

## **ATTACHMENT – SUPPLEMENTAL DOCUMENTS**

Select background documents, identified below, are available electronically for Respondents to reference in the preparation of their responses. Please note that several documents referenced below are incomplete “drafts” which may be modified as information becomes available.

The Board is not responsible/liable for the completeness of the documents nor how the Respondents use the content.

### **Documents available to all Respondents:**

- SWBNO Lead Awareness Page ([Lead Awareness - Sewerage & Water Board of New Orleans](#)), including the materials inventory required under the LCRR and customer education (Oct. 2024)
- Draft Lead Service Line Replacement Plan (Nov. 2024)
- Predictive Model Performance Analysis Presentation (Sept. 2025)
- Information regarding the City of New Orleans’s Historic District Landmarks Commission (<https://nola.gov/next/hdlc/topics/landmarks-and-districts/>)

### **Documents available to the Respondent selected for negotiations:**

- Detailed inventory as provided to LDH
- Predictive model outputs, indicating the probability of lead from the watermain to the property line (public side) and the property line to the structure (private side)
- Summary report of predictive model development, assumptions and performance evaluation (no date, submitted to SWBNO)
- Predictive Modelling Approach for LSI (Aug. 2024, for submission to LDH)
- Relevant documents describing lead service line replacement practices used by the Board, including guidance on using CASSWorks to document materials and replacements
- Draft Communications Plan



# SWBNO Lead Service Line Replacement Plan

*(DRAFT - November 2024)*

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The following document is a “working draft” and, as such, may be subject to further modification as relevant information becomes available. Final terms of the Lead Service Line Replacement Plan will be developed in collaboration with the selected contractor.

## List of Abbreviations

SWBNO – Sewerage and Water Board of New Orleans

LSL – Lead Service Line

LSLR – Lead Service Line Replacement

LCR – Lead and Copper Rule

LCRR – Lead and Copper Rule Revisions

LCRI – Lead and Copper Rule Improvements

POU – Point of Use Device

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# 1 Introduction

## 1.1 Overview

The purpose of this plan is to illustrate the means and methods by which the Sewerage and Water Board of New Orleans (SWBNO) will identify and remove all lead service lines (LSL) from its distribution system. In the best interest of public health and in keeping with the EPA's Lead and Copper Rule Revisions (LCRR) and the newly promulgated Lead and Copper Rule Improvements (LCRI), SWBNO will minimize lead exposure by limiting partial lead service line replacements, providing filtration to customers whose lead service lines have been disturbed or replaced, and educating customers about the health effects of lead. In addition to operational efficiency, SWBNO has prioritized equity and environmental justice in the following plan by making disadvantaged areas and sensitive populations key components of the prioritization factors used to schedule LSL replacements.

## 1.2 Applicable Regulations

Public water systems are subject to several regulations promulgated by the EPA that are related to lead service lines. These requirements include the Lead and Copper Rule Revisions (LCRR) and the new Lead and Copper Rule Improvements (LCRI). The LCRI strengthens several of the LCRR requirements. The LCRI was finalized and promulgated in October of 2024 with a compliance date of November 1, 2027. The LCRI shifts the compliance deadline for several LCRR requirements to November 1, 2027. The service line inventory compliance date remained at October 16, 2024.

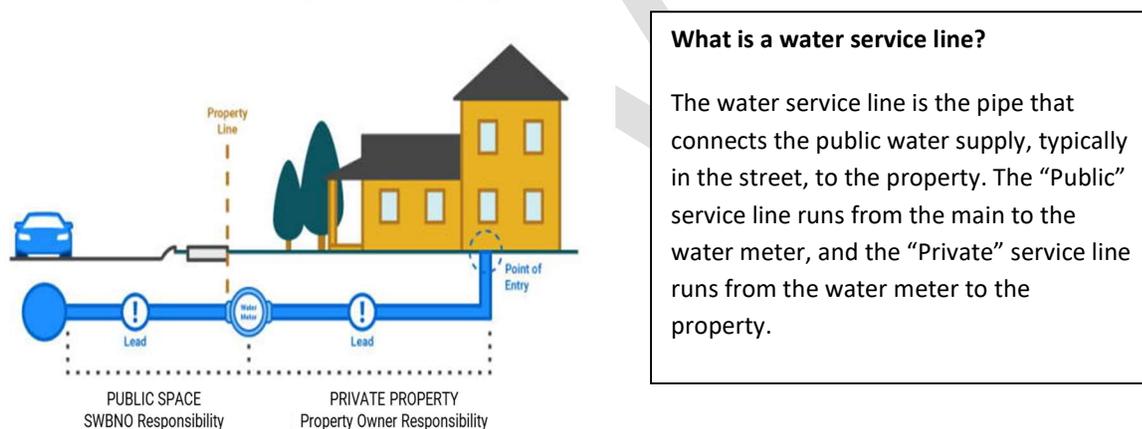


Figure 1.1: Water Service Line

The remaining requirements of the LCRR for community water systems are:

1. Develop a lead service line (LSL) inventory and make it publicly available.
2. Notify residents who have a lead, galvanized, or unknown service line within 30 days of inventory publication.
3. Notify Tier 1 Sites within 24 hours in the event of an Action Level Exceedance.

The primary requirements of the finalized LCRI for community water systems are:

1. Requires water systems to develop an updated initial service line inventory, called the LCRI baseline inventory, which would be due by the compliance date of the LCRI.
2. Develop and submit a Lead Service Line Replacement (LSLR) Plan.
3. Validate the accuracy of non-lead service lines no later than 7 years after the compliance date.
4. Complete replacement of all lead service lines within 10 years of the compliance date.
5. Removes the LCRR trigger level and lowers the compliance sampling action level from 15 µg/L to 10 µg/L.
6. Requires water systems to provide pitcher filters or point-of-use (POU) devices following full and partial replacement of lead and GRR service lines and additional types of disturbances to lead, GRR, and unknown material service line.
7. Prohibits water systems from conducting partial lead or GRR service line replacement unless it is conducted as part of an emergency repair, or in coordination with planned infrastructure work, excluding planned infrastructure work solely for lead or GRR service line replacement.

### 1.3 Notable Rule Compliance Activities

#### 1.3.1 LSL Inventory and Notifications

All community water systems must develop a service line inventory. Per the LCRR, the service line inventory had to be made publicly available by October 16, 2024. In 2027, per the LCRI, SWBNO must submit a new baseline inventory that will be used to track lead service line replacements.

Residents must be notified annually if they are served by a lead, galvanized, or unknown service line and provided information regarding the health effects of lead and what they can do to mitigate their risk.

#### 1.3.2 Development of a Lead Service Line Replacement Plan

The Lead Service Line Replacement Plan is mandated by the EPA and must be submitted for approval by the LCRI compliance deadline, November 1, 2027.

This plan must include a description of:

1. A strategy for determining the composition of lead status unknown service lines in its inventory.
2. A procedure for conducting full lead service line replacement.
3. A communication strategy for informing customers before a full or partial lead service line replacement.
4. A procedure for customers to flush service lines and premise plumbing of particulate lead.
5. A lead service line replacement prioritization strategy based on factors including but not limited to the targeting of known lead service lines, lead service line replacement for disadvantaged consumers, and populations most sensitive to the effects of lead.
6. A funding strategy for conducting lead service line replacements, which considers ways to accommodate customers that are unable to pay to replace the portion they own.

7. A communication strategy to inform customers and consumers (persons served) about the plan and replacement program.
8. Identification of any legal requirements or water tariff agreement provisions that affect a system's ability to gain access to conduct full-service line replacement.

### 1.3.3 Lead Concentration Action Levels

The LCRI removes the trigger level and lowers the compliance sampling action level from 15 µg/L to 10 µg/L. It also requires water systems to analyze the first- and fifth-liter samples from sites with LSLs, or lead premise plumbing, and use the higher lead level of the two samples in the 90th percentile compliance calculation. This is intended to capture water that has stagnated in the service line and therefore may have higher concentrations of lead. This reduction in action level value increases the chance for an action level exceedance that would require the changes below. Water systems that have multiple lead action level exceedances (i.e., more than three lead action level exceedances in 5 years) must conduct additional outreach to consumers and make POU filters certified for lead reduction available for all consumers.

SWBNO operates and maintains 2 distinct water systems, one on the Eastbank and one on the Westbank of Orleans Parish. As such, SWBNO conducts two separate tap sampling regimens, one in each water system. Therefore, an action level exceedance in one water system would only necessitate changes within that water system.

### 1.4 Utility Background

The Sewerage and Water Board of New Orleans's mission is to serve the people of New Orleans and improve their quality of life by reliably and affordably providing safe drinking water; removing wastewater for safe return to the environment; and draining stormwater to protect our community.

New Orleans is a historic, 300-year-old city. Some of the economic statistics for New Orleans can be seen below.

<b>New Orleans Economic Statistics (2020)<sup>1</sup></b>	
Poverty Rate	23%
Median Property Value	\$250,000
Median Household Income	\$43,258
Homeownership rate	49.8%

Figure 1.2: New Orleans Economic Statistics

<sup>1</sup> Source: <https://datausa.io/profile/geo/new-orleans-la/#economy>

The SWBNO uses a process called corrosion control in the water treatment process to minimize the tendency for lead to dissolve into water from pipes, lead solder, and plumbing fixtures in homes. Specifically, SWBNO adds calcium hydroxide to the water, which raises its pH level to about 9.0 using calcium hydroxide, or slaked lime. The SWBNO's current corrosion control treatment meets the requirements of LCRR.

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## 2 Current Rule Compliance

### 2.1 Lead and Copper Rule Compliance

The effectiveness of the SWBNO’s corrosion control treatment is determined by monitoring lead levels of compliance samples. Currently, the corrosion control treatment is deemed optimized if the 90th percentile lead concentration is less than or equal to 5 µg/L. Per the LCRI, the action level is exceeded if the 90th percentile lead concentration is more than 10 ug/L. The SWBNO’s corrosion control treatment has historically been effective at reducing 90th percentile levels of lead to below the action level. The SWBNO’s 90th percentile lead concentration data from 1992-2022 can be seen below. The 1992 sampling events were the first testing under the Lead and Copper Rule before SWBNO qualified for the reduced monitoring schedule.

90th Percentile Data:											
Carrollton Lead (parts per million, ppm)											
1992a	1992b	1995	1998	2001	2004	2008	2010	2013	2016	2019	2022
0.004	0.003	0.006	0.0001	0	0.001	0.014	0.009	0.006	0.007	0.008	0.0054
Carrollton Copper (ppm)											
1992a	1992b	1995	1998	2001	2004	2008	2010	2013	2016	2019	2022
0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.1
Algiers Lead (ppm)											
1992a	1992b	1995	1998	2001	2004	2007	2010	2013	2016	2019	2022
0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.002	0.0058
Algiers Copper (ppm)											
1992a	1992b	1995	1998	2001	2004	2007	2010	2013	2016	2019	2022
0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0	0

Figure 2.1: 90th Percentile Compliance Data

## 3 Service Line Material Inventory

### 3.1 Current Inventory Log and Development

SWBNO has developed a lead service line inventory which will inform the Lead Service Line Program and prioritization plan. SWBNO’s current interactive inventory map can be found on SWBNO’s Lead Awareness Page<sup>2</sup>.

The material classifications per regulation can fall into four categories lead, non-lead, galvanized requiring replacement, and unknown. These categories are defined below.

Material Category	Definition
<b>Lead</b>	Where the system-owned or customer owned portion of the service line is made of lead
<b>Non-Lead</b>	where the service line is determined through an evidence-based record, method, or technique not to be lead or GRR
<b>GRR</b>	Where a galvanized service line is or was at any time downstream of a lead service line or is currently downstream of a “Lead Status Unknown” service line
<b>Unknown</b>	where the service line material is not known to be “lead”, “GRR”, or a non-lead service line, such as where there is no documented evidence supporting material classification

Figure 3.1: Material Classifications

### 3.2 Methodology

To develop this inventory, SWBNO has partnered with Blue Conduit. Blue Conduit assisted in analyzing SWBNO’s internal data to create an inventory and map of where lead service lines are likely to be present.

SWBNO used several data sources in developing its inventory. Internal work orders, historical plumbing tap cards, plumbing inspection reports, and data from our ongoing water, sewer, and water meter programs were all compiled by SWBNO staff and organized into the LSL Inventory by Blue Conduit. The current material inventory is a combination of existing records and recent inspections from field work. Known materials are based on field verification during normal utility operations, records of previous utility work, plumbing records, and construction records. SWBNO has tracked water service line materials during work orders for the past 10 years. This data was supplemented with other sources, primarily records from SWBNO’s work orders, a recent meter survey, and billing systems.

SWBNO worked with Blue Conduit to use predictive modeling to determine the likelihood of lead service lines throughout New Orleans. The predictive model results provide an additional source of information to help estimate if a property is likely or unlikely to have a lead service line. However, a physical validation is required per LDH to determine and

<sup>2</sup> <https://www.swbno.org/Projects/LeadAwareness>

validate the service line material type.

### 3.1 Inventory Log

The results of the initial inventory are shown in Figure 3.2, based on data through October 16, 2024. The inventory will be regularly updated as SWBNO field staff and contracted staff capture more information on LSL material through their regular work duties.

Initial Inventory Material Count as of October 16, 2024		
Material	Public-Side Service lines	Private-Side Service lines
Lead	8,523	6,542
Not Lead	11,061	19,831
Galvanized	35	113
Unknown	119,340	112,473
<b>Total</b>	<b>138,959</b>	<b>138,959</b>

Figure 3.2: Public and Private Service Line Inventory Material Count

### 3.4 Strategy for determining composition of unknowns

Identifying unknown service line materials and confirming LSL locations is necessary to develop accurate replacement rate goals, replacement plans, and funding estimates. To address unknowns, SWBNO is prioritizing investigative potholing throughout the city. Investigative potholing will reduce the number of unknown service lines to help inform our program to better serve the community.

**What is potholing?**

Potholing is when a hole is dug above the service line. The hole or test pit exposes the pipe in the public space and/or on private property. It provides visual confirmation of the size and material of the service line that is bringing water to a property.

Figure 3.3: What is Potholing

### 3.5 Next Steps for Inventory Progress

SWBNO will continue to refine the LSL Inventory based on information obtained during

investigative potholing, on-going work, and continued review of plumbing inspection reports. SWBNO expects the lead service line inventory to remain a living and evolving data set as future field inspections and replacements are completed.

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## 4 Lead Service Line Prioritization and Goal Rate

### 4.1 LSLR prioritization strategy and goals

Using our current inventory, SWBNO estimates that approximately 40 to 60 percent of metered locations potentially include a lead service line. To optimize existing funding, SWBNO will need to be strategic about scheduling lead service line replacements.

#### 4.1.1 Summarized Prioritization Factors

Below are the prioritization factors required per the LCRR. Also included are factors that are considered best practices and will enhance the efficiency of the program.

LSLR Prioritization Factors	LCRR Requirement
Known Lead or GRR Service Line	Required
Disadvantaged Communities	Required
Populations Most Sensitive to the Effects of Lead <ul style="list-style-type: none"><li>• Schools / Day Care</li><li>• Nursing Homes / Medical Facilities</li><li>• Homes with children; pregnancy</li></ul>	Required
Companion Projects	Industry Best Practice
Disturbances	Industry Best Practice

Figure 4.1: LSLR Prioritization Factors

#### 4.1.2 Replacement Goals

Lead Service Line Replacements will take place across four main areas:

- Prioritized block replacements
- Replacement following a leak, break or disturbance
- Replacement alongside companion projects
- Customer Initiated

#### 4.1.3 Prioritized Block LSLR

SWBNO must identify an annual target number of LSL Replacements to meet the LCRI regulation 10-year replacement goal. Once this target number is finalized, prioritized blocks will be scheduled for LSL replacement based on sensitive populations, disadvantaged communities, and known lead and GRR service lines.

#### 4.1.3.1 Sensitive Populations

Sensitive populations are deemed by the EPA to have a greater risk of experiencing the negative health effects of lead.

According to the EPA Sensitive populations include schools, daycare centers, nursing homes, medical facilities, children under the age of six, and pregnant mothers.

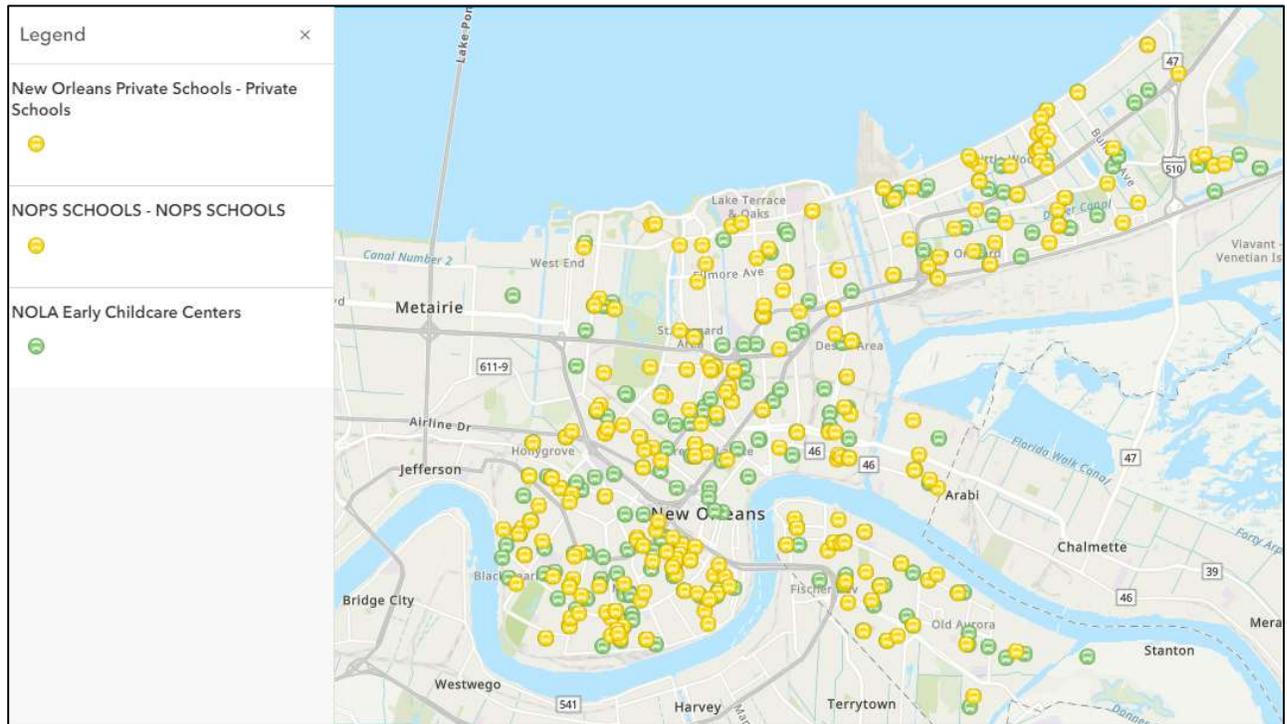
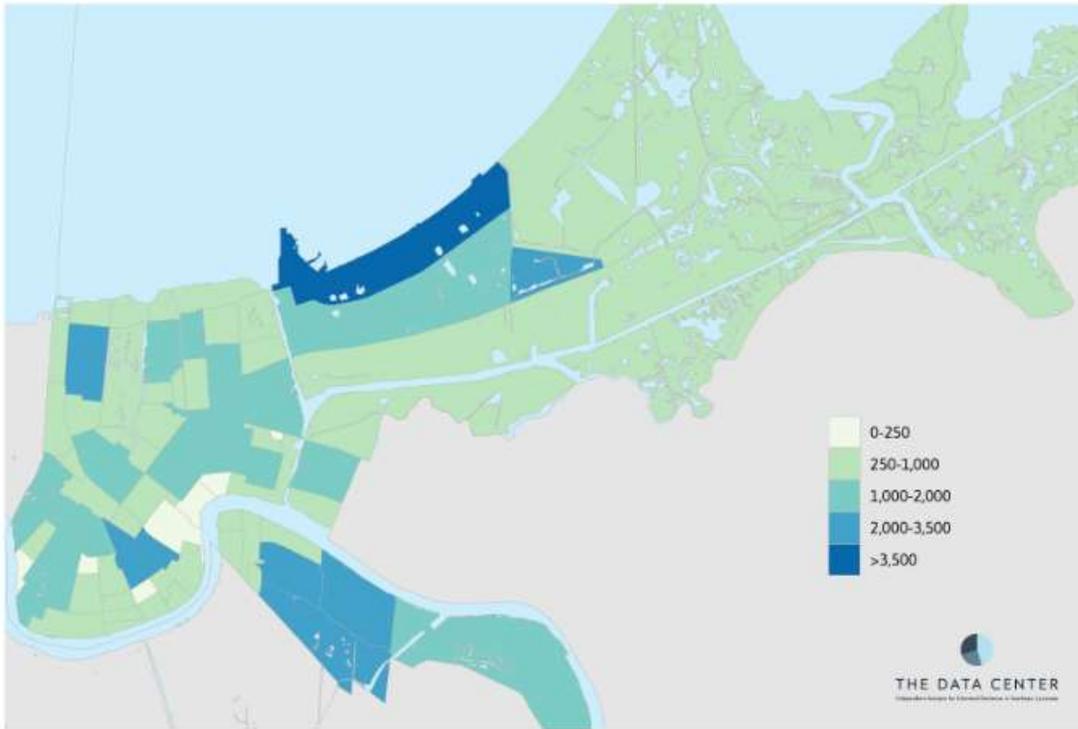


Figure 4.2: Map Showing Schools and Early Childcare Facilities in New Orleans

Below is a map showing the population of children in New Orleans by neighborhood. Census data and maps like the one below will be used to prioritize.

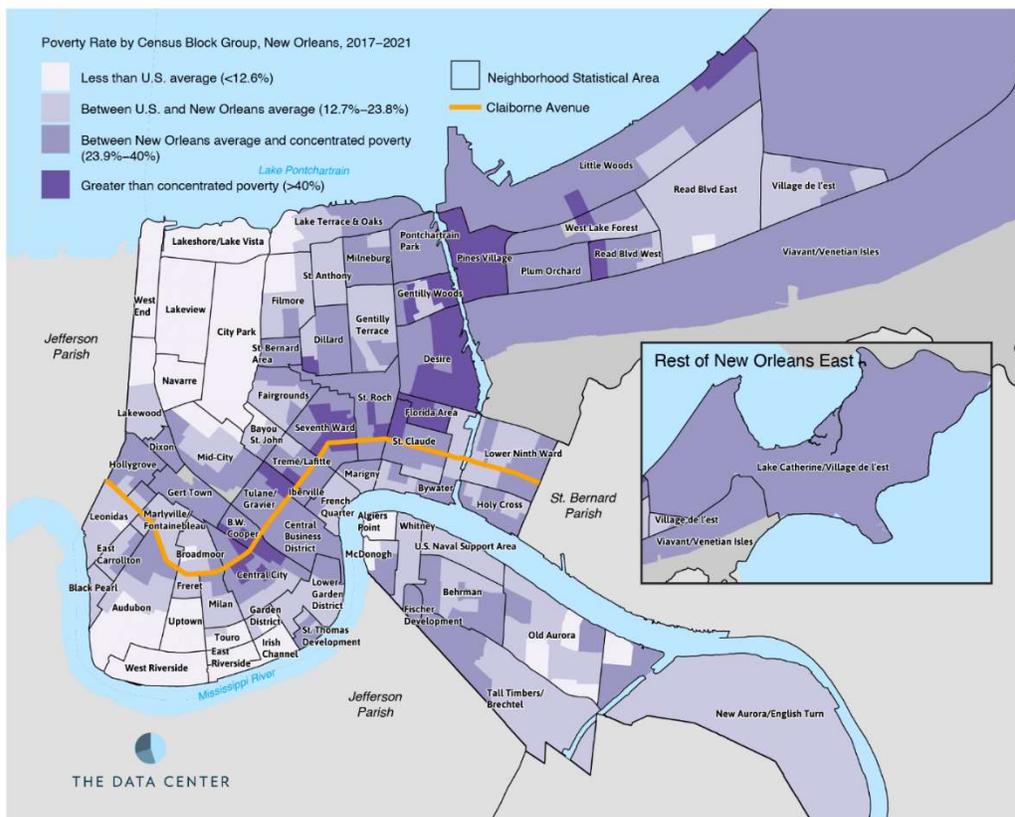


Source: The Data Center analysis of data from the U.S. Census Bureau: 2020 Census.

Figure 4.3: Map Showing Population of Children by Neighborhood in New Orleans

#### 4.1.3.2 Disadvantaged Areas

SWBNO is also using prioritization factors to assess the impacts that a project may have on minority and low-income populations and ensure that replacements are targeted towards disadvantaged consumers. The map below shows the poverty rate by census block group from 2017 to 2021.



Source: The Data Center analysis of data from 2017–2021 American Community Survey

Figure 4.4: Map Showing Poverty Levels by Neighborhood in New Orleans

#### 4.1.3.3 Known Lead or GRR Service Lines

Blocks with more lead service lines reported through the inventory will be given replacement priority and factored into the replacement schedule.

#### 4.1.4 Leaks or Breaks on LSLs

The number of leaks and breaks on LSLs is anticipated to go down over time as the number of LSLs in the system is reduced. LSLs with leaks and breaks will be replaced as they occur, without limiting the number. Individual years of low or high replacements under this program can be incorporated into the schedule by reducing or increasing the number of replacements in other programs the following year. Prioritization of LSLR would have no impact on the leaks and breaks program.

#### 4.1.5 Integration with Companion Projects

SWBNO has included LSL replacement work alongside all water main replacement programs or companion projects such as our Joint Infrastructure Recovery Road Projects (JIRR). Replacing the public service line alongside water main projects is a cost-effective way to replace LSLs, since crews are already mobilized to these locations.

Other projects that disrupt the streets, such as street resurfacing, will also consider including LSLR alongside or in advance of the projects to improve construction efficiency.



Figure 4.5: Map 1 of Planned JIRR Projects for 2025

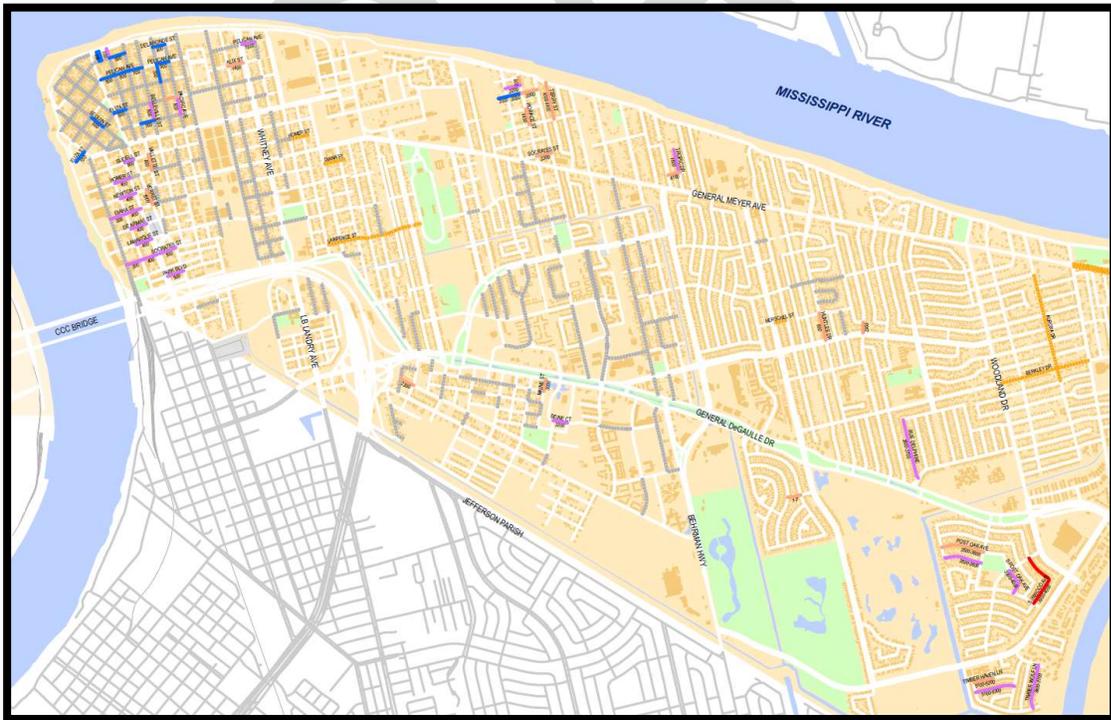


Figure 4.6: Map 2 of Planned JIRR Projects for 2025

#### 4.1.7 Customer Side Replacement

SWBNO will replace the public side of an LSL whenever a homeowner chooses to replace their private side LSL. SWBNO does not have control over where and when these LSLRs occur but will be prepared to conduct public side LSLRs on this basis.

#### 4.2 Contract for LSL Replacements at Schools and Residential Connections

In an effort to begin LSL replacements as soon as funding is available and to prioritize sensitive and disadvantaged populations, SWBNO will procure an initial LSL replacement contract for LSL inspections and replacements at schools, early childcare centers, and residential locations in disadvantaged areas where it is known that the private side is non-lead. This contract is meant to begin replacements on a small scale as soon as funding is available but before a program management firm is acquired through an RFP process. This contract is currently in the bidding phase with award anticipated in early 2025.

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## 5 Funding Opportunities and Strategies

### 5.1 Funding strategy for conducting LSLR

While SWBNO's initial inventory contains a large number of unknowns, SWBNO anticipates that out of approximately 139,000 service connections, a significant portion will need to be replaced. Replacing all LSLs within the proposed LCRI timelines will be costly and SWBNO will need multiple sources of funding to sustain LSL removals over this timeline.

To begin work, SWBNO has been approved for \$86M in Drinking Water State Revolving Fund (DWSRF) Lead Service Line Replacement (LSLR) funding. These funds are provided by the Bipartisan Infrastructure Law (BIL) specifically for LCR compliance and include 49% principal forgiveness and a zero percent interest rate for the remaining 51% of the loan. BIL LSLR funding is provided annually to states and will expire in FY 2026. SWBNO expects to close on this loan in late fall of 2024. While significant, the \$86M BIL LSLR funds represents less than 10% of SWBNO's estimated costs of replacing all LSLs through the proposed LCRI timeline. For this reason, SWBNO plans to apply for all available BIL LSLR funds through FY 2026 and submitted an additional application for \$66M in BIL LSLR funds in October 2024.

BIL LSLR funds alone will not be enough to meet the goal of full LSL replacements. The funding is finite, and other water systems in Louisiana will likely be applying in the future. To ensure all LSL are replaced by the LCRI, SWBNO has identified and is evaluating multiple funding sources. The table below illustrates some options and strategies SWBNO has for LSL replacement.

<b>Agency / Legislation</b>	<b>Funding Type</b>	<b>Potential \$\$</b>	<b>Opportunities</b>	<b>Challenges</b>
<b>WIIN (Water Infrastructure Improvements for the Nation)</b>	Federal Grant	Limited, LDH State-run program	Enhanced coordinatization between SWBNO and LDH to meet LCRI requirements.	Approx. \$400k annually to spend on statewide programs.
<b>HUD-CDBG (Community Development Block Grants)</b>	Federal Grant	Determined by federal formula (population size) or Congressional earmark.	Enhanced collaboration with City of New Orleans existing projects in Low-income areas.	Formula funds are usually already allocated for city uses.
<b>ARPA- WSC (LA State Water Sector Commission)</b>	Federal Grant	\$5M grants for water projects	Fewer federal requirements than other programs	State WSC priorities are for smaller communities.
<b>IJA- EPA DWSRF (LA Drinking Water State Revolving Loan Fund - LSLR)</b>	State Loan	LSLR specific funding- 49% loan forgiveness, %51 of loan at zero interest. Non-LSLR specific loans at 2.45% interest.	SWBNO is first applicant in LA for these funds and is scheduled to close on an \$86M loan in late fall 2024. Applying for additional \$66M loan fall of 2024.	Funding availability will shift as more cities start LSLR. DWSRF has long reimbursement timeline. IJA funding expires in 2026.
<b>EPA-WIFIA (Water Infrastructure Finance &amp; Innovation Act)</b>	Federal Loan	\$20M minimum project size	Low interest loan for 49% of total project costs. Applicant must match other 51%.	9 month application process, requires credit rating

Figure 5.1: Table of Funding Options and Strategies

## 6 Communication and Outreach

### 6.1 Strategy for informing customers before a service line replacement

#### **Stakeholder Engagement and Community Outreach**

As a drinking water agency committed to public health, SWBNO recognizes the risk lead can present to our customers, so we have been actively taking steps for years to protect our community. The Lead Service Line Replacement Program continues this commitment to be a model utility that earns and holds the trust and confidence of customers, community, and partners through reliable and sustainable water services, while upholding the values of being customer-focused, accountable, safety-minded, transparent, and honest.

#### **Outreach Guiding Principles**

##### INFORM

- Share information with the community about the risks of lead exposure from lead plumbing.
- Apprise customers and consumers (persons served) of their service line material through a publicly available inventory.
- Offer ongoing, accurate, transparent, and meaningful communication about SWBNO's lead program.

##### EMPOWER

- Empower community members with steps they can take immediately to reduce lead exposure in drinking water.
- Engage community partners in a coalition of support for the lead program to ensure equity across all communities.
- Reach all SWBNO residents who may receive water through a lead service line including tenants, school children, etc.

##### ACHIEVE

- Fully achieve compliance with and/or exceed all communication provisions of the federal LCRR and LCRI.
- Ensure internal awareness and knowledge among SWBNO team members to effectively manage customer needs around the lead issue.

#### **Outreach Approach**

##### Stakeholder Engagement

New Orleans has a rich history of active and engaged neighborhoods, and social and civic organizations. The strategic approach SWBNO has developed for outreach and engagement

includes proactive and prescriptive outreach, reflecting collaboration with trusted community partners and local leaders. The approach was developed to ensure information will be accurate and shared in a timely manner so that SWBNO continues to build trust with its stakeholders. Historically underserved communities in New Orleans and those most impacted by exposure to lead in drinking water, including pregnant women, children, and the elderly, will be specifically targeted for outreach.

At the heart of SWBNO's Lead Line Replacement Program is a desire to protect public health, and this will be reflected in its engagement with the community. Stakeholder engagement will:

- Provide outreach materials that offer meaningful and accurate information about the risks of lead exposure, and the value of lead service line replacements.
- Tailor engagement activities to reach communities of particular concern (i.e. vulnerable populations, underserved communities, etc.).
- Ensure both property owners and tenants understand the lead replacement program.
- Offer access to SWBNO representatives for responsive answers to questions about the program.

Overall success of this effort will depend on the ability to effectively connect with a broad spectrum of stakeholders. SWBNO's approach uses a tiered process to engage opinion leaders, organizations, businesses, schools and educational institutions, and other entities, with timing strategically connected to project and LCRI milestones. Recommendations include leveraging relationships with key community members to identify established communication channels already recognized by neighborhoods and groups in often difficult to reach communities.

### Building Awareness

Awareness of the potential health impacts of lead in drinking water is generally known in this country because of high profile instances in other communities. SWBNO's effort will aim to build awareness locally, that is solidly linked to factual information specific to New Orleans, about how lead enters drinking water, and the steps individuals can take to mitigate the impacts. Raising awareness combines meaningful messaging with targeted outreach and strategic relationships.

Specific tactics to build awareness may include:

- Levering Community Partnerships
- School outreach
- Spokesperson training
- Lead Awareness landing page on SWBNO's website
- FAQs available at doctor's offices and community health centers
- SWBNO social media

- Interviews and op-eds with local media
- Contractor training
- Video on customer lobby monitors
- On hold messages for customer service hotline and training of customer service staff
- Fact Sheets available at community events
- Bill inserts
- Monthly newsletter and internal meetings for SWBNO staff
- Lead-Free Water Ambassadors – community members who agree to share information with their circles about steps that can be taken to mitigate lead exposure as well as the LCRI
- Dedicated “customer liaison” for customer service (calls directed to one or two representatives who are more deeply trained on individual customer issues, including the lead service line replacement program)

DRAFT

## 7 Construction Implementation

### 7.1 Program Timeline

SWBNO anticipates starting the LSL Replacement Program in 2025.



Figure 7.1: Tentative Program Timeline

### 7.2 Procedure for Conducting Full LSLR

The section below will outline the LSL replacement methods to be implemented by SWBNO. This includes notifying customers before replacement, the process for acquiring necessary permits, acquiring property owner permissions for customer-owned portion of lines, and updating the water system's service line inventory.

SWBNO intends to replace LSLs such that the end state of the service line is lead free. Currently, there is a legal barrier for SWBNO to use public funds on private property. However, there is legislation underway that would allow SWBNO to utilize public funds for private service line replacements.

#### 7.2.1 LSL Replacement Notifications

SWBNO will notify the property owner or resident in advance of replacing their water service line using a series of notices at least 5 calendar days in advance as required per New Orleans City Ordinance, Section 159-2. These notices may take place in the form of a doorhanger, phone call, or mailer.

## 7.2.2 LSL Replacement Methods

### 7.2.2.1 Open Cut

One of the methods SWBNO commonly uses is open cut trench. The process includes saw cutting sidewalks, driveways, and necessary roadways to access the main line. After that excavation and trenching are necessary to access the existing line, remove the existing service line and replace it with a LCRI compliant water service line typically made of HDPE. The crew will then backfill and compact back to specifications and perform all the necessary concrete, asphalt, and base work.

It becomes necessary to use open cut trench if the service line is too short for any other reasonable method or if the location is on the main line or in roadway.

The downside of using open cut trenchless is extending the length of the overall LSLR, potential road closures, and the possibility of cutting or damaging other utilities.



Figure 7.2: Visual of Open Cut

### 7.2.2.2 Trenchless -Ground Level Horizontal Boring

Another method used by the SWBNO is trenchless using ground level horizontal boring. The process includes digging a shallow pothole on both sides of line, drilling or boring as close to the existing line as possible from main to meter or opposite, attaching the existing service line to the bit and pulling back through to removing the existing line.

Ground level horizontal boring is best used for new lines or short runs under the sidewalk.



Figure 7.3: Visual of Trenchless -Ground Level Horizontal Boring

### 7.2.2.3 Trenchless -Pull-Through Method

The last method used by SWBNO is the trenchless pull-through method. The process includes digging a shallow pothole on both sides of line to expose the existing line. If there is a location on the water main this will dramatically lessen the amount of roadway needed to be removed. The cable is run through the pipe and attached to the new line. The ring is attached to the cable and the excavator, and the old line is pulled out and replaced with the new line. This method can be used on most lead line replacements. However, if the lines are too shallow the machinery could just pull it out of the ground vertically.



Figure 7.4: Visual of Trenchless -Pull Through Method

### 7.2.2.4 Post Construction Restoration

After the replacement of a lead service line, all disturbed grassy areas will be either seeded or have sod laid. The roadways will be installed back to use; they are cleaned, and any debris is removed. Water service is restored to the customer. The replacement crew will also do an exterior flush of the line, and the resident will be notified and asked to do a flush of each interior fixture and to clean their aerators.

## 7.3 Procedure for customers to flush service lines

After a lead service line replacement is performed, a doorhanger will be given to the customer

to instruct them how to flush their interior lines.

The doorhanger will instruct the customer to not consume tap water, open hot water taps, use icemaker, or use filtered water dispenser until after the flushing procedure is complete. They are to remove faucet aerators, screens, and shower heads from all cold water taps in the building. Beginning with the lowest level, they are to fully open the cold water taps throughout the building including showers, baths, and hose bibs. After all the faucets are open, they are to let the water run for at least 30 minutes. After 30 minutes, they can turn off each tap starting with the taps at the lowest level of the building or closest to the service line. Lastly, they are to clean aerators and screens of solid debris and place them back on faucets.

It is recommended that customers repeat this flushing every two weeks for three months. Water quality sampling will be available and is recommended within 3-6 months after service line replacement. After each lead service line replacement, the new material classification will be notated and updated in the inventory.

#### 7.4 Post Construction Sampling and Filter Distribution per LCRI

Per the LCRI and starting in 2027, SWBNO will be required to collect a tap sample for each customer 3-6 months after their lead service line replacement. A 6-month NSF-Standard 53 water filter pitcher must also be offered to every customer.

#### 7.5 Current Mitigation Efforts

SWBNO initiated a Pilot Pitcher Distribution Program in May of 2024 where customers can request and pick up an NSF 53 rated water filter pitcher at the SWBNO's Customer Service Lobby downtown. While the Pilot Program successfully came to a close, SWBNO plans to continue this program by distributing water filter pitchers to customers who have a lead, galvanized or unknown service line. There are also plans to add a pitcher pickup location on the West Bank and use community meetings for distribution where possible.



**We have identified a lead service line at this location on**

SWBNO-owned property

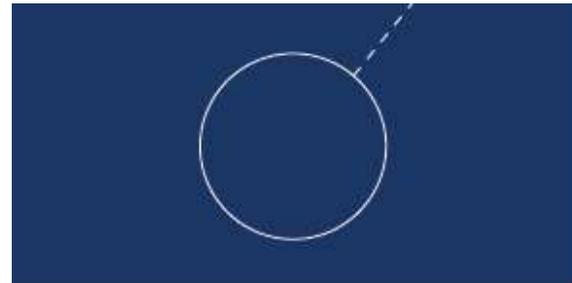
Private property



**SWBNO is committed to public health and recognizes the risk lead presents to our customers.**

- There is no detectable lead in the water leaving our treatment plants.
- However, if water passes through pipes made with lead, the metal can sometimes leach into the water.
- SWBNO uses effective corrosion control to mitigate this issue.
- We also test water samples in locations across the system to monitor the quality of the water.
- Please provide this information to anyone occupying or residing in this building.

*Last Revised: May 2024*



## Actions YOU Can Take!

**SWBNO actively works to prevent lead from getting into drinking water. Here are some recommendations that can help reduce your exposure to lead in drinking water:**

1. Use **only cold water** for drinking, cooking, and making baby formula.
2. Use a **filter** that meets NSF Standard 53.
3. When water hasn't been used for six hours or more, **run the faucet for 3-5 minutes before using** for drinking or cooking.
4. **Replace lead service lines** if located on your private property.
5. **Visit our Lead Awareness webpage** at [swbno.org/Projects/LeadAwareness](http://swbno.org/Projects/LeadAwareness) to:
  - Request a **free lead test kit** from SWBNO.
  - Request a **free water pitcher** that filters for lead from SWBNO.
  - Read our **annual SWBNO Water Quality Report** for more ideas on how to limit your exposure to lead.



**SCAN ME**

to visit our Lead Awareness Webpage.

## QUESTIONS?

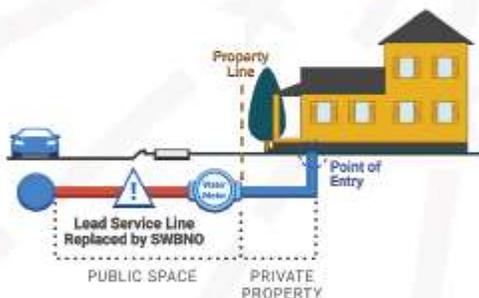
52-WATER

[customerservice@swbno.org](mailto:customerservice@swbno.org)



## FLUSH YOUR PIPES

SWBNO replaced a service line containing lead.



Our crews replaced a lead service line between the water main and your meter. This process may have dislodged lead particles into your household plumbing. Consuming lead can have negative health impacts. Flushing your interior plumbing after a service line replacement is important to prevent exposure to lead.

**See other side for flushing instructions.**

### MORE INFORMATION

[swbno.org/DrinkingWater/LeadAwareness](http://swbno.org/DrinkingWater/LeadAwareness)

**To flush your interior plumbing, follow these steps:**

1. **Run only cold water on all faucets** in your home, one at a time, for five minutes each. Start with the faucet furthest from your meter. Include bathtubs and showers.
2. **Clean your faucets' aerators** after flushing to remove any trapped lead particles.
  - Unscrew the aerator from the tip of the faucet
  - Soak it in white vinegar for five minutes
  - Gently scrub with a brush
  - Rinse and place the aerator back on your faucet
3. **Continue flushing for at least one month.** When water has not been used in a few hours, flush at one faucet for 10 minutes before using the water for drinking and cooking.

**To protect your home's water supply, you can also**

- Have a Licensed Master Plumber inspect your service line between the meter and your home for lead.
- Request a water quality test from SWBNO. Call 504-865-0420.
- Obtain an NSF-certified water filter that can remove lead.

Sewerage & Water Board of New Orleans



# Protecting Your Family from Impacts of Lead Water Lines

New Orleans' families deserve a lead-free water system. As a drinking water agency committed to public health, SWBNO recognizes the risk lead can present to our customers. There is no detectable lead in the water that leaves our treatment plants; however, lead can enter drinking water through lead pipes and fixtures in plumbing. Removing lead pipes across the community is our long-term goal.

## Steps You Can Take NOW to Protect Your Family

We have reduced the number of lead pipes on the utility-owned side of the water system where possible over the years. However, completely eliminating lead pipes across the entire community – including private property – will take years.



The good news is you can act today to protect your family by following some simple steps:

- Use only cold water for drinking, cooking, and making baby formula.
- When water hasn't been used for six hours or longer, run the faucet for three to five minutes to flush the lines before drinking or cooking with the water. Household tasks like showering or running the dishwasher can also help flush the system.
- Request a lead test kit by contacting SWBNO's Lab at (504) 865-0420.
- Use a filter that meets NSF Standard 53 as a recommended practice to help protect you and your family.
- If you have a lead service line on your property, replace it. SWBNO can coordinate to replace the public side of the lead line at the same time.
- Review the latest SWBNO Consumer Confidence Report for more ideas.

## Protection Measures in Place

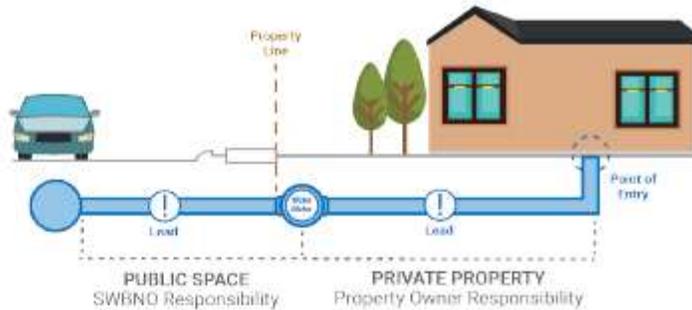
Removing lead pipes citywide is our goal, and we are investing in a multi-year program to get us there. But we have been aggressively confronting this challenge for years.



- We use corrosion control measures to minimize the tendency for lead to dissolve into water.
- We test water samples in locations across the system to ensure our water quality protection measures are effective.
- We notify customers when we identify a lead line.
- We offer lead testing for customers upon request.

## Lead Pipes and Drinking Water

Lead was commonly used in plumbing for decades, long before the serious health effects of exposure to it was known. In 1986, the federal Safe Drinking Water Act was amended to ban the use of lead in plumbing used for human consumption. Although there is no detectable lead in the water that leaves our treatment plants, we know that lead pipe exists on both the customer-owned and utility-owned side of the water system from the years before lead plumbing was banned.



*Working with customers to remove all lead lines is a priority within SWBNO's lead service line replacement program.*

## More Actions Underway to Protect Public Health

### Creating an Inventory of Lead Pipes

Parts of SWBNO's system are more than 100 years old and were installed in a time when records were not kept as they are today. Understanding where lead pipes exist in the system is the first step and we're actively developing a web-based map detailing the locations of lead service lines on both public and private property. This map will be available to customers in October 2024.

### Securing Funding To Replace Lead Lines

Removing old lead pipes across New Orleans is estimated to cost \$1.1 billion. In May 2024, the Louisiana State Bond Commission approved \$84 million for the SWBNO lead service line replacement program. Working with state, federal, and other utility partners to identify and secure even more funding solutions will continue to be a priority for this important community issue.

### Developing a Lead Service Line Replacement Plan

We're developing an in-depth plan to guide our replacement efforts in the coming years. Accessing private property to replace lead lines is essential, so we are asking our community for cooperation as we request permission.

### Raising Awareness

We're developing a robust multi-year plan for enhanced communication with our community, including creating targeted efforts to reach vulnerable populations including infants and school-aged children.



*Parts of SWBNO's system are more than 100 years old, a time when records were not kept as they are today. Understanding where lead pipes exist in the system is a first step.*

There is much work to do, but **together** we can achieve our objectives for the public health of our community!

For more information, scan QR Code:



Sewerage & Water Board of New Orleans  
625 Saint Joseph Street  
New Orleans, LA 70165

@SWBNewOrleans



(504) 529-2837

swbno.org

# Modeling Results

New Orleans, LA

September 3, 2025



# Agenda



**Inventory Status**



**Model Training &  
Results**



**Next Steps**



# Inventory Status

Dashboard Grants Resources
Grants Resources

Home Page > Upload Data

File Upload
Column Matching
Map Material Label
Review and Upload

**Review and Upload** Home Page > Upload Data

Review your answers below about your data file. If everything looks correct you can click "Save & Submit" to start the upload and anal

**Uploaded Data** Data Information

Service Line ID :	Address :	Coordinates :	Private Service Line :
SL00001	1178 West Fork Street	42.06345534717243, -87.70432485346053	Copper
SL00002	1180 West Fork Street	42.06275476904477, -87.71479740020949	Copper
SL00003	1184 West Fork Street	42.0668970667049, -87.71814538861665	Lead
SL00004	1204 West Fork Street	42.06364550334924, -87.70564120655287	Lead
SL00005	1210 West Fork Street	42.0625397428623, -87.69457607989035	Copper
SL00006	1218 West Fork Street	42.06243565811513, -87.70759266890188	Copper
SL00007	1223 West Fork Street	42.061166108510506, -87.70425306413121	Lead
SL00008	1230 West Fork Street	42.06270435524099, -87.69890155010326	Lead

Show 10 Entries

File Upload

Column Matching

Map Material Label

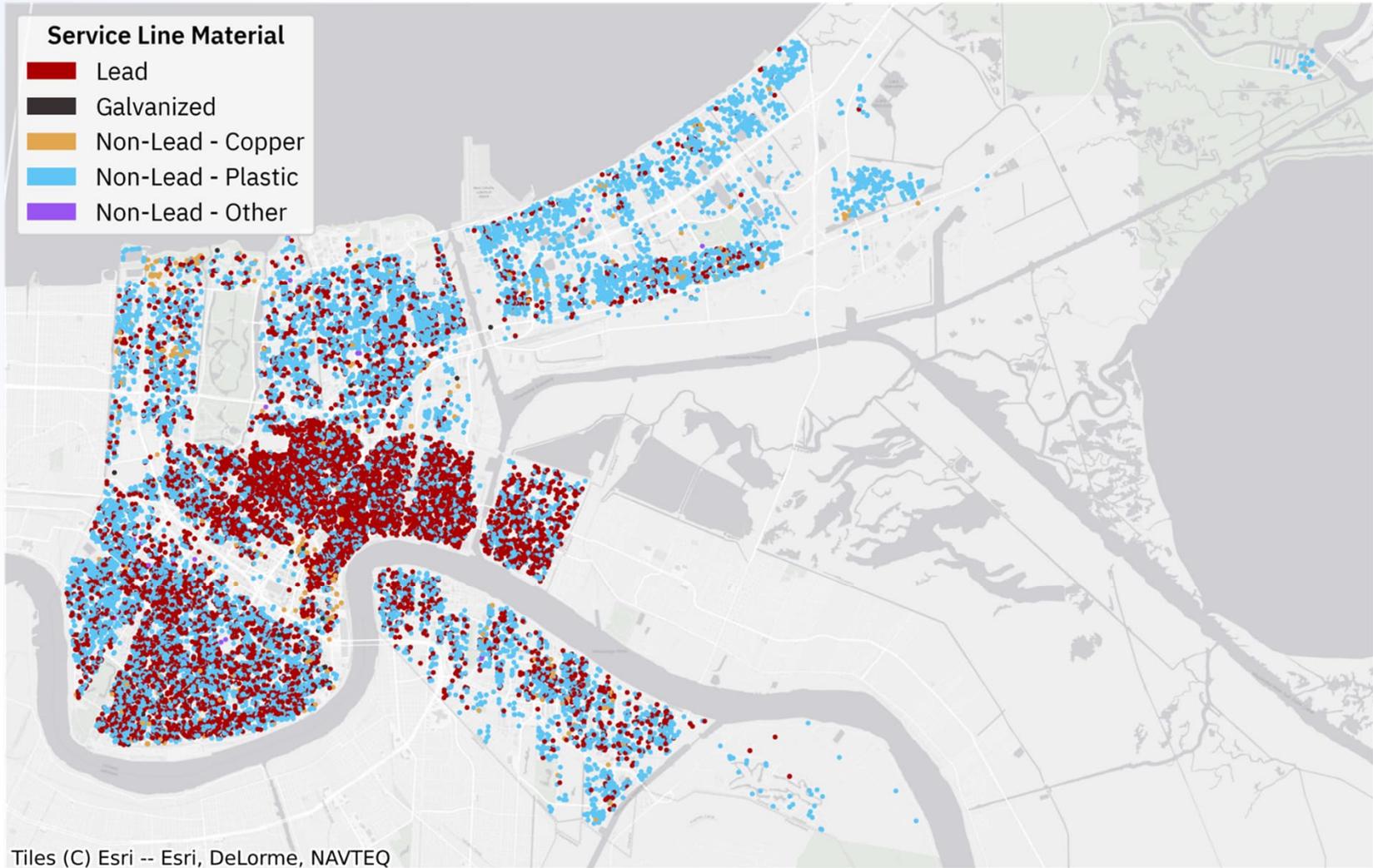
**Review and Upload**

Review your answers below about your data file. If everything looks correct you can cl

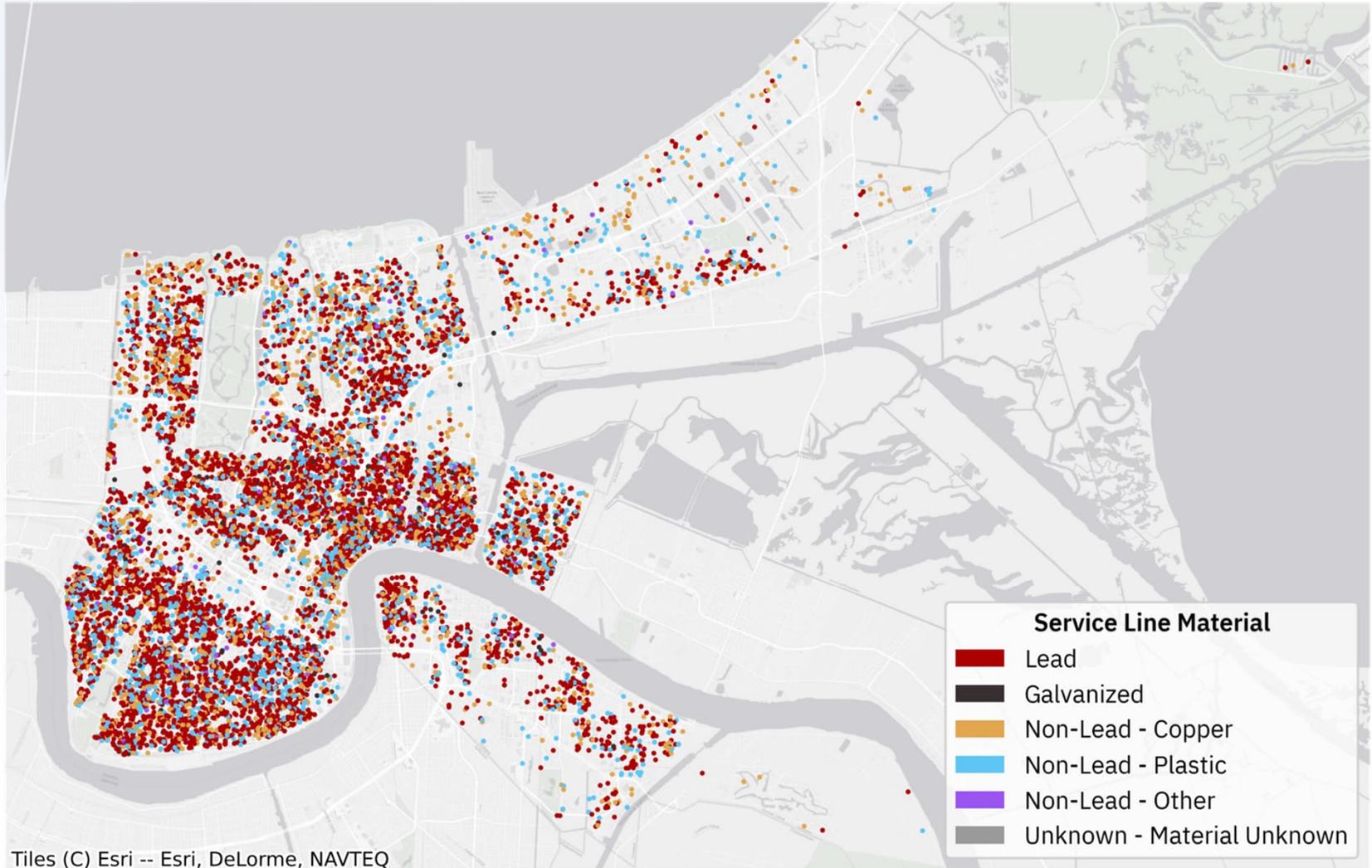
**Uploaded Data** Data Information

Service Line ID :	Address :	Coordinates :
SL00001	1178 West Fork Street	42.06345534717243, -87.70432485346053
SL00002	1180 West Fork Street	42.06275476904477, -87.71479740020949
SL00003	1184 West Fork Street	42.0668970667049, -87.71814538861665
SL00004	1204 West Fork Street	42.06364550334924, -87.70564120655287

# Public-side Verified Materials



# Private-side Verified Materials



Tiles (C) Esri -- Esri, DeLorme, NAVTEQ

# Data Sources

Service lines were enriched with approximately 20k structure year built values from a third-party provider.

Public-side model was trained on pre-lead ban service lines with:

- Field-verified material records (except Water Sampling records\*)
- Historical Lead/Non-Lead records\*

Private-side model was trained on pre-lead ban service lines with:

- Field-verified material records (except Water Sampling records)

*\*(change since first iteration)*

# A Note about Historical Lead

- We understand New Orleans may have a significant number of unrecorded historical replacements.
- The more unrecorded replacements have occurred, the more the models will **overestimate** the likelihood of an individual service line being lead.
- However, without extensive randomized field investigations, we **cannot reliably control for unrecorded replacements**.
- We believe that **training models on historical lead data is the correct choice despite this tradeoff**. Not including this data would make a poorer performing model and may underestimate the lead prevalence.

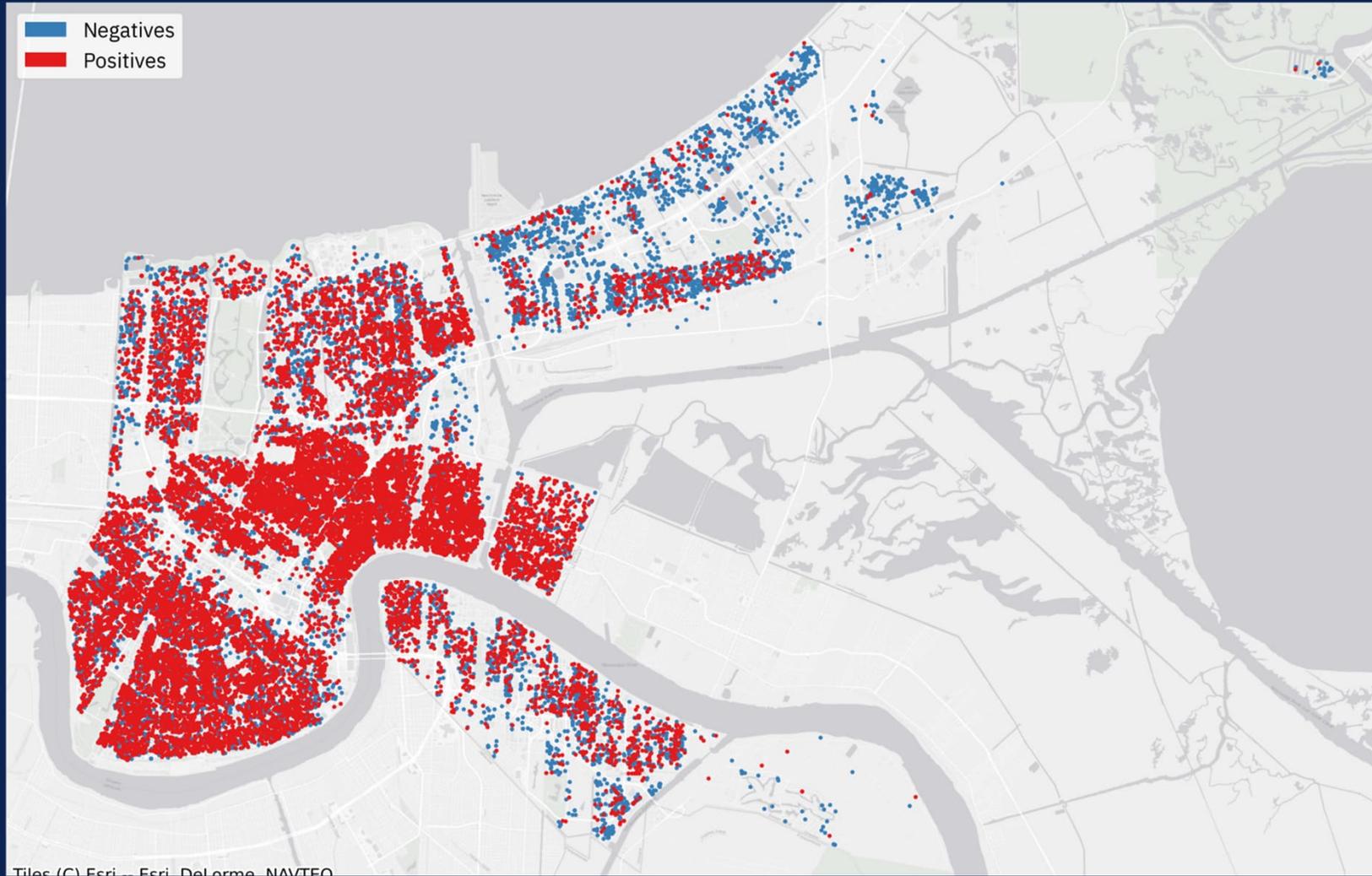
# Data Sources

Summary of all service line materials used to train the models:

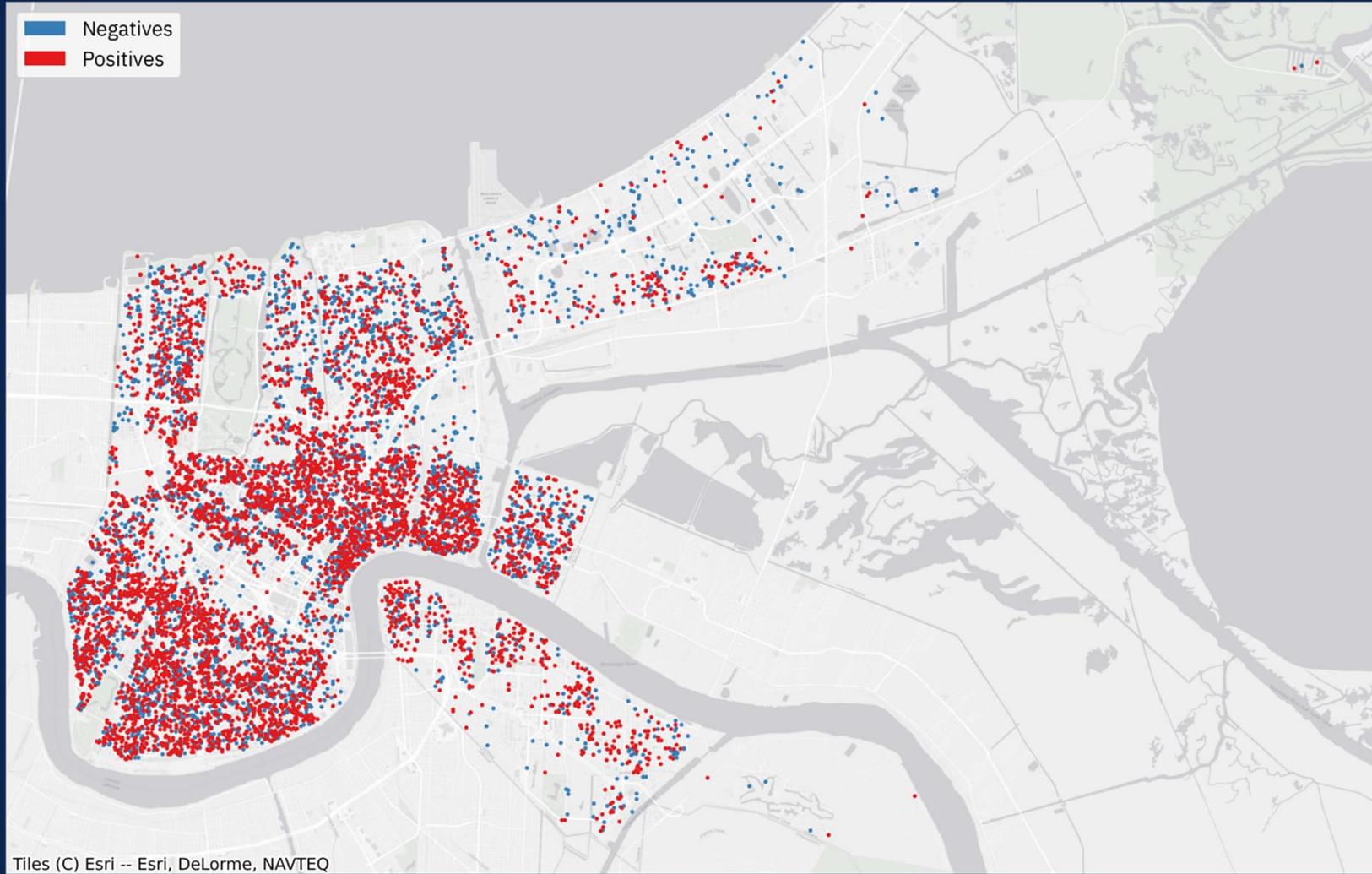
Public Side Material	Count
Non-Lead - Plastic	9,102
<i>Historical Lead</i>	<i>8,423</i>
Lead	8,421
Non-Lead - Copper	338
Galvanized	31
Non-Lead - Other	21

Private Side Material	Count
Lead	5,640
Non-Lead - Copper	1,898
Non-Lead - Plastic	1,749
Galvanized	95
Non-Lead - Other	91

# Public-side Model labels

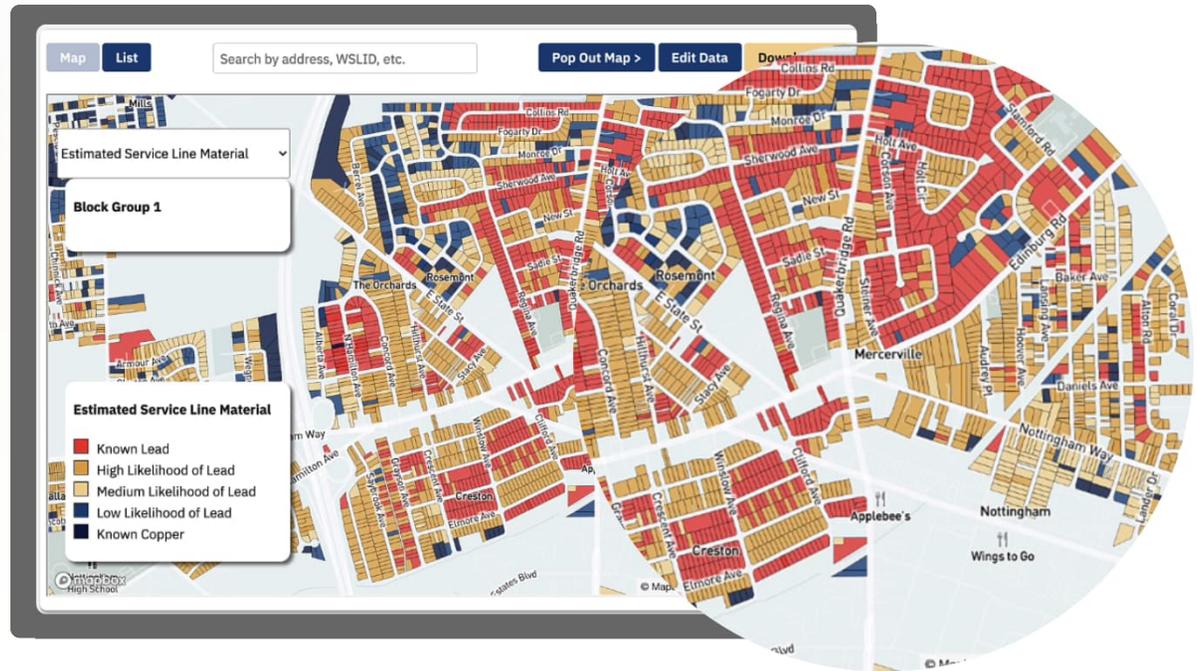


# Private-side Model labels





# Model Training & Results



# Model Training

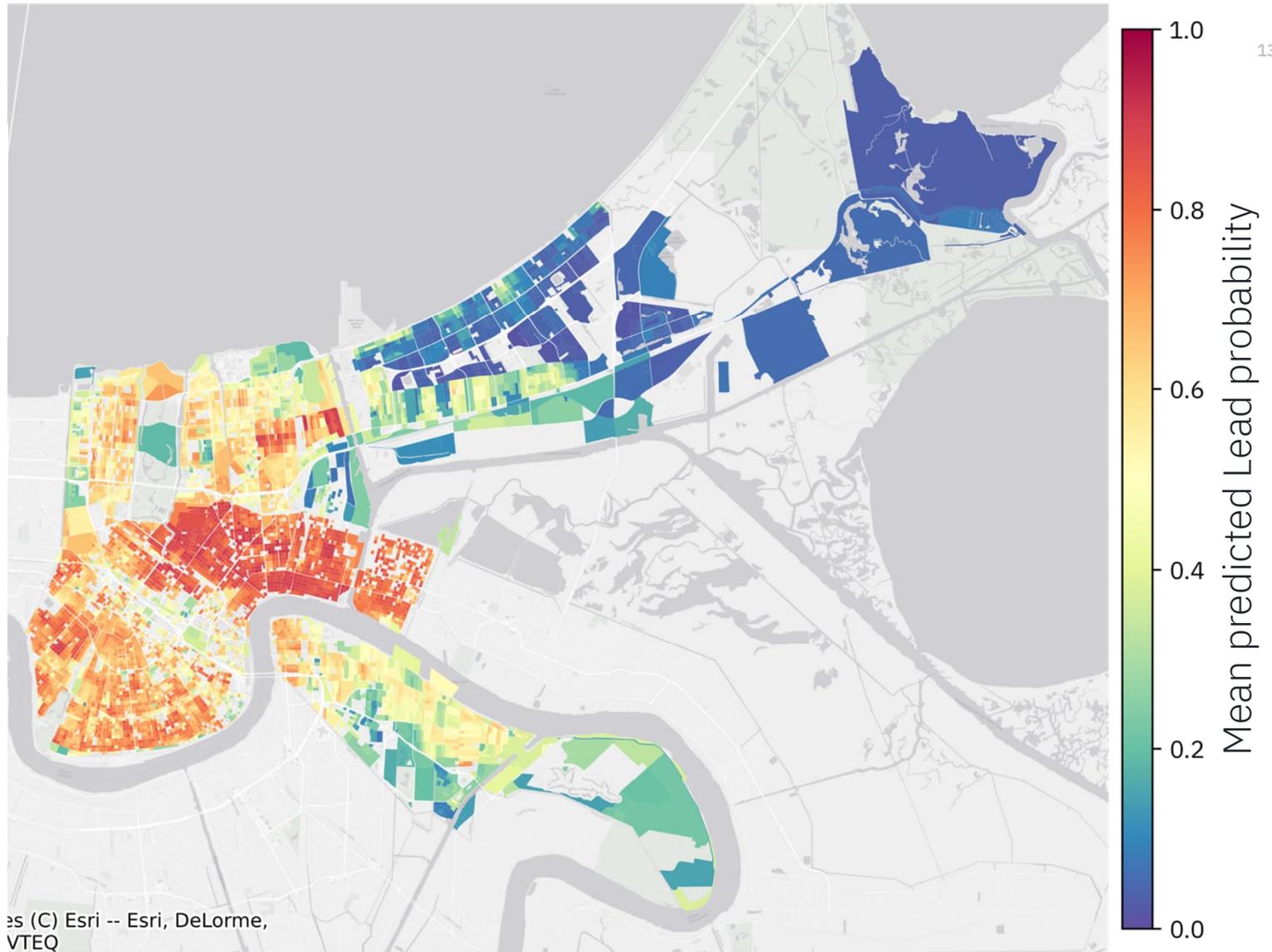
- Inventory data is enriched with parcel and demographic data (100+ features)
- Multiple model types tested
- Models evaluated using performance on unseen data
- Simpler models chosen where performance was similar

# Model Results: Public side

Only service lines with unknown public-side materials are mapped.

*Note: while this map shows results aggregated by block, model predictions are at the service-line level are available in the BC dashboard.*

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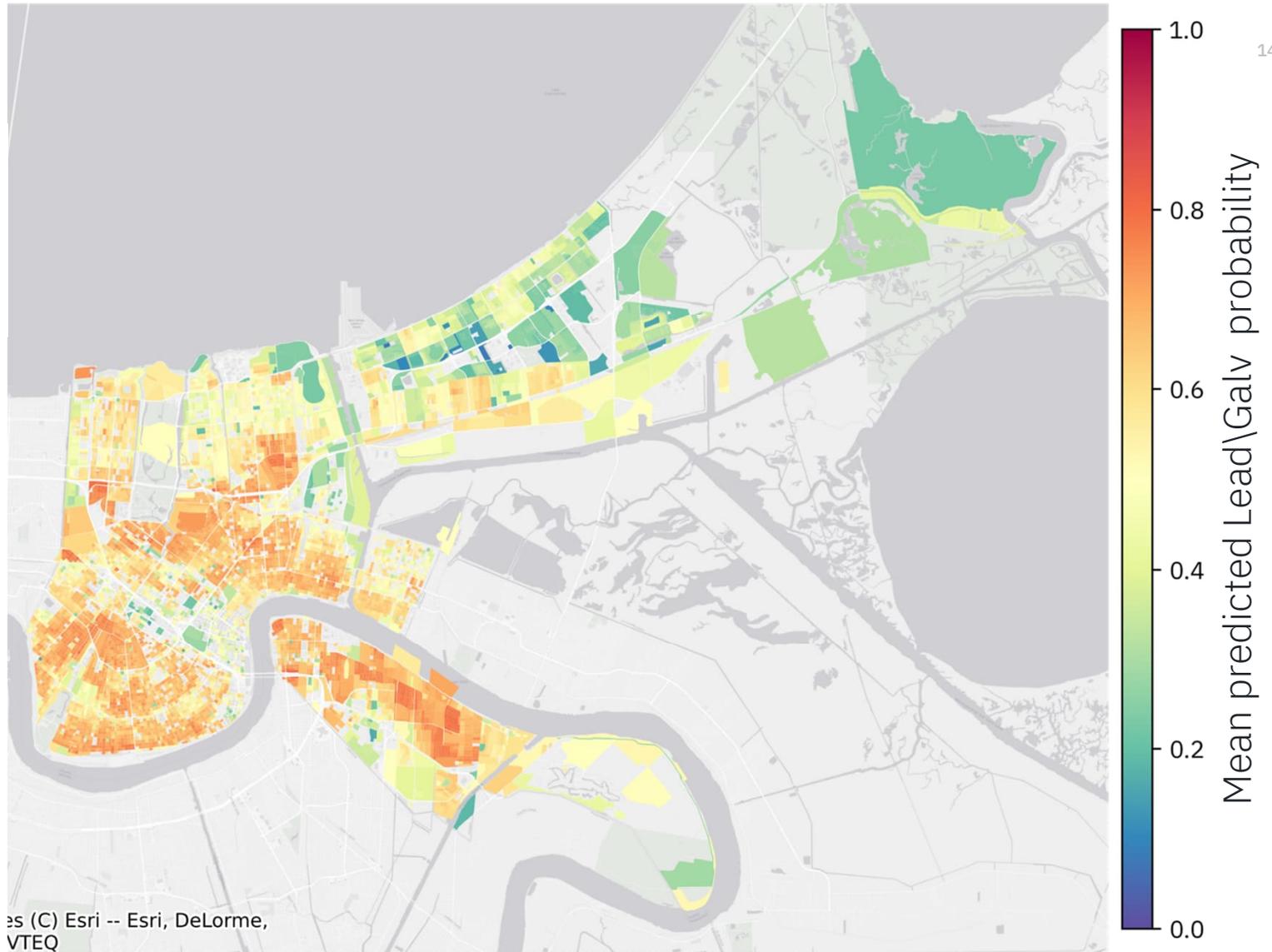


# Model Results: Private side

Only service lines with unknown private-side materials are mapped.

*Note: while this map shows results aggregated by block, model predictions are at the service-line level are available in the BC dashboard.*

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# Model Features

The most important public-side model features are:

- Sewerage & Water Board (SWB) Zone
- Neighborhood age
- Distance to nearest water main
- Distance to city center

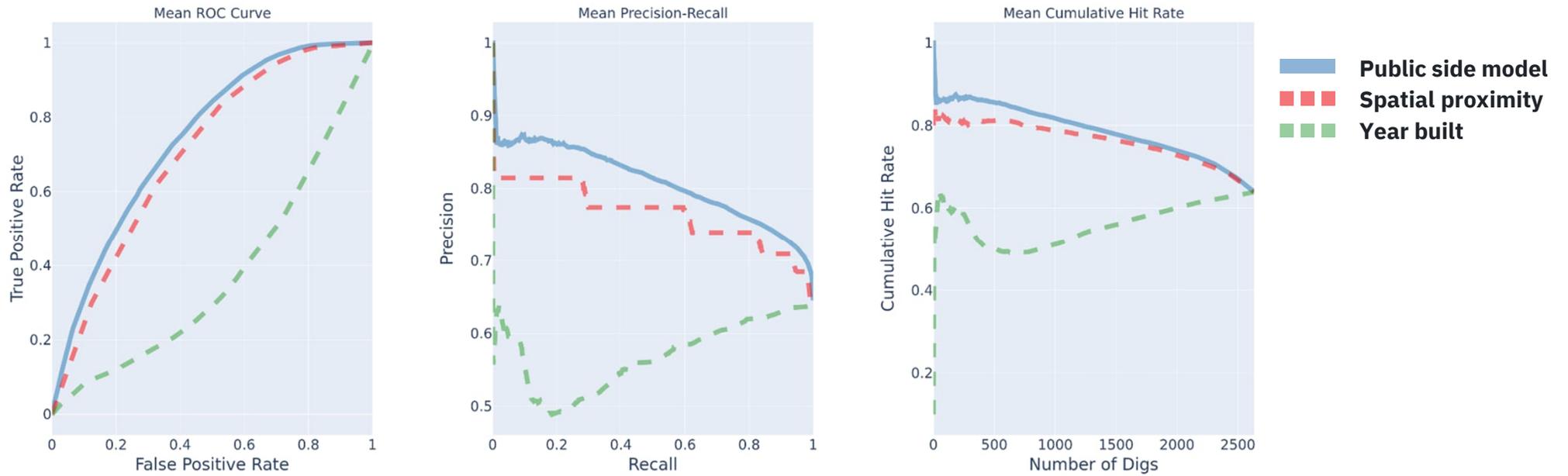
The most important public-side model features are:

- Latitude
- Parcel size
- Parcel value

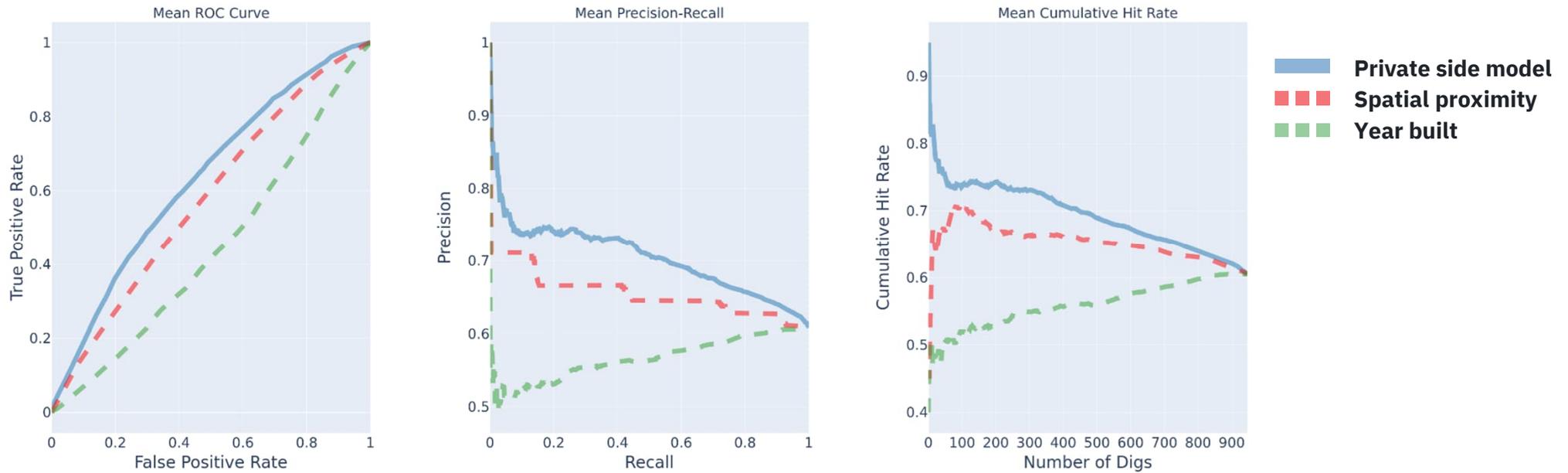
# What is a baseline model?

1. Given limited data, what would the simplest approach be?
2. We use two baseline models:
  - a. Take the average risk of the 5 nearest service lines with verified materials
  - b. Assign risk based on age of structure only (older=higher risk, newer=lower risk)
3. Any machine learning model must outperform simple baseline models, otherwise the simpler models should be used.

# Public side Model is Outperforming Baselines



# Private side Model is Outperforming Baselines



# Model Results: Key Takeaways

1. Public-side model is trained on verified and historical lead, private-side model is trained on verified lead/galvanized.
2. Models are outperforming both previous iteration models and baseline approaches.
3. Predictions are generally based on location, age, and parcel characteristics.
4. Models predict a range of probabilities, offering direction for future LSL replacement efforts.



## Next Steps

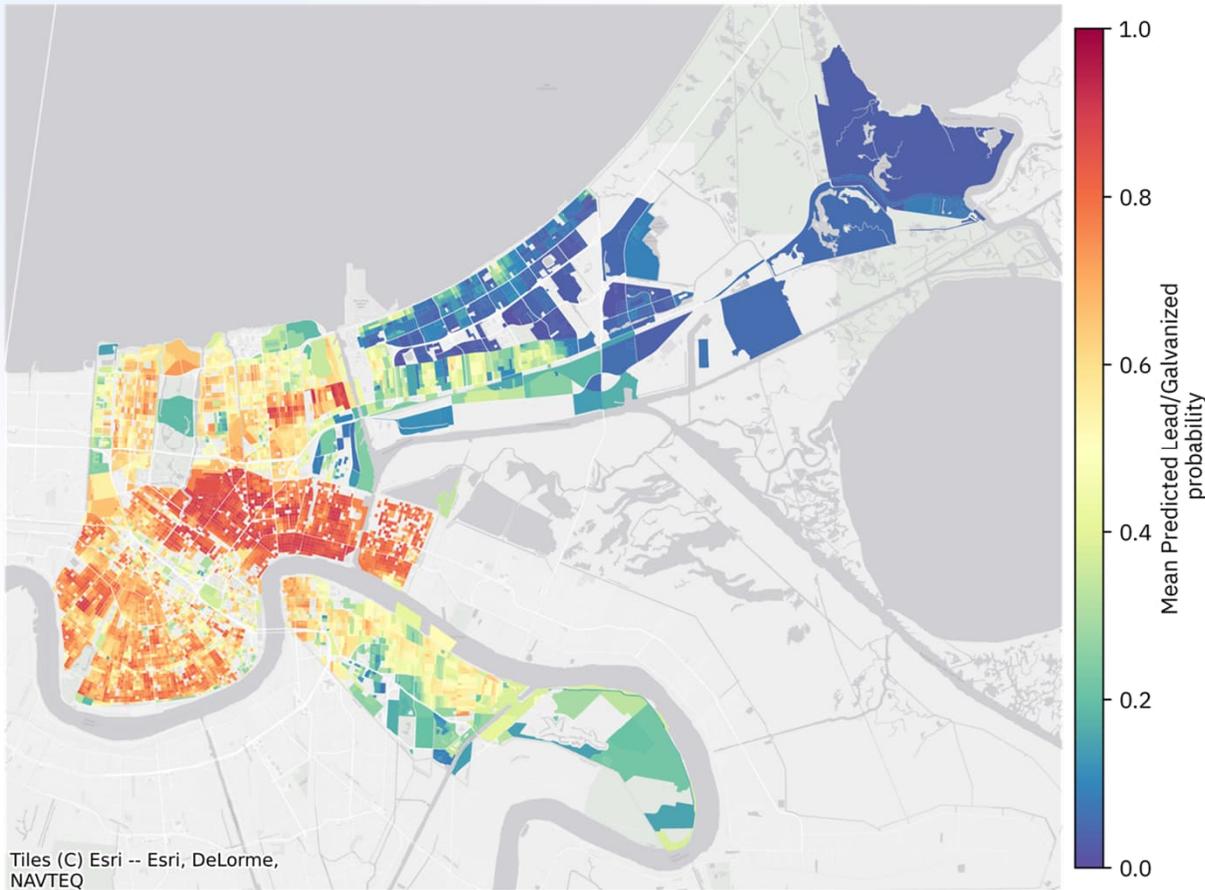
- Esri permissions
- Using predictions for lead replacement
- No material reclassification
- Model report by end of September
- Inventory development support by mid October (if needed)

# Q&A

Any questions?

# Appendix

# Model Results: Public side

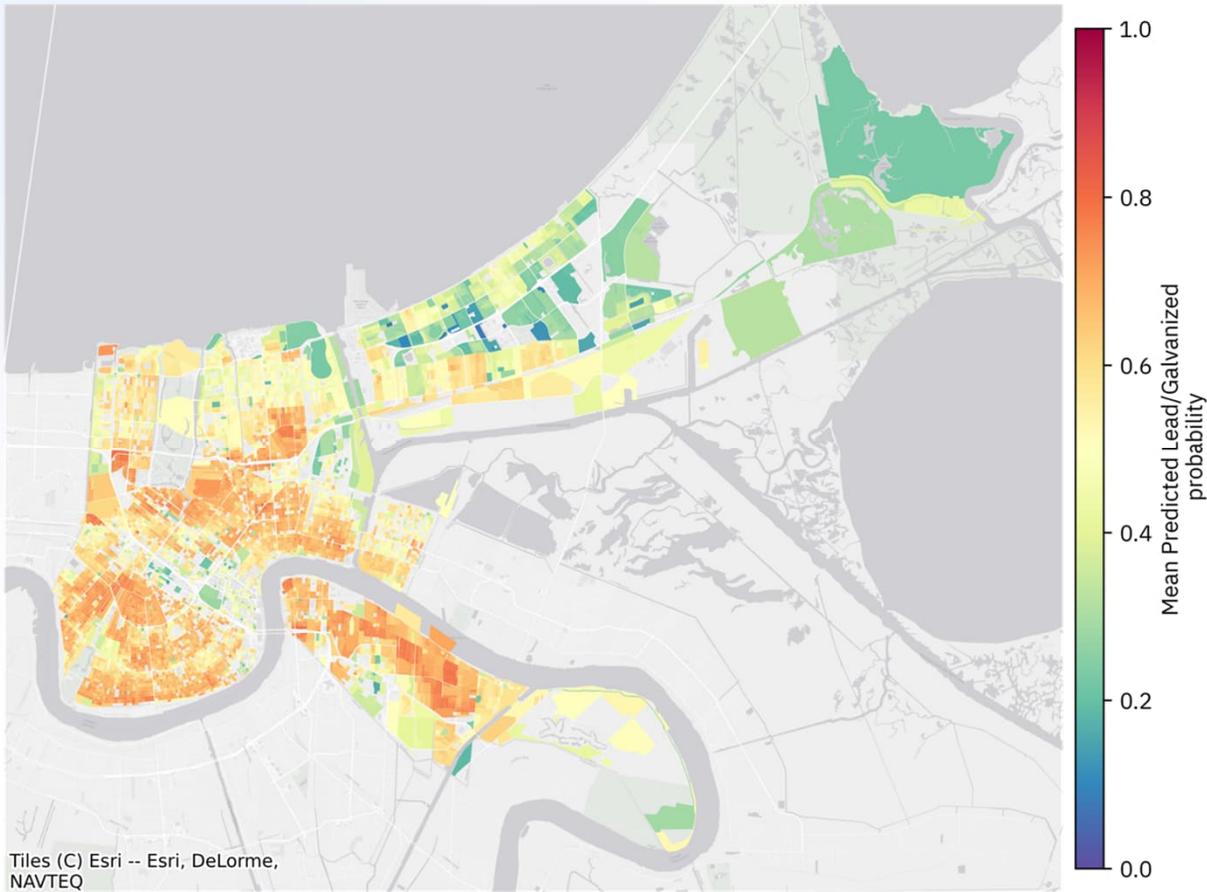


Tiles (C) Esri -- Esri, DeLorme, NAVTEQ

For lines with unknown public-side material:

Total number	93,373
Predicted number of Lead public-side materials	53,524 (57%)

# Model Results: Private side

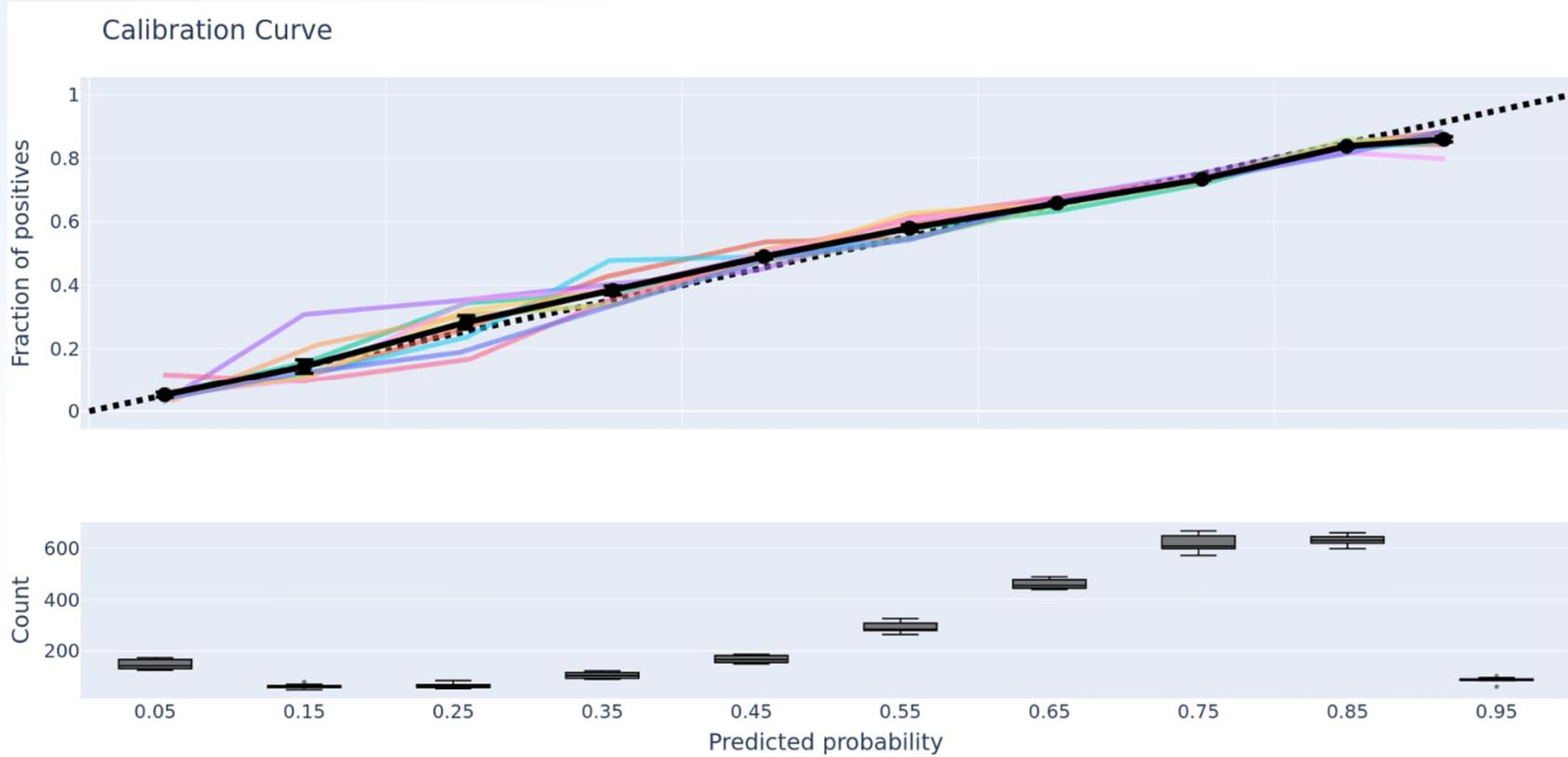


Tiles (C) Esri -- Esri, DeLorme, NAVTEQ

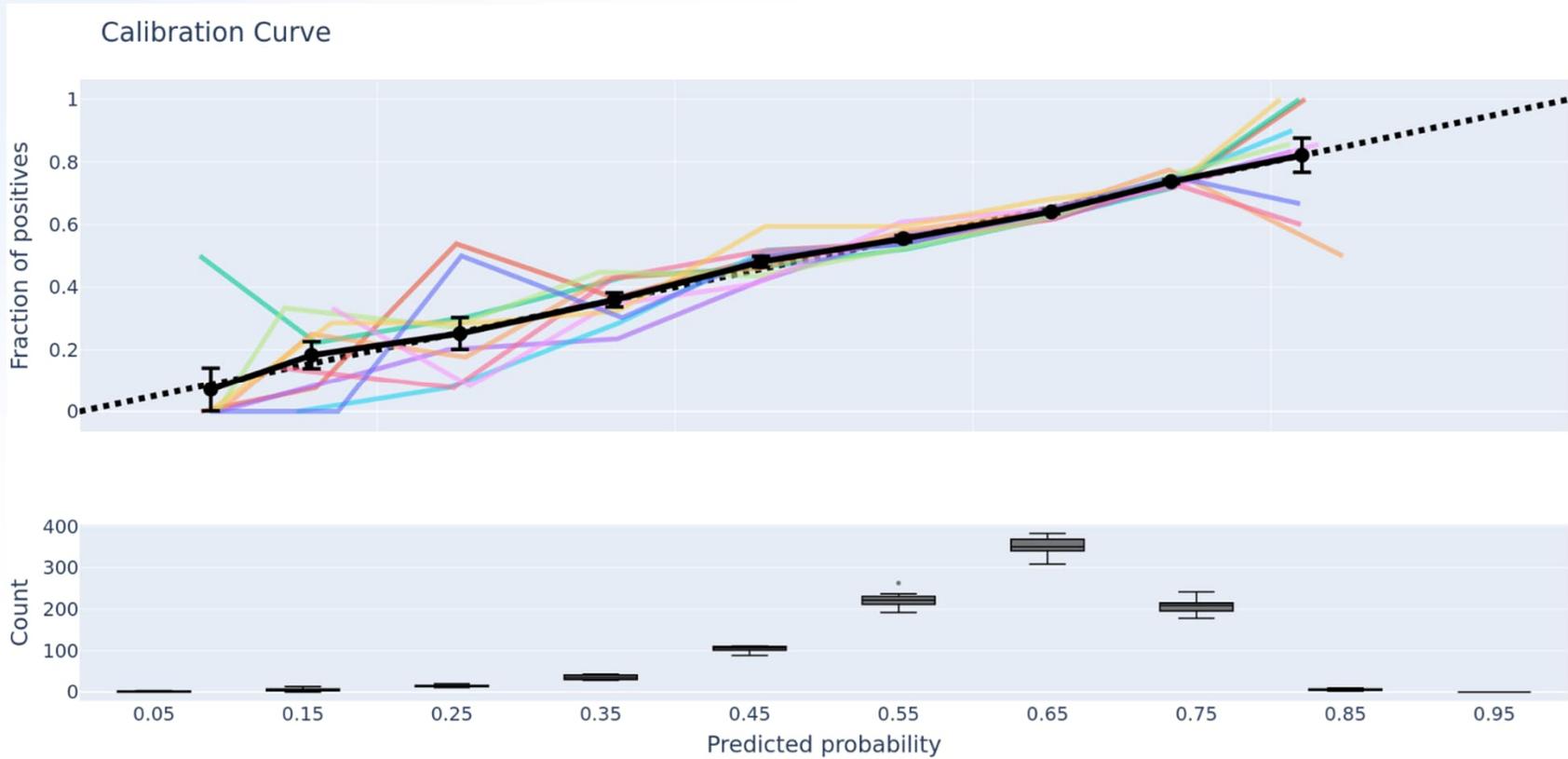
For lines with unknown private-side material:

Total number	94,548
Predicted number of Lead/Galv private-side materials	56,004 (59%)

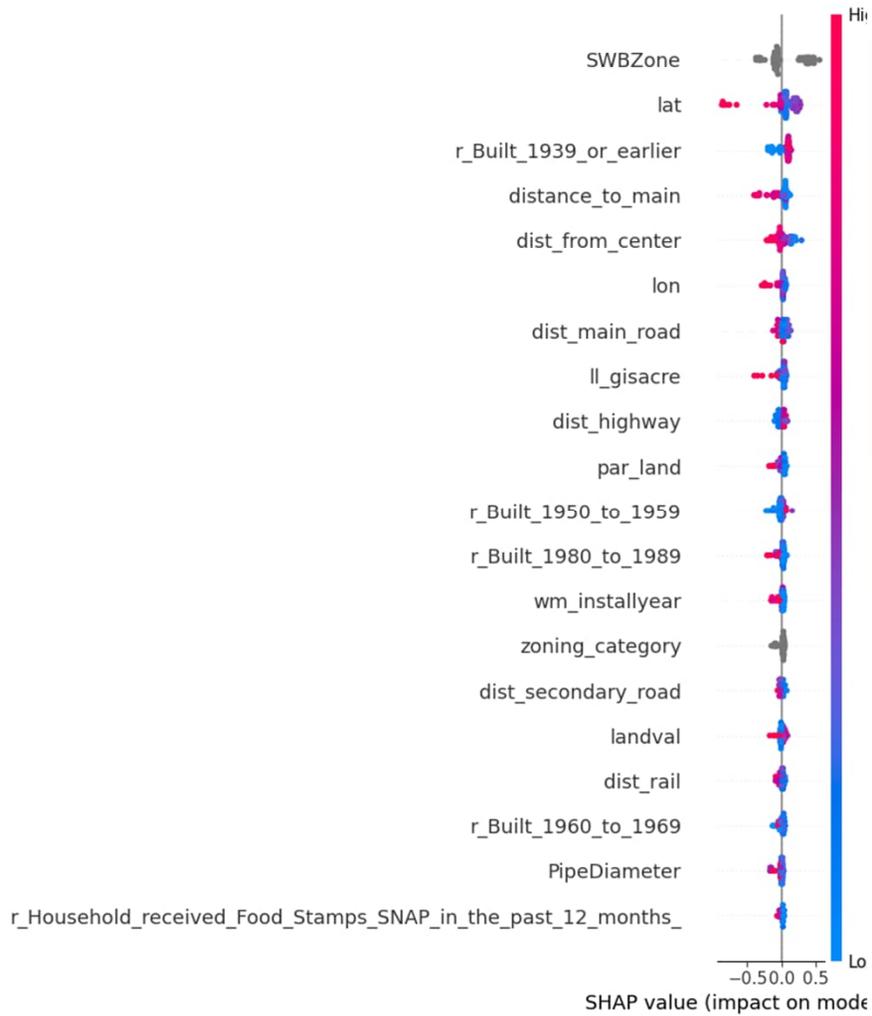
Public-side model is well-calibrated.



Private-side model is well-calibrated.



## Public-side SHAP plot



Copyright:

## Private-side SHAP plot

