

DC Water's

LEAD SERVICE LINE

**Replacement
Plan**



June 2021



On behalf of the DC Water Board of Directors, the executive leadership team, and Team Blue, it is my pleasure to present DC Water's Lead Service Line Replacement Plan, our ambitious and robust plan to remove all lead service lines in the District of Columbia by 2030.

Over the past few years, DC Water has taken significant steps to reduce lead in drinking water. These actions include monitoring for lead at the tap, controlling corrosion, replacing lead service pipes, educating our customers on the health impacts of lead, and helping them identify and remove lead sources on their property. We have unified our suite of lead pipe replacement programs under the Lead Free DC umbrella and have already made a significant impact by removing lead pipes from more than 1,000 homes, while leveraging District funding to save customers approximately \$1,000,000 in replacement costs.

Achieving the Lead Free DC vision requires a comprehensive, nuanced plan that not only improves on what we do today, but also details what would be required from us, the city, and our customers to accelerate replacement efforts.

Inside this document, you will find a listing of private lead service lines across the District, and the methods used historically and currently, to detail the scope of the challenge before us. We will also review the three primary programs utilized to remove lead service lines on both public and private property in the District, and the plan's new holistic approach that incorporates water quality and customer equity needs in the prioritization of lead service line replacements under Lead Free DC. This approach prioritizes lead replacements for vulnerable populations most impacted by lead exposure, and communities that have historically been underserved and/or experienced disparate and poor health outcomes when compared against other parts of the city.

Identifying funding for this effort is a major component of Lead Free DC. The plan shares the current cost estimates, explains what DC Water's current funding level will cover, and explores additional funding opportunities to replace the remaining lead service lines in the ground today.

Providing high quality water and reliable sanitation services to our customers day in and day out is our fundamental mission, but our duty goes further than that. We take care of customers, protect the environment and maintain infrastructure that keeps this city thriving. Water connects us all and the importance of safe, clean water cannot be overstated.



David L. Gadis
CEO and General Manager

INTRODUCTION

Malleable lead pipe was once the preferred conduit for connecting new homes to the cast iron water mains in the streets of the District of Columbia and many other cities across the United States and around the world. We know now the threat lead poses to our health and lead pipes have not been used for water service lines since 1988, but many still remain in service and their legacy is a persistent challenge for municipalities and water utilities.

DC Water estimates the District of Columbia has more than 28,000 service lines with lead pipe. DC Water launched the Lead Free DC (LFDC) initiative in 2019 to accelerate the replacement of those lead service lines (LSLs), and to align DC Water’s replacement programs to implement new District law. DC Water has now developed a comprehensive strategy, outlined in this plan, to achieve those goals and remove all lead service lines by 2030.

Inside this document, you will find an accounting of our lead service line inventory and the methods used historically and currently to define the scope of the challenge before us. This plan also describes the three primary programs utilized to remove lead service lines on both public and private property in the District, and the plan’s new holistic approach that incorporates water quality and customer equity needs in the prioritization of LSL replacements under Lead Free DC. This approach prioritizes lead replacements for vulnerable populations most impacted by lead exposure, and communities that are historically underserved and experience disproportionately poorer health outcomes compared with other parts of the city.

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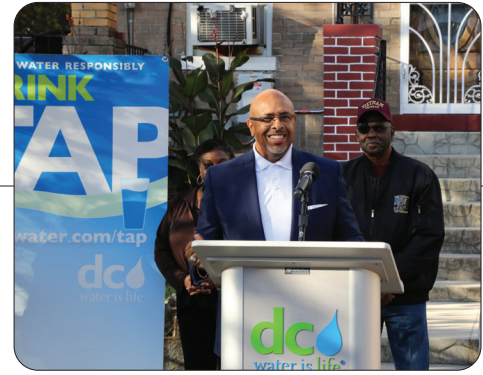
Through this plan, DC Water is also recommending a host of legislative and outreach initiatives necessary to accomplish the lead service line replacement goal by 2030. The plan is aggressive and requires helping hands from many stakeholders including the District of Columbia and related agencies, the Federal government, residents and property owners, advocates, and community leaders.

Finally, we will share the timetable for developing performance and risk metrics to keep the program on track and meet the 2030 goal.



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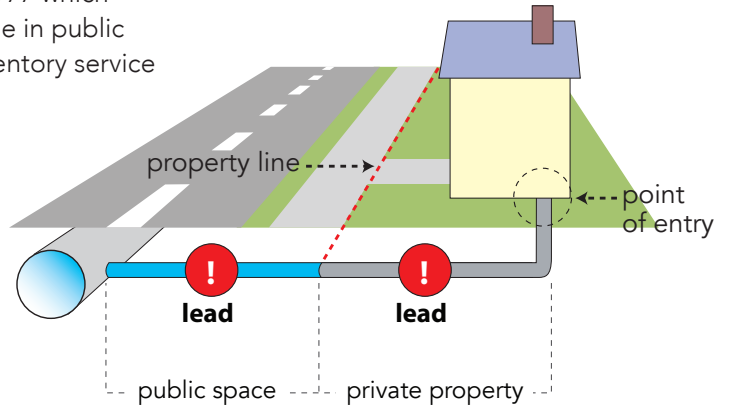


LEAD SERVICE LINE INVENTORY

The water service line is the pipe that connects the public water supply, typically in the street, to a building. The property owner owns the full service line; however, the District enacted DC Law 1-98 in 1977 which required DC Water to maintain the portion of the service line in public space. This separation generated a business process to inventory service lines into two segments—"public" and "private."

Service Line Material Data

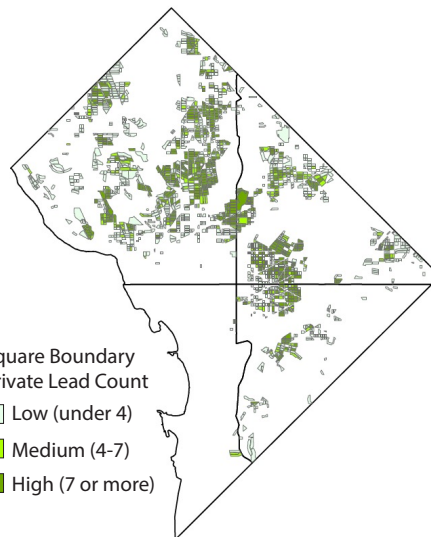
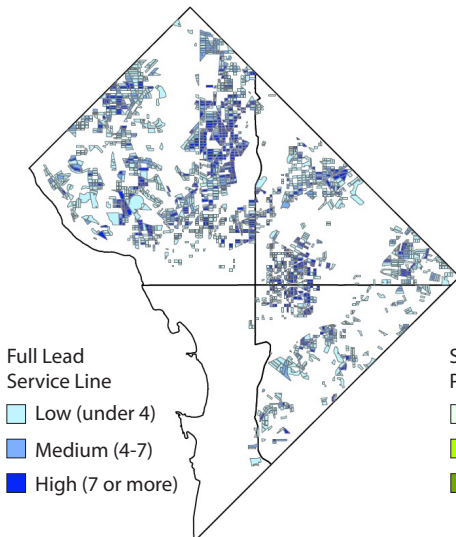
The valve between the service line and the water main is called a "tap." Beginning in the early 1900s, developers and DC Water would document the location of the tap, and sometimes pipe material, on a "tap card." In the late 1980s, DC Water initiated a study to identify sources of lead in the District's drinking water to comply with the Environmental Protection Agency's Lead and Copper Rule. The study evaluated existing service line data, plumbers' records and practices, home build dates, and other information to identify known and likely locations of lead service lines. This research, combined with the tap card and other engineering project data, comprise DC Water's historic service line data. Since the early 2000s, DC Water has documented the service line materials when replacing, repairing, or observing service lines. This practice provides more accurate material data. We have found some historic data inaccurate through these construction and repair activities. Possible reasons for the inaccuracies could be incorrect material recorded on the tap card, such as cases where the meter setter pipe was recorded instead of the service line, data entry errors, past research estimates, and undocumented service line replacements. The current inventory is roughly 50% historic data and 50% current information based on updated records. Several services do not have pipe material information and therefore need to be reconciled as part of the LFDC initiative to ensure no lead service lines remain.



Full Lead Service Lines

Private Side-Only Lead Service Lines

Total Number of Lead Service Lines in Washington, DC



Pipe Material	Number of Service Lines
Public and Private Lead	10,400
Private Side-Only Lead	11,200
Unknown	14,700
Non-lead	101,400



Identifying Pipe Material for Service Lines Without Data

To replace all lead service lines by 2030, DC Water must also identify the pipe material of all water service connections. DC Water has identified the pipe material for many service lines from maintenance operation and customer data over the past few years. As a part of the LFDC plan, we will accelerate this effort in the near term to feed into the replacement project planning process.

DC Water will also research past developer permit records for blocks of service lines with unknown pipe material and past maintenance operation data for those individual service line connections with unknown pipe material that have maintenance records.

DC Water collects the pipe material of the pipe entering the building through our water quality lead testing programs. From 2017 through 2019, we identified point-of-entry (POE) pipe material from 650 homes, which helped to either confirm lower-confidence data or identified the pipe material was lead. We will bolster this effort in 2021 with outreach to all daycares, private schools, and residential homes in areas of older developments (homes built prior to 1960) where the likelihood of finding a lead service line is greater. Our outreach will utilize the Area Deprivation Index (ADI) to prioritize, along with likelihood of lead service line presence. Additional outreach to all residential buildings without service line material data will occur in summer 2022. Commercial building outreach will follow the residential efforts, along with the anticipated EPA Lead and Copper Rule notification requirements.

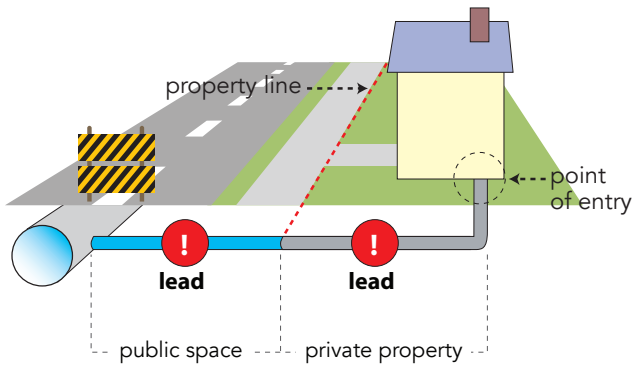
DC Water will also utilize water testing to identify the presence of lead pipe. If a customer cannot access the point-of-entry pipe, we will offer a special water test designed to indicate if a service line has lead pipe. DC Water tested 244 homes between 2017 and 2019 and determined 125 as having lead pipe.

Activity	Number of Service Lines with Unknown Pipe Material Reviewed	Timeline
Desktop Review		
Developer permit records	4,000	FY21-22
Tap records	1,000	FY21-22
Water main installation	300	FY21-22
Customer Provided		
Point-of-entry pipe material	1,000	FY21-23
Water quality testing	500	FY21-24
Operational Maintenance and Planned Construction Work	7,900	FY21-30

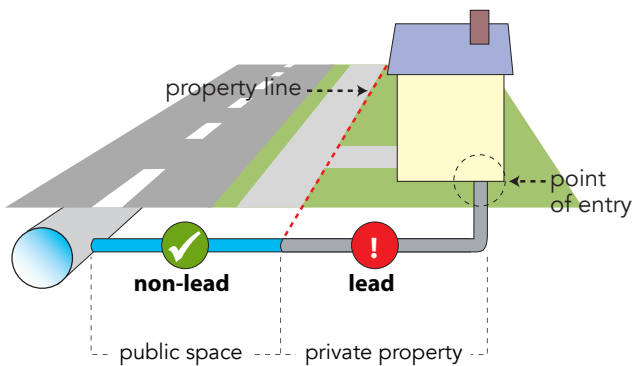


LEAD SERVICE LINE REPLACEMENT

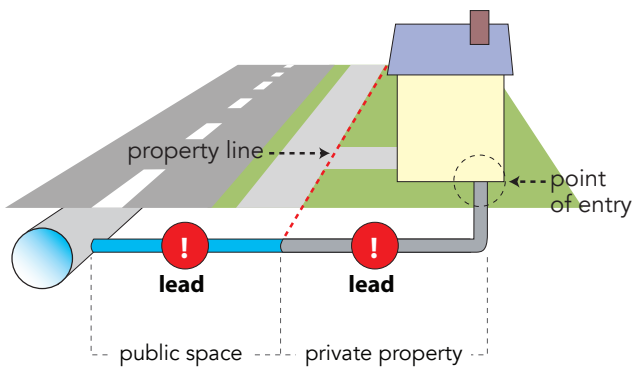
The Lead Free DC initiative currently has three programs to facilitate lead service line replacements, two of which are partially funded by the District:



- **CIPERR (Capital Improvement Project and Emergency Repair Replacement)** - DC Water-initiated replacements during planned capital improvement work like water main replacements and emergency repairs. DC Water pays for 100% of public-side costs. The District pays for 100% of private-side replacement costs.



- **LPRAP (Lead Pipe Replacement Assistance Program)** - Customer-initiated replacements where only the private-side is lead. DC Water co-administers the program with the District Department of Energy and the Environment. The District pays for 50-100% of private-side replacement costs.



- **VFRP (Voluntary Full Replacement Program)** - Customer-initiated replacements where both the public-side and private-side are lead. DC Water pays for 100% of public-side costs. The property owner pays for 100% of private-side replacement costs. DC Water recommends expanding District assistance to the VFRP, similar to LPRAP (see Section IV: Legislative Recommendations).

DC Water's capital improvement plan (CIP) for water main replacement work is estimated to address 20% of known lead service lines by 2030. DC Water's current funding level for this work is \$632 million. DC Water estimates that the remaining 80% of lead service lines will be removed on a block-by-block basis and through established customer-initiated programs.

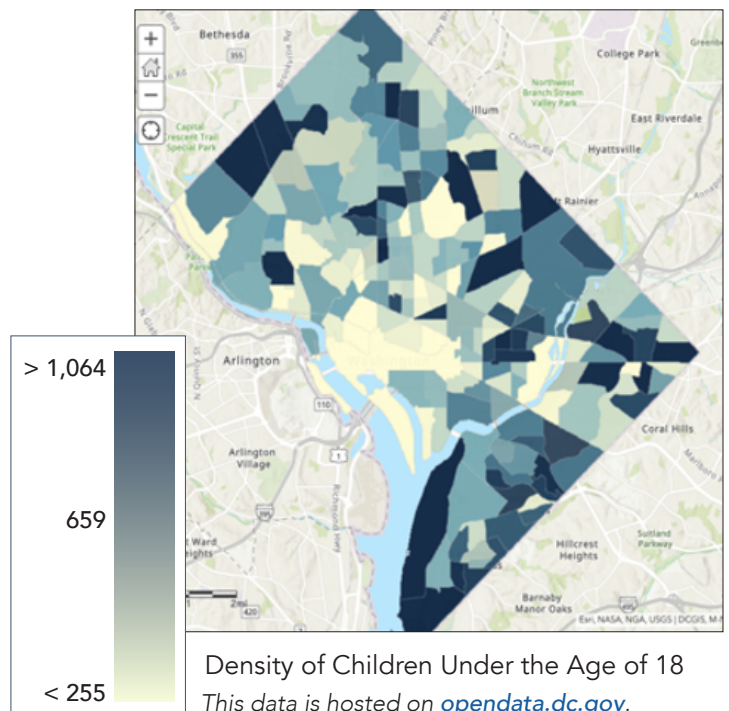
Lead Service Line Replacement Planning and Prioritization

To tackle the 80% of lead service lines not addressed by the current approved CIP, DC Water developed a prioritization model that uses service line inventory, water main condition data, water quality data, vulnerable populations, and socioeconomic data to prioritize future lead service line replacement projects.

Vulnerable Populations

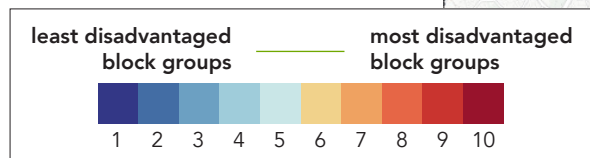
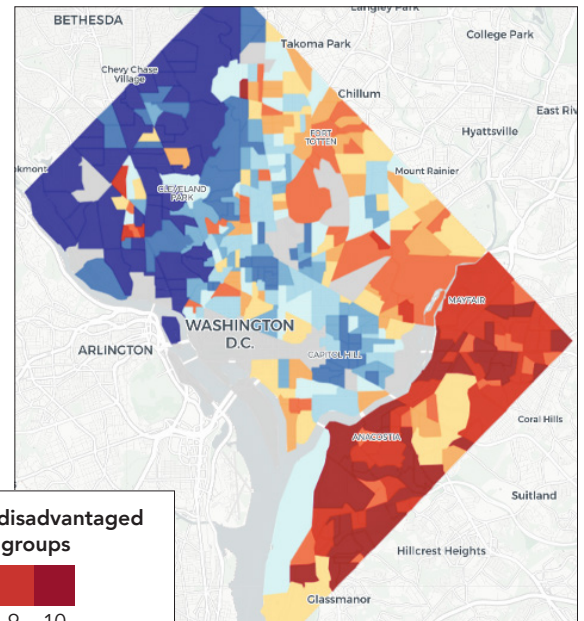
Young children are most vulnerable to lead’s effects. Prior to age six, young children’s brains and central nervous systems are still forming and are easily susceptible to damage. For an adult to suffer significant health effects, exposure to lead would have to be sustained and more intense. Most adults who are affected by lead have been exposed in an occupational setting, such as working as a house painter or in a battery recycling plant. Pregnant women are also at special risk to lead exposure as the lead they absorb crosses the placenta and enters the fetus. Therefore, the vulnerable populations considered for prioritizing lead service line replacements are children and pregnant women.

DC Water’s prioritization model uses the US Census American Community Survey data (2013-2017) of children under 18. The Census data of children under 5 does not provide sufficient variation across the District. The children under 18 data were considered representative of where families live in the District and therefore covering the census tracts most at risk to lead exposure. Licensed daycare facilities are also allocated a priority score.



Area Deprivation Index

The Area Deprivation Index (ADI) is a score based on 17 socioeconomic and demographic factors, the most significant being poverty level, income, and education. The ADI is based on data from the 2014-2018 US Census. An index is calculated at the neighborhood level. The table below shows the factors and coefficients used to calculate the indices. The greater the absolute value of the coefficient the more impact on the score. A negative coefficient lowers the score (less deprived) and a positive coefficient increases the score (more deprived). Additional information about the ADI derivation is provided on the website neighborhoodatlas.medicine.wisc.edu/.



#	Census Block Group Components	Factor Score Coefficients
1	Median family income	-0.0977
2	Percent aged ≥ 25 years with greater/equal to a high school	-0.0970
3	Percent of employed persons ≥16 years of age in white-collar occupations	-0.0874
4	Median gross rent	-0.0781
5	Median monthly mortgage	-0.0770
6	Median home value	-0.0688
7	Percent owner-occupied housing units (home ownership rate)	-0.0615
8	Percent of population below 150% of the poverty threshold	0.1037
9	Percent of families below the poverty level	0.0977
10	Income disparity†	0.0936
11	Percent of occupied housing units without a telephone	0.0877
12	Percent of the block group's population aged ≥ 25 years with < 9 years of education	0.0849
13	Percent of civilian labor force population ≥ 16 years of age unemployed (unemployment rate)	0.0806
14	Percent of single-parent households with children < 18 years of age	0.0719
15	Percent of occupied housing units without a motor vehicle	0.0694
16	Percent of occupied housing units with more than one person per room (crowding)	0.0556
17	Percent of occupied housing units without complete plumbing	0.051



Service Line Material

DC Water’s inventory of service line materials for both public and private sides was categorized by lead, nonlead, and no data (unknown). The model scores for the presence of lead on the public side and presence on the private side.

Water Main Failure

Water mains in the District fail in two primary modes—the pipe breaking, and the interior pipe wall reacting with the water, depleting chlorine residual and releasing

iron and other pipe scale into the flowing water. Both impact the quality of water delivered to the customers. Every water main break poses a risk of impacting drinking water quality. Therefore, any planned water main replacement selection incorporates main break frequency into the planning process. The main break frequency weight is low for this Lead Service Replacement (LSR) Planning Model, which will prioritize these blocks with all other factors equal, but not ahead of the other higher lead-related risk factors such as vulnerable populations.

Iron and Chlorine Concentrations

Unlined cast iron mains also pose a water quality risk because the iron readily reacts with the chlorine, lowering microbial protection. Therefore, using iron and chlorine concentrations from water samples collected throughout the District categorizes the

at-risk water mains into the group requiring water main replacement, compared to those water mains that can undergo service line replacements only.

Lead Service Line Replacement Planning Model Factors

Category	Weight	Negligible = 1	Very Low = 2	Low = 3	Moderate Low = 4	Moderate = 5	Moderate High = 6	High = 7	Very High = 8	Extreme = 10
Health/Social Equity										
Area Deprivation Index (ADI)	25%	All other blocks segments in a census block group with an ADI score of ≤2		All block segments in a census block group with an ADI score of 3 or 4		All block segments in a census block group with an ADI score of 5 or 6		All blocks segments in a census block group with an ADI score of 7 or 8		All block segments in a census block group with an ADI score of 9 or 10
Vulnerable Populations										
Children Under 18	10%	All other block segments in a census tract with ≤400 children under 18		All block segments in a census tract with 400 to ≤800 children under 18		All block segments in a census tract with 800 to ≤1200 children under 18		All block segments in a census tract with 1200 to ≤1600 children under 18		All block segments in a census tract with >1600 children under 18
Licensed Childcare Facility	15%	All other block segments								Any block segment within 200 ft of a licensed childcare facility
Physical Condition										
Water Main Failures	5%	All other block segments	Block segments with 1 to 3 historic failures			Block segments with 4 or 5 historic failures				Block segments with >5 historic failures
Performance										
Iron Concentration	14%	All other block segments	Block segments within 300 ft of a sample site with iron content of <.4 mg/L		Block segments within 300 ft of a sample site with iron content of ≥.4 mg/L and <.7		Block segments within 300 ft of a sample site with iron content of ≥.7 mg/L and <1		Block segments within 300 ft of a sample site with iron content of ≥1 mg/L and <2	Block segment within 300 ft of an automatic flushing unit OR within 300 feet of a sample site with iron content >2
Chlorine Concentration	5%	All other block segments	Block segments within 300 ft of a sample site with chlorine residual of ≥1.75 mg/L			Block segments within 300 ft of a sample site with chlorine residual ≥1 and <1.75				Block segment within 300 ft of an automatic flushing unit OR within 300 ft of a sample site with chlorine residual <1
Service Line Material*	27%	All other block segments	Block segments with a service material score of ≤2 per 100 ft of road	Block segments with a service material score of >2 and ≤3 per 100 ft of road	Block segments with a service material score of >3 and ≤4 per 100 ft of road	Block segments with a service material score of >4 and ≤5 per 100 ft of road	Block segments with a service material score of >6 and ≤7 per 100 ft of road	Block segments with a service material score of >3 and ≤7 per 100 ft of road	Block segments with a service material score of >7 and ≤8 per 100 ft of road (mostly private side lead services)	Block segments with a service material score of >8 per 100 ft of road

*Service material score = public side lead (7 present; 0 absent) + private side lead (3 present, 0 absent).

The ADI is measured at the census block group level. The density of children under 18 is measured at the census tract level. For more information about census block groups and census tracts visit www2.census.gov/geo/pdfs/reference/GARM/Ch11GARM.pdf.



The model calculates a score for each block according to the scores and weights shown in the prioritization table “Lead Service Line Replacement Planning Model Factors” above. The scored blocks are categorized into one of three main project groups based on number of public side lead service lines and water main condition. The blocks are prioritized for construction execution according to their block scores (high to low) within each project group. Today, we go block-by-block primarily targeting old water mains, and we also replace lead service lines when we find them. To ramp up our replacement rate to meet our 2030 goal, we will go block-by-block according to a prioritized implementation plan targeting lead service lines. The implementation plan is prioritized by water quality and equity.

Project Groups for Lead Service Line Replacement Methodology

Project Group	Model Criteria	Current LSR Program*	Full LSRs**	Private Side-Only	Total
By Block: LSLs with Water Main Replacement	Public side LSLs > 3 and water main condition is poor	CIPERR	4,501	1,590	6,091
By Block: LSLs	Public side LSLs > 3 and water main condition is not poor	CIPERR	7,441	385	7,826
By Premise: LSL	Public side LSLs ≤ 3	VFRP and LPRAP	5,000	9,058	14,058
Totals			16,942	11,033	27,975

*CIPERR = Capitol Improvement Project and Emergency Repair Replacement; VFRP = Voluntary Full Replacement Program; and LPRAP= Lead Pipe Replacement Assistance Program
 **Full LSRs are those with lead pipe on the public side plus half the service lines that do not have pipe material data (Unknowns).

The execution of the replacement work is separated into four phases between Fiscal Years 2021-2030, which is determined by the model’s prioritization and project group (see table below). Some blocks with lead service lines also have water mains that need to be replaced. These projects require 3-4 years to design and complete construction; therefore, they do not start until Phase 3. Conversely, blocks planned for lead service line-only do not require significant design so they will start in Phase 2. Phase 4 will also capture the unknown service lines not already included in block projects. For high-risk homes, such as those with pregnant women and children under six, they will be addressed individually at the time of notification. Currently, much of the work is unfunded; therefore, the completion year will increase if funding is not provided by the beginning of Fiscal Year 2022. The appendix contains maps illustrating the planned location of replacements for each fiscal year.

Timeline of Lead Service Line Replacements

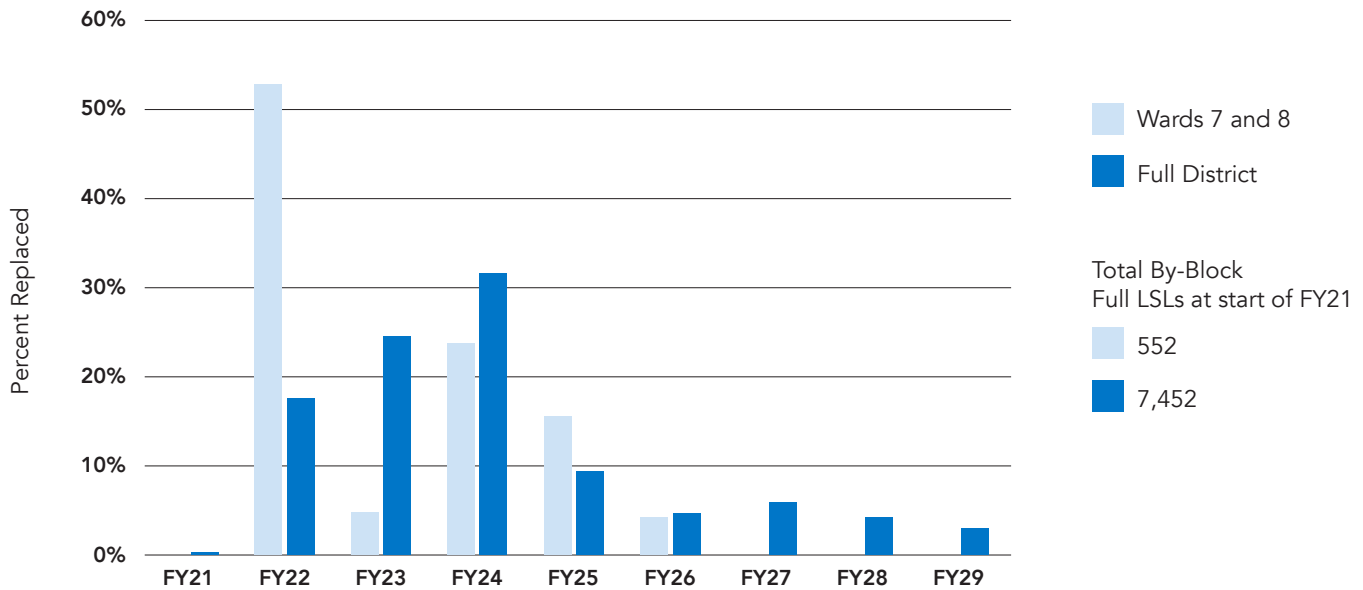
Fiscal Year	CIPERR	VFRP	LPRAP	Annual LSL Total	Phase				
					Phase I	Phase II	Phase III design	Phase IV	
FY2021	150	400	250	800	Phase I				
FY2022	1693	300	400	2393		Phase II			
FY2023	2324	200	800	3324			Phase III design		
FY2024	3157	183	1234	4574		Phase II wrap-up			
FY2025	3261	183	1234	4678			Phase III		
FY2026	2344	183	1234	3761				Phase IV	
FY2027	1398	183	1234	2815					Phase III wrap-up
FY2028	1398	183	1234	2815			Phase III wrap-up		
FY2029	1398	183	1234	2815					
Grand Total*	17124	1997	8854	27975					

*Annual LSL replacements per program area were generated by the Lead Free DC prioritization model which is based on water quality and equity factors. VFRP and LPRAP are customer-initiated programs so LSL rate is dependent on customer participation. low cost estimate. Only unfunded amounts were adjusted in the high and low cost estimate.



Equity and construction planning are significant drivers for prioritization. The figure below illustrates that the by-block groups' replacement rate for Wards 7 and 8 is higher in the early years compared to the full District, thus confirming the model does prioritize by the ADI as intended. Note, the graph shows only by-block projects because the by-premise projects are customer-initiated, which were randomly assigned a fiscal year of execution (with each future year having the same estimated number of replacements). Future legislative initiatives could allow for funding of additional private side work and therefore allow more prioritization of these projects.

Block Project Full Lead Service Replacements by Year - Equity Impacts



PLANNING LEVEL COST ESTIMATES

The planning level cost estimates provided are based on historic costs from DC Water's small diameter water main replacement and lead service line replacement programs, but have been adjusted to reflect the faster pace and some more difficult to construct areas remaining. Many factors will affect the actual incurred costs, including coordination with other District programs and agencies, resident participation, roadway and sidewalk paving, and neighborhood lead densities. To identify the funding gap and to model the financial impact to ratepayer, the planning level costs were estimated for both public (incurred by DC Water) and private side (incurred by property owner or the District) over the life of the program. Lead Free DC program costs include program management, engineering, construction management, administration, DDOT and DCRA permitting, water main installation (where necessary), service line installation, and paving restoration. Contingency for construction costs is included in the base estimate in accordance with cost variations historically seen in the unit pricing. Costs escalate annually at 3%. Costs associated with identified program risks are reflected by using a cost estimate range, currently at -20% to +30% variation to the base estimate. The estimate range uses industry standard techniques for major civil construction and corresponds to an Association of Advancement of Cost Engineering (AACE) Class 4 estimate. The planning level cost estimates for each program are described in the following sections.



Capital Improvement Project and Emergency Repair Replacement (CIPERR) Costs

DC Water’s 10-year Capital Improvement Plan (CIP) for water main replacement is funded at \$632 million to replace approximately 130 miles of water main and 5,827 of lead service lines (20% of all lead service lines). The by-block groups, when funded, will become part of the CIP. The LSR Planning model identifies future lead service line replacements that will require a minimum of 22 miles of water main replacement (By Block: LSLs and Water Main Replacement Group). The amount of water main that will require replacement could increase as construction proceeds due to the main breaking upon construction, water quality changes that dictate a need to replace the water main, or other operational needs requiring the replacement. The total planning level cost range for the CIP projects (both funded and new by-block unfunded projects) is \$858 million to \$1,012 million.

LPRAP Planning Level Cost Estimates

The model estimates 8,854 private side only replacements through the Lead Pipe Replacement Assistance Program (LPRAP) (The model estimates 11,301 private side only LSLs, however, 2,447 private side only replacements will be captured through the by-block projects). The LPRAP planning level cost estimate ranges from \$43 million to \$70 million, which is derived from the actual costs incurred through the first 16 months of the program. The costs are currently shared by the District and the customer.

VFRP Planning Level Cost Estimates

The model estimates 1,997 replacements through the Voluntary Full Replacement Program (VFRP). The VFRP planning level cost estimate ranges from \$43 million to \$48 million, which is derived from the actual costs incurred through the program. The public side cost includes service line replacement, permitting, and restoration—all incurred by DC Water. The private side costs are for the service line replacement on private property.

Total Costs with High and Low Estimates

Planning Level Cost Estimate to Eliminate All Lead Lines by 2030

Lead Free DC Program Area	High Cost Estimate	Low Cost Estimate
CIPERR, Public-Side Costs** – by block: LSLs / by block: LSLs and Water Main – by premise: LSL	\$962M	\$822M
VFRP, Public-Side Costs* – by premise: LSL	\$35M	\$35M
Public-Side Subtotal	\$997M	\$857M
CIPERR, Private-Side Costs** – by block: LSLs / by block: LSLs and Water Main – by premise: LSL	\$59M	\$36M
VFRP, Private-Side Costs** – by premise: LSL	\$13M	\$8M
LPRAP, Private-Side Costs** – by premise: LSL	\$70M	\$43M
Private-Side Subtotal	\$142M	\$87M
Grand Total	\$1,139M	\$944M
Currently Funded*	\$632M***	\$632M***
Currently Unfunded**	\$507M	\$312M

*The Currently Funded amount is \$632 million which partially funds the CIPERR and VFRP public-side costs.

**The Currently Unfunded amount is between \$507 million and \$312 million which includes part of the CIPERR public-side costs, and all of CIPERR, VFRP, and LPRAP private-side costs.

*** DC Water’s Capital Improvement Plan (CIP) currently funds \$597M for CIPERR and \$35M for VFRP public-side costs (\$632M total). These funded amounts were not adjusted for the high and low cost estimate. Only unfunded amounts were adjusted in the high and low cost estimate.



POLICY RECOMMENDATIONS

DC Water evaluated the current program and other jurisdictions’ legislative initiatives to recommend legislative amendments that will increase the lead service line (LSL) replacement rate. Education is the cornerstone of any effort to stimulate LSL replacements which progressive legislation can also support. Additionally, the elimination of LSLs should be identified as a public health priority of the District of Columbia, supported by strong incentives to ensure the timely replacement of LSLs. Finally, it is imperative that a variety of funding and financing plans for customers be made available. This assistance will make replacements more feasible and less financially burdensome, especially for those who are most disadvantaged. DC Water also recognizes the need to establish a dedicated funding source for its planned lead service line replacement projects, which ultimately assists the ratepayers. In summary, DC Water recommends three main policy initiatives:

1. Expand the public information campaign.
2. Create strong incentives to ensure LSL replacement.
3. Increase the funding and financing options for customers and DC Water.

Expand the Public Information Campaign

1. Declare the continued use of LSLs a public health and safety hazard encouraging removal of all lead service lines in the District of Columbia.

Legislative policy that strikes the right tone can communicate the importance of eliminating lead sources in water and encourage the replacement of LSLs. Legislation should clearly communicate to customers that lead service lines represent a health and safety hazard. lead in drinking water. Understandably, customers may feel secure since DC Water and the Washington Aqueduct have effectively implemented optimum corrosion control treatment, which has reduced water lead levels to 2-3 ppb at the 90th percentile compared to the EPA lead action level of 15 ppb. However, drinking water flowing through a lead pipe will always pose a risk of lead exposure.

In 2016, the Cincinnati, Ohio legislature enacted Ordinance 185-2017 codifying their “determination that the public health and safety is endangered by the ingestion of drinking water that contains lead,” the “use of Lead Service Lines... increases the risk of lead in the water,” and “complete replacement of Lead Service Lines is essential to protect safety and health.”

DC Water recommends amending Section 6019c of the amended 2004 Act to include the declaration, “Drinking water that contains any amount of lead is a public health hazard and all potential sources of lead in water, particularly lead service lines should be removed in the District of Columbia.” By enacting this amendment, the District signals to residents and visitors that lead sources are unsafe and reaffirms the purpose of eliminating them across the District.

2. Engage DCRA and DOEE to Collect Service Line Data During Permit and Home Inspections and Share with DC Water.

The Department of Consumer and Regulatory Affairs (DCRA) should assist in collecting service line pipe material information during their permit compliance inspections and provide that information to DC Water to update its service line database. The Department of Energy and the Environment (DOEE) should also include the service line material identification during home inspections when investigating causes of elevated blood lead levels or other housing quality inspections. The pipe material data will fill gaps and improve the accuracy of the material inventory which is the first step in full lead service replacement.

Home inspections during property sales or transfers should require point-of-entry pipe inspection and submission of the home inspection report to DC Water.



Increase Rate of Lead Service Line Replacements

1. Prohibit the Continued Use of Lead Service Lines and Incentivize the Removal of Lead Service Lines by 2030.

Several states have enacted ordinances and laws to drive the replacement of lead service lines by a certain date.

- Cincinnati, Ohio issued an ordinance authorizing the City Manager to implement a program to replace all public and private lead service lines within fifteen years.
- Green Bay, Wisconsin enacted an ordinance requiring the replacement of “high-risk lead service lines within one year of their discovery and the replacement of all lead pipe water service lines in the city within ten years.”
- Newark, New Jersey, prohibited the existence of lead service lines and required the replacement of all lead service lines within 90 days of the effective date of the ordinance.
- The Governor of New Jersey established a goal to replace all lead service lines within 10 years and signed the Lead Service Line Replacement Law authorizing municipalities in the state to enact ordinances to enter private residences for replacements.

The Council of the District of Columbia (Council) should consider adding a new Section 6019d to the 2004 Act that sets a goal of replacing lead service lines by 2030. This provision is consistent with the previous proposal that declares lead service lines as public health and safety risk.

Madison, Wisconsin indicates that a majority of the lead service lines in the city have been replaced. If a lead service line is discovered now, Madison will pay the homeowner’s cost up to \$1,000, and \$1,500 if the replacement is completed in a month of discovery. While this system may not perfectly address the needs of District customers, the Council may consider this tiered funding model if it encourages all lead service lines be replaced by 2030. For example, to increase interest and incentivize early and swift replacement, the District may consider providing more funding in earlier years than later years. This tiered approach to funding could amend Section 6013 of the Lead Service Line Priority Replacement Assistance Act of 2004.

2. Replacement of Lead Service Lines at High Risk Sites.

Children under 6 and pregnant or nursing mothers are the population most adversely affected by exposure to lead. Replacing lead service lines to these homes and child day-care facilities will reduce the potential risk of this exposure. The previous EPA Administrative Order to DC Water required a priority replacement program that expedited the lead service line replacement at properties with children under 6, pregnant or nursing mother, and where children had an elevated blood lead level. The requirement for this program ended in 2006 when the District’s water lead level was reduced to below the EPA Action Level. The Council should consider implementing measures designed to achieve the complete replacement of the lead service line within 90 days of notice that a child under 6, pregnant or nursing mother resides or cared for in a home, child development centers, day-care facilities property with a lead service line.

3. Explore options to achieve the Replacement of Lead Service Lines at Property Transfer.

Denver, Colorado’s statute provides that a home sale triggers replacement of non-copper lines within 70 days of the sale. Through the legislative process, the DC Council could hear from stakeholders and industry professionals about the impact of similar legislation including potential exemptions for property transfers to family members and whether defaulting on a loan might have an adverse impact on the customer or this funding structure.



4. Waive DDOT Public Right-of-Way Permit Restrictions for Block Lead Service Line Replacement Projects.

The completion of a full lead service line replacement entails work in public space requiring a District Department of Transportation (DDOT) Public Space Permit. The replacement of some lead service lines on private property can also require a DDOT Public Space Permit if equipment needs to be staged in public space or if there is a requirement to install a corporation stop in public space. Current DDOT public space regulations present challenges to the goal of replacing lead service lines by 2030. For example, owners of underground standalone conduits in the public right-of-way are required to submit a plan showing all major excavation work anticipated to be completed in the next two years. In accordance with 21 DCMR 3401.2, “no Public Space Permit authorizing non-emergency major Excavation work of the Public-Right-of-Way ...shall be issued unless that Major Work is described or depicted on the current two-year plan ...” Further, 21 DCMR 3401.3, states “an application for a Permit to Excavate Public Space...shall be rejected if dated six months or more after the filing date of the Owner’s last filed two-year plan...” Further, DDOT regulations establish moratorium streets that prohibits the issuance of Public Space Permits non-emergency Excavation work on “any Public Right-of-Way reconstructed or resurfaced less than five (5) years prior to the date of the application.” While District regulations grant DDOT discretion to waive the moratorium street excavation restriction for good cause including “public’s health, safety, welfare,” there is no requirement that DDOT grant a waiver for issues involving potential exposure to lead from lead service lines. DDOT also does not have authority to waive the two-year plan rule. DC Water cannot achieve the accelerated lead replacement rate necessary under the current DDOT permitting processing and planning provisions.

DC Water recommends the DC Council enact a waiver of DDOT permit limitations pertaining to the replacement of lead service lines in the public right-of-way upon request. Additionally, DC Water recommends DDOT provide blanket permits for work related to lead service line replacement like those provided from 2004 to 2008 when DC Water was under an EPA Administrative Order for accelerated replacements.

Increase the Funding and Financing Options for Customers and DC Water

To advance the lead service line replacement initiative, funding and financing options must be updated to reflect the needs of the customer. Each section below should be considered as a potential amendment to Section 6013 of the Lead Service Line Priority Replacement Assistance Act of 2004.

1. Expand District Funds to Cover All Private Side Lead Service Line Replacements.

When evaluating the gaps in the success of the customer-initiated programs (LPRAP and the VFRP), the most glaring issue is the seemingly unnecessary bifurcation and distinction between funding options for partial lead service lines and full lead service lines. Specifically, in the case of full lead service replacements that are not performed by DC Water under a CIP or repair project, the customer is required to fully fund the entire cost of the replacement on private property, which is financially burdensome. To that end, DC Water recommends expanding the District funding to include all lead service line replacement work on private property.

2. Establish Property Assessment Funding Options.

Green Bay, Wisconsin provides an interest-free loan for up to five years financed by ratepayer funds and paid through the water bill. The utility and homeowner split the cost of the lead line replacement through the low interest loan program. An interest free loan and a cost sharing model provides customers with more payment flexibility and acknowledges that not all customers are willing or able to pay for service line replacements at one time.



Milwaukee, Wisconsin established an alternative funding model where a property owner can pay the service line replacement amount in full or defer by paying a special assessment over 10 years. This option also assists customers who want full lead service line replacements where DC Water has no planned projects in their neighborhood. Giving the customer the ability to roll the replacement costs into a water bill they already intend to pay, makes the cost easier to bear. Additionally, this model would “run with the land.” Thus, a new owner would pay the assessment if the land transferred.

Consequently, the DC Council should also consider amending Section 6(1)(A) of the Residential Real Property Seller Disclosure, Funeral Services Date Change, and Public Service Commission Independent Procurement Authority Act of 1998 to include a disclosure requirement that notifies potential buyers of the assessment arrangement if current disclosures do not adequately inform the buyer.

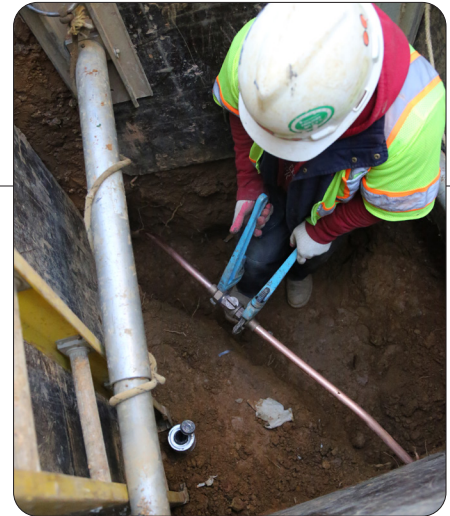
Alternatively, the ratepayer assessment funding model could also be used to cost-share DC Water’s current CIP projects with the customer. A portion of the CIP project could be attributed directly to the customer needing the replacement instead of distributing the cost across all customers. Similarly, but not identical to the Water System Replacement Fee, this fee would be administered to fund the customer’s specific lead service line replacement. DC Water recommends that for a CIP-cost sharing model, the customer installments are spread over 20 years instead of 10 years to reduce the burden.

3. Establish CIP District Capital Fund Project.

As mentioned above, the District signified its commitment to eliminating lead water hazards by allocating \$2.8 million for lead service line replacement work on private property. Building on this, a designated District capital funding project to assist DC Water in funding its scheduled water main line replacements would be extremely helpful. District capital funding could ease the burden on ratepayer funds. As a non-profit cost recovery organization, the customer rates are necessary to treat wastewater, invest in infrastructure, and deliver safe drinking water to homes and businesses. While District capital funds are collected through taxes and fees of District residents/ratepayers, sharing this fund with the District is still a useful cost-sharing model that can help ease the burden on customers’ water bills. Ratepayers directly fund DC Water’s CIP projects, but a District capital fund could help defray costs.

4. Funding for Businesses.

DC Water recommends that all District businesses have access to the financing recommendations listed here with the exception of the Lead Pipe Replacement Assistance Program (LPRAP). However, to completely exclude businesses from a grant assistance program would be imprudent. Therefore, DC Water recommends that certain small businesses receive assistance. Specifically, childcare centers should have the option to draw down on funds in a separate but similar program to the grant funds available in LPRAP. Smaller businesses should get close to 100% funding depending on criteria that the DC Council can make in conjunction with the Department of Small and Local Business Department. Additionally, the District should consider the Milwaukee, WI cost-sharing model for properties with a maximum of four dwelling units where the city pays costs above \$1,754. Through the legislative process, these recommendations can be refined to meet the unique needs of District businesses.



FUNDING OPPORTUNITIES

The total capital cost for the Lead Free DC initiative is estimated to range from \$944 million to \$1,140 million. Approximately \$312 million to \$507 million is not funded. Inclusion of this amount in the DC Water capital plan would require rate increases higher than previously forecasted or a reduction in other planned infrastructure investments.

Ratepayer Funding Sources

In 2016, DC Water added a Water System Replacement Fee to the rate structure to create a dedicated funding source for water system replacements which added approximately \$40 million per year to the capital budget. The fee is based on meter size and average flow. Customers in DC Water’s low-income Customer Assistance Programs receive a 100% credit for this fee. DC Water does not recommend additional fees, but recognizes it is an option.

Non-ratepayer Funding Sources

DC Water identified the following federal grants that are available to water utilities or communities for lead service line replacements.

1. USEPA | Water Infrastructure Improvements for the Nation Act (WIIN Act).

This program assists disadvantaged communities with removing sources of lead in drinking water from drinking water systems and schools. The District Department of Energy and Environment (DOEE) received \$2.3 million in Fiscal Year 2021 to support their child care center and school lead reduction program. DC Water and DOEE collaborated in 2020 to propose for a grant to assist lead service line replacements in disadvantaged neighborhoods, but did not get accepted.

2. DOEE | Full Lead Water Service Line Replacement Program.

Newly enacted legislation provides funds to cover the complete cost of the lead water service pipe replacement on private property when DC Water replaces the portion of lead pipe in public space in conjunction with a capital improvement project or repair.

3. DOEE | Lead Water Service Line Replacement Assistance Program (LPRAP).

Again, newly enacted legislation provides funds to residential customers to replace the lead service pipe on private property when the service line in public space is not lead. Assistance ranges from 50% (maximum \$2,500) to 100% based on household income.

4. DC Department of Housing and Community Development (DHCD) | Community Development Block Grant (CDBG) HOME Investment Partnerships | National Housing Trust Fund | Preservation Fund.

DC receives a direct allocation of Community Development Block Grant funding from the US Department of Housing & Urban Development (HUD) to provide loans and/or grants for home repairs to alleviate DC building code violations, fix health and safety concerns and make accessibility modifications. Through the Residential Rehabilitation Program, lead service lines can be replaced in addition to other qualifying housing rehabilitation activities.

HUD issues Lead Hazard Control grants that typically address lead hazards in about 300 homes over 3 years. The DC Department of Housing and Community Development is a current grant awardee so there could be an opportunity to include lead service line replacements.



5. Drinking Water Infrastructure Act (DWIA) 2020 (Draft).

Congress drafted legislation for the Drinking Water Infrastructure Act (DWIA) 2020, which has been through an initial round of markups in the U.S. Senate and is now being considered in the U.S. House of Representatives. The draft version of this legislation includes several funding allocations for lead service line identification and replacement. DWIA could be a future source of funding for the Lead Free DC program. Descriptions of relevant sections of the draft legislation are as follows:

SEC. 7 LEAD MAPPING PILOT PROGRAM

This provision amends the SDWA to create a pilot program for system operators that know through lead mapping that their system has, or is likely to have, at least 30% of service lines containing lead. Two years after the first grant is awarded, the EPA must submit a report to Congress detailing the recipients of this grant money, what type of lead mapping was used, and how accurate and useful the mapping was in locating the lead contamination. The pilot program is authorized for \$10 million and the funds are to remain available until expended.

SEC. 11. LEAD CONTAMINATION IN SCHOOL DRINKING WATER

This section amends the existing Voluntary School and Childcare Lead Testing Grant Program to make public water systems and eligible nonprofit organizations that service schools and childcare locations eligible grant recipients. The program authorization is extended through Fiscal Year 2022 at the current funding level of \$25 million annually.

SEC. 14. DRINKING WATER INFRASTRUCTURE DISCRETIONARY GRANT PROGRAM

This section creates a new grant program administered by the EPA. This grant program is modeled after the state revolving funds, which are mostly loans. These discretionary grants may be used for expenditures for planning, design, siting, and associated preconstruction activities, or for replacing or rehabilitating aging treatment, storage or for distribution facilities of public water systems that will facilitate compliance with national primary drinking water regulations or significantly further the health protections. These grants may not be used for monitoring, operation, and maintenance expenditures, and priority is given to public water systems that need help coming into compliance with the Safe Drinking Water Act, and to projects that need additional sources of funding to achieve completion. This program has a waivable non-federal share of 20%. No one state may receive more than 20% of the total amount made available each year for this program. This section requires the EPA to submit a report to Congress on this program. This program is authorized for \$50 million for each fiscal year 2022 through 2024.

Proposed Recovery Package, The Moving Forward Act of 2020, HR 2

As introduced, HR 2 would provide a total of \$1.5 trillion in funding for infrastructure projects. Elements of the Moving Forward Act are relevant to DC Water's Lead Free DC program:

- \$25 billion to the Drinking Water State Revolving Fund and
- Tax-exempt bond financing for water infrastructure projects by exempting bonds funding these projects from state allocation caps for Private Activity Bonds.

Private Philanthropy Grant Funding

Grant Programs from private foundations could also be explored (Walton Foundation, Rockefeller Foundation, Lilly Foundation, Bloomberg Foundation, etc.).



STAKEHOLDER ENGAGEMENT AND COMMUNITY OUTREACH

The Lead Free DC Program will continue DC Water’s commitment to transparency and customer engagement with a robust communications and outreach strategy. This communications and outreach strategy will include surveys to collect customer satisfaction and feedback, as well as traditional and digital advertising to publicize the program.

Outreach Objectives

- Inform customers about their service line material and the importance of lead service line replacement.
- Inform customers of their service line replacement options and rights under the law.
- Publicize tools to address lead risk (e.g., assistance funding, free test kits, service line map, identification guides, etc.).
- Reach all District residents who may receive water through a lead service line (tenants as well as housing providers).
- Maximize participation in scheduled replacement projects.

Outreach Tactics

1. Stakeholder Engagement.

The Lead Free DC (LFDC) initiative must be a full community and government effort. With Mayoral support, DC Water will establish an Interagency LFDC Task Force to develop a Memorandum of Agreement between DC Water, DDOT, DCRA, and DOEE to: 1) streamline permitting requirements; 2) coordinate planned work; 3) prioritize LSL replacement during District infrastructure projects; and 4) collect service line data during home and permitted work inspections. DC Water will also establish an external stakeholder advisory group to: 1) monitor the progress of the LFDC to inform stakeholders and offer guidance to improve program outcomes; 2) participate in outreach strategy development; and 3) assist with removing barriers to customer affordability and accessibility. This group will bring together health advocates, community stakeholders, and industry representatives to guide LFDC progress and deliver on DC Water’s commitment to transparent, accessible communication. Deliverables of the external stakeholder advisory group can include:

- Equity Plan to prioritize vulnerable/at-risk residents in the planning, communication, and implementation of LFDC activities.
- Improved outreach materials about lead risk mitigation, flushing and filtering.
- Tailored outreach activities to promote lead replacement including door-to-door canvassing, faith-based outreach, and ANC representation.
- Improved coordination and communication between residents, elected officials, advocacy groups, District agencies (holistic approach to addressing lead and lead inspections).
- Feasible outside funding sources.
- Identified opportunities for community and workforce development.
- Identified ideas and champions for lead replacement/disclosure legislation and policy.



DC Water is also committed to working with external partners in other capacities including:

- Industry groups.
- Plumbers and contractors.
- Faith-based organizations and other non-profits, such as the Greater Washington Urban League and AARP, to distribute information and to co-host workshops to share information with customers and help them apply.
- DC Office on Religious Affairs, DC Office on Aging and other District government agencies to help reach customers and disseminate information.

2. Direct Engagement.

DC Water will leverage engagement activities that have proven effective and successful in previous authority outreach campaigns like the promotion of the Customer Assistance Programs (CAP). This includes attending community meetings, hosting and participating in outreach events, and creating other opportunities to engage directly with customers, disseminate information and help eligible customers sign up for the programs.

Specifically, to promote the programs DC Water will:

- Continue to staff a lead hotline and designated email inbox for lead inquiries.
- Distribute lead test kits and provide 10-L bottle sampling.
- Host public pop-ups such as outside Metro stations or other high-traffic public locations in the District to hand out information and engage with customers.
- Engage in door-to-door canvassing in targeted neighborhoods.
- Visit Senior Wellness Centers to hand out information about programs and engage with seniors who are DC Water customers.
- Attend Advisory Neighborhood Commission and Civic Association Meetings to offer presentations to share information and explain the application process. DC Water will also continue its practice of outreach before planned projects to ensure participation for free replacements.
- Coordinate with EOM and Council Offices to distribute information to constituents.
- Provide bill inserts and Lead Free DC bill envelopes and create and distribute semiannual bill inserts about programs.
- Distribute email blasts and engage community listservs.
- Expand website and digital resources.
- Implement social media campaigns.
- Create “hubs” for information about lead at DC libraries and recreation centers.
- Produce captioned video resources in multiple languages.



3. Promotion

DC Water and our partners will pursue traditional means of promotion and advertising to disseminate Lead Free DC messaging and initiatives.

- Media campaign: Paid exposure to broader audiences, creating high visibility messaging to customers and stakeholders.
- Outdoor advertising: Use transit shelter ads along select bus routes and outdoor placement at Metrorail stations and on Metrobuses.
- Digital advertising: Use targeted digital advertising to reach customers with known lead service lines.
- Print advertising: Place large advertisements in local print publications including the Hill Rag, Informer, etc.
- Earned media: Press releases and announcement of media-related events; contact local TV and radio news outlets, blogs and DC TV to generate news stories and on-set interviews to publicize opportunities.



DC Water's Lead Service Line Replacement Plan

Appendix



“DC Water is replacing all lead service lines in the city by 2030 under the Lead Free DC (LFDC) Program. An analytical model was developed to help DC Water prioritize replacements based upon social equity, vulnerable populations and the likelihood that a home has a lead service line. Prioritized replacements will be conducted in block groups, in conjunction with the water main replacement, or as single line replacements throughout the 10 year LFDC program. These maps do not represent the precise timing and location of planned construction. As our we improve the service line pipe material data and coordinate with DDOT, DC Water will routinely revised the project schedule throughout the LFDC program.”

Lead Free DC Program
Lead Service Line (LSL) Project Map
Fiscal Year 2021
Program Year 1



LSL Program Statistics

LSLs Replaced (This year): 800
 LSLs Replaced (Cumulative): 800
 LSLs Remaining: 27175

Year 1 Lead Service Line Replacements

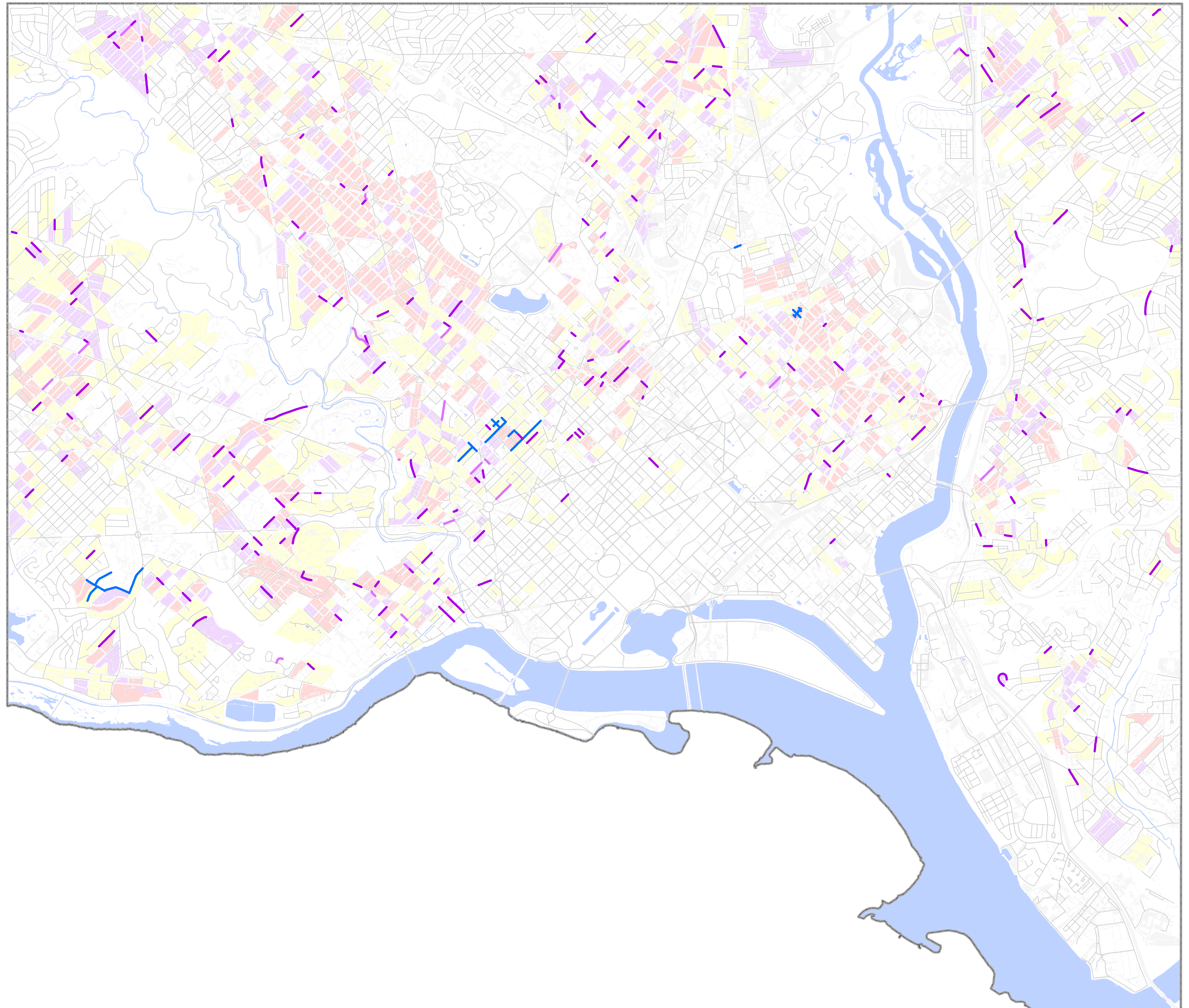
- By Block: LSLs & Water Main
- By Block: LSLs
- By Premise: LSL
- LSL Work Completed or Not Required

Lead Service Line Density

- Less Than 4 Lead Services
- 4 to 6 Lead Services
- 7 or More Lead Service

Assumptions

Revision - 4/15/2021
 -50% of unknowns are lead service lines.
 -By Premise replacements are customer-initiated. This map shows a randomized distribution of By Premise replacements as a proportion of the total By Premise replacements identified by the Lead Free DC model.



0 0.5 1 Miles







Lead Free DC Program
Lead Service Line (LSL) Project Map
Fiscal Year 2022
Program Year 2






LSL Program Statistics

LSLs Replaced (This year): 2,393
 LSLs Replaced (Cumulative): 3,193
 LSLs Remaining: 24,782

Year 2 Lead Service Line Replacements

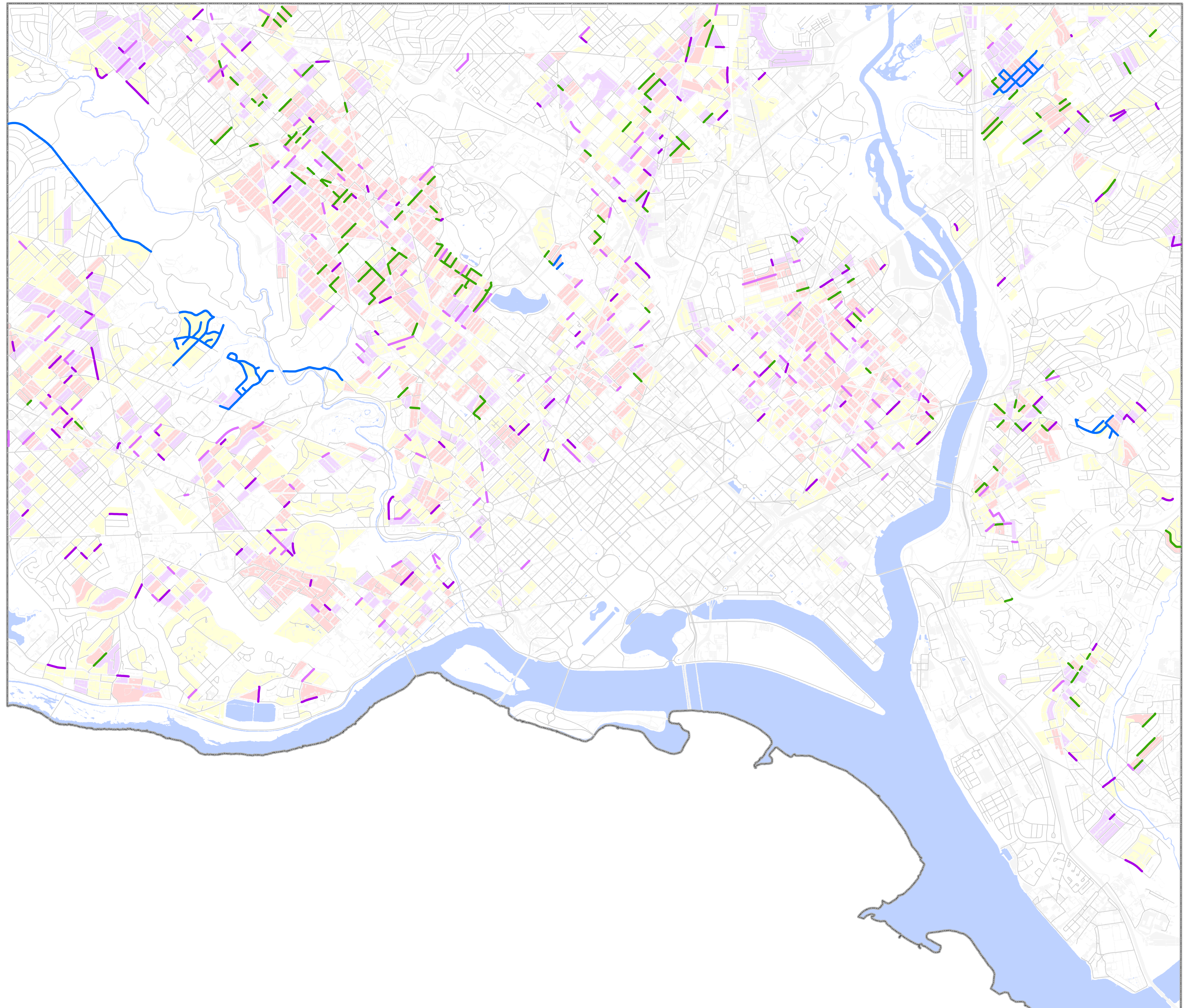
-  By Block: LSLs & Water Main
-  By Block: LSLs
-  By Premise: LSL
-  LSL Work Completed or Not Required

Lead Service Line Density

-  Less Than 4 Lead Services
-  4 to 6 Lead Services
-  7 or More Lead Service

Assumptions

Revision - 4/15/2021
 -50% of unknowns are lead service lines.
 -By Premise replacements are customer-initiated. This map shows a randomized distribution of By Premise replacements as a proportion of the total By Premise replacements identified by the Lead Free DC model.



0 0.5 1 Miles



Lead Free DC Program
Lead Service Line (LSL) Project Map
Fiscal Year 2023
Program Year 3



LSL Program Statistics

LSLs Replaced (This year): 3,324
 LSLs Replaced (Cumulative): 6,517
 LSLs Remaining: 21,458

Year 3 Lead Service Line Replacements

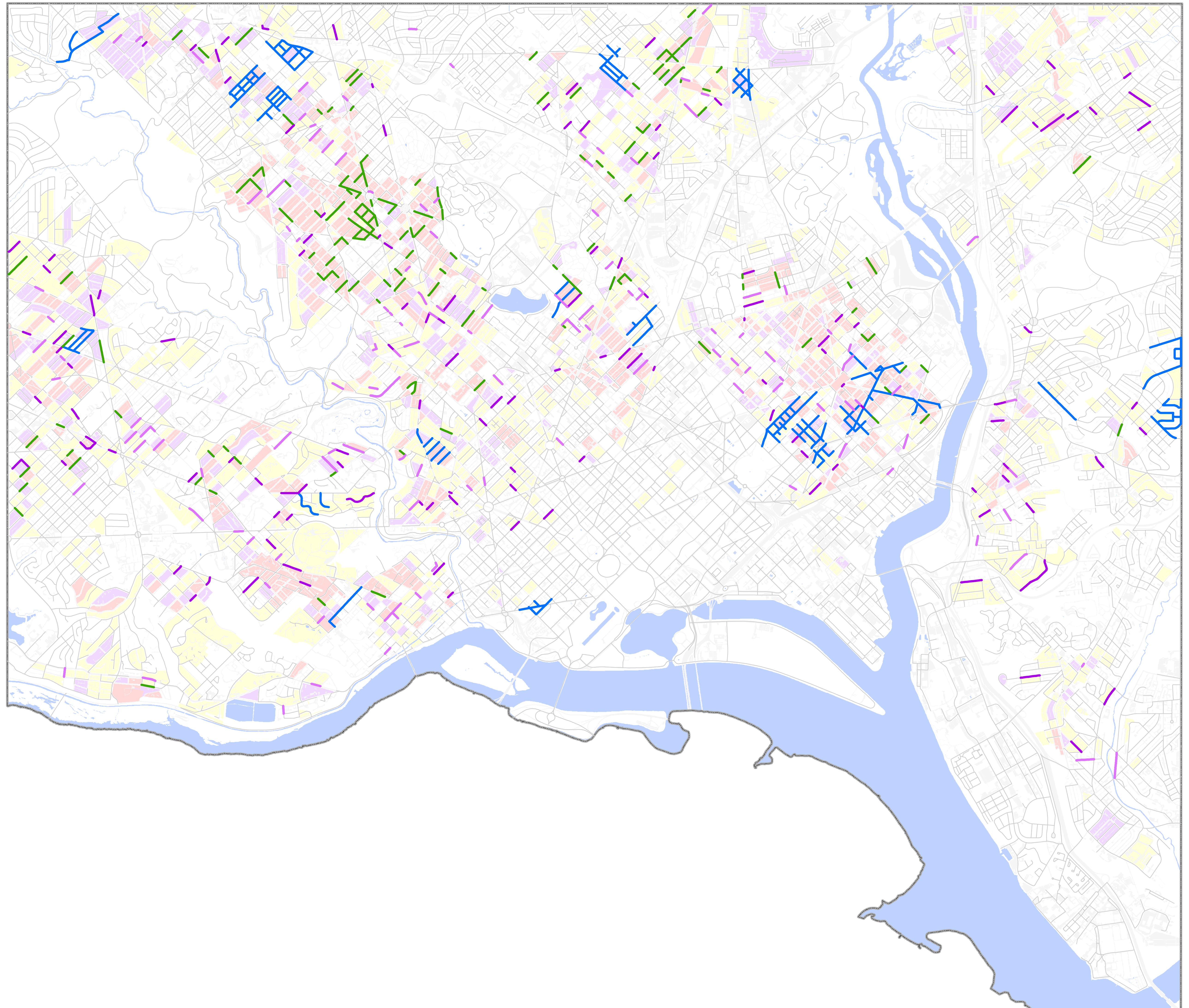
- By Block: LSLs & Water Main
- By Block: LSLs
- By Premise: LSL
- LSL Work Completed or Not Required

Lead Service Line Density

- Less Than 4 Lead Services
- 4 to 6 Lead Services
- 7 or More Lead Service

Assumptions

Revision - 4/15/2021
 -50% of unknowns are lead service lines.
 -By Premise replacements are customer-initiated. This map shows a randomized distribution of By Premise replacements as a proportion of the total By Premise replacements identified by the Lead Free DC model.



0 0.5 1 Miles



Lead Free DC Program
Lead Service Line (LSL) Project Map
Fiscal Year 2024
Program Year 4



LSL Program Statistics

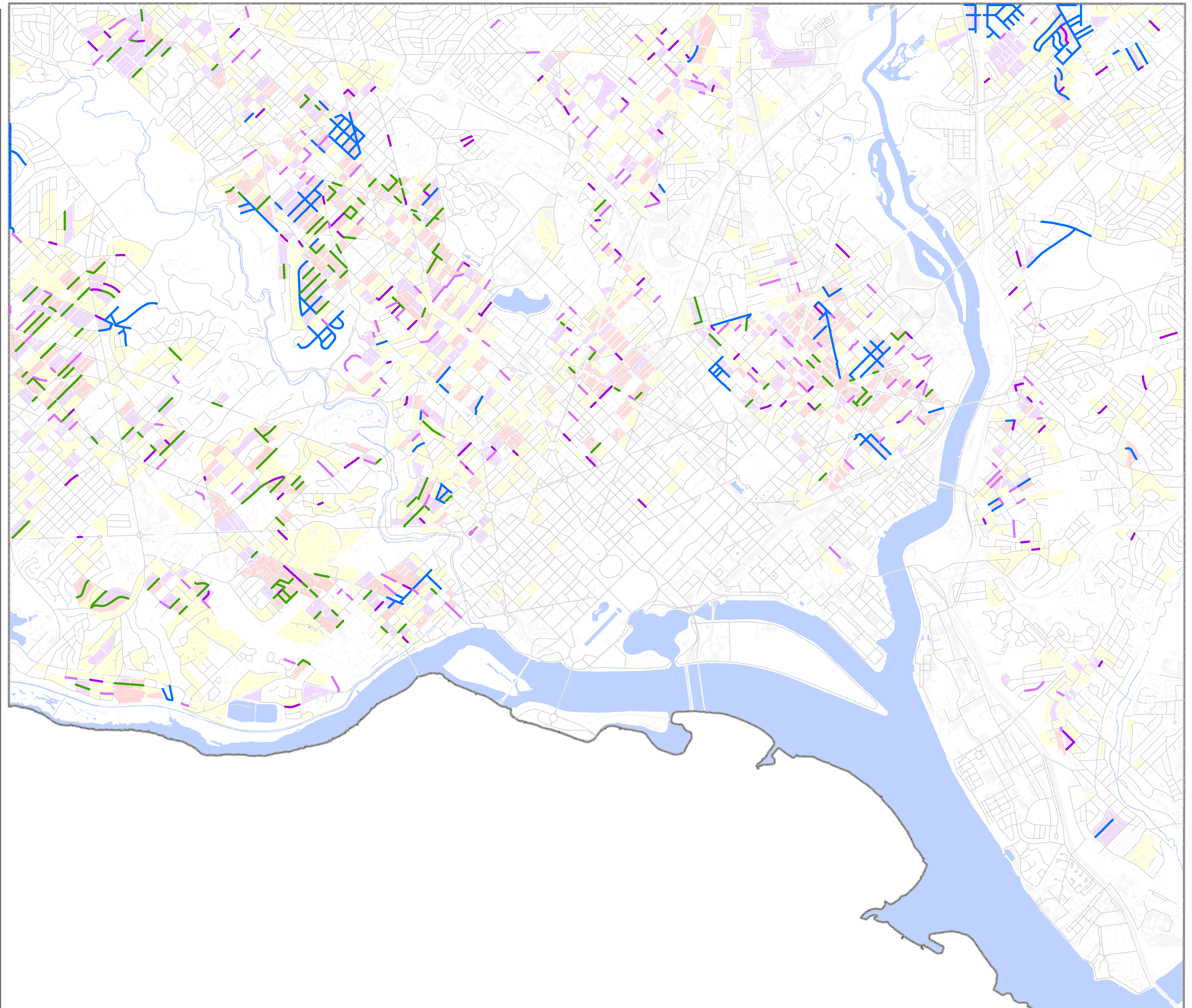
LSLs Replaced (This year): 4,574
 LSLs Replaced (Cumulative): 11,091
 LSLs Remaining: 16,884

Year 4 Lead Service Line Replacements

- By Block: LSLs & Water Main
- By Block: LSLs
- By Premise: LSL
- LSL Work Completed or Not Required

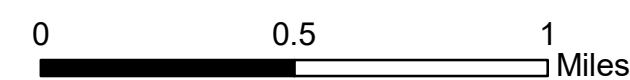
Lead Service Line Density

- Less Than 4 Lead Services
- 4 to 6 Lead Services
- 7 or More Lead Service



Assumptions

Revision - 4/15/2021
 -50% of unknowns are lead service lines.
 -By Premise replacements are customer-initiated. This map shows a randomized distribution of By Premise replacements as a proportion of the total By Premise replacements identified by the Lead Free DC model.







Lead Free DC Program
Lead Service Line (LSL) Project Map
Fiscal Year 2025
Program Year 5






LSL Program Statistics

LSLs Replaced (This year): 4,678
 LSLs Replaced (Cumulative): 15,769
 LSLs Remaining: 12,206

Year 5 Lead Service Line Replacements

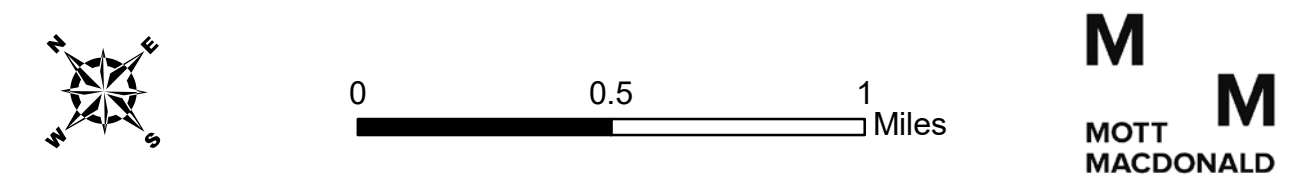
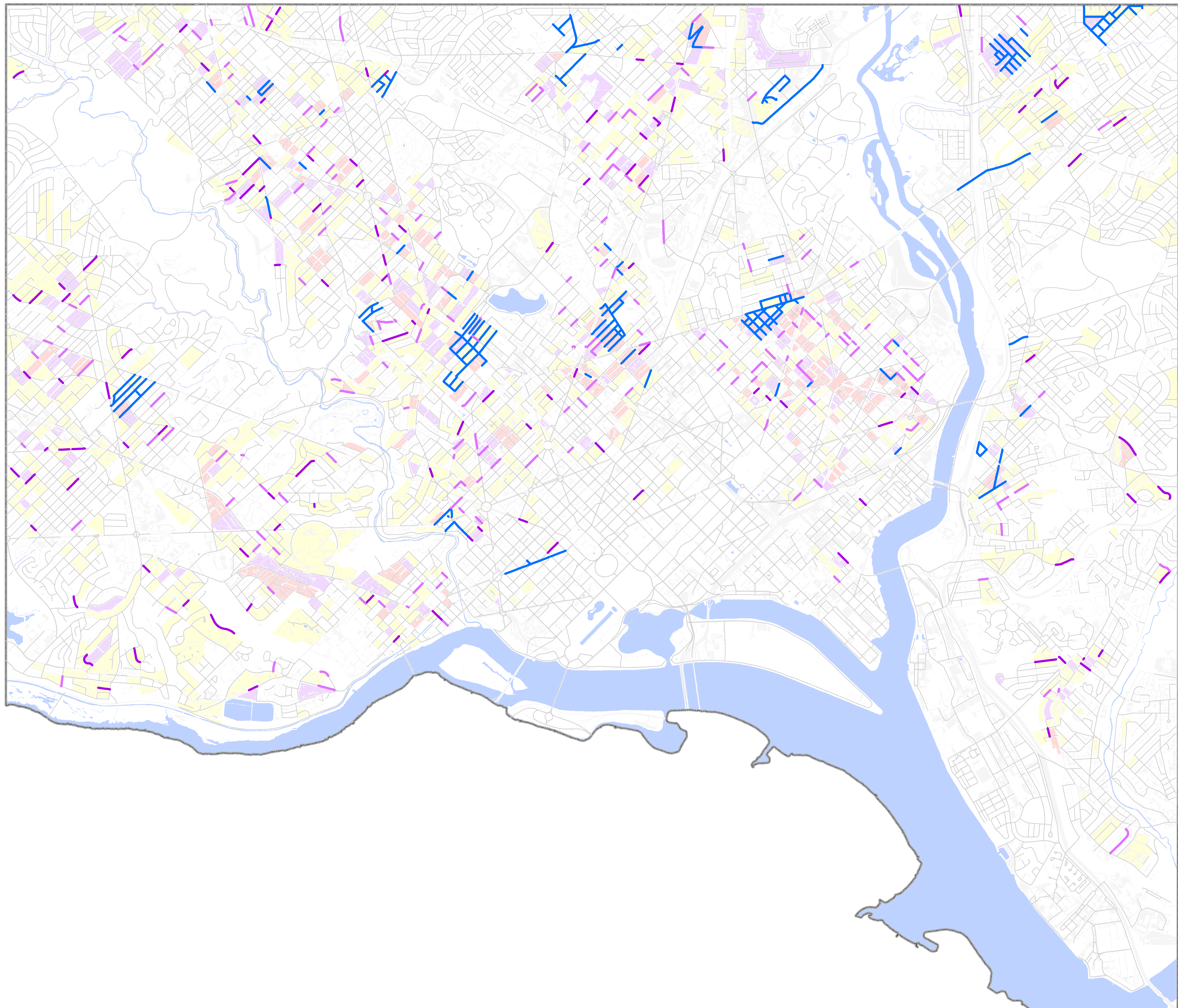
-  By Block: LSLs & Water Main
-  By Block: LSLs
-  By Premise: LSL
-  LSL Work Completed or Not Required

Lead Service Line Density

-  Less Than 4 Lead Services
-  4 to 6 Lead Services
-  7 or More Lead Service

Assumptions

Revision - 4/15/2021
 -50% of unknowns are lead service lines.
 -By Premise replacements are customer-initiated. This map shows a randomized distribution of By Premise replacements as a proportion of the total By Premise replacements identified by the Lead Free DC model.



Lead Free DC Program
Lead Service Line (LSL) Project Map
Fiscal Year 2026
Program Year 6



LSL Program Statistics

LSLs Replaced (This year): 3,761
 LSLs Replaced (Cumulative): 19,530
 LSLs Remaining: 8,445

Year 6 Lead Service Line Replacements

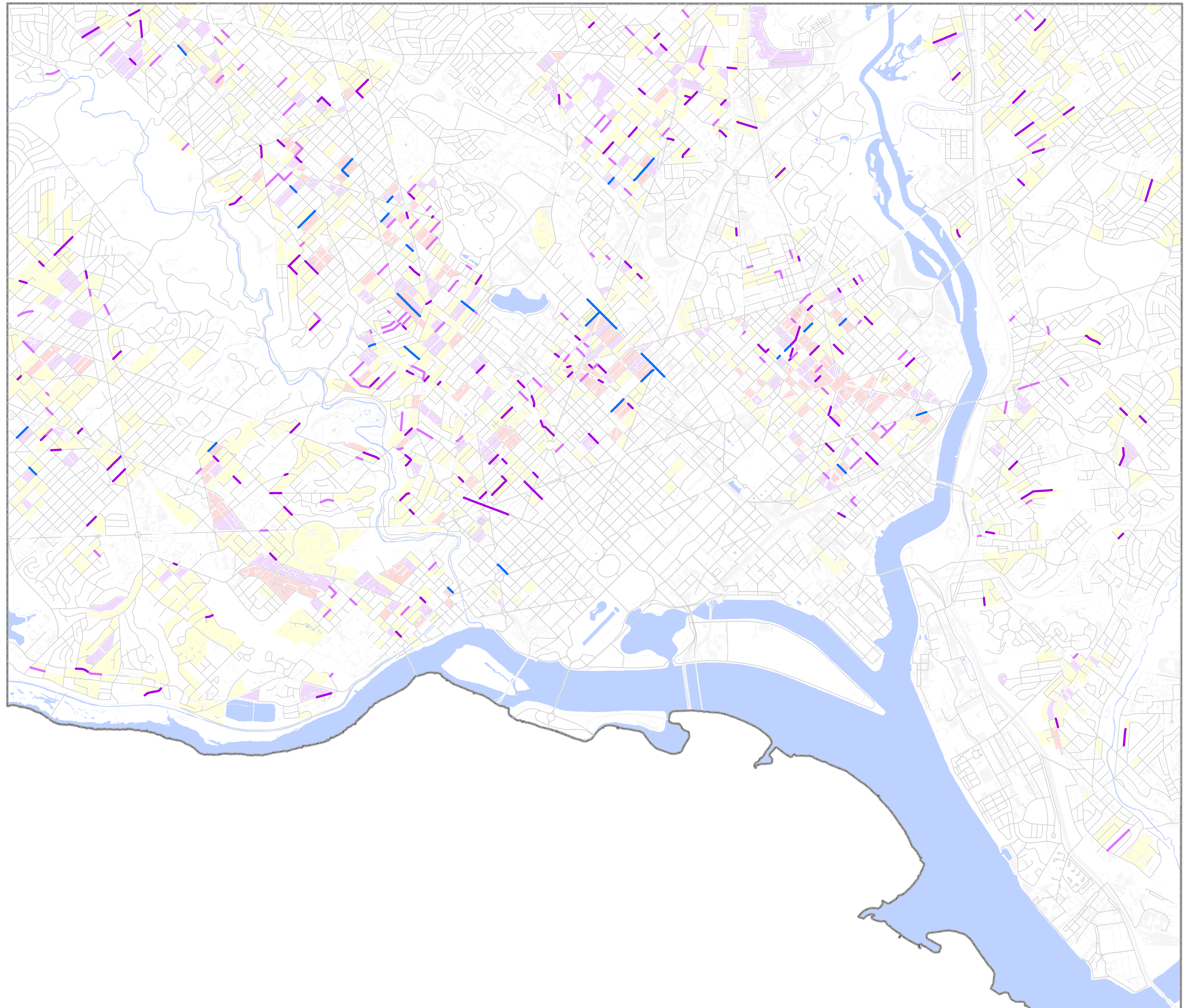
- By Block: LSLs & Water Main
- By Block: LSLs
- By Premise: LSL
- LSL Work Completed or Not Required

Lead Service Line Density

- Less Than 4 Lead Services
- 4 to 6 Lead Services
- 7 or More Lead Service

Assumptions

Revision - 4/15/2021
 -50% of unknowns are lead service lines.
 -By Premise replacements are customer-initiated. This map shows a randomized distribution of By Premise replacements as a proportion of the total By Premise replacements identified by the Lead Free DC model.



0 0.5 1 Miles







Lead Free DC Program
Lead Service Line (LSL) Project Map
Fiscal Year 2027
Program Year 7





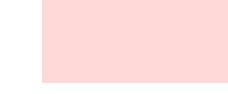
LSL Program Statistics

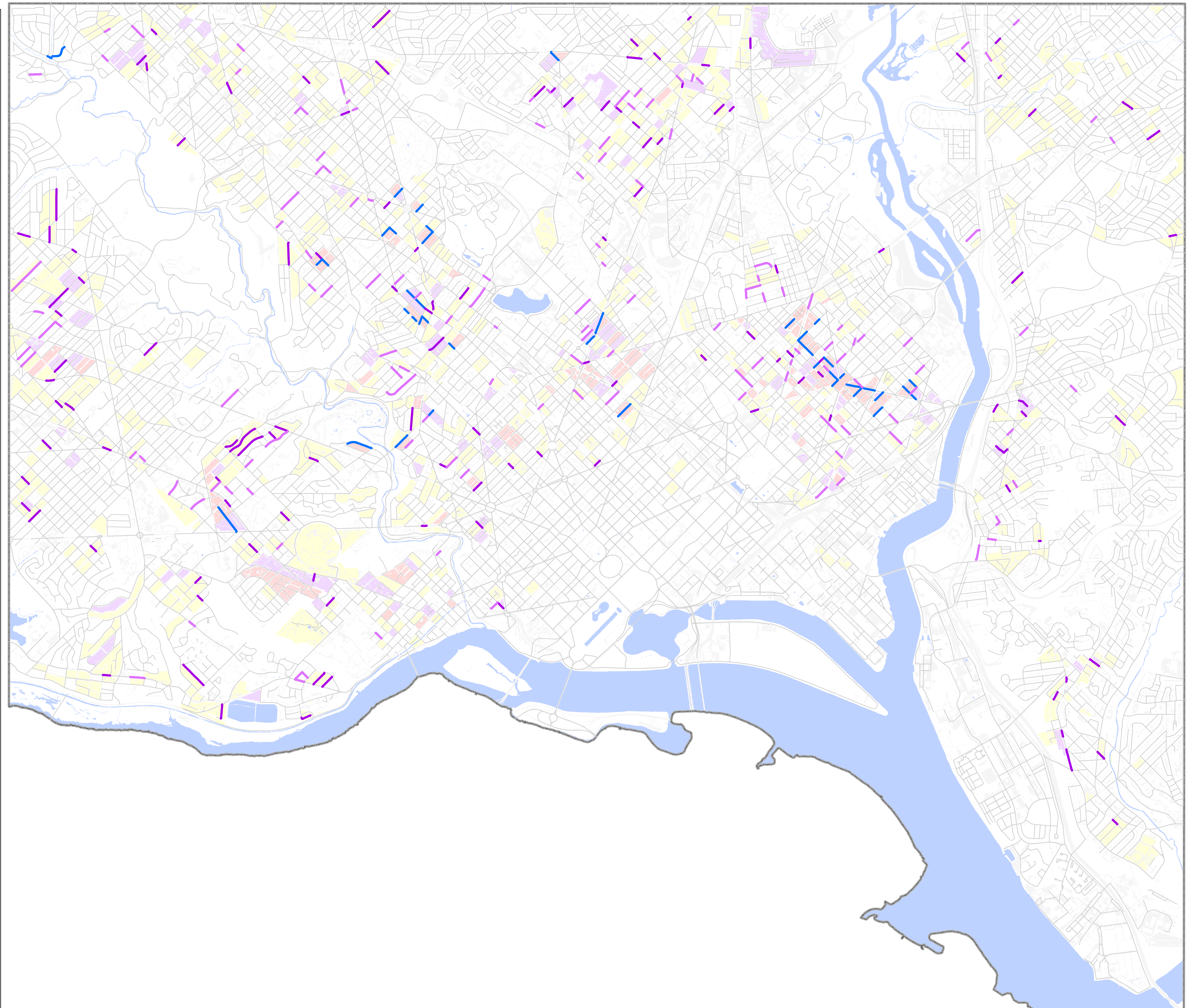
LSLs Replaced (This year): 2,815
 LSLs Replaced (Cumulative): 22,345
 LSLs Remaining: 5,630

Year 7 Lead Service Line Replacements

-  By Block: LSLs & Water Main
-  By Block: LSLs
-  By Premise: LSL
-  LSL Work Completed or Not Required

Lead Service Line Density

-  Less Than 4 Lead Services
-  4 to 6 Lead Services
-  7 or More Lead Service



Assumptions

Revision - 4/15/2021
 -50% of unknowns are lead service lines.
 -By Premise replacements are customer-initiated. This map shows a randomized distribution of By Premise replacements as a proportion of the total By Premise replacements identified by the Lead Free DC model.



0 0.5 1 Miles







Lead Free DC Program
Lead Service Line (LSL) Project Map
Fiscal Year 2028
Program Year 8





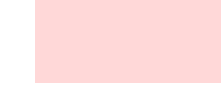
LSL Program Statistics

LSLs Replaced (This year): 2,815
 LSLs Replaced (Cumulative): 25,160
 LSLs Remaining: 2,815

Year 8 Lead Service Line Replacements

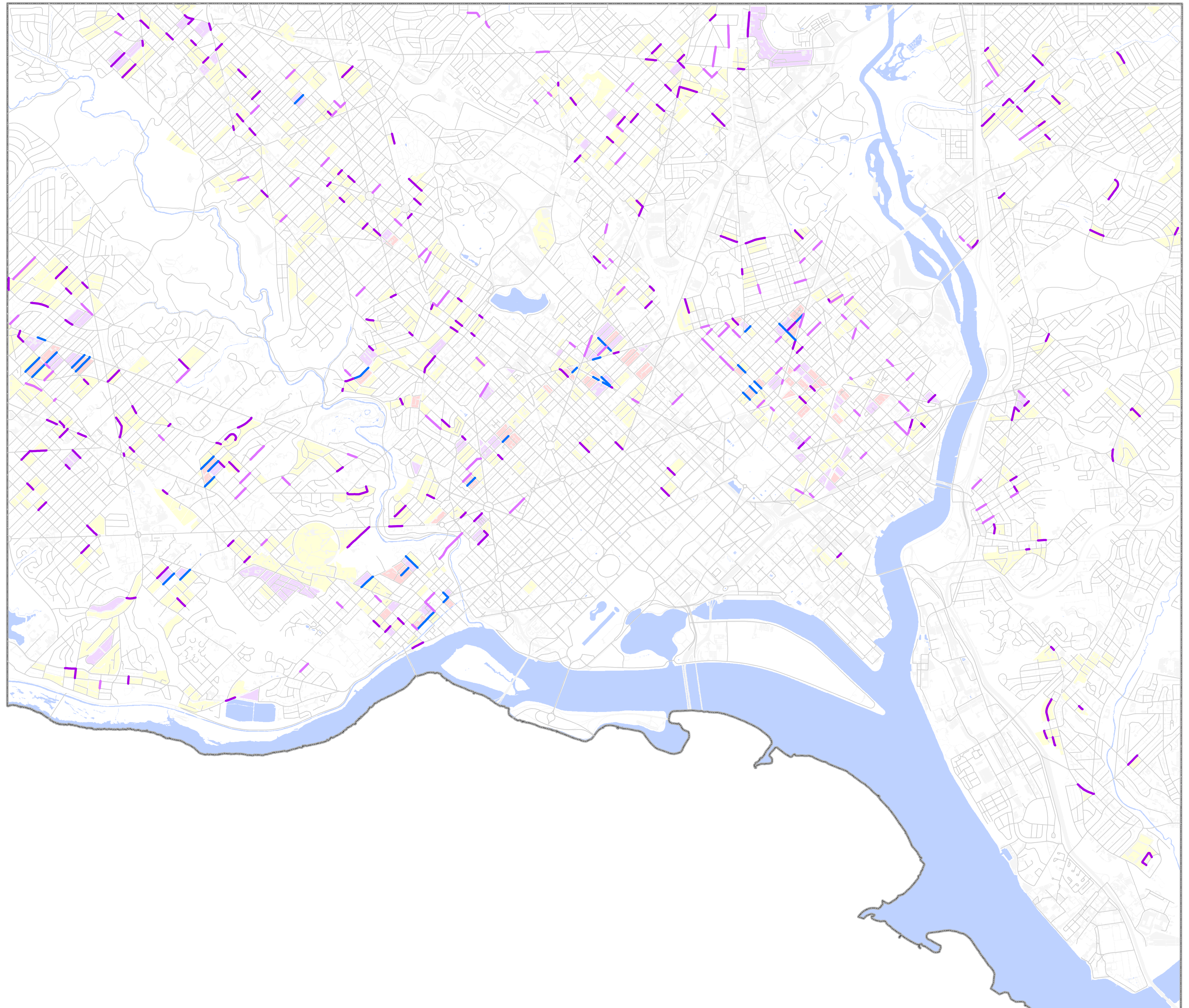
-  By Block: LSLs & Water Main
-  By Block: LSLs
-  By Premise: LSL
-  LSL Work Completed or Not Required

Lead Service Line Density

-  Less Than 4 Lead Services
-  4 to 6 Lead Services
-  7 or More Lead Service

Assumptions

Revision - 4/15/2021
 -50% of unknowns are lead service lines.
 -By Premise replacements are customer-initiated. This map shows a randomized distribution of By Premise replacements as a proportion of the total By Premise replacements identified by the Lead Free DC model.



0 0.5 1 Miles



Lead Free DC Program
Lead Service Line (LSL) Project Map
Fiscal Year 2029
Program Year 9



LSL Program Statistics

LSLs Replaced (This year): 2,815
 LSLs Replaced (Cumulative): 27,975
 LSLs Remaining: 0

Year 9 Lead Service Line Replacements

- By Block: LSLs & Water Main
- By Block: LSLs
- By Premise: LSL
- LSL Work Completed or Not Required

Lead Service Line Density

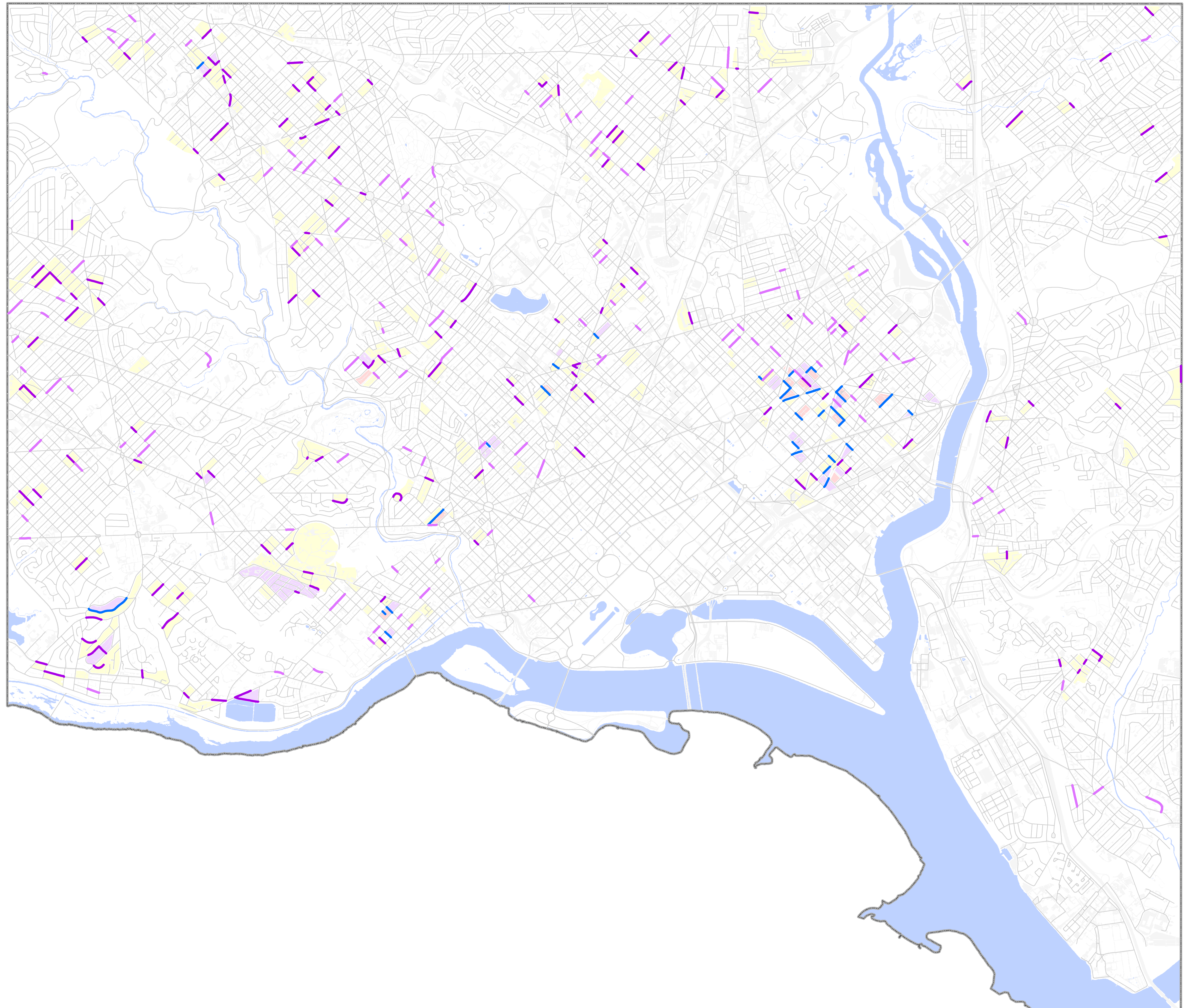
- Less Than 4 Lead Services
- 4 to 6 Lead Services
- 7 or More Lead Service

Assumptions

Revision - 4/15/2021
 -50% of unknowns are lead service lines.
 -By Premise replacements are customer-initiated. This map shows a randomized distribution of By Premise replacements as a proportion of the total By Premise replacements identified by the Lead Free DC model.



0 0.5 1 Miles



Lead Free DC Program

Lead Service Line (LSL) Project Map

Fiscal Year 2030

Program Completed



LSL Program Statistics


LSLs Replaced (Cumulative): 27,975

LSLs Remaining: 0

— LSL Work Completed or Not Required

Squares By Public Lead Frequency

 Less Than 4 Lead Services

 4 to 6 Lead Services

 7 or More Lead Service



Assumptions

Revision - 4/15/2021

-50% of unknowns are lead service lines.

-By Premise replacements are customer-initiated. This map shows a randomized distribution of By Premise replacements as a proportion of the total By Premise replacements identified by the Lead Free DC model.



0 0.5 1 Miles

M
M
MOTT
MACDONALD