

Executive Summary

The City of Newark launched the Lead Service Line Replacement (LSLR) program in 2019 after routine testing of the water supply revealed lead contamination in excess of the federal action level of 15 parts per billion (ppb).¹ In the wake of this discovery, advocacy groups such as the NRDC and the Newark Education Workers Caucus (NEW Caucus) sued the city over their insufficient response to lead proliferation in the water supply and their continued violation of the Lead and Copper Rule.²

In response, the City of Newark committed to replacing all 18,000 of the city's public and private lead service lines (LSLs) in 24-30 months. Along with the program, the city implemented other measures to reduce lead contamination, including free blood testing for children under six years of age, the distribution of free water filters, and the introduction of anti-corrosive zinc orthophosphate into the water supply.³ The city also contracted with 120Water to ensure active communication with the public surrounding LSL replacements; most communication happens after the replacement, at which point 120Water distributes puzzles and games that illustrate the importance of lead-free water.⁴ Notably, both city and state governments passed ordinances making the replacement of LSLs compulsory.⁵ These developments marked a rapid acceleration in lead eradication—where the prior opt-in program replaced only 750 lead service lines, as of September 2020, Newark had replaced 15,000 under the LSLR.⁶

¹ *PEQUANNOCK WTP CORROSION CONTROL REVIEW AND RECOMMENDATIONS - DRAFT*. CDM Smith, 10 Oct. 2018, tapinto-production.s3.amazonaws.com/documents/8606/Newark_CCT_Review_Recommendations_Draft_10.10.18_rev_Redacted.pdf.

² Woods, Claire, et al. "Notice of Intent to Sue under the Safe Drinking Water Act, 42 U.S.C. Notice of Intent to Sue under the Safe Drinking Water Act, 42 U.S.C. 8(b)(1)(a) for Failure to Comply with Regulations for the Control of Lead in Drinking § 300j 8(b)(1)(a) for Failure to Comply with Regulations for the Control of Lead in Drinking Water in Newark, New Jersey." Received by City of Newark, *NRDC*, Natural Resources Defense Council, 24 Apr. 2018, www.nrdc.org/sites/default/files/notice-intent-to-sue-sdwa-newark-20180424.pdf.

³ Stabile, Tom. "Newark Speeds \$120M Lead Water Line Replacement." *Engineering News-Record*, Engineering News-Record, 1 Apr. 2020, www.enr.com/articles/49078-newark-speeds-120m-lead-water-line-replacement.

⁴ "120Water Brings Digital Water Solution to Newark & Denver." *120Water*, 120water.com/120water-brings-digital-water-solution-to-newark-denver/.

⁵ Warren, Michael Sol. "New Law Lets the Gov't Change Lead Pipes on Your Property without Permission." *Nj.com*, 9 Jan. 2020, www.nj.com/news/2020/01/new-law-lets-the-govt-change-lead-pipes-on-your-property-without-permission.html.

⁶ "Newark's LSLR Program Surpasses 10,000 Milestone." *Newark's LSLR Program Surpasses 10,000 Milestone* - CDM Smith, CDM Smith, 11 May 2020, www.cdmsmith.com/en/News/Newark-Lead-Service-Line-Program-Surpasses-10-000-Milestone.

The city financed the LSLR with a \$120 million AAA bond from the Essex County Improvement Authority. The bond, which will save Newark \$15-\$20 million in interest due to the city's high credit rating, funds the replacement of all LSLs at no cost to the homeowner.⁷ Before the issuance of the bond, financing was split between the homeowner and the city: the homeowners each were responsible for up to \$1,000 of the \$4,000-\$10,000 cost.⁸ This led to low buy-in in a city where 70% of residents are renters and the median income is well below the national average, rendering the \$1,000 price tag cost-prohibitive.⁹

Insofar as Providence has less advocacy for LSL replacement, along with limited prospects for obtaining a loan to enable replacement without rate-hikes, the scope of the program in Providence would likely be smaller, and the city would need to focus efforts on gaining buy-in from residents via public outreach. The example of Newark underscores the importance of grassroots organizations like the NRDC and NEW Caucus in applying pressure on local governments to address the issue of lead contamination in water. Simultaneously, it highlights the importance of collaboration with engineering firms and local contractors to plan and carry out rapid replacements.

Introduction:

The City of Newark supplies water to 280,000 city residents, an additional 20,000 businesses, as well as people in the surrounding communities.¹⁰ Starting in 2013, testing revealed that the city's water supply was contaminated with lead levels in excess of the federal action level of 15 parts per billion (PPB).¹¹ In response, the City of Newark introduced the Lead Service Line Replacement (LSLR) program in 2019 as part of a multi-pronged approach to eliminate

⁷ Levenson, Eric. "Newark Is Getting a \$120 Million Loan to Fix Its Water Crisis in the next 2-3 Years." *CNN*, Cable News Network, 26 Aug. 2019, www.cnn.com/2019/08/26/us/newark-safe-water-funds/index.html.

⁸ Stabile, Tom. "Newark Speeds \$120M Lead Water Line Replacement." *Engineering News-Record*, Engineering News-Record, 1 Apr. 2020, www.enr.com/articles/49078-newark-speeds-120m-lead-water-line-replacement.

⁹ Ibid

¹⁰ "Lead Service Line Replacement Program." *City of Newark Lead Service Line Replacement Program*, City of Newark, www.newarklead serviceline.com/replacement.

¹¹ "Newark Drinking Water Crisis." *NRDC*, Natural Resources Defense Council, www.nrdc.org/newark-drinking-water-crisis.

lead in the city's drinking water. Beginning in March 2020, the LSLR program aims to replace all public and private lead lines in Newark within 24 to 30 months of the genesis of the project.¹² As of October 2020, the program has successfully replaced around 15,000 of the 18,000 lead lines in Newark.¹³ The city implemented the lead service line replacements in conjunction with other measures to reduce lead exposure: it distributed water filters to city residents, provided free blood testing for children under 6 years old, and introduced anti-corrosive zinc orthophosphate to water from the Valley Road Rechlorination Station. Ultimately, the LSLR program proved to be Newark's only means of addressing the city's unsafe drinking water.

Newark Detects High Concentrations of Lead in its Drinking Water

Newark first detected lead contamination in the drinking water in 2013 when samples revealed lead levels that surpassed the federal maximum of 15ppb (parts per billion) set by the Lead and Copper Rule.¹⁴ In 2016, routine testing indicated unsafe lead levels in 30 Newark schools.¹⁵ One year later, Newark's water system began monitoring for lead on a six-month schedule. Over this first six-month monitoring period, 22 percent of drinking water samples exceeded the federal action level of 15ppb. A further 10 percent of the samples exceeded 27

¹² Baraka, Ras. "Newark has reached a turning point in our work to achieve a permanent solution to the lead service line issue." *City of Newark*, City of Newark, 26 Aug. 2019, www.newarknj.gov/news/newark-has-reached-a-turning-point-in-our-work-to-achieve-a-permanent-solution-to-the-lead-service-line-issue.

¹³ "Newark's LSLR Program Surpasses 10,000 Milestone." *Newark's LSLR Program Surpasses 10,000 Milestone - CDM Smith*, CDM Smith, 11 May 2020, www.cdmsmith.com/en/News/Newark-Lead-Service-Line-Program-Surpasses-10-000-Milestone.

¹⁴ "Newark Drinking Water Crisis." *NRDC*, Natural Resources Defense Council, www.nrdc.org/newark-drinking-water-crisis.

¹⁵ "Lead Fear Forces Water Ban in 30 New Jersey School Buildings." *AP NEWS*, Associated Press, 9 Mar. 2016, apnews.com/article/540db93ca7c04e498cdfab99c391ddb4.

ppb—nearly twice the action level.¹⁶ Furthermore, CDM Smith—a private consulting firm contracted by the city—informed officials in Newark that corrosion control at one of the two water treatment plants was no longer effectively preventing lead from leaching into the city’s water via old service lines.¹⁷ The residents of Newark were only made aware of the problems stemming from ineffective corrosion control in October of 2018, eight months after CDM Smith informed the city of the danger.¹⁸

Impetus: Advocacy Organizations Respond to the Water Crisis

After Newark failed to submit a lead service line inventory to the New Jersey Environmental protection Agency (NJEPa) as required based on their noncompliance with the Lead and Copper Rule, the Natural Resources Defense Council (NRDC) and 10 other organizations sent a letter to city officials demanding greater transparency about the location of lead service lines and the release of a comprehensive plan to address the unsafe lead levels.¹⁹

Subsequently, Newark continued to violate the federal action level for the July to December of 2017 monitoring period. In response, on 24 April, 2018 the NRDC and the Newark

¹⁶ Woods, Claire, et al. “Notice of Intent to Sue under the Safe Drinking Water Act, 42 U.S.C. Notice of Intent to Sue under the Safe Drinking Water Act, 42 U.S.C. 8(b)(1)(a) for Failure to Comply with Regulations for the Control of Lead in Drinking § 300j 8(b)(1)(a) for Failure to Comply with Regulations for the Control of Lead in Drinking Water in Newark, New Jersey.” Received by City of Newark, *NRDC*, Natural Resources Defense Council, 24 Apr. 2018, www.nrdc.org/sites/default/files/notice-intent-to-sue-sdwa-newark-20180424.pdf.

¹⁷ Yi, Karen. “Newark Said Its Water Was Safe, but Email Reveals It Was Warned of Problems Months Ago.” *Nj.com*, 18 July 2019, www.nj.com/essex/2018/12/newark-was-warned-about-lead-water-problems-months-before-it-told-residents.html.

¹⁸ “Newark Drinking Water Crisis.” *NRDC*, Natural Resources Defense Council, www.nrdc.org/newark-drinking-water-crisis.

¹⁹ “Newark’s Lead in Drinking Water Contamination Recalls Flint Crisis; Local and Natural Groups Challenge Officials for a Stronger Response.” *NRDC*, Natural Resources Defense Council, 21 Sept. 2017, www.nrdc.org/media/2017/170921.

Education Workers Caucus (NEW Caucus) notified Newark of their intent to sue unless the conditions were “remedied” within 60 days.²⁰ On 26 June, 2018, the NRDC and NEW Caucus sued the City of Newark regarding unsafe lead levels and a failure to sufficiently address them.²¹ They alleged that the city willfully tested sites that were likely to contain low concentrations of lead, failed to implement optimal corrosion control regimes, and neglected to distribute legally mandated warnings to the public.

Implementation: Newark Responds to Elevated Lead-Levels

Under the pressure of the suit, Newark Mayor Ras Baraka implemented a number of measures to address the lead levels. In October 2018, Newark created a plan to provide water filters free of charge to city residents; in January 2019, Mayor Baraka addressed increasing lead levels by writing an open letter to President Trump urging him to provide federal assistance to repair the water infrastructure in New Jersey and around the country.²² Finally, in March 2019, Mayor Baraka announced the city’s first initiative to replace lead service lines on a voluntary basis. Under the \$75 million program, homeowners would pay no more than \$1,000 for the replacement of their private lines.²³ Ultimately, only 750 lines of more than 18,000 were

²⁰ Woods, Claire, et al. “Notice of Intent to Sue under the Safe Drinking Water Act, 42 U.S.C. Notice of Intent to Sue under the Safe Drinking Water Act, 42 U.S.C. 8(b)(1)(a) for Failure to Comply with Regulations for the Control of Lead in Drinking § 300j 8(b)(1)(a) for Failure to Comply with Regulations for the Control of Lead in Drinking Water in Newark, New Jersey.” Received by City of Newark, *NRDC*, Natural Resources Defense Council, 24 Apr. 2018, www.nrdc.org/sites/default/files/notice-intent-to-sue-sdwa-newark-20180424.pdf.

²¹ “Newark Drinking Water Crisis.” *NRDC*, Natural Resources Defense Council, www.nrdc.org/newark-drinking-water-crisis.

²² Baraka, Ras J. “Open Letter to President Donald Trump From Mayor Ras J. Baraka.” *City of Newark*, 15 Jan. 2019, www.newarknj.gov/news/open-letter-to-president-donald-trump-from-mayor-ras-j-baraka.

²³ Stabile, Tom. “Newark Speeds \$120M Lead Water Line Replacement.” *Engineering News-Record*, Engineering News-Record, 1 Apr. 2020, www.enr.com/articles/49078-newark-speeds-120m-lead-water-line-replacement.

replaced under the voluntary arrangement.²⁴ The program was destined to fail: 70% of Newark residents are renters and a further 30% of residents live below the poverty line.²⁵ Meanwhile, on 10 August 2019, under direction from the Environmental Protection Agency (EPA), Newark officials began distributing bottled water to residents of some 15,000 homes.²⁶

Not a week later, on August 16, Mayor Baraka announced the plan to replace all of Newark's 18,000 LSLs.²⁷ Furthermore, the city would replace all lines, publicly and privately owned, in a timeframe of 24-30 months and at no cost to the homeowner. To these ends, the city secured a \$120 million, low-interest, AAA bond from the Essex County Improvement Authority.²⁸ The bond would fund the entirety of the program, thereby eliminating the need for the publicly owned and operated water utility, Newark Water and Sewer, to increase rates. As part of the LSLR program, the city inspects LSLs of residents free of charge and provides resources to enable Newark residents to evaluate the proximity of lead lines to their homes.

City and state-level legislation helped to expedite the LSLR program. An ordinance passed by the city of Newark on 18 September, 2019—and later codified in state law on 9 January, 2020—stipulates that enrollment in the LSLR program is mandatory for all

²⁴ *ibid*

²⁵ Corasaniti, Nick. "Newark Water Crisis: Racing to Replace Lead Pipes in Under 3 Years." *The New York Times*, The New York Times, 26 Aug. 2019, www.nytimes.com/2019/08/26/nyregion/newark-lead-water-pipes.html.

²⁶ Thomas, Elizabeth. "Newark Handing out Bottled Water as Filters Appear to Fail to Protect Residents from Lead." *ABC News*, ABC News Network, 12 Aug. 2019, abcnews.go.com/Politics/newark-handing-bottled-water-filters-fail-protect-residents/story?id=64925237.

²⁷ Baraka, Ras. "Newark has reached a turning point in our work to achieve a permanent solution to the lead service line issue." *City of Newark*, City of Newark, 26 Aug. 2019, www.newarknj.gov/news/newark-has-reached-a-turning-point-in-our-work-to-achieve-a-permanent-solution-to-the-lead-service-line-issue.

²⁸ Romo, Vanessa. "Flood Of Money Could Fast-Track Newark's Plan To Replace Lead Pipes Amid Water Crisis." *NPR*, NPR, 26 Aug. 2019, www.npr.org/2019/08/26/754537989/flood-of-money-could-fast-track-newarks-plan-to-replace-lead-pipes-amid-water-cr.

homeowners in Newark, and the presence of lead pipes in the city is illegal.²⁹ As such, city officials are legally permitted to replace private lines without explicit consent from homeowners. If homeowners do not enroll in the program, city workers will solicit consent from the residents of the property; in the case that the residents do not consent to LSL replacement, procedure dictates that the City of Newark will take them to court. This ordinance was implemented because, initially, homeowners were taking too long to sign up for the program, thus delaying the timeline of completion in 24-30 months. Additionally, in homes with LSLs, residents were sidestepping the program by avoiding tap water. This hindered the efficacy of the anti-corrosion system because of the significant reduction in water flow.

Accelerated by the ordinance, city workers were replacing nearly 100 lead lines per day before the Covid-19 pandemic. As of September 2020, the city replaced 15,000 lead lines, bringing lead levels down to 14ppb on average.³⁰ As the city now grapples with the pandemic, only 30-40 lead lines are replaced daily. In the meantime, the city continues to provide water filters to residents. Currently, the completion date for the program is estimated to fall during the spring of 2021. Ultimately, when all of the lead lines are replaced, Newark will have defeated the issue of lead contamination in its water.

²⁹ ORDINANCE TO AMEND TITLE XVI, ENTITLED “HEALTH, SANITATION AND AIR POLLUTION,” OF THE REVISED GENERAL ORDINANCES OF THE CITY OF NEWARK, NEW JERSEY, 2000, AS AMENDED AND SUPPLEMENTED, BY ADDING A NEW CHAPTER 23, ENTITLED “MANDATORY REPLACEMENT OF LEAD SERVICE LINE,” <https://static1.squarespace.com/static/5ad5e03312b13f2c50381204/t/5daf07f6e298021e8365cf82/1571751926771/LSLR+Ordinance+20190910.pdf>.

³⁰ Cagnassola, M.E. “Newark's Lead Service Line Replacement Program Nearing Finish Line.” *TAPintoNewark*, Tap into Newark News, 21 Sept. 2020, www.tapinto.net/towns/newark/sections/newark-water-crisis/articles/newark-s-lead-service-line-replacement-program-nearing-finish-line.

Financing:

The new funding model for the LSLR program differs from the funding plan for the original voluntary program. Initially, funding was split between Newark and the homeowner. Residents who opted into the program were responsible for paying no more than \$1,000, and the remainder of the \$4,000-\$10,000 cost of replacement was covered by the city.³¹ Though the \$1,000 was payable in installments over the course of a year, the cost amounted to a large sum of money given the median income of \$37,642 in Newark, which is far below the median U.S. income of \$68,703.³²³³ As such, only 750 Newark residents opted into the voluntary program in the months during which it was offered. To pay for the remaining costs of replacement, Newark obtained a \$12 million loan from the State Water Bank and planned on selling \$75 million worth of municipal bonds.³⁴

The funding model for the new mandatory plan—which replaced the aforementioned voluntary program—hinges on a \$120 million bond issued by the Essex County Improvement Authority. Importantly, it is a AAA bond—the highest bond rating—which will save Newark between \$15-\$20 million in interest over the term of the loan.³⁵ Under the new payment model,

³¹ “Lead Service Line Replacement Program Ready to Move Forward after Final Council Vote.” *City of Newark*, City of Newark, 22 Feb. 2019, www.newarknj.gov/news/lead-service-line-replacement-program-ready-to-move-forward-after-final-council-vote.

³² Vannozzi, Briana. “Newark Begins \$75M Lead Water Pipe Replacement Program.” *NJ Spotlight News*, NJ Spotlight News, 13 Mar. 2019, www.njspotlight.com/news/video/newark-begins-75m-lead-water-pipe-replacement-program/.

³³ “Newark, NJ Census Data.” *Data USA*, 2018, datausa.io/profile/geo/newark-nj/.

³⁴ Rebovich, Missy. “Newark’s Lead Service Line Replacement Program Is a Model for the Nation.” *New Jersey Future*, New Jersey Future, 12 June 2020, www.njfuture.org/2020/06/12/newarks-lead-service-line-replacement-program-is-a-model-for-the-nation/.

³⁵ Levenson, Eric. “Newark Is Getting a \$120 Million Loan to Fix Its Water Crisis in the next 2-3 Years.” *CNN*, Cable News Network, 26 Aug. 2019, www.cnn.com/2019/08/26/us/newark-safe-water-funds/index.html.

residents of Newark are not responsible for covering any costs associated with the replacement of public or private lines, nor are they required to pay higher rates for their water. The bond from Essex County enables the city to expedite the program, shortening the timeline from 8 years to 24-30 months, and expands the scope of the program from the initial intention of 15,000 replacements to the current goal of all 18,000 lead lines in the city.

Community Engagement:

The City of Newark hired 120Water to conduct outreach to residents after their lead lines have been replaced. 120Water communicates primarily through direct mail to city residents for up to six months after the LSL replacement, at which point the city takes the final water sample to ensure the efficacy of the replacement.³⁶ With the goal of optimizing engagement, 120Water uses puzzles, games, and similar activities as vehicles communicating information pertaining to the importance of LSL replacement. Critically, since Newark passed the 2019 ordinance making participation in the replacement program compulsory, much of the communication with residents takes place after the replacement as the city no longer needs to convince residents and homeowners of the gravity of the issue in order to induce participation.³⁷

In addition to their outreach efforts, the city of Newark has launched programs to directly aid the community during the lead line replacement process. Firstly, it created an initiative to distribute water filters to high-risk residents in October 2018. Furthermore, as part of the LSLR

³⁶ “Newark Sets the Standard for Community Engagement and Education with Their New LSLR Program.” *120Water*, 120water.com/newark-sets-the-standard-for-community-engagement-and-education-with-their-new-lslr-program/.

³⁷ Ibid.

the city is offering free blood testing to children under the age of 6.³⁸ Starting in August of 2019, the city also began to distribute water bottles to heavily affected areas.

Applicability to Providence

Although the political and financial landscape of the City of Newark differs significantly from that of Providence, there are still lessons to be taken from Newark's program to fully replace all lead lines. Firstly, when Newark replaced private lines on a voluntary basis, only a negligible proportion of homeowners paid for replacement. Only when Newark ceased to distinguish between public and private lines was it feasible to eradicate all lead lines. Second, it is evident that the engagement of advocacy organizations with Newark's water utility and mayor's office, specifically in the form of a lawsuit, encouraged the government to prioritize the issue of lead. No comparable advocacy nor lawsuit exists in Providence. Third, Newark has avoided strong opposition to lead line replacement by securing a loan that allowed them to conduct city-wide replacement without a rate hike. Like in Providence, Newark's water utility serves outlying communities and would have difficulty justifying increased rates for the replacement of the city's lead piping. Fourth, Newark's water utility outsourced engineering and construction work to international and local contractors—this reduced costs, bolstered technical efficacy, and increased the speed of replacements. Specifically, Newark hired CDM Smith, a global engineering firm, to analyze lead proliferation and plan replacement. They also hired local contractors Roman E & G to carry out the replacements. Finally, Newark tackled lead lines so rapidly due to city and state ordinances that made lead lines illegal and replacement mandatory. No comparable legislation exists in Providence.

³⁸ "NJ Department of Health Recognizes National Lead Poisoning Prevention Week," NJ Health (New Jersey Department of Health <https://www.nj.gov/health/news/2018/approved/20181024b.shtml>, October 24, 2018).

In tandem with these four conclusions, we must recognize that not all of the solutions to lead proliferation in Newark are equally feasible in Providence. Firstly, the success and speed of Newark's lead line replacement program can be attributed, in no small part, to the \$120 million loan from the Essex County Improvement Authority. Newark was able to secure this loan with a AAA bond rating, while Providence has a BBB bond rating and may not be able to find a comparable lender.³⁹ Secondly, where Newark saw widespread advocacy from organizations from the NRDC to the teacher's unions, no comparable grassroots organization in Providence has encouraged the government to pass ordinances banning lead lines, nor to release a comprehensive plan for their replacement. Notably, unless an ordinance is passed making participation compulsory, the scope of the program would likely be smaller, and the City of Providence would need to focus efforts on gaining buy-in from residents.

Conclusion

In 2013, it became clear that the City of Newark had a widespread issue of lead contamination in its water supply. By 2017, 22 percent of all homes and 30 of Newark's schools had lead levels in excess of the federal action level of 15ppb. By 2018, advocacy organizations, like the NRDC, the NEW Council, and over ten other signatories had signed a letter demanding a response from the government and had filed a lawsuit holding city officials accountable for a lackluster response to the lead issue. Initially, Newark launched a voluntary lead line replacement program, which quickly faltered given low levels of homeownership in the city. Finally, in August of 2019, Mayor Ras Baraka announced a plan to replace all of the city's lead

³⁹ "S&P Global Ratings Affirms City's Bond Rating and Changes Outlook to 'Positive.'" *City of Providence*, 10 Aug. 2017, www.providenceri.gov/sp-global-ratings-affirms-citys-bond-rating/.

lines, public and private, with no rate-hike to the homeowner. The Lead Service Line Replacement program would be funded by a \$120 million AAA bond from the Essex County Improvement Authority, and would allow the city to replace all lines within 24-30 months. In tandem with the LSLR, city and state legislatures passed ordinances to mandate the replacement of all lead lines, even in cases where homeowners do not consent to the replacement. Ultimately, a combination of advocacy, public responsiveness, and prudent financing has set Newark on the path towards eliminating one of its most pressing public health concerns: lead contamination.