CITY OF CHICAGO
OFFICE OF INSPECTOR GENERAL

2025

Advisory Concerning Non-Compliant Separation of Water Mains and Sewers

February 19, 2025

DEBORAH WITZBURG | INSPECTOR GENERAL FOR THE CITY OF CHICAGO

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February 19, 2025

On December 11, 2024, the Office of Inspector General (OIG) notified the City of Chicago Department of Water Management (DWM) of concerns regarding a lack of public transparency surrounding extensive water main and sewer line construction work that failed to comply with Illinois Environmental Protection Agency (IEPA) regulations. OIG aims to provide Chicagoans with transparency concerning this issue and suggested that DWM take additional steps to improve and facilitate public understanding of this matter.

In 2019, DWM discovered widespread noncompliance with IEPA requirements for the minimum horizontal and vertical distance between underground water mains and sewer lines (separation standards). DWM has subsequently cooperated with the IEPA to develop a remediation plan, reported noncompliant locations, and continues to correct noncompliance when it discovers it during the course of its regular work. The City demanded that contractors who constructed noncompliant water mains conduct corrective work at the contractors' expense, resulting in litigation by two contractors against the City. But the City had paid a company over $288 million between 2013 and 2023 to, among other roles, ensure that contractors correctly installed water mains. Even after discovery of widespread separation standards noncompliance in 2019, the City continued to pay that same company millions of dollars annually for its services.

As of May 2024, DWM had reported 1,204 non-compliant locations—spread widely across the City—to the IEPA. The extent of noncompliance varies. In some instances, the noncompliant work nearly satisfies vertical or horizontal separation requirements. However, in at least 39 instances, a City water main or service line in fact crossed through sewer infrastructure.

Subject-matter experts informed OIG that the City's noncompliance with water main and sewer line separation standards does not necessarily present an acute safety risk, because the pressurization of City water mains mitigates the risk of water supply contamination. However, parts of the City's network of water mains have lost full pressurization multiple times in recent years. DWM notifies residents when there is a need to boil water before consuming it, but it takes time to disseminate information and there is no guarantee that every impacted resident will learn of a boil order.

The City's noncompliance with IEPA standards has practical impacts for Chicagoans. Correcting the noncompliant work may involve significant financial costs to the City, and the corrective can be highly disruptive by prolonging the time that streets remain excavated during DWM construction projects. Extending the duration of such construction has significant quality-of-life impacts for City residents due to the noise and dust it creates as well as its impacts for street users, parking, and streetscapes.

OIG recommended that DWM increase and improve the information available to the public and members of City Council about this issue, including by providing updates on the City's progress toward compliance with IEPA water-sewer separation standards and on steps that DWM is taking to

avoid this issue recurring. Additionally, OIG recommended that DWM coordinate with relevant City departments to provide accessible, proactive public education on how City residents should respond in the event of a water main depressurization, especially because it takes time for DWM to communicate to City residents about the need to boil water in the event of a water main depressurization.

In a written response attached at Appendix B, DWM "affirm[ed] that the water supply is safe." DWM reports that it preserves the safety of the water supply through multiple layers of systems, including by maintaining water pressure levels that meet or exceed regulatory standards, by proactively monitoring for leaks in the system, by inspecting one-third of the water system each year, and by using leak data to prioritize spending on water main replacements. DWM "continuously monitors" the quality of water both as it leaves the water purification plants and as it travels through the distribution system.

DWM stated that it discloses to IEPA any field conditions that do not comply with IEPA water and sewer separation standards, and it corrects the noncompliance in the course of undertaking other work at non-compliant locations or when repairing parts of the water system that could impact non-compliant locations. DWM "acknowledge[d] that there have been, and will continue to be, financial costs associated with the Title 35 non-compliance and associated corrective work," and that related litigation remains ongoing with two contractors that had performed water main replacement work.

As to OIG's recommendation on transparency and public awareness, DWM stated that "information about this issue, including its reports to the IEPA regarding the discovery of non-compliant locations, is not confidential and may be requested by anyone who is interested."

Regarding OIG's recommendation that DWM coordinate with relevant City departments to provide proactive public education on how City residents should respond in the event of a water main depressurization, DWM stated that "[t]here are no additional steps or precautions that DWM would recommend for Chicagoans to take to protect themselves and ensure the safety of their drinking water due to regularly non-compliance with separation standards." DWM's position is that "where comprehensive monitoring indicates that no such risk is present and where residents do not need to take any action, such elevated public communications may dilute the desired impact of City communications when there is a confirmed risk and action by residents is actually needed, for example during boil orders."

Appendix A: OIG Letter

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Via Electronic Mail

December 11, 2024

Randy Conner
Commissioner
Department of Water Management
1000 East Ohio Street
Chicago, IL 60611

Dear Commissioner Conner:

I write to bring to your attention concerns about a lack of public transparency on a matter with important quality-of-life and health and safety implications for Chicagoans. The City of Chicago Office of Inspector General (OIG) has become aware that the Department of Water Management (DWM) is engaged in a years-long effort to address extensive water main and sewer line construction work that failed to comply with Illinois Environmental Protection Agency (IEPA) regulations. DWM has not meaningfully communicated with the public regarding the underlying issue, attendant risks, and remedial efforts; this compromises transparency and deprives Chicagoans of the ability to take well-informed risk mitigation steps if necessary.

In 2019, DWM discovered widespread noncompliance with IEPA requirements for the minimum distance between underground water mains and sewer lines. In the time since then, DWM has cooperated with IEPA to develop a remediation plan, reported confirmed noncompliant locations, and corrected noncompliance when it discovers it during the course of its regular work.

Subject-matter experts informed OIG that the City's noncompliance with water main and sewer line separation standards does not necessarily present an acute safety risk, because the pressurization of City water mains mitigates the risk of water supply contamination. However, parts of the City's network of water mains have lost full pressurization multiple times in recent years, raising the specter that structural protections against a contamination event might fail.[1] Additionally, correcting the noncompliant work may involve significant financial costs to the City, and the corrective work also has other impacts. Water main and sewer line construction can be highly disruptive by prolonging the time that streets remain excavated during DWM construction projects. Extending the duration of such

[1] Crystal Paul, "South Siders Line Up For Bottled Water After Leaky Pipe Forces 3rd Boil Order in 3 Years," Block Club Chicago, July 10, 2024, https://blockclubchicago.org/2024/07/10/south-siders-line-up-for-bottled-water-after-leaky-pipe-forces-3rd-boil-order-in-3-years/; Office of Inspector General, "OIG Advisory on May 2021 Roseland Pumping Station Failure," October 15, 2021, https://igchicago.org/wp-content/uploads/2023/08/OIG-Advisory-Report-on-May-2021-Roseland-Pumping-Station-Failure.pdf.

construction has significant quality-of-life impacts for City residents due to the noise and dust it creates as well as its impacts for street users, parking, and streetscapes.

Given the extent of the noncompliance, the monetary and quality-of-life costs associated with DWM's corrective work, and the scale of the health and safety risk in the event—however unlikely—of a pressurization failure, OIG aims to provide Chicagoans with transparency concerning this issue and suggests that DWM take additional steps to improve transparency around and facilitate public understanding of this matter.

I | Background

Title 35 of the Illinois Administrative Code ("the Code") establishes environmental regulations for Illinois, including the separation of water and sewer infrastructure. Separation between water mains and sewer lines is meant to mitigate the risk of drinking water contamination. It also has practical advantages, such as ease of access when water or sewer infrastructure needs to be repaired or replaced. The Code requires that, when possible, water and sewer structures be separated by 10 feet horizontally and 18 inches vertically.[2] In the event that it is impossible to meet the separation standards—which is sometimes the case in dense urban environments—the Code details other requirements, including requirements related to the materials used to construct water mains. The Municipal Code of Chicago (MCC) contains the same separation requirements as the Illinois Administrative Code.[3] Specific language of each of these requirements is shown in Addendum A.[4]

DWM reported to OIG that, in January 2019, it discovered a location near 3500 N. Cicero Avenue where water and sewer lines were too close together, out of compliance with the Title 35 separation standards. In March 2019, CTR—a former City contractor with oversight responsibilities for the design and installation of City water mains—completed a limited audit of potentially noncompliant locations. CTR's responsibilities included reviewing the work of contractors who physically constructed City water mains to confirm that the work was performed properly and as designed. The CTR audit sought to identify "private drains" that were located below water mains replaced under 14 City contracts executed in 2013 and 2016.[5] CTR's audit found 6,334 potentially noncompliant locations, each of which CTR identified by a single address (for example, 928 W. Diversey).

In March 2019, DWM reported the potential noncompliance identified in CTR's audit to the IEPA. In March 2020, IEPA sent a letter to the City requesting that the City submit a work plan to (1) confirm compliance with the separation standard; (2) propose corrective action, including an implementation

[2] Ill. Admin. Code tit. 35 §§ 307.350(c), 604.1440(a), 653.119.
[3] MCC § 18-29-603.2.1.
[4] Other jurisdictions have separation requirements that differ from Title 35's requirements. Examples are presented in the chart below:

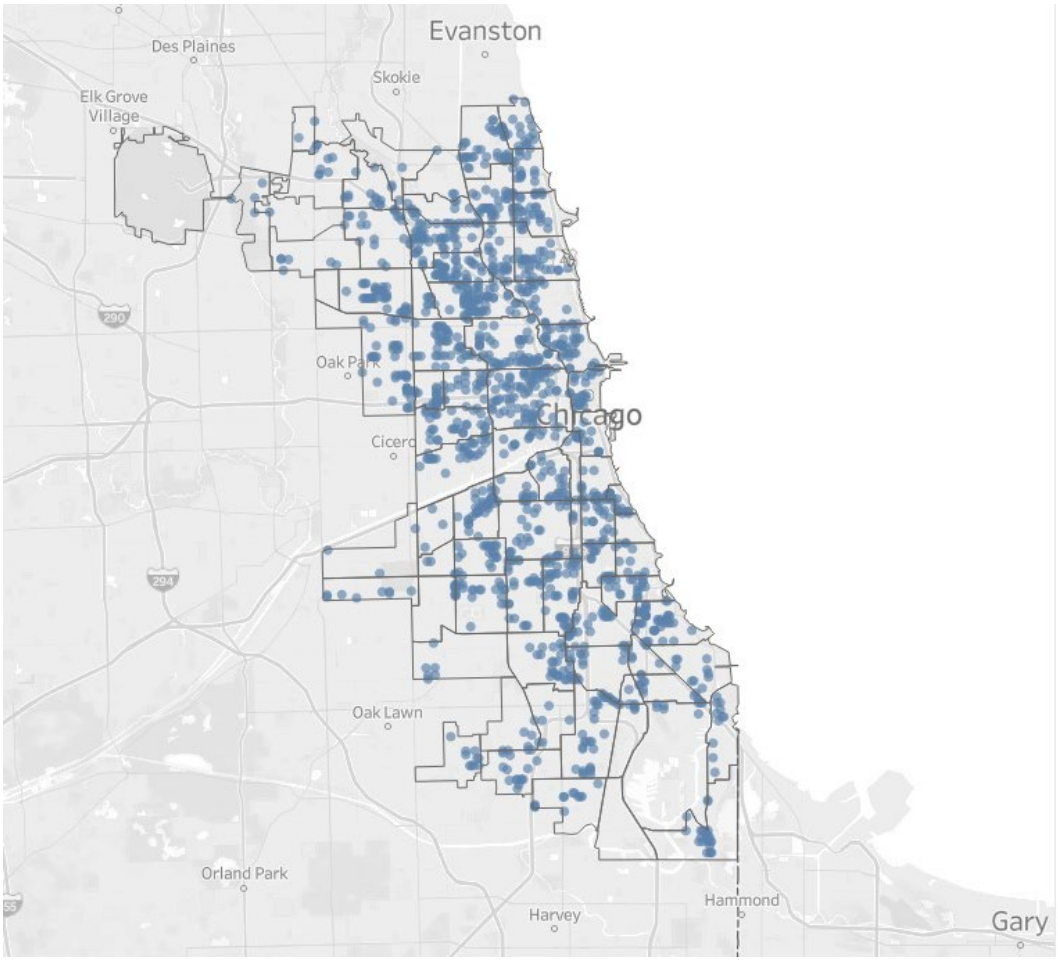
	Parallel (Horizontal) Min. Separation (ft.)	Crossing (Vertical) Min. Separation (ft.)	Code
California	10	1	Cal. Code Title 22 § 64572
Florida	3 but "preferably" 10	0.5 but 1 "preferred"	Fl. 62-555.314
Texas	4	0.5	Tex. Code Title 30 § 317.13

[5] Under the City's Private Drain Repair Program, the City is responsible for repair of drains connecting the main sewer to certain residential properties—called private drains—to the extent the damaged portion of the private drain is under the public way. *See* Department of Water Management, Private drains program overview (Dec. 12, 2018), available at https://311.chicago.gov/s/article/Private-drains-program-overview?language=en_US.

timeline, for noncompliant locations; (3) identify and address post-audit locations that may be noncompliant; and (4) ensure that future sewer-related construction projects are compliant. In June 2021, the City entered into an agreement with the IEPA that "[o]ver the next five years, the City is undertaking corrective action at all non-compliant locations identified in the 2019 audit."

DWM identifies noncompliant locations during the course of its regular work; when it discovers a noncompliant location, it adds the location to the list of noncompliant locations that it regularly discloses to IEPA. As of May 2024, DWM has reported 1,204 non-compliant locations, most of which are identified as a range of blocks on a single street (for example, "W Chicago Ave – N Central Park Ave to N Troy St"). As of May 2024, DWM reported to the IEPA that, so far, those 1,204 locations have required over 77 miles of reconstruction and more than 338 miles of exploratory drilling.

The 1,204 noncompliant locations span the city. A map identifying those locations across Chicago's community areas is shown below:



Source: OIG visualization of DWM reports to IEPA

The measure of noncompliance varies across reported locations. That is, in some instances, the noncompliant work is close to satisfying vertical or horizontal separation requirements. However, in at least 39 instances, a City water main or service line in fact crossed through sewer infrastructure. As of DWM's May 2024 disclosure to IEPA, the status of work at these so-called intrusions ranged from "under review" to "emergency work pending construction."

In addition to disclosing the location of the noncompliant infrastructure to IEPA, DWM also discloses the manner in which it is noncompliant—for instance, that a specific water main fails to meet either or both of the horizontal or vertical separation requirements. For each location, DWM provides IEPA dates on which the City has completed or anticipates completion of various steps in the corrective work process. As of May 2024, these dates extend until May 2026.

II | Potential Impacts and Remedies

The inadequate separation of water mains and sewers does not necessarily pose an acute safety risk to City residents. However, the City's widespread noncompliance with water main and sewer separation standards may incur significant monetary and quality of life costs, and a lack of available public information leaves Chicagoans ill-prepared to mitigate any safety risk that might arise, however unlikely.

A. Health and Safety

Representatives from DWM and an independent expert affiliated with a standard-setting body that publishes water-sewer separation requirements stated that high water pressure mitigates the risk of contaminants entering water mains. DWM maintains water main pressure levels far exceeding the minimums required by IEPA, and a representative from DWM stated that DWM engages in rigorous testing of the City's water supply, further reducing the risk of contamination. Nonetheless, were a depressurization event to occur—and there have been multiple such depressurizations in recent years—adherence to Title 35's separation standards makes water main contamination less likely.

In recent depressurization events, DWM has taken steps to notify residents of the need to boil water. Boil orders help mitigate against the risk of residents consuming potentially contaminated water, but it can take hours for information about a boil order to disseminate to residents, and not every impacted resident will necessarily learn of the boil order. For example, a water main leak occurred on July 9, 2024, at the Roseland Pumping Station. The leak caused a drop in water pressure from approximately 7:30 p.m. till 11:00 p.m. in water mains that serve parts of Beverly, Morgan Park, and Auburn Gresham. DWM issued a boil order, but not until approximately 1:30 a.m. on July 10, 2024. The boil order cautioned individuals in impacted areas to boil water for at least five minutes before using it for drinking, washing dishes, or brushing teeth—all activities that reasonably would have occurred during the time between the pressure drop and the subsequent distribution of the boil order.

B. Quality of Life

Although noncompliance with water main and sewer line separation standards is mostly out-of-sight, it will still have a direct impact on many Chicagoans. OIG has received reports from stakeholders regarding the impacts of the work to correct noncompliant water mains and sewer lines. The corrective work can create significant noise and dust. It can also require additional or prolonged construction work on City streets, interrupting street users, temporarily reducing parking, and impacting streetscapes in affected areas. Moreover, multiple City water main contractors have alleged that coming into compliance with Title 35 could have a significant impact on the City's tree

canopy, as root obstructions are often a barrier to constructing Title 35-compliant water mains and sewers.[6]

C. Financial and Legal Impacts

Significant corrective work also creates monetary and legal costs to the City. As of May 2024, DWM reported that it has performed corrective work at just over 100 locations,[7] at a cost of over $9.7 million. The City has also demanded that City contractors who constructed noncompliant water mains conduct corrective work at the contractors' expense, resulting in litigation by two contractors against the City. One of the water main contractors has alleged that their corrective work would have an estimated cost of over $83 million.

The costs of corrective work may be mitigated by the City's ongoing interactions with state regulatory authorities. For example, a senior DWM official explained that where the City has replaced water mains with castile iron or ductile iron, IEPA has granted the City a variance from Title 35 separation standards.

D. Contractor Management

Since the discovery of the City's widespread noncompliance with Title 35 separation standards, DWM has restructured its water main construction program. Before 2023, DWM contracted a single entity—CTR—to function as both the program manager and construction manager for City water main construction. As the program manager, CTR was responsible for water main design, information technology work, and document retention, among other tasks. As the construction manager, CTR was responsible for overseeing the contractors who physically constructed City water mains and confirming that work was performed properly and as designed. Between 2013 and 2023, the City paid CTR over $288 million to fill these roles.

CTR's contract required them to maintain "as-built" drawings of completed water main work. An "as-built" drawing shows how the infrastructure was ultimately constructed. A complete set of "as-built" drawings would have allowed DWM to ensure that water mains were constructed in a compliant manner. A senior DWM official told OIG that after the Title 35 noncompliance issue arose, DWM discovered that there were no "as-builts" for many projects, making it impossible to audit the precise extent of the noncompliance without digging up City streets and visually inspecting water mains and sewers.

The same senior DWM official also reported inadequate management and oversight of CTR. The official told OIG that there was little oversight of CTR by DWM management, and that CTR was not held accountable to any specific metrics or performance goals. The official also explained that after

[6] There has been public reporting on the impact of water main construction on the City's tree canopy. *See* Patti Wetli, "Another Setback for City's Trees After Water Department Announces Failure of Pipe Replacement Alternative," WTTW, Aug. 12, 2021, https://news.wttw.com/2021/08/11/water-department-tree-pilot-study-pipe-replacement. Prior OIG reports have also noted the importance of maintaining the City's tree canopy, finding that the City's urban forest is "a critical asset to, among other things, the mitigation of the urban heat island effect and excessive storm water runoff, which will be ever-mounting concerns as a result of climate change." *See* OIG, "Advisory Concerning Inefficient Tree Trimming Operations at the Bureau of Forestry" Oct. 2019, https://igchicago.org/wp-content/uploads/2023/08/OIG-Advisory-Concerning-DSS-Inefficient-Tree-Trimming-Operations.pdf.

[7] The locations identified by DWM are not uniform in length; some are listed as a single address, while others extend for several blocks.

DWM discovered the Title 35 noncompliance issue, DWM management aggravated its oversight challenges by deliberately disengaging with CTR. This disengagement occurred despite CTR's continuing to manage the City's water main construction program until 2023—four years after the 2019 discovery of widespread Title 35 noncompliance. The senior official represented that as a result of the disengagement, DWM management had no line of sight into what CTR was working on—although the City continued to pay CTR tens of millions of dollars annually for its services.

In 2023, after the expiration of CTR's contract, DWM contracted with two separate joint ventures to perform program management and construction management for water main construction. The dedicated construction manager adds a layer of review to ensure that construction is completed properly, on top of the company constructing the water main and a separate company monitoring the construction work.

IV | Recommendation

Widespread noncompliance with Title 35 regulations will likely have significant monetary and quality of life costs to Chicagoans. Furthermore, while subject matter experts told OIG that there is not necessarily an acute health and safety risk posed by this noncompliance, some risk may exist where there are—as there have been recently—occasional depressurization events. While the City is pursuing measures to mitigate these potential costs with the relevant state regulatory agencies, it will nonetheless likely incur significant monetary costs of corrective work as well as additional or prolonged construction work on City streets.

In the interest of transparency and accountability, DWM should increase and improve the information available to the public and members of City Council about this issue, including by providing updates on the City's progress toward compliance with IEPA water-sewer separation standards and on steps that DWM is taking to avoid this issue recurring. Additionally, DWM should coordinate with relevant City departments to provide accessible, proactive public education on how City residents should respond in the event of a water main depressurization in order to avoid health and safety risks; this is particularly important because it takes time for DWM to communicate to City residents about the need to boil their water in the event of a water main depressurization.

OIG invites DWM to respond in writing on or before January 10, 2025. Any such response will be made public together with this advisory.

Respectfully,

Deborah Witzburg
Inspector General
City of Chicago

Addendum A | Separation Standards

Title 35 of the Illinois Administrative Code regulates the separation of water and sewer infrastructure. Title 35 specifically requires the following:

- Section 604.1440(a) provides that "[w]ater mains must be laid at least 10 feet horizontally from any existing or proposed drain, storm sewer, sanitary sewer, combined sewer or sewer service connection." Water mains may be "laid closer than 10 feet to a sewer line" when "A) local conditions prevent a lateral separation of 10 feet; B) the water main invert is at least 18 inches above the crown of the sewer; and C) the water main is either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer." These requirements are mirrored Section 370.350(c), which addresses sewer construction.

- In the event it is impossible to meet the aforementioned standards, Section 604.1440(a) imposes materials and construction specifications that must be followed as to both water mains and sewers, as well requirements related to pressure testing of sewers.

- Section 604.1440(b) provides that "when possible, the water main must be placed above the sewer." "A water main must be laid so that its invert is 18 inches above the crown of the drain or sewer whenever water mains cross storm sewers, sanitary sewers, or sewer service connections." This vertical separation "must be maintained for that portion of the water main located within 10 feet horizontally of the outer edge of any sewer or drain crossed." These requirements are mirrored in Section 370.350(c).

- In the event it is impossible to maintain Section 604.1440(b)'s vertical separation standards, the IEPA may approve an alternate construction that meets certain materials and construction specifications. In addition, if a water main must be laid below a sewer, the water main must be laid at least 18 inches below the invert of the drain or sewer and must meet certain construction and materials specifications.

Municipal Code of Chicago Section 18-29-603.2.1 contains the same separation requirements identified in the Illinois Administrative Code.

Appendix B: Department Response

CITY OF CHICAGO

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DEPARTMENT OF WATER MANAGEMENT

February 7, 2025

Deborah Witzburg
Inspector General
City of Chicago
Office of Inspector General
231 South LaSalle Street, 12th Floor
Chicago, Illinois 60604

RE: OIG Advisory Concerning Non-Compliant Separation of Water Mains and Sewers Department of Water Management Response

Dear Inspector General Witzburg,

The Department of Water Management ("DWM") is in receipt of the December 11, 2024, OIG Advisory Concerning Non-Compliant Separation of Water Mains and Sewers ("OIG Advisory"). We thank the Office of the Inspector General for providing DWM with additional time to prepare a response. The most important mission of DWM is to provide safe drinking water to our residents and customers that always meets or exceeds all industry standards and regulatory requirements. We believe we meet those benchmarks every day but welcome the opportunity to provide additional information and clarity. Despite the noncompliance with the separation standards discussed in the OIG Advisory, DWM can affirm that the public water supply is safe. As the OIG Advisory also acknowledges, the City is engaged in litigation regarding the separation standard non-compliance, and information that may be shared publicly is limited by that litigation. However, there is a great deal of information on the City's water system, separation standards, and the health and safety of the water supply that we welcome the opportunity to share.

DWM's response to the OIG Advisory is respectfully submitted as follows:

I. HEALTH AND SAFETY

DWM's systems and established protocols operate to ensure the safety of Chicago's drinking water. These include monitoring and maintaining water pressure throughout the system; using state-of-the-art technology to monitor the system for leaks so that they can be identified rapidly and repaired quickly; conducting extensive water testing throughout the distribution system to ensure water quality; and responding quickly and efficiently to reports of potential system issues submitted by the public. These extensive DWM monitoring and operational steps protect Chicago's drinking water from health and safety risks.

A. Water Pressure

Water pressure is critical to ensuring the safety of Chicago's water system. As a brief overview, two water cribs in Lake Michigan serve as intake points for water. The water then travels to one

of two purification plants: the Jardine Water Purification Plant and Eugene Sawyer Water Purification Plant (which are among the largest and most sophisticated treatment plants in the world). Water then flows from the purification plants to underground tunnels from which water is transported to twelve pumping stations where the water is lifted, pressurized, and conveyed to larger water mains. Finally, these larger mains transmit water to the smaller water mains that provide residents with fresh water. This system is continuously monitored.

DWM maintains pressurization of its water system at levels that prevent contamination and ensures access to clean, safe drinking water that meets or exceeds all regulatory standards. Water pressures in Chicago's water system are continuously monitored by DWM through a Supervisory Control and Data Acquisition (SCADA) system that provides real-time information on the operating pressures throughout the water system. There are multiple SCADA monitoring points that are situated throughout the City. With the assistance of the SCADA monitoring network, DWM's water system operators at the Jardine Water Purification Plant have the ability to quickly add additional pumps to boost water pressures if an area is experiencing reduced pressures. DWM is therefore able to both monitor the water system for pressure variances and make necessary adjustments in real time as needed.

B. Leak Detection

In addition to SCADA, DWM has a program that proactively monitors water leaks throughout the system. DWM has a contract with ADS, LLC ("ADS", PO# 74134) to provide comprehensive water system inspection services. ADS's experienced technicians use state-of-the-art equipment to detect leaks, locate the leaks by street address, and estimate leak flow. This leak information is reported to DWM construction crews for prioritization of repairs. ADS identifies isolated leaks within various components of the water system such as water mains, fire hydrants, B-Boxes (also called Buffalo Boxes or shutoff valves), and service lines. One-third of the system is inspected each year, which means a review of the whole system is completed every three years. The information gathered on leaks within the system is one of the criteria DWM uses to select new water main replacements as part of the annual capital improvement program ("CIP"). Since 2000, DWM's water CIP programs and metering expansion have allowed DWM to reduce the amount of system use by over 250 million gallons *per day* – DWM now pumps only 400 million gallons per day for use by Chicago as opposed to 650 million gallons in 2000.

C. DWM's Repair Response Capabilities

DWM is responsible for maintaining and repairing almost one million assets and approximately 9,000 miles of water mains and sewer mains. DWM uses data to prioritize CIP replacement while actively monitoring system pressures. Although DWM has a robust leak detection regimen, system anomalies do take place. In addition to DWM's pressure monitoring and leak-detection systems, the public may also report water issues to DWM using the City's 311 reporting system. In responding to 311 requests related to critical water issues, DWM's response times are excellent. In 2024, for example, DWM was able to complete repairs to certain system locations identified by notifications from the public categorized as "Broken Water Main" within 2.4 days. During 2024, DWM was also able to respond to "Check for Leak" requests from the public in 0.4 days. Upon notification, DWM crews respond quickly and effectively to critical 311 water service requests.

D. Boil Order Procedures

The OIG Advisory cites two examples of boil orders issued recently. Boil orders are issued as a precaution due to isolated instances of low pressure or routine DWM construction work that may pose an elevated risk of inadvertently contaminating water. These boil orders are standard for water providers. While DWM implements safeguards to protect the water supply such as intensive flushing and maintaining a strong free chlorine residual to prevent any bacterial growth, there are still conditions under which DWM recommends boiling water on a precautionary basis to ensure water safety. These conditions typically occur during extended low-pressure incidents or during the dewatering of old water mains and installation of new pipe that cannot be isolated. DWM notifies IEPA of each boil order and posts the boil order on the homes of residents during localized incidents. DWM issues boil orders when appropriate and as quickly as possible, in accordance with regulatory guidelines and water quality management best practices. DWM also samples the water in the area subject to each boil order to detect possible bacteria (Total Coliform and E. Coli) and all sampling results are sent to IEPA and are available to review.

E. Water Quality Testing Overview

DWM continuously monitors the quality of water leaving both water purification plants and traveling throughout the distribution system. Turbidity and chlorine levels are continuously monitored at the purification plants and samples are routinely collected at the outlets for bacteria and other chemical parameters. Throughout the distribution system over 420 bacterial samples are collected each month to meet regulatory requirements. Additionally, bacterial samples are collected in the area of any repair work, new construction, water quality complaints or any other issues that may warrant monitoring. DWM also collects chemical samples regularly to monitor for optimal corrosion control performance and other regulated compounds.

F. Coordination with Illinois Environmental Protection Agency

The Illinois Environmental Protection Agency ("IEPA") is the state agency vested with the authority to issue construction and operating permits for community water supplies in Illinois. DWM operates one of these community water supplies. The IEPA allows Chicago (through DWM) to issue construction and operating permits for the Chicago water system. DWM is provided with this authorization through a DWM/IEPA "Agreement to Delegate Authority to Issue Permits for Water Main Extension" ("Delegate Authority Agreement"). The current Delegate Authority Agreement is effective for five (5) years from June 4, 2021 through June 3, 2026. A previous Delegate Authority Agreement was issued in 2016 and DWM will pursue another Delegate Authority Agreement in 2026. The Delegate Authority Agreement requires that DWM have credentialed engineer personnel on staff to manage the system, adhere to water design standards, and methodically follow the IEPA reporting regimen.

As required by the Delegate Authority Agreement, DWM water main plans must comply with the "Standard Specifications for Water and Sewer Main Construction in Illinois," and "American Water Works Association Standards." Applicable IEPA regulations provide that water mains shall be protected from sanitary sewers, storm sewers, combined sewers, house sewer service connections and drains in accordance with 35 Ill. Adm. Code 604.1440. Any adjustments made to sewer facilities during construction must meet IEPA regulatory requirements and are documented on an IEPA "Compliance Pressure Test Form." That form is submitted to the DWM Bureau of Engineering Services for review and approval prior to disinfection of the newly installed water main to ensure compliance. The water main record drawing also shows any sewer facilities that were adjusted to meet regulatory requirements.

Under the Delegate Authority Agreement, whenever DWM encounters field conditions that do not comply with the IEPA water and sewer separations standards in Title 35 of the Illinois Administrative Code (the "Code"), DWM notifies IEPA of these conditions within ten days and submits a corrective action plan within forty-five days of the notification. DWM performs corrective work at locations that do not comply with the Code when DWM is undertaking other work at these non-compliant locations or when DWM is undertaking repair work on other segments of the water system that could impact the non-compliant locations. For example, if a field condition is identified where a sewer line crosses over a water service line and does not adhere to the vertical or horizontal separation standards required by the Code, DWM will replace the water service line with acceptable materials or encase the water service in polyvinyl chloride ("PVC") pipe as required by the Code to bring that segment into compliance. DWM is able to perform adjustments without the need for wholesale structural replacement or infrastructure relocation because this work is authorized by a state waiver. This waiver was published by the Illinois Department of Public Health and is available statewide to all community water supplies. Under this available remedy, if a water main and sewer main are encountered that do not meet vertical and horizontal separation requirements, the sewer main is replaced with acceptable materials required by Code, or the water main is encased in PVC pipe required by the Code. DWM submits an annual report to IEPA that, among other items, includes a summary of all the corrective action locations that have been identified and the corrective work that DWM has undertaken.

As part of the Delegate Authority Agreement, an annual report is submitted by DWM to IEPA's Bureau of Water/Division of Public Water Supplies. This reporting requirement contains the following:

a. Preliminary plans indicating the location of anticipated water main construction for the ensuing 12 months. This may be updated to add or delete anticipated extensions by the community water supply at any time;
b. Plan drawings as described in 35 Ill. Adm. Code 602.240 and 602.260 for all water main extensions constructed in the preceding year along with the identification numbers, dates of initial operation, reports of bacteriological analyses, length and size of water main and estimated population served by the new main;
c. Reports of bacteriological analysis performed in accordance with 35 Ill. Adm. Code Part 174.309(d); and
d. A list of construction and operating permits issued.

Furthermore, in compliance with the Delegate Authority Agreement, if any noncompliance is discovered in the field during construction, it is reported to the IEPA along with a tentative schedule to bring the location into compliance with regulatory requirements. Once all the water main suborders that DWM has previously submitted to IEPA's Bureau of Water/Division of Public Water Supply have been brought into compliance through corrective work, DWM will resubmit them to IEPA to demonstrate the separation requirements have been met.

II. QUALITY OF LIFE

DWM concurs with the OIG Advisory that construction work can result in noise, dust, reduced parking, and impacts to streetscapes, and trees. These quality-of-life issues are not unique to DWM projects and arise whenever any infrastructure work takes place in a dense urban setting.

III. FINANCIAL AND LEGAL IMPACTS

DWM acknowledges that there have been, and will continue to be, financial costs associated with the Title 35 non-compliance and associated corrective work. As the OIG Advisory correctly notes, the City is currently engaged in litigation with two contractors that have performed water main replacement work. The City cannot comment on that pending litigation.

IV. CONTRACTOR MANAGEMENT

The OIG Advisory correctly notes that DWM has restructured its water main construction program since DWM's identification and discovery of regulatory noncompliant locations. To assist with the substantial design and installation of water mains throughout the City, DWM has a Program Management Office ("PMO") that is staffed by multiple consultants with varying subject matter expertise under a unified contract. Before 2022, the PMO included both the water main design and the overall water main construction management. In order to improve vendor checks and balances as well as accountability, DWM decided to bifurcate these related construction components into separate contracts. DWM initiated the new procurements for separate PMO and Construction Management ("CM") services in 2021. A separate PMO contract was executed in December 2022 with AECOM-DBS JV (PO# 211620). A separate CM contract was executed in May 2023 with PCWP LLC (PO# 225463). The previous combined PMO incumbent, CTR, ceased providing services to DWM in March 2023.

DWM has also streamlined the reporting hierarchy and has clarified the expectations for the PMO. The current PMO reports directly to the DWM First Deputy Commissioner. DWM and PMO coordination meetings continuously take place across each of the PMO disciplines. A combined DWM and PMO coordination meeting takes place on a monthly basis and the PMO provides a comprehensive operational monthly report to DWM. In addition to other coordination, the PMO Program Director and Deputy Program Director meet with the First Deputy Commissioner every other week in an executive session. These changes have strengthened communication and oversight in the water main construction program.

The current CM reports directly to the DWM Managing Deputy Commissioner of Operations. The separation of contracts allows the CM to report independently from the PMO. The DWM Managing Deputy Commissioner meets weekly with the CM and discusses all construction management related issues. These issues range from contractor management, verification of as-builts and the restoration of disturbed infrastructure. This independent review ensures that all DWM's contractor design and installation work meet all city, state and federal rules and regulations for all CIP work.

V. TRANSPARENCY

DWM recognizes the importance of transparency, particularly in connection with the safety of the drinking water supply. DWM notes that information about this issue, including its reports to the IEPA regarding the discovery of non-compliant locations, is not confidential and may be requested by anyone who is interested. DWM further notes that, as mentioned above, the City is engaged in litigation regarding the separation standard non-compliance and can only make public information

regarding the City's plans to correct or remedy non-compliance to the extent it would not disclose litigation assessment or strategy, or efforts to negotiate a settlement in any of the pending matters.

The Advisory acknowledges that "[t]he inadequate separation of water mains and sewers does not necessarily pose an acute safety risk to City residents" and "subject matter experts told OIG that there is not necessarily an acute health and safety risk posed by this noncompliance." The existing water and sewer infrastructure, including the regulatory non-compliant sites, has been functioning for decades and yet DWM has continuously exceeded state and federal drinking water quality standards. As detailed above, DWM operates a multitude of systems and procedures to ensure water quality, including maintaining high chlorine residuals and conducting extensive testing both as a matter of course and when a loss in pressure occurs. There are no additional steps or precautions that DWM would recommend for Chicagoans to take to protect themselves and ensure the safety of their drinking water due to regulatory non-compliance with separation standards. DWM agrees that additional public outreach and education is appropriate where an actual safety risk to Chicago residents exists. However, where comprehensive monitoring indicates that no such risk is present and where residents do not need to take any action, such elevated public communications may dilute the desired impact of City communications when there is a confirmed risk and action by residents is actually needed, for example during boil orders.

VI. CONCLUSION

Chicago's water system is in its third century of service and the water and sewer separation anomalies are not new. As the most important mission-critical objective of the department, DWM prioritizes water safety to ensure that residents always have access to the safest publicly available water supply in the country. DWM's water infrastructure is substantial and incorporates comprehensive safety protocols and system safeguards, including continuous water pressure monitoring and leak detection. DWM implements and is in is in full compliance with the IEPA Delegate Authority Agreement. When system leaks do occur, DWM responds quickly with robust testing and boil order protocols to safeguard public health. DWM shares a commitment to public transparency and to ensuring that information is clear, factual, and does not cause undue alarm where no significant risk is posed and no additional precautions are necessary.

Thank you in advance for your continued assistance. Please contact DWM if any additional information is needed.

Sincerely,

Randy Conner

Randy Conner
Commissioner
Department of Water Management

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For further information about this report, please contact the City of Chicago Office of Inspector General, 231 S. LaSalle Street, 12th Floor, Chicago, IL 60604, or visit our website at igchicago.org.

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