analysis of the point of entry at Building 11, produced by LiquiTech’s subcontracted laboratory, EMT, indicated that, subject to confirmation, there was arsenic present in the water at the Riis Houses at a concentration of 12.2 ppb.

Unbeknownst to NYCHA at the time, EMT was not certified to conduct broad-spectrum water testing—that is, to test for arsenic and other contaminants. For a laboratory to analyze environmental samples or specimens originating in New York State, the laboratory and any subcontracted laboratories must be certified by N.Y.S. DOH ELAP.⁹² ELAP certification indicates that a laboratory has the ability “to analyze environmental samples of drinking water, non-potable water, solid and hazardous waste, air and emissions and can perform the Contract Laboratory Protocol.”⁹³ LiquiTech’s subcontracted laboratory for bacteriological testing is ELAP certified, but EMT, its subcontractor that tested NYCHA’s water for arsenic and other contaminants, is not ELAP certified.

Furthermore, also unbeknownst to NYCHA at the time, EMT’s positive test result for arsenic was unreliable because EMT failed to properly perform certain EPA-required lab procedures.^{94,95} Specifically, EMT did not use the same dilution for the Riis Houses water sample and the blank—a clean water solution that does not contain the contaminants for which the lab is testing and is treated identically to the sample⁹⁶—preventing EMT from identifying the true source

⁹² New York State Public Health Law § 502(2).

⁹³ *Environmental Laboratory Approval Program (ELAP) Certification Description*, CITY OF NEW YORK, <https://nyc-business.nyc.gov/nycbusiness/description/environmental-laboratory-approval-program-elap-certification> (last visited Apr. 29, 2024).

⁹⁴ *Environmental Measurements and Modeling, Collection of Methods*, U.S. ENVIRONMENTAL PROTECTION AGENCY, <https://www.epa.gov/dwanalyticalmethods> (last visited Apr. 29, 2024) (“EPA offices and laboratories, and outside organizations, have developed approved methods for measuring the concentration of a substance or pollutant”).

⁹⁵ NEW YORK STATE DEPARTMENT OF HEALTH, ITEM NO. 180.1, APPROVED METHODS: POTABLE WATER, at 3 (2022); *Statement of Retraction: September 8, 2023*, ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC., <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/EMT-Statement-of-Retraction-090822.pdf> (last visited Apr. 29, 2024) (EMT cited using EPA Method 200.8. N.Y.S. DOH ELAP item no. 180.1 lists EPA Method 200.8 as an approved testing method for arsenic).

⁹⁶ U.S. ENVIRONMENTAL PROTECTION AGENCY, METHOD 200.8: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY, REV. 5.4, at 5 and 16 (1994) (The blank described here is a laboratory reagent blank (“LRB”). A LRB is an “aliquot of reagent water or other *blank matrices that are treated exactly as a sample* [emphasis added] including exposure to all glassware, equipment, solvents, reagents, and internal standards that are used with other samples. The LRB is used to determine if method analytes or *other interferences* [emphasis added] are present in the laboratory environment, reagents, or apparatus....[the LRB] [m]ust contain all the reagents in the same volumes as used in processing the samples. The LRB must be carried through the same entire preparation scheme as the samples including digestion, when applicable”); *Statement of Retraction: September 8, 2023*, ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC., <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/EMT-Statement-of-Retraction-090822.pdf> (last visited Apr. 29, 2024) (EMT’s Statement of Retraction indicates that they did not run the blank and sample at the same dilution).

of the contamination when there was molecular interference indicating a false arsenic positive.^{97,98} EMT also applied an inaccurate correctional equation, preventing EMT from properly accounting for the interference and correcting the result accordingly.^{99,100}

ELAP-certified labs must undergo an assessment by the N.Y.S. DOH on a biennial basis.¹⁰¹ During an assessment, N.Y.S. DOH inspects the lab's quality system, corrective and preventative actions, subcontractors, internal audits, data integrity and ethics, equipment and reference materials, measurement traceability and calibration, sample handling, quality of the test results, and any other factors that might affect the quality of laboratory data.¹⁰² It is likely that a N.Y.S. DOH assessment would have revealed that EMT was not running the blank and sample at the same dilution and not using the accurate correctional equation during their testing, affecting the validity of its test results.

Issue 9: *EMT used a reporting limit that was too high to accurately test for the presence of arsenic in the water within U.S. EPA and N.Y.S. DOH standards. EMT's initial partial test result was lower than their reporting limit, meaning that EMT's test result was not reliable.*

In addition to the certification and lab procedure issues discussed above, EMT's partial test results—which were received by the NYCHA Industrial Hygienist on August 29 and showed arsenic in the Riis Houses water at a concentration of 12.2 ppb—were below EMT's reporting

⁹⁷ See *The Interference-Free Determination of Arsenic in a Variety of Matrices*, THERMO SCIENTIFIC, <http://tools.thermofisher.com/content/sfs/brochures/D00656~.pdf> (last visited Apr. 29, 2024) (“The main consideration for arsenic is that it is mono-isotopic at mass 75, so when interferences occur it is not possible to switch to an alternative isotope as can be done with many other elements. *This also means that consideration must be given to the possibility of false positives for arsenic* [emphasis added] as there is no other isotope that can be used for confirmation of presence”).

⁹⁸ ENVIRONMENTAL MONITORING & TECHNOLOGIES, EMT-SOP-I-119, STANDARD OPERATING PROCEDURE FOR DETERMINATION OF TRACE ELEMENTS IN WATER AND WASTES BY INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY (ICP-MS), METHOD 200.8, REV. 9, at 18 (2020); *Statement of Retraction: September 8, 2023*, ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC., <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/EMT-Statement-of-Retracton-090822.pdf> (last visited Apr. 29, 2024) (While EMT's Standard Operating Procedure requires this procedure, EMT did not perform this procedure here).

⁹⁹ U.S. ENVIRONMENTAL PROTECTION AGENCY, METHOD 200.8: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY, REV. 5.4, at 4, 7, 11 and 16. (1994); *Statement of Retraction: September 8, 2023*, ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC., <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/EMT-Statement-of-Retracton-090822.pdf> (last visited Feb. 13, 2024) (EMT's Statement of Retraction cites using hydrochloric acid. “Several polyatomic ion interferences result when hydrochloric acid is used... *When hydrochloric acid is used, corrections for the chloride polyatomic ion interferences must be applied to all data.*” [emphasis added]. Such interferences must be recognized, and *when they cannot be avoided by the selection of alternative analytical isotopes or sample prep procedures, appropriate corrections must be made to the data* [emphasis added]).

¹⁰⁰ U.S. ENVIRONMENTAL PROTECTION AGENCY, METHOD 200.8: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY, REV. 5.4, at 38, Table 5 (1994); ENVIRONMENTAL MONITORING & TECHNOLOGIES, EMT-SOP-I-119, STANDARD OPERATING PROCEDURE FOR DETERMINATION OF TRACE ELEMENTS IN WATER AND WASTES BY INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY (ICP-MS), METHOD 200.8, REV. 9, at 23, Table 17.4 (2020) (EMT's Standard Operating Procedure cites using a different correctional equation for arsenic than EPA Method 200.8 requires).

¹⁰¹ NEW YORK STATE DEPARTMENT OF HEALTH, ITEM NO. 200, ENVIRONMENTAL LABORATORY APPROVAL PROGRAM CERTIFICATION MANUAL: ASSESSMENT (AUDIT), at 1 (2020).

¹⁰² *Id.* at 2-3.

limit of 12.5 ppb, and therefore not reliable.¹⁰³ A reporting limit is the lowest concentration of a contaminant that a laboratory can test for with accuracy. Laboratories will typically use reporting limits that are lower than the U.S. EPA's MCLs, and the MCL of their state health department. The U.S. EPA and N.Y.S. DOH's MCL for arsenic is 10 ppb, as stated above.¹⁰⁴ EMT's reporting limit, however, was higher. Therefore, EMT's finding of the presence of arsenic at a concentration of 12.2 ppb—which was .3 ppb *below* the concentration that EMT could test for with accuracy, but nonetheless *above* the U.S. EPA and N.Y.S. DOH's MCL for arsenic by 2.2 ppb—raised concerns not only about the public health implications of the results, but also about the accuracy of the results.

Issue 10: *NYCHA did not have a protocol for notifying its residents about the possible or confirmed presence of a contaminant.*

Federal and state laws concerning appropriate levels of arsenic in water, even if applicable to NYCHA in this scenario—which, as stated above, they are not—do not require public notification or disclosure for the concentrations of arsenic identified in the initial partial test results, and even at the higher levels identified in the complete test results discussed below.¹⁰⁵ NYCHA, however, would have to notify the N.Y.S. DOH of its samples exceeding 10 ppb.¹⁰⁶ NYCHA nevertheless disclosed to residents that the water had tested positive for arsenic, recommended that residents not drink the water, distributed bottled and canned water to residents, and kept residents updated on the status of water testing on a daily basis from September 2 through September 10, on which date NYCHA confirmed that the tap water was safe to drink.

Per the U.S. EPA and N.Y.S. DOH's rules, a public water system¹⁰⁷ with an exceedance of the MCL for arsenic—that is, in excess of 10 ppb—must increase the frequency of monitoring to quarterly sampling.¹⁰⁸ If the average MCL for four quarters of sampling exceeds 10 ppb, then that system is considered in violation, and public notice is required.¹⁰⁹ If, on the other hand, a sample result would cause the annual average to exceed the MCL at any sampling point (e.g., the sampling result is 4 times the MCL, or 40 ppb or more), then the system is deemed out of compliance with the MCL and the public water system must issue a public notice as soon as practical but within 30

¹⁰³ *Results Received August, 29, 2022, and September, 01, 2022*, ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC., <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/EMT-Results-Received-082922-and-090122.pdf> (last visited Apr. 29, 2024).

¹⁰⁴ *See supra* II, A, 1, Regulatory Background.

¹⁰⁵ When there are exceedances of MCLs, the U.S. EPA and N.Y.S. DOH designate violations into three tiers: tier one—immediate notice, within 24 hours; tier 2—notice as soon as practical but within 30 days; tier 3—notice within 12 months.

¹⁰⁶ 10 N.Y.C.R.R. § 5-1.52, Table 13.

¹⁰⁷ 40 C.F.R. § 141.62(b); 10 N.Y.C.R.R. §§ 5-1.51(a) and 5-1.52, Table 1 (The U.S. EPA's MCLs apply to community and non-transient, non-community water systems, while the N.Y.S. DOH's MCLs apply to all public water systems).

¹⁰⁸ 40 C.F.R. § 141.23(c)(7); 10 N.Y.C.R.R. §§ 5-1.51(a) and 5-1.52, Table 1; *see also Arsenic Rule: Background and Rule Provisions*, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, <https://www.epa.gov/sites/default/files/2015-09/documents/train1-background.pdf> (last visited Apr. 29, 2024).

¹⁰⁹ 10 N.Y.C.R.R. § 5-1.52, Table 13.

days.¹¹⁰ The U.S. EPA and N.Y.S. DOH's rules provide useful guidance with respect to what information should be included in such a notice.¹¹¹

Therefore, under the U.S. EPA and N.Y.S. DOH's rules, the single point-in-time test results received by NYCHA and described above and herein, even if accurate, were at most inconsistent with the U.S. EPA's unenforceable goals, but not inconsistent with the U.S. EPA and N.Y.S. DOH's enforceable standards. The results therefore would not have required any public notification—only notification to the N.Y.S. DOH—and would not have required any other action beyond future quarterly sampling.

On August 29, 2022, after the Industrial Hygienist received the available results of the tests for the point of entry at Building 11, showing arsenic at 12.2 ppb, he shared them with the TSD Superintendent, TSD Director Militano and the Deputy Director of TSD. Militano then shared the results with numerous NYCHA executives: COO Trimble (who was now out of the country on vacation from August 25 to September 5, 2022), DCOO Walton, Vice President of Operational Analysis and Contract Management Bruno, Acting Vice President for Manhattan PHO Tavarez, and Chief of Staff to the Chief Operating Officer Lauren Gray. Gray shared the results with Executive Vice President for Legal Affairs & General Counsel Lisa Bova-Hiatt, the Director of Public and Community Relations, the Deputy Director of Research & Policy, the Managing Attorney and Senior Vice President for Legal Affairs, the Special Counsel, the Administrative Real Property Manager, the Senior Vice President of Intergovernmental Affairs, the Deputy Director of Intergovernmental Relations, and the Special Advisor to the Chair/CEO for Operations. The Special Counsel additionally forwarded the results to the Chief Compliance Officer.

Because COO Trimble was on vacation at this time, DCOO Walton served as the acting COO. However, when DCOO Walton was interviewed by DOI and the former Federal Monitor, he stated that, although he had assumed the duties of acting COO, NYCHA's response to the arsenic results was a collaborative effort among various departments.¹¹² Notwithstanding this collaborative effort, no one at NYCHA raised concerns about the fact that LiquiTech, despite having tested for other contaminants, including arsenic, failed to perform the intended testing for *E. coli* and coliforms—further exemplifying NYCHA management's failure to sufficiently oversee testing procedures. Nevertheless, NYCHA remained focused on addressing the perceived public health threat posed by the arsenic results.

Subsequently, Militano and the Industrial Hygienist recommended retesting the water because the results reflecting the presence of arsenic might be inaccurate due to the results being under EMT's reporting limit, as explained above.¹¹³ LiquiTech was asked to collect more samples the following morning to test for arsenic, and on August 30, LiquiTech returned to the Riis Houses to collect samples from points of entry to Buildings 8 and 11 and two apartment kitchen sinks in Building 11.

¹¹⁰ 40 C.F.R. Part 141, Subpart Q, Appendix A; 10 N.Y.C.R.R. §§ 5-1.51(a) and 5-1.52, Tables 1 and 13.

¹¹¹ See Appendix, EPA's Required Elements of a Public Notice and Provided Example of a Public Notice.

¹¹² DOI and the former NYCHA Federal Monitor interviewed DCOO Walton on October 12, 2022.

¹¹³ DOI and the former NYCHA Federal Monitor learned this in its interview with COO Trimble on October 11, 2022.

On September 1, the LiquiTech Senior Account Manager emailed the TSD Superintendent and the Industrial Hygienist the results from the August 30 sampling. The results reflected that water in five out of six locations tested was above the contaminant limit for arsenic, ranging between 13.6 ppb and 14.1 ppb.¹¹⁴ Under the U.S. EPA and N.Y.S. DOH rules discussed above, these results also would not require public notification. The Industrial Hygienist forwarded these results to Militano, the TSD Superintendent, and the Deputy Director of TSD.

Militano relayed this information to many superiors: COO Trimble, DCOO Walton, the Chief of Staff to the Chief Operating Officer Gray, Vice President of Operational Analysis and Contract Management Bruno, Acting Vice President for Manhattan PHO Tavarez, Deputy Director of Research and Policy, the Director of Public and Community Relations, the Administrative Real Property Manager, the Managing Attorney and Senior Vice President for Legal Affairs, the Special Counsel, the Senior Vice President of Intergovernmental Affairs, the Deputy Director of TSD, the Chief of Staff, Community Coordinator, the Senior Communications Manager of Digital Marketing and Design, the Director of Editorial Strategy and Content Development, the Operations Administrator, Deputy Director of Intergovernmental Relations, and the Emergency Management and Services Department Senior Director. Afterwards, the Chief of Staff to the Chief Operating Officer Gray emailed the results to the Senior Vice President of Healthy Homes Daniel Greene, Chief Compliance Officer, and Vice President of Environmental Health and Safety. Greene notified N.Y.C. DOHMH and N.Y.C. DEP of the situation at the Riis Houses, as well.

At the same time, the Emergency Management and Services Department Senior Director, who had been involved with outreach to N.Y.C. DEP related to emergency management in the past, informed N.Y.C. DEP Emergency Management Section Chief Natan Mandelbaum of the test results, and Mandelbaum forwarded these results to N.Y.C. DEP Water Quality & Innovation First Deputy Director Salome Freud and Water & Sewer Operations Deputy Commissioner Anastasios Georgelis.

Freud emailed N.Y.C. DEP Water Quality & Innovation Director Lori Emery, Bureau of Water Supply Deputy Commissioner Paul Rush, Deputy Chief Operating Officer Kim Cipriano, and NYCHA Senior Vice President of Healthy Homes Greene, that EMT, the lab that detected arsenic in the drinking water samples, is not New York State certified. The public can access N.Y.S. DOH's database of N.Y.S.-certified laboratories, therefore it is unclear why NYCHA did not know, or did not confirm, that EMT had the appropriate certification. It is also unclear why NYCHA did not contact Emery and Freud for advice when the Authority initially decided to conduct water testing at the Riis Houses; however, N.Y.C. DEP offered to sample the water again the following day and to include arsenic as a testing parameter. Greene then coordinated with TSD Director Militano for N.Y.C. DEP to access Building 11's point of entry the next day.

¹¹⁴*Results Received August, 29, 2022, and September, 01, 2022*, ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC., <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/EMT-Results-Received-082922-and-090122.pdf> (last visited Apr. 29, 2024).

On September 2, representatives of N.Y.C. DEP returned to the Riis Houses to collect water samples from the same hydrant from which they had previously collected and Building 11's point of entry. Unlike prior tests, however, N.Y.C. DEP tested for arsenic. After collecting the samples, N.Y.C. DEP informed the TSD Superintendent that the results would not be back until the Tuesday after Labor Day, September 6.

While N.Y.C. DEP's results were pending, the TSD Superintendent requested that LiquiTech take more samples, asking the LiquiTech Senior Account Manager if LiquiTech could get the results in 24 hours. The LiquiTech Senior Account Manager confirmed that the results could be received in 24 hours, and LiquiTech performed the testing. LiquiTech did not produce the results within 24 hours and the samples still had not been tested as of September 8. At NYCHA's request, LiquiTech had EMT mail these samples to a different lab.

According to LiquiTech, the TSD Superintendent requested that LiquiTech test both the water from the same hydrant that N.Y.C. DEP took samples from, as well as the samples from the August 16 and 17 collections for arsenic. The TSD Superintendent disputes giving LiquiTech specific instructions about which contaminants to test.

During the morning of September 2, N.Y.C. DOHMH advised NYCHA to flush the building before retesting the water, and to inform Riis Houses residents that they should not drink or cook with the water, a recommendation with which N.Y.C. DEP concurred. N.Y.C. DOHMH, which was fully aware of the certification issues, also recommended (1) disclosing to residents the potential presence of arsenic in NYCHA's water supply with a public notification, (2) accepting the tests as valid until proper testing showed otherwise, and (3) imposing a water use restriction. NYCHA executives subsequently met to discuss the next steps and the implementation of N.Y.C. DOHMH's recommendation, and the Senior Vice President of Intergovernmental Affairs sent an email to City Hall notifying them of the results indicating the presence of arsenic. NYCHA and City Hall began notifying elected officials and community partners.

On September 2, at approximately 7:00 p.m., NYCHA notified residents via robocall in all "covered languages"¹¹⁵ that testing showed levels of arsenic above the federal standard for drinking water and advised residents not to drink the water, following N.Y.C. DOHMH's advice.¹¹⁶ NYCHA also sent an email in English with these details and began to hand out flyers while translations of these communications were prepared. A Customer Contact Center ("CCC") script—the Authority's center for residents, via walk-in or call, who need help with maintenance repairs, among other things—was drafted and provided. The Financial Accounting & Reporting Services Vice President and Controller activated NYCHA's emergency procurement response and NYCHA began to distribute potable water to Riis Houses residents.

That same day, NYCHA received the preliminary results from LiquiTech's bacteriological testing of samples collected on August 16. These results showed the potential presence of

¹¹⁵ The covered languages are English, Spanish, Traditional Chinese, Simplified Chinese, and Russian.

¹¹⁶ See Appendix, September 2, 2022, Robocall.

Legionella bacteria in three kitchen sinks that were sampled,¹¹⁷ a bacteria that can cause Legionnaires' disease if the water droplets are inhaled.¹¹⁸ N.Y.C. DOHMH follows U.S. CDC guidance pertaining to *Legionella* bacteria, which requires that remediation be initiated when there are, within a 12-month period, two or more confirmed cases of Legionnaires' disease originating in the same building with a shared hot water system.¹¹⁹ If a water distribution system requires remediation, N.Y.C. DOHMH requires that building owners inform their residents.¹²⁰ These results indicating the potential presence of *Legionella* bacteria, even if confirmed, would not require remediation or disclosure.

The NYCHA employee who received the results did not disclose them to the executive staff until September 4, and as discussed further below, NYCHA and other City agencies concluded that the results might be erroneous. Upon receiving the completed results, which were also positive for *Legionella* bacteria, NYCHA promptly disclosed them to residents and the public, despite the fact that U.S. CDC and N.Y.C. DOHMH guidance did not require remediation or disclosure based on the test results that NYCHA received, as discussed further below.

On September 3, NYCHA, in coordination with City Hall, notified the United States Attorney's Office for the Southern District of New York, the United States Department of Housing and Urban Development, and former NYCHA Federal Monitor Bart M. Schwartz of the test results indicating the presence of arsenic and coliforms, and the potential presence of *Legionella* bacteria. The former NYCHA Federal Monitor initiated an investigation. That same day, NYCHA received the N.Y.C. DEP results from its September 2 collection, which were negative for elevated levels of arsenic.¹²¹

NYCHA continued remediation and outreach to residents. These efforts included: the distribution of water to residents; building-wide flushing of water systems; notification to residents that staff would be coming to their apartment to flush the water system and to test the water—and the preparation of a short script for maintenance workers in all covered languages for apartment visits in connection with flushing; and a notification robocall in all covered languages informing

¹¹⁷ *Non-Tuberculosis Mycobacteria: August 13, 16, and 17, 2022*, SPECIAL PATHOGENS LABORATORY, https://www.nyc.gov/assets/nycha/downloads/pdf/Riis-Houses-Bacteriological-Tests/Non-Tuberculosis_Mycobacteria_8.13_8.16_8.17_Redacted.pdf (last visited Apr. 29, 2024).

¹¹⁸ *Legionnaires Disease Cause and Spread*, UNITED STATES CENTERS FOR DISEASE CONTROL AND PREVENTION, <https://www.cdc.gov/legionella/about/causes-transmission.html> (last visited Apr. 29, 2024) (“*Legionella* bacteria are found naturally in freshwater environments, like lakes and streams. The bacteria can become a health concern when they grow and spread in human-made building water systems... People can get Legionnaires' disease or Pontiac fever when they breathe in small droplets of water in the air that contain *Legionella* bacteria... Legionnaire's disease is like other types of pneumonia, with symptoms that include cough, shortness of breath, fever, muscle aches, and headaches... Pontiac fever is a milder infection than Legionnaires' disease. Symptoms are primarily fever and muscle aches”).

¹¹⁹ *Legionnaires' Disease and Building Evaluations*, NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE, <https://www.nyc.gov/assets/doh/downloads/pdf/environmental/legionnaires-disease-building-evaluations.pdf> (last visited Apr. 29, 2024).

¹²⁰ *Id.*

¹²¹ *Results Received: September 3, 2022*, NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION, <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/DEP-Results-Received-090322.pdf> (last visited Apr. 29, 2024).

residents of negative arsenic results from the follow-up test earlier in the day, but advising them to avoid using the water at the Riis Houses.¹²² The CCC script was updated and interpreters (Spanish, Mandarin, and Cantonese) were onsite to provide information.

Senior Vice President of Healthy Homes Greene conferred with N.Y.C. DOHMH and N.Y.C. DEP., both of which expressed skepticism about EMT's test results. N.Y.C. DOHMH was skeptical because arsenic is not commonly found in N.Y.C. water, while N.Y.C. DEP raised concerns due to EMT's failure to obtain N.Y.S. DOH ELAP certification and its use of a reporting limit that was higher than the EPA's MCL for arsenic.¹²³ Following these discoveries, Greene and TSD Director Militano agreed that another company, The LiRo Group ("LiRo"), should perform more sampling because EMT potentially had reached incorrect conclusions with respect to the presence of arsenic in NYCHA's water supply. Accordingly, LiRo was retained on an emergency purchase order. On September 4, LiRo collected samples to test for arsenic from approximately 95 apartments, both water tanks, and the point of entry for Building 8.¹²⁴

Also on September 4, a TSD employee (whose identity was not determined in the investigation) shared with NYCHA executives the preliminary results that were received on September 2 from LiquiTech's August 16 sampling for bacteriological testing. The results, as noted above, showed the potential presence of *Legionella* bacteria in three kitchen sinks. It is unclear why the TSD employee waited two days to inform NYCHA executives of these preliminary results.

NYCHA sought advice with respect to the analysis of the bacteriological results in accordance with U.S. CDC guidance from N.Y.C. DEP, N.Y.C. DOHMH, and City Hall. N.Y.C. DEP subsequently reviewed the results and informed NYCHA of the following information: the result could be due to sample contamination; the species preliminarily identified are common to the N.Y.C. water system; and bacterial growth can be common in certain taps, especially if they have not been disinfected before testing, and because of flushing. N.Y.C. DOHMH also reviewed the results and stated that a proper cleaning of the aerators and disinfection is required to avoid sample contamination and to get accurate results. LiquiTech confirmed that they did not follow these steps before testing.

That same day, NYCHA initiated a robocall in all covered languages notifying residents that access to their apartments might be needed for testing and stating, again, that results received the day prior did not detect arsenic from the water source entering the building.¹²⁵ NYCHA also advised residents to avoid using the Riis Houses water.¹²⁶ NYCHA, however, did not disclose the bacteriological results, due to the City agencies' consensus that those results were potentially inaccurate.

¹²² See Appendix, September 3, 2022, Robocall.

¹²³ See *supra* III, A, Issue 9.

¹²⁴ LiRo used their subcontracted laboratory Long Island Analytical, which is N.Y.S. ELAP certified. Long Island Analytical tested the samples for arsenic.

¹²⁵ See Appendix, September 4, 2022, Robocall.

¹²⁶ *Id.*

On September 5, LiRo sent the results of 86 samples, including samples from kitchen sinks located in Buildings 2, 3, 10, 13 and 14, and Building 8's points of entry and two roof tanks.¹²⁷ The test results reflected that the samples were non-detectable for arsenic or significantly below U.S. EPA and N.Y.S. DOH's arsenic standard. NYCHA shared these results with N.Y.C. DEP, N.Y.C. DOHMH, and City Hall. City Hall subsequently issued a press release informing the public of these results but directing residents not to drink or cook with the water, pending further test results.

LiRo collected samples to test for arsenic from 65 additional locations across multiple buildings, apartments, and common spaces.¹²⁸ And NYCHA continued to keep the Riis Houses residents apprised of the situation, initiating a robocall in all covered languages stating that the results that had been received in the previous two days did not detect arsenic, but advising residents to continue not to drink the water.¹²⁹ An updated flyer was created and distributed in all covered languages and the CCC script was updated accordingly.

On September 6, LiRo collected 22 additional samples of water for bacteriological testing.¹³⁰ LiRo also returned the results for 38 samples, including from Building 11's point of entry and kitchen sinks located in Buildings 11, 18 and 19, all of which were non-detectable for arsenic or significantly below U.S. EPA and N.Y.S. DOH's arsenic standard.¹³¹ A robocall that same date was issued to NYCHA residents in all covered languages stating that the test results remained promising, but advising residents to avoid drinking or cooking with the Riis Houses water. A new flyer was created and distributed and the CCC script was updated.

On September 7, NYCHA received multiple test results: the arsenic test results from LiRo for 65 samples, all of which were non-detectable for arsenic or significantly below the U.S. EPA and N.Y.S. DOH's arsenic standard,¹³² and the full results from LiquiTech for the August 16 and 17 testing, which indicated that three samples tested positive for *Legionella* bacteria in kitchen sinks that were tested.¹³³

NYCHA shared these results with N.Y.C. DEP, N.Y.C. DOHMH, and City Hall. The Mayor subsequently issued a press release stating that *Legionella* bacteria was found at the Riis Houses,

¹²⁷ *Results Received: September 5, 6, and 7, 2022*, THE LIRO GROUP, <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/LIRO-Results-Received-090522-090622-and-090722.pdf> (last visited Apr. 29, 2024).

¹²⁸ LiRo used their subcontracted laboratory Long Island Analytical, which is N.Y.S. ELAP certified. Long Island Analytical tested the samples for arsenic.

¹²⁹ See Appendix, September 5, 2022, Robocall.

¹³⁰ LiRo used their subcontracted laboratory Long Island Analytical, which is N.Y.S. ELAP certified. Long Island Analytical tested the samples for arsenic.

¹³¹ *Results Received: September 5, 6, and 7, 2022*, THE LIRO GROUP, <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/LIRO-Results-Received-090522-090622-and-090722.pdf> (last visited Apr. 29, 2024).

¹³² *Id.*

¹³³ *Bacteriological Testing Received September 2 and 7, 2022*, LIQUITECH, <https://www.nyc.gov/assets/nycha/downloads/pdf/Riis-Houses-Bacteriological-Tests/Liquitech-Bacteriological-Testing-Received-Sept2andSept7.pdf> (last visited Apr. 29, 2024).

but no arsenic.^{134,135} A robocall in all covered languages on that date confirmed that approximately 140 tests of the water distribution system had returned showing levels of arsenic below the U.S. EPA’s drinking water standards, but advising residents not to cook with or drink the water at the Riis Houses;¹³⁶ NYCHA did not include information about the *Legionella* bacteria testing results in their robocall until September 8. The CCC script was revised. N.Y.C. DOHMH confirmed, again, that the bacteriological results received on September 2 could reflect contamination of the aerators and stated that resampling was being done that day. N.Y.C. DOHMH also confirmed that the Riis Houses did not meet the criteria to initiate remediation protocols for *Legionella* bacteria.

On September 8, LiRo returned the available¹³⁷ results from the first 22 samples collected on September 6 for bacteriological testing and NYCHA shared the results with N.Y.C. DEP, N.Y.C. DOHMH, and City Hall. The samples were negative for *E. coli* and coliforms. LiRo informed NYCHA that the samples from the September 7 testing were also negative for *E. coli* and coliforms, but the results had not yet been provided to NYCHA.¹³⁸

An updated flyer was created and distributed in all covered languages. A new robocall in all covered languages stated that the approximately 140 test results indicated no discernable amounts of arsenic in the water but advised residents not to drink or cook with the Riis Houses water. The robocall also stated that the potential presence of *Legionella* bacteria was identified.¹³⁹ Residents were told that NYCHA was working with N.Y.C. DOHMH to complete ongoing testing and review of the completed test results. Updates to the CCC script were made.

Also on September 8, N.Y.C. DEP Water Quality and Innovation First Deputy Director Freud asked NYCHA Senior Vice President of Healthy Homes Greene to request the full quality control report from LiquiTech for the August 13 and August 30 samplings for arsenic. N.Y.C. DEP also noted that the initial results from August 13 were below EMT’s reporting limit, so it was unclear why LiquiTech deemed the result a positive result that required more testing.

NYCHA leadership determined, and informed N.Y.C. DEP, N.Y.C. DOHMH, and City Hall, that LiquiTech sampled the same hydrant that N.Y.C. DEP tested on September 2—located on the east side of Avenue D, north of 9th Street—and those results were still pending. In addition, NYCHA requested that LiquiTech send their sampling protocols and a list of all the outstanding samples that had not yet been returned.

¹³⁴ See Appendix, September 7, 2022, Mayor Adams’s Press Release.

¹³⁵ *Results Received: September 5, 6, and 7, 2022*, The LiRo Group, <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/LIRO-Results-Received-090522-090622-and-090722.pdf> (last visited Apr. 29, 2024) (The test results from The LiRo Group indicated that the samples were non-detectable for arsenic or were far below levels requiring action by federal and state public health standards); see *supra* II, A, 1, Regulatory Background

¹³⁶ See Appendix, September 7, 2022, Robocall.

¹³⁷ Total Heterotrophic Count tests require 48 hours to become available and could not be returned on that date.

¹³⁸ *Bacteriological Testing Received September 8 and 9*, THE LIRO GROUP, <https://www.nyc.gov/assets/nycha/downloads/pdf/Riis-Houses-Bacteriological-Tests/LiRo-Bacteriological-Testing-Received-Sept8andSept9.pdf> (last visited Apr. 29, 2024).

¹³⁹ See Appendix, September 8, 2022, Robocall.

That same day, LiquiTech informed NYCHA that EMT planned to rescind the arsenic testing results provided to NYCHA on August 29 and September 1 because, following a quality control review, EMT noticed that there was an error: it failed to use the same dilution for the Riis Houses water sample and the blank—a clean water solution that does not contain the contaminants for which the lab is testing and is treated identically to the sample¹⁴⁰—preventing EMT from identifying the true source of the contamination when there was molecular interference indicating a false arsenic positive.^{141,142}

After LiquiTech informed NYCHA of EMT’s plans to rescind the arsenic results, Congresswoman Nydia Velázquez sent NYCHA a letter, dated September 8, requesting that NYCHA cancel its business relationship with LiquiTech in light of EMT’s testing errors. Congresswoman Velázquez also requested that NYCHA’s former Federal Monitor approve a new vendor to ensure that all federal, state and local testing laws are met.¹⁴³

On September 9, Riis Houses Tenant Association President Daphne Williams held a community meeting to discuss the ongoing water quality issues. At the meeting, residents were

¹⁴⁰ U.S. ENVIRONMENTAL PROTECTION AGENCY, METHOD 200.8: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY, REV. 5.4, at 5 and 16 (1994) (The blank described here is a laboratory reagent blank (“LRB”). A LRB is an “aliquot of reagent water or other *blank matrices that are treated exactly as a sample* [emphasis added] including exposure to all glassware, equipment, solvents, reagents, and internal standards that are used with other samples. The LRB is used to determine if method analytes or *other interferences* [emphasis added] are present in the laboratory environment, reagents, or apparatus....[the LRB] [m]ust contain all the reagents in the same volumes as used in processing the samples. The LRB must be carried through the same entire preparation scheme as the samples including digestion, when applicable”); *Statement of Retraction: September 8, 2023*, ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC., <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/EMT-Statement-of-Retraction-090822.pdf> (last visited Apr. 29, 2024) (EMT’s Statement of Retraction indicates that they did not run the blank and sample at the same dilution).

¹⁴¹ U.S. ENVIRONMENTAL PROTECTION AGENCY, METHOD 200.8: DETERMINATION OF TRACE ELEMENTS IN WATERS AND WASTES BY INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY, REV. 5.4, at 5 and 16 (1994) (The blank described here is a laboratory reagent blank (“LRB”). A LRB is an “aliquot of reagent water or other *blank matrices that are treated exactly as a sample* [emphasis added] including exposure to all glassware, equipment, solvents, reagents, and internal standards that are used with other samples. The LRB is used to determine if method analytes or *other interferences* [emphasis added] are present in the laboratory environment, reagents, or apparatus....[the LRB] [m]ust contain all the reagents in the same volumes as used in processing the samples. The LRB must be carried through the same entire preparation scheme as the samples including digestion, when applicable”); *Statement of Retraction: September 8, 2023*, ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC., <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/EMT-Statement-of-Retraction-090822.pdf> (last visited Apr. 29, 2024) (EMT’s Statement of Retraction indicates that they did not run the blank and sample at the same dilution).

¹⁴² ENVIRONMENTAL MONITORING & TECHNOLOGIES, EMT-SOP-I-119, STANDARD OPERATING PROCEDURE FOR DETERMINATION OF TRACE ELEMENTS IN WATER AND WASTES BY INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY (ICP-MS), METHOD 200.8, REV. 9, at 18 (2020); *Statement of Retraction: September 8, 2023*, ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC., <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/EMT-Statement-of-Retraction-090822.pdf> (last visited Apr. 29, 2024) (While EMT’s Standard Operating Procedure requires this procedure, EMT did not perform this procedure here).

¹⁴³ Press Release, Congresswoman Nydia Velázquez, Congresswoman Nydia Velázquez Calls on NYCHA Federal Monitor to Approve New Vendor to Prevent Faulty Testing at Riis Houses, <https://velazquez.house.gov/media-center/press-releases/vel-zquez-calls-nycha-federal-monitor-approve-new-vendor-prevent-faulty> (last visited Apr. 29, 2024).

informed that the test results indicating the presence of arsenic above the U.S. EPA and N.Y.S. DOH's MCL were in error.

That same day, NYCHA received additional information from LiquiTech. LiquiTech sent NYCHA the results of a retest of samples that were collected on August 16, 2022. The retesting showed that all of the samples were below the U.S. EPA and N.Y.S. DOH's limit for arsenic.¹⁴⁴ It is unclear how these samples that were originally collected for bacteriological testing came to be retested for arsenic. LiquiTech informed NYCHA that a NYCHA employee requested resampling, but NYCHA denied this.

Also on September 9, LiquiTech sent NYCHA a letter from EMT that, due to a lab error, EMT was rescinding its previous arsenic testing results from the August 13 sampling (the results of which were received on August 29) and August 30 sampling (the results of which were received on September 1).¹⁴⁵ In their letter to LiquiTech, EMT stated that “[t]race levels of arsenic were introduced to the samples during the digestion process. The dilution of the blank hid the true arsenic level within the blank, which artificially inflated the relative arsenic levels within the samples.” The Mayor subsequently released a press statement regarding EMT's retraction of their previous testing results that same day.¹⁴⁶

Additionally on September 9, N.Y.C. DEP collected samples from the previously mentioned fire hydrant—located on the east side of Avenue D, north of 9th Street—to test for arsenic, among other things.¹⁴⁷ LiRo provided the full results from the September 6 sampling, which tested for the presence of *E. coli* and coliforms in Riis Houses kitchen sinks. The results were negative. NYCHA shared the results with N.Y.C. DOHMH for review.¹⁴⁸

On September 10, all of the arsenic results received as of September 9 were posted on the City's and NYCHA's websites.¹⁴⁹ N.Y.C. DOHMH announced that the water was safe to drink.¹⁵⁰

¹⁴⁴ *Results Received: Sept 09, 2022, Part 1*, ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC., https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/20E0844_EMT_Consolidated_FINAL_09_08_22_2128_Redacted.pdf (last visited Apr. 29, 2024); *Results Received: Sept 09, 2022, Part 2*, ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.,

https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/22H1017_EMT_Consolidated_FINAL_09_09_22_2129_Redacted.pdf (last visited Apr. 29, 2024).

¹⁴⁵ *Statement of Retraction: September 8, 2023*, ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC., <https://www.nyc.gov/assets/nycha/downloads/pdf/RIIS-Houses-Test-Results/EMT-Statement-of-Retraction-090822.pdf> (last visited Apr. 29, 2024).

¹⁴⁶ Press Release, Office of Mayor Eric Adams, Statement on Water Situation at Riis Houses (Sept. 9, 2022) <https://www.nyc.gov/office-of-the-mayor/news/653-22/statement-water-situation-riis-houses> (last visited Apr. 29, 2024).

¹⁴⁷ N.Y.C. DEP used the lab, Lefrak, which tested for arsenic, temperature, specific conductance, field pH, residual chlorine, color, turbidity, coliform, and *E. coli*.

¹⁴⁸ *Bacteriological Testing Received September 8 and 9*, THE LIRO GROUP, <https://www.nyc.gov/assets/nycha/downloads/pdf/Riis-Houses-Bacteriological-Tests/LiRo-Bacteriological-Testing-Received-Sept8andSept9.pdf> (last visited Apr. 29, 2024).

¹⁴⁹ *Riis Drinking Water Advisory*, NEW YORK CITY HOUSING AUTHORITY, <https://www.nyc.gov/site/nycha/residents/riis-houses-water.page> (last visited Apr. 29, 2024).

¹⁵⁰ *Id.*

On September 11, the results of N.Y.C. DEP’s September 9 sampling indicated that the Riis Houses water was safe to drink.

Issue 11: *Inspection software does not include a prompt requiring the designated employee to ensure that the house pump alarm is on and functioning.*

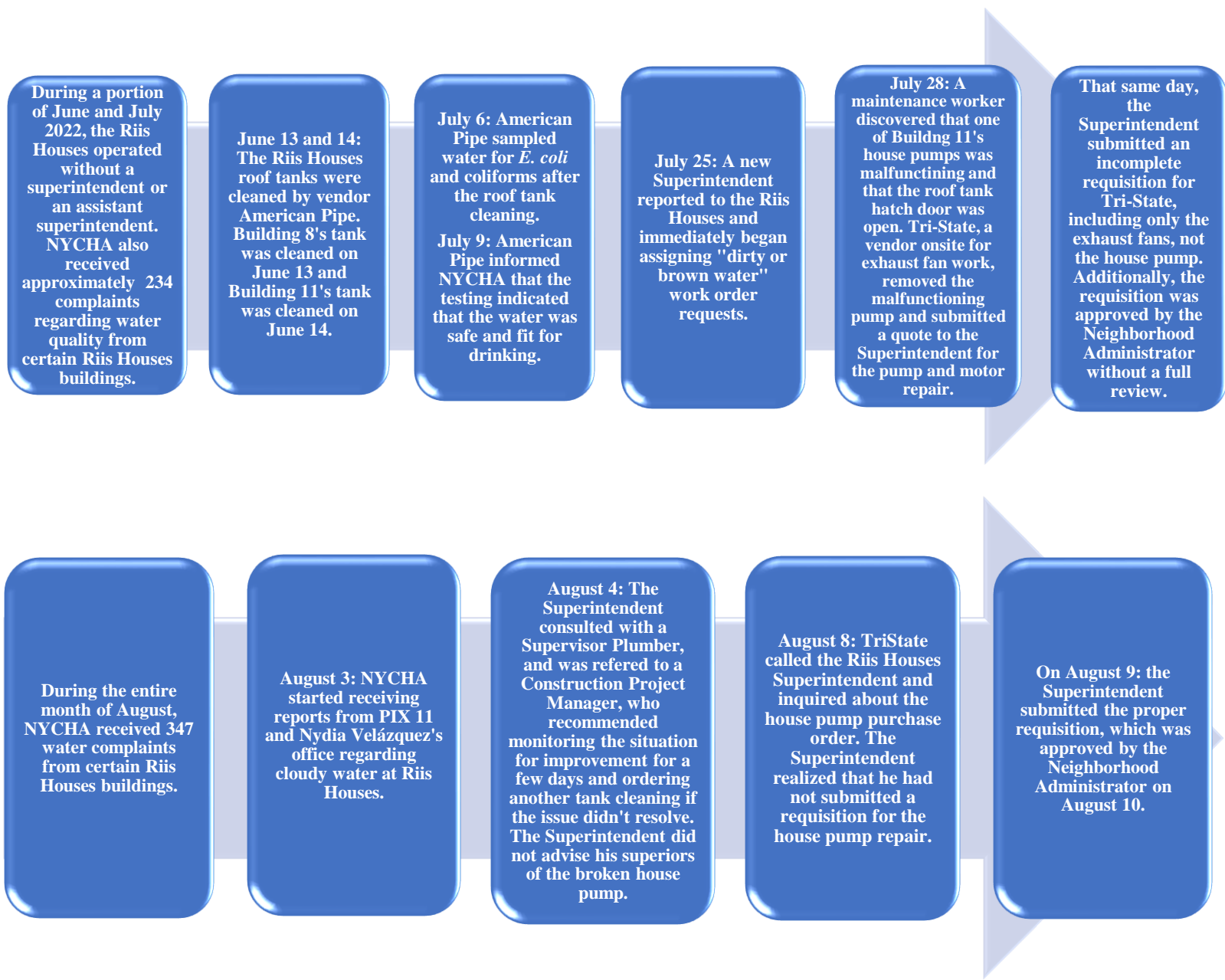
On September 27, 2022, during a follow-up visit to the Riis Houses, DOI investigators inspected Building 11’s pump room and water pumps and discovered that the house pump alarm was off. Riis Houses staff did not know why the alarm was off. Riis Houses staff also did not know how the alarm’s alert system worked—specifically, staff did not know if any remote devices would receive an alert if the alarm was triggered.

The inspection software does not include a prompt requiring the designated employee to ensure that the house pump alarm is on and functioning, the prompt merely requires that the employee check the house pump room as part of the monthly supervisory inspection of buildings and adjacent properties.

In total, NYCHA tested approximately 140 sites of the water system at the Riis Houses, including the six locations that were previously identified as having unsafe levels of arsenic, and distributed more than 380,000 bottles and cans of clean water. NYCHA’s figure for costs incurred during the events at the Riis Houses, as of August 2023, is \$482,506.45.¹⁵¹ This amount includes overtime costs and 1,684 payments of \$200 to Riis residents, totaling \$336,800.

¹⁵¹ The figure NYCHA had in March 2023 was \$352,810.78. This figure was revised to \$482,506.45 in August 2023 after invoices and payments to residents were processed.

B. Visual Timeline



During a portion of June and July 2022, the Riis Houses operated without a superintendent or an assistant superintendent. NYCHA also received approximately 234 complaints regarding water quality from certain Riis Houses buildings.

June 13 and 14: The Riis Houses roof tanks were cleaned by vendor American Pipe. Building 8's tank was cleaned on June 13 and Building 11's tank was cleaned on June 14.

July 6: American Pipe sampled water for *E. coli* and coliforms after the roof tank cleaning.
July 9: American Pipe informed NYCHA that the testing indicated that the water was safe and fit for drinking.

July 25: A new Superintendent reported to the Riis Houses and immediately began assigning "dirty or brown water" work order requests.

July 28: A maintenance worker discovered that one of Building 11's house pumps was malfunctioning and that the roof tank hatch door was open. Tri-State, a vendor onsite for exhaust fan work, removed the malfunctioning pump and submitted a quote to the Superintendent for the pump and motor repair.

That same day, the Superintendent submitted an incomplete requisition for Tri-State, including only the exhaust fans, not the house pump. Additionally, the requisition was approved by the Neighborhood Administrator without a full review.

During the entire month of August, NYCHA received 347 water complaints from certain Riis Houses buildings.

August 3: NYCHA started receiving reports from PIX 11 and Nydia Velázquez's office regarding cloudy water at Riis Houses.

August 4: The Superintendent consulted with a Supervisor Plumber, and was referred to a Construction Project Manager, who recommended monitoring the situation for improvement for a few days and ordering another tank cleaning if the issue didn't resolve. The Superintendent did not advise his superiors of the broken house pump.

August 8: TriState called the Riis Houses Superintendent and inquired about the house pump purchase order. The Superintendent realized that he had not submitted a requisition for the house pump repair.

On August 9: the Superintendent submitted the proper requisition, which was approved by the Neighborhood Administrator on August 10.

August 12: NYCHA sent the following response to PIX 11— “NYCHA received reports of cloudy water at Jacob Riis Houses and is working with DEP to test the water, followed by water tank cleaning. There are no reports of a negative water quality impact on residents. We will actively keep residents apprised of the testing status and results.”

That same day, N.Y.C. DEP began flushing hydrants in the vicinity of the Riis Houses at NYCHA's request. NYCHA scheduled LiquiTech to perform water testing the following day. NYCHA also requested that N.Y.C. DEP test the water entering the Riis Houses.

August 13: The purchase order for the house pump repair was approved by NYCHA's Supply Management and Procurement department.

August 15: The new house pump was installed by TriState in Building 11 at the Riis Houses. A robocall was sent to residents in all covered languages informing them that water sampling was being conducted due to reports of cloudy water.

August 16: American Pipe began draining and re-cleaning the roof tanks. American Pipe also conducted bacteriological testing.

Water samples were obtained from the Riis Houses by LiquiTech on August 13, 16, 17, 30, and September 2.

Water samples were obtained from the Riis Houses by N.Y.C. DEP on August 13, 15, and September 2 and 9. LiRo collected water samples on September 4, 5, and 6.

The LiquiTech sample results returned on August 29 indicated the presence of arsenic (using a 12.5 ppb reporting limit) at a concentration of 12.2 ppb, which is 2.2 ppb above the U.S. EPA and N.Y.S. DOH's 10 ppb MCL for arsenic. NYCHA requested that LiquiTech take more samples.

Septemebr 1: LiquiTech returned results indicating that water in 5 out of 6 locations tested showed arsenic at concentrtrions ranging between 13.6 and 14.1 ppb. NYCHA informed N.Y.C. DEP and N.Y.C. DOHMH of these results.

September 2: N.Y.C. DOHMH advised NYCHA to tell residents not to drink or cook with the water. N.Y.C. DOHMH also advised that the building must be flushed before the water is retested.

That same day, N.Y.C. DEP informed NYCHA that EMT, LiquiTech's subcontracted lab, was not certified in New York State. Additionally on September 2, NYCHA sent robocalls to Riis Houses residents about the presence of arsenic in the water. NYCHA began distribution of potable water.

September 3: NYCHA continued to distribute water to residents and implemented building-wide flushing, which was completed in the evening. NYCHA also informed City Hall, elected officials, and community partners, among other entities, of the results.

In the following days, retesting by LiquiTech, N.Y.C. DEP, and LiRo did not indicate the presence of arsenic in the water at the Riis Houses. On September 7, the Mayor issued a press release indicating that no arsenic had been found in the water at the Riis Houses.

September 8: LiquiTech informed NYCHA that EMT was rescinding its arsenic testing results because, after a quality control review, EMT noticed that there was an error which resulted in false positives.

September 9: The Mayor released a press statement on EMT's retraction of their previous testing results which indicated the presence of arsenic.

That same day, LiquiTech sent NYCHA a letter from EMT stating that EMT was rescinding its results from August 29 and September 1.

NYCHA distributed more than 380,000 bottles and cans of clean water while the Authority tested approximately 140 sites of the water system at the Riis Houses, including the six locations that were previously identified as having unsafe levels of arsenic—in total costing NYCHA \$482,506.45.

IV. REMEDIAL MEASURES & RECOMMENDATIONS

A. Legislation

On November 17, 2023, New York State Governor Kathy Hochul signed Senate Bill S7456 into law. This legislation, proposed in the wake of the events at the Riis Houses with the intent “to ensure affected [NYCHA] residents receive prompt written notice when they should avoid use of water at their NYCHA development,”¹⁵² amends the New York State Public Housing Law by adding the following sections:

When a public utility or local, state or federal agency advises the New York city housing authority that certain residents of such authority should avoid the use of water for drinking or cooking, such authority shall provide written notice, in electronic and paper form, of such advice to the indicated residents and the resident association president or other formally recognized resident leader for the indicated development as soon as practical but no later than twenty-four hours after such authority has received such advice.¹⁵³

... [and]

The New York city housing authority shall establish appropriate measures, procedures, and guidelines, such as contract requirements and enforcement mechanisms, to ensure that all of its contractors and subcontractors, when collecting or examining water samples on behalf of such authority, comply with all federal, state, and local laws, rules, and regulations applicable to such collection or examination, including the provisions of section five hundred two of the public health law.¹⁵⁴

The amendment is effective immediately.

B. Remedial Measures

Before the events at the Riis Houses, NYCHA had no department or office with expertise in water quality maintenance and remediation of water quality issues. NYCHA relied on N.Y.C. DEP and N.Y.C. DOHMH for guidance, although, as noted above, NYCHA did not seek N.Y.C.

¹⁵² Sponsor Memorandum, New York State Senator Brian Kavanagh, New York State Senate Bill S7456/Assembly Bill A7273 (2023).

¹⁵³ New York State Public Housing Law § 402-e(1)(b) (amended 2023).

¹⁵⁴ New York State Public Housing Law § 402-e(1-a) (amended 2023).

DEP or N.Y.C. DOHMH's guidance prior to conducting water testing for arsenic in August 2022, and thus did not benefit from N.Y.C. DEP and N.Y.C. DOHMH's expertise in this area.

In October 2022, in response to the events of August 2022, NYCHA established an Office of Water Quality (the "Office"), within the Healthy Homes Department,¹⁵⁵ led by a Director of Water Quality.¹⁵⁶ The Director oversees an industrial hygienist, a community coordinator, and a superintendent. The Office is tasked with ensuring that NYCHA's water supply is free of contaminants and, in the event of suspected contamination, with implementing response plans, including standardized treatment and remediation, if necessary. The Office also is responsible for vetting any requests for water testing and advising the Chief Operating Officer and Vice President of Healthy Homes on when water testing is needed and which substances to test for. The new Standard Procedure Manual, discussed below, also mandates that any request to test water must be approved by the Chief Operating Officer, in consultation with the Property Management Operations Executive Vice President.¹⁵⁷ The Office is also responsible for communicating with N.Y.C. DOHMH on a regular basis concerning water quality.

NYCHA also has contracted with specific contractors, and their subcontractors, that have the appropriate specialized expertise and the necessary certifications, to maintain, test and remediate water quality issues. These include JB&B Environmental (water maintenance, analysis, and remediation); TRC Companies (water sampling and testing); Atlas Technical Consultants (water quality investigations and responses to contamination); LiRo Group (flushing fixtures and risers, water sampling and testing, auditing of distribution systems and pieces of equipment); Barclay Water Management, Inc., and Nalco Water (water disinfection services); and EPI (auditing of disinfection systems). Additionally, to ensure the hatch doors to the roof tanks are secure, NYCHA has contracted with American Pipe to install locks on the hatch doors. These efforts will help to ensure that contractors, when collecting or examining water samples on behalf of NYCHA, comply with all federal, state, and local laws, rules, and regulations applicable to such collection or examination, as required by the newly enacted amendments to the New York State Public Housing Law.¹⁵⁸

NYCHA also had no standard procedures for the supervision and maintenance of its water systems before the incident at Riis Houses. Following the incident, NYCHA's Compliance Department established a committee to draft a Standard Procedure Manual for Domestic Water

¹⁵⁵ The Authority's Healthy Homes Department has three divisions: Office of Mold Assessment and Remediation, Lead Hazard Control, and Prevention Intervention Strategies. The Office of Mold Assessment and Remediation is currently assisting with the Office of Water Quality's formation and growth.

¹⁵⁶ NYCHA hired Jegan Abraham as the first Director of Water Quality. Abraham holds a B.S. in Chemical Engineering and a Certified Water Technologist designation. To get a Certified Water Technologist designation from the Association of Water Technologies, an individual must have at least five years of field experience in the water treatment industry, and they must pass the Certified Water Technologist exam, which covers all aspects of water treatment technology.

¹⁵⁷ NEW YORK CITY HOUSING AUTHORITY, INDEX NO. 040:23:1, NYCHA STANDARD PROCEDURE MANUAL: DOMESTIC WATER SERVICE *INTERIM*, at 30 (2023).

¹⁵⁸ New York State Public Housing Law § 402-e(1-a).

Service.¹⁵⁹ This committee included representatives of many of the Authority’s departments and offices, including the newly established Office of Water Quality, the Environmental Health and Safety Department, the Technical Resources Department, a Neighborhood Administrator, Property Maintenance Superintendents, and Borough Skilled Trades. The committee drafted the Manual, which addresses water outages, water quality issues, water sampling and testing, and *Legionella* procedure, among other matters relating to NYCHA’s water supply. NYCHA’s Compliance Department shared a draft of the Standard Procedure Manual with DOI and the former NYCHA Federal Monitor for approval and DOI and the former NYCHA Federal Monitor made preliminary recommendations, which are discussed below. Furthermore, as a result of its investigation, DOI and the former NYCHA Federal Monitor made additional recommendations on December 22, 2023, to improve NYCHA’s domestic water quality management, analysis, and remediation, as detailed below.

C. Recommendations^{160,161}

1. The Manual defines *water outage point of contact* as “an employee designated to manage a no water outage, monitor restoration of service, request resources, and provide incident reports. It is usually a property manager, property maintenance supervisor, assistant property maintenance supervisor, or Emergency Management and Services Department supervisor (outside of normal business hours), although it can be any employee as assigned.” The Manual should require that a supervisor serve as the water outage point of contact. Furthermore, the Property Manager should have the responsibility of designating the water outage point of contact. **NYCHA accepted and implemented this change.**
2. *Low pressure* is currently defined in the Manual as “water that comes out of a faucet at a significantly reduced flow.” However, low pressure should be quantified using an objective measurement such as pounds per square inch (“psi”), and NYCHA should determine a

¹⁵⁹ NYCHA issues Standard Procedure Manuals that detail protocols that must be followed by NYCHA employees, outside consultants, contractors, and other third parties whose services are used and/or are issued any handheld device to access NYCHA information assets.

¹⁶⁰ DOI and the former NYCHA Federal Monitor made recommendations 1-11 on July 18, 2023, and recommendations 12-23 on December 22, 2023.

¹⁶¹ Recommendations 1 and 2 discuss water systems generally and are not directly related to the cloudy water complaints and subsequent events discussed in this report. NYCHA’s former Federal Monitor and DOI reviewed NYCHA’s *Standard Procedure Manual Domestic Water Service (Interim)* prior to its issuance. The former NYCHA Federal Monitor and DOI are making recommendations 1 and 2 because NYCHA should provide clear and sufficiently detailed Manual language concerning all aspects of NYCHA’s water systems and potential water issues, including not only cloudiness, but also low pressure and outages. See also Federal Monitor Bart M. Schwartz, *Monitor’s Final Quarterly Report for the New York City Housing Authority*, Riis Exhibit Findings and Conclusions of the Monitor, pg. 62 (Feb. 27, 2024), [https://img1.wsimg.com/blobby/go/1191cd59-cd0d-4d02-a60c-098cfcfb7ca1/downloads/Riis Exhibit - Monitor Findings.pdf?ver=1709305398044](https://img1.wsimg.com/blobby/go/1191cd59-cd0d-4d02-a60c-098cfcfb7ca1/downloads/Riis%20Exhibit%20-%20Monitor%20Findings.pdf?ver=1709305398044) (last visited Apr. 29, 2024) (In the Riis Exhibit of the former Federal Monitor’s Final Quarterly Report for the New York City Housing Authority, the former Federal Monitor issued a separate list of recommendations that does not reflect the recommendations that the former Federal Monitor issued with DOI in July 2023).

baseline water pressure for each development. Once a baseline water pressure has been established for each development, NYCHA should determine a threshold psi that indicates low pressure. **NYCHA accepted in part. NYCHA believes that a measurement such as psi would not be an accurate reflection of low water pressure at NYCHA's properties because pressure rates greatly vary depending on the apartment's faucet hardware, the floor on which apartment is located, etc. NYCHA will instead build questions into their Maximo system to prompt property management employees to look at numerous aspects to determine if the water pressure is in fact low (e.g., is there a pressure difference for hot water versus cold water, does the unit have non-NYCHA-installed faucet hardware, on what floor is the apartment located, etc.).**

3. The Standard Procedure Manual defines *root cause* as “the main problem that leads to a water complaint.” NYCHA should adjust the definition to state “the principal phenomenon or circumstance which creates a water quality anomaly requiring responsive action.” **NYCHA accepted and implemented this change.**
4. NYCHA should give clearer guidance on procurement and when a new contract must be executed for services. Old contracts should not be used if the services sought by NYCHA are not expressly covered within the scope of the contract. **NYCHA accepted and implemented this change.**
5. The Manual dictates that, when an accumulation of work orders exists with respect to a particular location, the property maintenance supervisor or assigned employee must immediately visit that location to determine if a water outage exists. NYCHA should also require that the property maintenance supervisor or assigned employee determine if dirty and cloudy water conditions exist at the location in response to an accumulation of work orders. Moreover, a numerical standard is needed, such as a percentage of 10-20% of units, to be an indicator for circumstances when there is an accumulation of work orders at a particular location that suggests that the issue is potentially development-wide. **NYCHA accepted in part. NYCHA does not believe a numerical standard is appropriate for this purpose given the variation in property size but accepted a procedure that requires staff to respond based on an accumulation or findings based on an individual unit.**
6. In the event that only one house pump is operating, the Manual requires that “the Property Management Office performs a house pump watch. This means a qualified employee always must be on duty and in the vicinity of the house pump as long as only one house pump is operating. The qualified employee is someone who has the ability to switch a pump to manual every 30 to 60 minutes to fill water in the roof tank up to the high limit if the low-level alarm goes off.” It is unclear what “in the vicinity of the house pump” and switching the pump to manual means. NYCHA should include more detailed directions for this procedure here. **NYCHA accepted and implemented this change.**
7. Inspections of the house pumps are done daily or monthly, depending on the location of the house pump. House pumps located in a boiler room are inspected daily by an employee

of the Heating Management Services Department, while house pumps located anywhere else on the development property are inspected monthly by an employee of the Property Management Office. The expertise of the employees conducting the inspection also varies. The Heating Management Services Department employees have education, certifications, and expertise relevant to the mechanics of the house pump and water distribution system; Property Management Office employees are less likely to have a detailed understanding of the system. There appears to be no logical basis for assigning employees to house pump inspections based on the location of the house pumps. Therefore, the Heating Management Services Department should handle all house pump inspections daily, no matter where the pump is located. **NYCHA rejected this recommendation. NYCHA is instead rolling out an inspection protocol that will require house pumps to be inspected weekly by superintendents, monthly by electricians, and quarterly by plumbers. The superintendents' inspection will have a checklist with more than a dozen questions about pump room components (e.g., control panels, debris, valves, alarms, etc.).**

8. The Manual describes a vendor's requirement to fill out the *Annual Roof Tank Inspection Report* form and provide that form to the Property Management Office. Certain testing done at NYCHA (e.g., lead-based paint via XFR testing and mold assessments) requires the use of a hand-held device and program. In these instances, the programs generate Maximo Inspection work orders so that, even before test results are received, NYCHA can know which locations were assigned to be tested and the dates of the samplings. The information is stored in NYCHA's system, so that NYCHA does not need to rely on the vendor to self-report. NYCHA should implement the same process for the annual roof tank inspections and for any water testing. **NYCHA accepted but notes that there will always be a paper system outside of Maximo that NYCHA's vendors must use for the N.Y.C. DOHMH filing.**
9. NYCHA should adopt the recommendation of NYCHA's Environmental Health and Safety Department to establish a Water Complaint and Surveillance Program with more accurate classification codes and priority levels.¹⁶² Additionally, the Program should have a percentage threshold, rather than a number. **NYCHA is discussing internally. NYCHA believes that implementing this recommendation would require extensive coding by NYCHA's IT Department and would be a project that NYCHA could develop as the Authority transitions to new IT software.**
10. NYCHA should require qualified personnel to cover for absent superintendent-colleagues, so that a development is never without a superintendent. Before a superintendent leaves their position, they should be required to conduct an inspection of the property and produce a transition memorandum (following a standard template) to be used by their successor and any interim superintendent. **NYCHA accepts.**

¹⁶² See Appendix, NYCHA's Environmental Health and Safety Department Recommendation.

11. The Manual should describe the circumstances in which executive level staff must be notified—and identify the members of the executive staff who must be notified—in the event of a planned water outage, work performed during an unplanned water outage, a low water pressure issue, or complaints relating to the appearance or condition of the water. **NYCHA accepted and implemented this change.**
12. The Manual is inconsistent about which NYCHA executives must be involved in the decision to test water. Some aspects of that decision-making process, as set forth in the Manual, require the consultation of the Executive Vice President of Property Management Operations, while others do not. NYCHA should create a procedure that clearly describes the decision-making process with respect to water testing. At all stages of that process, water quality experts should be included and should make a recommendation to the ultimate decision-makers as to whether water should be tested for contaminants. NYCHA should consult with N.Y.C. DOHMH regarding the necessity of testing and the type of testing to conduct, and if NYCHA believes there is an issue with the water entering the Authority’s building(s) (i.e., not an issue caused by internal conditions of the building(s)), then NYCHA should request that N.Y.C. DEP test the water main nearby the building(s) of concern as soon as reasonably practicable. **NYCHA accepted and implemented this change.**
13. NYCHA should consult with N.Y.C. DOHMH concerning whether NYCHA should disclose to residents a decision to conduct water testing that is prompted by a suspicion of contamination, prior to the receipt of test results. If disclosure is deemed appropriate, NYCHA should consult with N.Y.C. DOHMH as to the content of the disclosure, but any disclosure should be made within 24 hours of the commencement of testing. DOI believes that transparency in these circumstances is paramount and that determinations implicating issues of public health should be made in consultation with the City’s public health agency. **NYCHA accepts, but the Authority will need to continue to discuss this recommendation with DOI and N.Y.C. DOHMH during its implementation.**
14. NYCHA’s contracts with vendors should specify that water will be retested following a positive result indicating the presence of a contaminant and that re-test results should be provided to NYCHA as soon as possible, but no later than 24-48 hours thereafter. **NYCHA accepts but notes that the 24–48-hour time constraint may not be possible for certain types of bacteriological testing, depending on how the lab conducts the test and handles the samples. NYCHA agrees to have re-test results available as soon as possible after the initial results are received.**
15. NYCHA should specify in the Manual (1) the staff at the Office of Water Quality who are responsible for analyzing the results of water quality tests; (2) a procedure for confirmatory/repeat sampling of each contaminant tested, as applicable, if initial test results are positive; (3) that residents be notified of negative test results for both planned and unplanned testing as soon as reasonably practicable but no later than 24 hours after

NYCHA receives the results, and in the case of positive test results, as soon as reasonably practicable but no later than 24 hours after NYCHA receives the confirmatory test results. **NYCHA accepts, but the Authority will need to continue to discuss this recommendation with DOI, N.Y.C. DOHMH, and N.Y.C. DEP during its implementation.**

16. NYCHA should mandate that the Authority follow the MCLs set by the United States Environmental Protection Agency and New York State Department of Health, or other federal/state action levels as applicable. If the Authority receives a positive confirmatory test result indicating the presence of a contaminant at a concentration above the MCL or action level for that contaminant, then NYCHA should notify residents as soon as reasonably practicable, but no later than 24 hours, after receiving the confirmatory test result. For internal building issues, NYCHA should seek advice from N.Y.C. DOHMH regarding remediation and the contents of notification to residents prior to making notification. For test results related to the City water supply, NYCHA should seek advice from N.Y.C. DEP; N.Y.C. DEP will follow its standard response procedures and public notification requirements in coordination with N.Y.C. DOHMH and the New York State Department of Health. **NYCHA accepts.**
17. In drafting its notification to residents, as recommended in 15 and 16 above, in addition to consultation with N.Y.C. DOHMH as to the content of the notification, NYCHA should consider the public notification requirements of the United States Environmental Protection Agency and New York State Department of Health (e.g., potential adverse health effects, populations and subpopulations impacted, etc.).¹⁶³ **NYCHA accepts, but the Authority will need to continue to discuss this recommendation with DOI and N.Y.C. DOHMH during its implementation.**
18. NYCHA's new contract for "Specifications for Annual Gravity Water Tank Inspection, Cleaning, Disinfection, Bacteriological Water Sampling and Related Work at Various NYCHA Developments Citywide" should be amended to specify that the contractor must respond to emergency work requests within a certain time period and state a timeframe for commencement and completion of the work. **NYCHA accepts.**
19. NYCHA should have job-and-site-specific trainings regarding the water distribution systems. **NYCHA accepts.**
20. Inspections of the house pumps should be properly checked for completeness by the superintendent and the property manager. Additionally, employees should be directed to check the house pump alarm and the roof tank hatch door during inspections. **NYCHA accepts.**

¹⁶³ See Appendix, U.S. EPA's Required Elements of a Public Notice and Provided Example of a Public Notice.

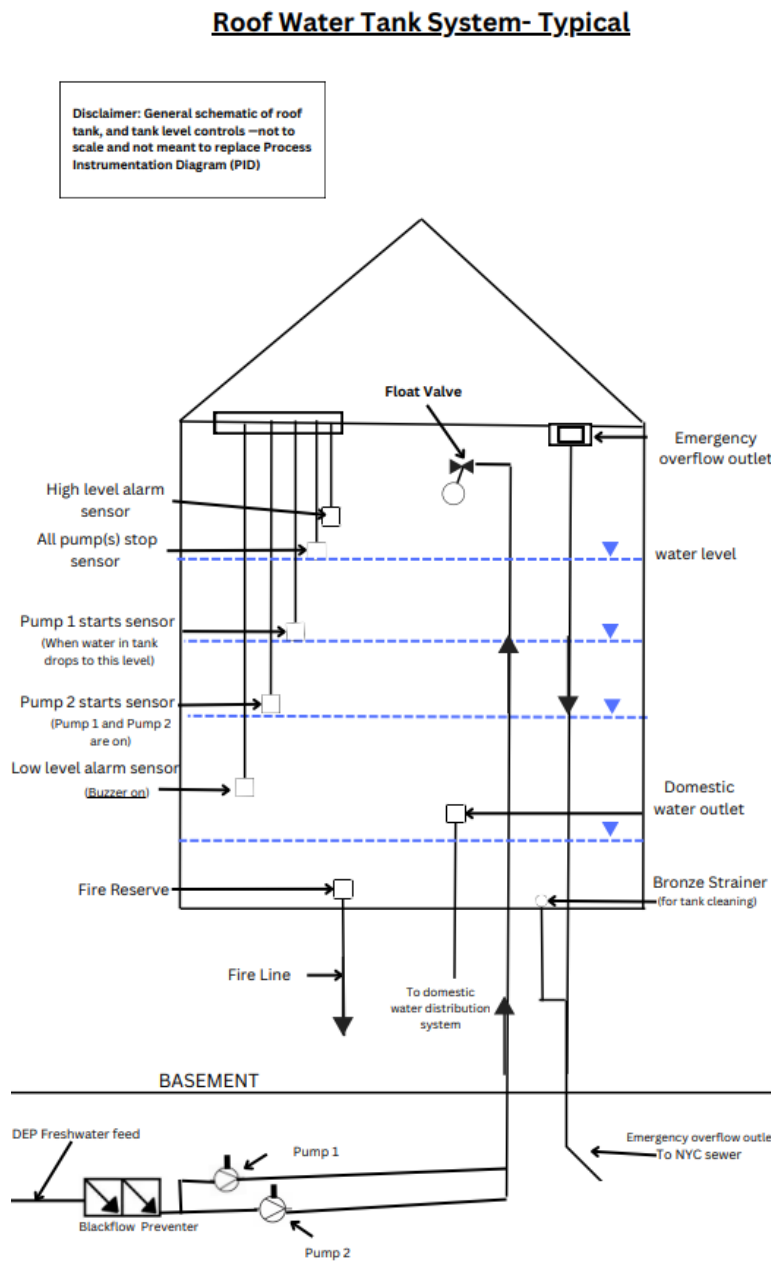
21. NYCHA should also enable, through Bluetooth or other means, an alert to be received digitally on a NYCHA handheld device when the alarm goes off. **NYCHA accepts but notes that this would require significant investment, which will need to be included within the scope of a larger capital project.**
22. NYCHA should impose an automated system-based requirement, through computer coding or otherwise, that ensures a requisition is read by the approver before it is approved. **NYCHA accepts.**
23. NYCHA should include a provision in the Manual requiring a development property management employee to coordinate with the Technical Services Department to obtain a hale pump where a house pump is malfunctioning or removed for service. **NYCHA accepts.**

V. CONCLUSION

As detailed above, NYCHA failed to adequately train its staff with respect to the maintenance of the water distribution system and lacked established procedures for emergency water testing, resulting in a malfunctioning house pump, persistent water quality issues, and an ad hoc response to these issues. This inadequate, ad hoc response ultimately led to vendor selection errors and the dissemination of false test results indicating the presence of arsenic at levels exceeding federal and state standards, causing the unnecessary expenditure of \$482,506.45 and unquantifiable stress to residents. Following the implementation of the policy and procedural recommendations made by DOI and the former NYCHA Federal Monitor, NYCHA is in a stronger position to handle a potential or actual water contaminant in the future.

VI. APPENDIX

Riis Water Tank System Schematic Drawn by NYCHA Engineer



U.S. EPA's Required Elements of a Public Notice and Provided Example of a Public Notice¹⁶⁴

The N.Y.S. DOH required public notification contents do not differ.¹⁶⁵

Ten Required Elements of a Public Notice

Unless otherwise specified in the regulations,* each notice must contain:

1. Description of the violation or situation, including the contaminant(s) of concern, and (as applicable) the contaminant level(s).
2. When the violation or situation occurred (i.e., date the sample was collected or was supposed to be collected).
3. Any potential adverse health effects from drinking the water and standard language regarding the violation or situation. (For MCL, MRDL, treatment technique violations, or violations of the conditions of a variance or exemption, use health effects language from Appendix B of the PN Rule. For monitoring and testing procedure violations, use the standard monitoring language below.)
4. The population at risk, including subpopulations that may be particularly vulnerable if exposed to the contaminant in their drinking water.
5. Whether alternate water supplies should be used.
6. Actions consumers should take, including when they should seek medical help, if known.
7. What the PWS is doing to correct the violation or situation.
8. When the PWS expects to return to compliance or resolve the situation.
9. The name, business address, and phone number or those of a designee of the PWS as a source of additional information concerning the notice.
10. A statement (see standard distribution language below) encouraging notice recipients to distribute the notice to others, where applicable.

** These elements do not apply to notices for fluoride SMCL exceedances, availability of unregulated contaminant monitoring data, and operation under a variance or exemption. Content requirements for these notices are specified in the PN Rule.*

Standard Language:
Standard Monitoring Language: We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During [period] we [did not monitor or test/did not complete all monitoring or testing] for [contaminant(s)], and therefore cannot be sure of the quality of the drinking water during that time.

Standard Distribution Language: Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Multilingual Requirements

- ▶ Where the PWS serves a large proportion of non-English speakers, the PWS must provide information in the appropriate language(s) on the importance of the notice or on how to get assistance or a translated copy.

Presentation and Distribution

- ▶ The Tier 1 PN must be issued via radio, TV, hand delivery, posting, or other method specified by the primacy agency to reach all persons served. PWSs must also initiate consultation with the primacy agency within 24 hours. Primacy agency may establish additional requirements during consultation.
- ▶ The Tier 2 and Tier 3 PNs must be issued by Community Water Systems (CWSs) via mail or direct delivery and by NCWSs via posting, direct delivery, or mail. Primacy agencies may permit alternate methods. All PWSs must use additional delivery methods reasonably calculated to reach other consumers not notified by the first method.*
- ▶ Notices for individual violations can be combined into an annual notice (including the Consumer Confidence Report [CCR], if PN requirements can still be met).
- ▶ Each PN:
 - ▶ Must be displayed in a conspicuous way.
 - ▶ Must not include overly technical language or very small print.
 - ▶ Must not be formatted in a way that defeats the purpose of the notice.
 - ▶ Must not include language that nullifies the purpose of the notice.
- ▶ If the notice is posted, it must remain in place for as long as the violation or situation persists, but in no case for less than seven days, even if the violation or situation is resolved.

**PWSs should check with their primacy agency to determine the most appropriate delivery methods.*

Notices to New Customers

- ▶ All new billing units and customers must be notified of ongoing violations or situations requiring PN.

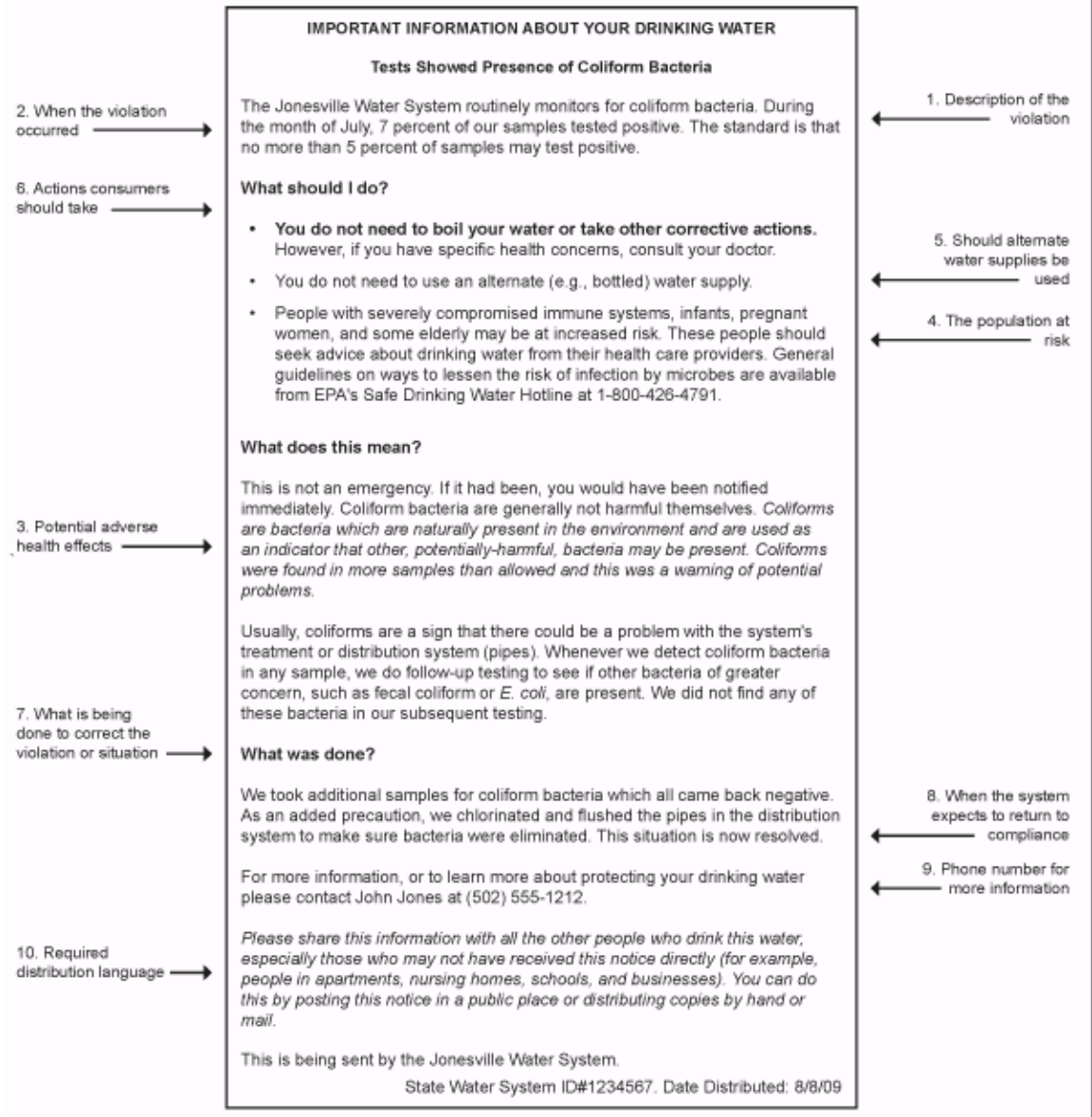
Reporting and Recordkeeping

- ▶ PWSs have 10 days to send a certification of compliance and a copy of the completed notice to the primacy agency.
- ▶ PWS and primacy agency must keep notices on file for 3 years.

¹⁶⁴ UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, EPA 816-F-09-010, THE PUBLIC NOTIFICATION RULE: A QUICK REFERENCE GUIDE (2009), at 2-3.

¹⁶⁵ 10 N.Y.C.R.R. § 5-1.78(b).

The Required Elements of a Public Notice



NYCHA’s Environmental Health and Safety Department Recommendation

NYCHA’s Environmental Health and Safety Department recommends that NYCHA establish a Water Complaint Surveillance Program, consisting of the following procedure:

- a. Identify key failure class/problem codes (“FC/PC”) and establish thresholds, by property, for each code, such that when the number of complaints categorized into a specific code exceeds a set threshold for a particular property, the system will “alert” and notify designated NYCHA staff. The water quality FC/PC should be grouped into priority levels based on potential health risks. For example:
 1. Priority Level 1-Reported Illness
 2. Priority Level 2-Taste or Odor
 3. Priority Level 3-Appearance

August 15, 2022, Robocall

“This is New York City Housing Authority calling. Some Jacob Riis Houses residents have reported instances of cloudy water. We’re looking into this matter and the Department of Environmental Protection is conducting water tests. Any residents experiencing this or other water-related issues are reminded to call the Customer Contact Center at 718-707-7771 or submit a complaint via MyNYCHA (nyc.gov/mynycha).”

September 2, 2022, Robocall

“This is the New York City Housing Authority calling with an important advisory about the drinking water at Riis Houses. Recent water testing identified levels of arsenic that are above the federal standard for drinking water. Please do not drink the water in your apartment or use the water for cooking until further notice. You may use the water for bathing and laundry. NYCHA is providing drinking water this weekend; please call the CCC at 718-707-7771 if you need assistance with getting drinking water. NYCHA staff will visit your apartment to run the faucets to flush the water system. NYCHA will then re-test the water as soon as possible. Please call 311 if you have any questions about drinking water. We apologize for the inconvenience and are working to address this issue as quickly as possible.”

September 3, 2022, Robocall

“This is the New York City Housing Authority calling. We continue to flush the water system at Riis Houses and are re-testing the water multiple times. A follow-up test that came back today did not detect arsenic, but we continue to run additional tests. As we wait for these additional results, we still advise Riis Houses residents to avoid drinking the water out of an abundance of caution. We will continue to provide drinking water; there’s a water station at Avenue D and 10th Street. Please call the CCC at 718-707-7771 with any questions. Thank you.”

September 4, 2022, Robocall

“This is the New York City Housing Authority calling. NYCHA continues to test the water at Riis Houses. Please provide access to your apartment tomorrow for water testing, if requested. While the results received yesterday did not detect arsenic from the water source entering the building, we still advise Riis Houses residents to avoid drinking the water or cooking with it out of an abundance of caution. We continue to provide drinking water – it will now be distributed from the tent in the parking lot near the management office. Please call the CCC at 718-707-7771 with any questions. Thank you.”

September 5, 2022, Robocall

“This is the New York City Housing Authority calling. NYCHA has been testing the water at Riis Houses and the results that we have received yesterday and so far today detect no arsenic. As we wait for all results to come back, we still advise Riis Houses residents to avoid drinking the water or cooking with it out of an abundance of caution. We continue to provide drinking water. Please call the CCC at 718-707-7771 with any questions. Thank you.”

September 6, 2022, Robocall

“This is the New York City Housing Authority calling. We are continuing to receive promising updates from the new arsenic test results that we have received so far at Riis Houses. While testing is ongoing, we are still advising Riis Houses residents not to drink or cook with the water in their buildings, and we are continuing to provide clean water at the development. Please contact the CCC at 718-707-7771 with any questions. Thank you.”

September 7, 2022, Robocall

“This is the New York City Housing Authority calling. As you know, NYCHA has been testing the water for arsenic at Riis Houses. We are happy to confirm that all of the approximately 140 tests of the water distribution system have returned safe arsenic test results. Because your health and safety is our highest priority, we have additional testing ongoing. We advise Riis Houses residents not to drink or cook with the water in their buildings while we confirm these final tests, but we continue to provide clean water at the development. Residents may call the CCC at 718-707-7771 with any questions. Thank you.”

September 7, 2022, Mayor Adams’s Press Release

“We continue to receive encouraging results from water tests at Riis Houses. All original water delivery points that were previously thought to test positive for arsenic have been retested and found to be negative. We have now also received results from the approximately 140 additional sites, both at the source and at the point of delivery, and can conclude based on these test results that there is no discernable amount of arsenic in the water at Riis Houses.

We also received new, belated results, late today, from the initial vendor that was found to have provided questionable results, suggesting the possible presence of Legionella bacteria, but we suspect these results are inaccurate. Legionella cannot be spread through drinking water. Additionally, we are actively reviewing our Legionella surveillance data and have found no reported or confirmed cases of Legionella at Riis Houses over the last 12 months.

We have been and will continue to be transparent about the information we receive every day, as the health and safety of residents remain our top priorities. We are continuing to approach the situation with an extreme level of care, and that is why we have flushed the water in the complex and are continuing to wait on additional test results that we initiated with a new vendor. We want to fully analyze all test results before making any recommendations. Out of an abundance of caution, we are continuing to ask Riis Houses residents not to drink or cook with the water in their buildings until all test results are returned. In the meantime, we are continuing to provide clean water for anyone who needs it.”

September 8, 2022, Robocall

“This is the New York City Housing Authority calling. As you know, NYCHA has been testing the water at Riis Houses. As of yesterday, we have received results from approximately 140 locations that were tested for arsenic. Based on these results, we can conclude that there is no discernible amount of arsenic in the water. Because your health and safety is our highest priority, we have additional testing ongoing. As part of our testing, the potential presence of Legionella bacteria was identified. We are working with the City Health Department to review all test results. The City Health Department is on site at Riis Houses today, and will be there throughout the weekend, to provide guidance to residents. The City Health Department has advised NYCHA that their guidance remains the same, and residents can continue to use water to bathe, clean, and wash hands, but still advises residents not to drink or cook with the water in their buildings. We continue to provide clean water for drinking and cooking. Please contact the CCC at 718-707-7771 with any questions. Thank you.”

September 10, 2022, Robocall

“This is the New York City Housing Authority calling. The City has confirmed that unsafe levels of arsenic are not, and were never, present in the water supply at Jacob Riis Houses. Based on these test results, the Department of Health & Mental Hygiene has advised that residents of Riis Houses can safely start drinking the water again. As a result, water distribution will end on Sunday at 4 p.m. Please call the CCC at 718-707-7771 with any questions. Thank you.”