Lead Service Line Program Semi-Annual Update

Steering and Rules Committee

July 19, 2018

Jennifer Gonda, Superintendent

Dr. Lucas Beversdorf, Water Quality Manager

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Lead Basics

- Lead is a toxic material that is found in paint, water pipes and fixtures, soil, toys, ceramics, jewelry, etc…
- There is no safe exposure to lead.
- Lead exposure is cumulative.
- Young children are particularly vulnerable to the toxic effects of lead and can suffer profound and permanent adverse health effects, particularly affecting the development of the brain and nervous system.
- Removing sources of lead contamination, including lead service lines, will reduce the prevalence of lead poisoning in our community.

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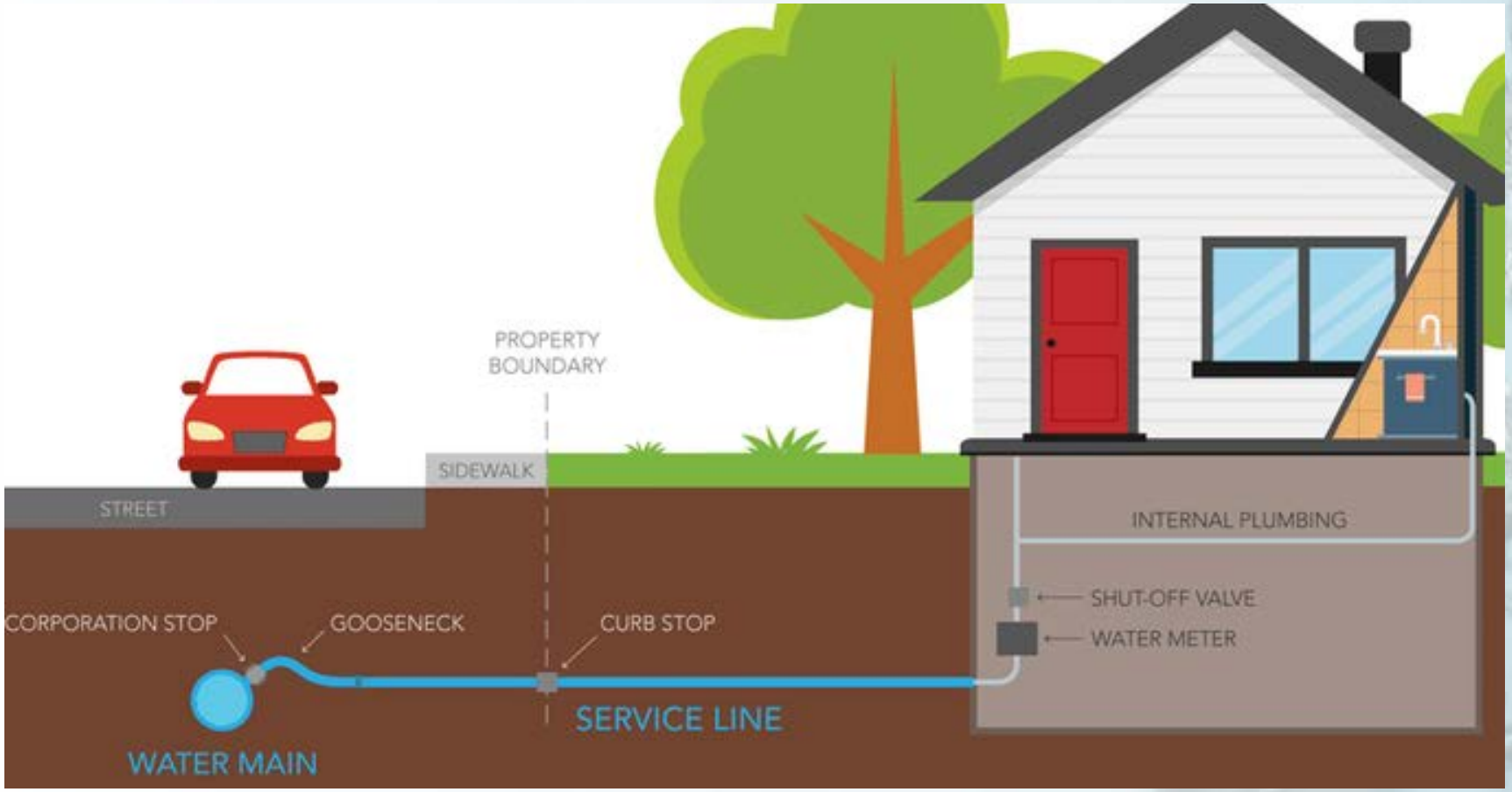
What is a Service Line?



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Recap: Lead Service Lines

- The water service line is co-owned by the utility and the property owner
- Milwaukee Water Works (MWW) started phasing out the use of lead for the public side of water service lines in 1947
- City enacted an ordinance in 1962 requiring copper service line installation on the private side
- MWW has used orthophosphate for corrosion control since 1996
- MWW is compliant with the Lead and Copper Rule, and is on a reduced monitoring status because our corrosion control is considered to be optimized

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Recap: Lead Service Lines

- Oct 2014 PSC orders increased water main relay program
- MWW performed PILOT study to assess lead in 2015
- Study results drove decision to place a moratorium on water main projects connected to lead service lines starting 1/1/16
- Began to replace rather than repair – conducted partial replacements for leaks and breaks only (approx. 330)
  - Filters were provided
  - Lead informational materials were provided
  - Owners were encouraged to replace their side (14 did)
- Worked to set up a legal and financial framework for full replacement mandate

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Lead Service Lines: Full Replacement Mandate

As of January 1, 2017, MWW is replacing lead service lines with copper when:

- A lead service line is found to be leaking or disturbed
- A lead service line is disconnected during planned water main construction
- A lead service line serves a child care facility or a private school
- An owner calls to initiate a replacement (no subsidy)
- Mandate extended to licensed <u>and</u> certified child cares as of 5/25/18

Replacing both the public and private side is mandatory by ordinance; no partial replacements or repairs.

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Lead Service Line Inventory

- Number of active public lead services in system as of 6/30/18:
  - 72,800 currently active and turned on
  - 3,490 currently active, but turned off at the curb stop
  - 45% of the 169,816 water services
  - 93% serve residential properties
- The last lead service line installed on the public side was in 1951, but approximately 2,000 properties were built later and connected to them

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Lead Service Line Inventory

4,540 of 31,706 properties built between 1952 and 1962 have been visually inspected by our meter techs or reported by residents.

- Of the 4,259 that have copper on the public side:
  - 3,650 (86%) have copper on the private side
  - 423 (10%) have galvanized steel on the private side
  - 174 (4%) have lead on the private side
  - 12 (0%) are cast iron
- Of the 262 that have lead on the public side:
  - 209 (80%) have copper on the private side
  - 29 (11%) have lead on the private side
  - 24 (9%) have galvanized steel on the private side
- Note: 19 were cast or ductile iron on the public side with no lead found on the private side

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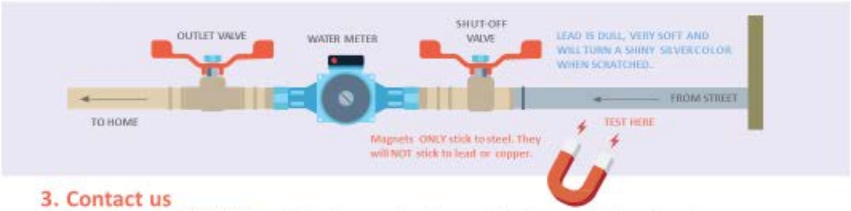
Lead-Safe Milwaukee

1. Important! Please read and respond!

Dear Occupant: To update our records, we need to know if the property where you live has a lead water service line or pipe. Please check to see what your pipe is made of and call us at (414) 286-2830.

2. Test the Pipe

- Find the water meter. This is typically in the basement but it could be on the first floor. From the meter, work your way to where the service line enters the building in the wall or in the floor.
- Find an area to test on the pipe between the wall or floor and the shut-off valve. (See diagram) The pipe may be wrapped in insulation. Pull this back to reveal the pipe.
- Use the magnet from this letter to see if it sticks to the pipe. If it sticks, the pipe is made of galvanized steel.
- If the magnet does not stick, use a key or a coin to scrape the pipe. If the scratch is copper-colored like a penny, the pipe is copper.
- If the scraped area is shiny and silver, the service line is made of lead.
- After touching a lead service line, wash your hands with soap and water. Safely clean up any debris from the scraped pipe with a disposable wet cloth.



3. Contact us

- Please call us at (414) 286-2830 and tell us the property address and the type of material you found.

OR

- Send us an email at watwebcs@milwaukee.gov. Put the property address in the subject line. Tell us the type of material you found. If you are the current occupant and do not own the property, please share your results with your landlord.

Thank you for your assistance.

Sincerely,

Jennifer Gonda

Superintendent

FOR MORE INFORMATION VISIT LeadSafeMKE.com • Espanol.LeadSafeMKE.com

If your service line is made of lead, find tips for drinking water safety at LeadSafeMke.com. The City of Milwaukee Health Department recommends that families in homes with lead service lines or plumbing and children under the age of 6 (especially bottle-fed infants), pregnant or breastfeeding women, or women who may become pregnant, drink and cook with water that has been filtered using a drinking water filter certified to remove lead by NSF/ANSI under standard 53.

Lead-Safe Milwaukee

1. ¡Importante! ¡Por favor lea y conteste!

Estimado residente: Para poner al día nuestros récords, necesitamos saber si la propiedad en donde usted vive tiene una línea o tubería de servicio de agua hecha de plomo. Por favor examine para ver de qué está hecha su tubería y llámenos al (414) 286-2830.

2. Hágale una prueba a la tubería

- Busque el medidor de agua. Típicamente se encuentra en el sótano, pero podría estar en el primer piso. Desde el medidor, camine hasta donde la línea de servicio entra en el edificio, por la pared o por el piso.
- Busque un área para hacer la prueba en la tubería, entre la pared o el piso y la válvula de cerrar. (Ver el diagrama). La tubería podría estar envuelta en material aislante. Quítelo para ver la tubería.
- Use el imán que va con esta carta para versi se pega a la tubería. Si se pega, la tubería está hecha de acero galvanizado.
- Si el imán no se pega, use una llave o una moneda para raspar la tubería. Si la raspadura es del color del cobre, como un centavo, la tubería es de cobre.
- Si el área raspada es brillante y plateada, la línea de servicio es de plomo.
- Después de tocar una línea de servicio de plomo, lávese las manos con agua y jabón. Con cuidado limpie cualquier basura del tubo raspado con una toalla mojada desechable.

3. Contáctenos

- Por favor, llámenos al (414) 286-2830 y díganos la dirección de la propiedad y el tipo de material que encontró.

O

- Mándenos un email al watwebcs@milwaukee.gov. Escriba la dirección de la propiedad en la línea del asunto. Díganos el tipo de material que encontró. Si usted es el residente actual y no es dueño de la propiedad, por favor comparta sus resultados con el propietario.

Muchas gracias por su ayuda.

Atentamente,

Jennifer Gonda, Superintendente

PARA MAS INFORMACION, VISITE, LeadSafeMKE.com • Espanol.LeadSafeMKE.com

Si su línea de servicio está hecha de plomo, encontrará consejos para tener agua potable segura en Espanol.LeadSafeMke.com. El Departamento de Salud de la Ciudad de Milwaukee recomienda que las familias en casas con líneas de servicio o tubería de plomo y con niños menores de 6 años de edad (en especial los infantes alimentados por botella), las mujeres embarazadas o dando de mamar, o mujeres que podrían quedar embarazadas, beban y cocinen con agua que ha sido filtrada usando un filtro certificado de agua potable para remover el plomo de NSF/ANSI bajo el estándar 53.

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LeadSafeMke.com
EspanolLeadSafeMke.com
watwebcs@milwaukee.gov
Milwaukee.gov/water

Customer Service
Servicios al Cliente
(414) 286-2830

24-Hour
Control Center
(414) 286-3710

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LSL Replacements in 2017-2018

- In 2017, 621 replacement projects were completed*
  - 438 were leaks or disruptions
  - 149 were child cares
  - 10 were owner initiated
  - 18 related to water main relays
  - 6 related to other utility work
- In 2018, 415 replacement projects have been completed
  - 282 were leaks or disruptions
  - 99 were child cares or schools
  - 5 were related to water main relays
  - 28 were owner initiated
  - 1 related to other utility work

*Note: the 2017 figures have been reviewed and updated since the January report.

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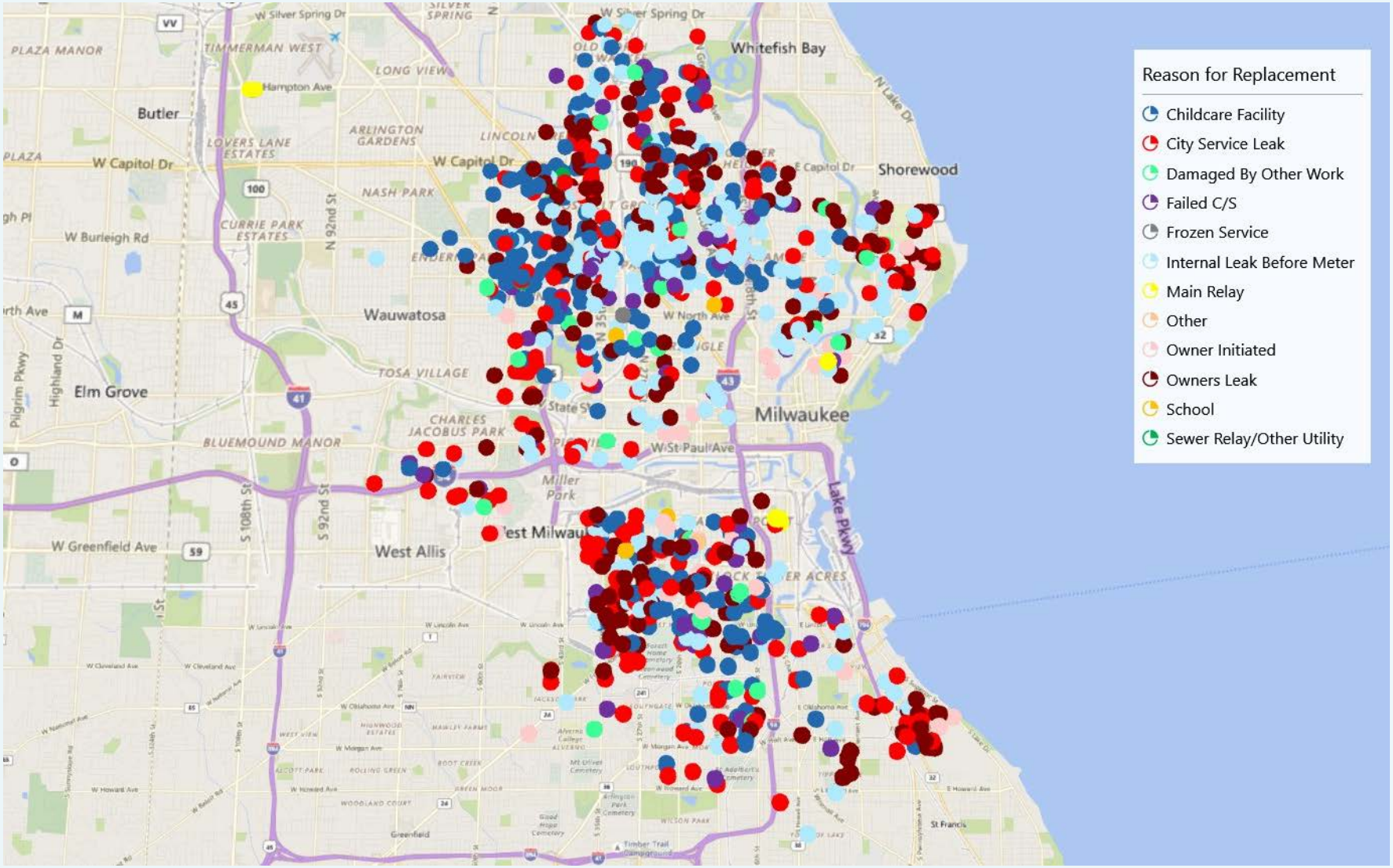
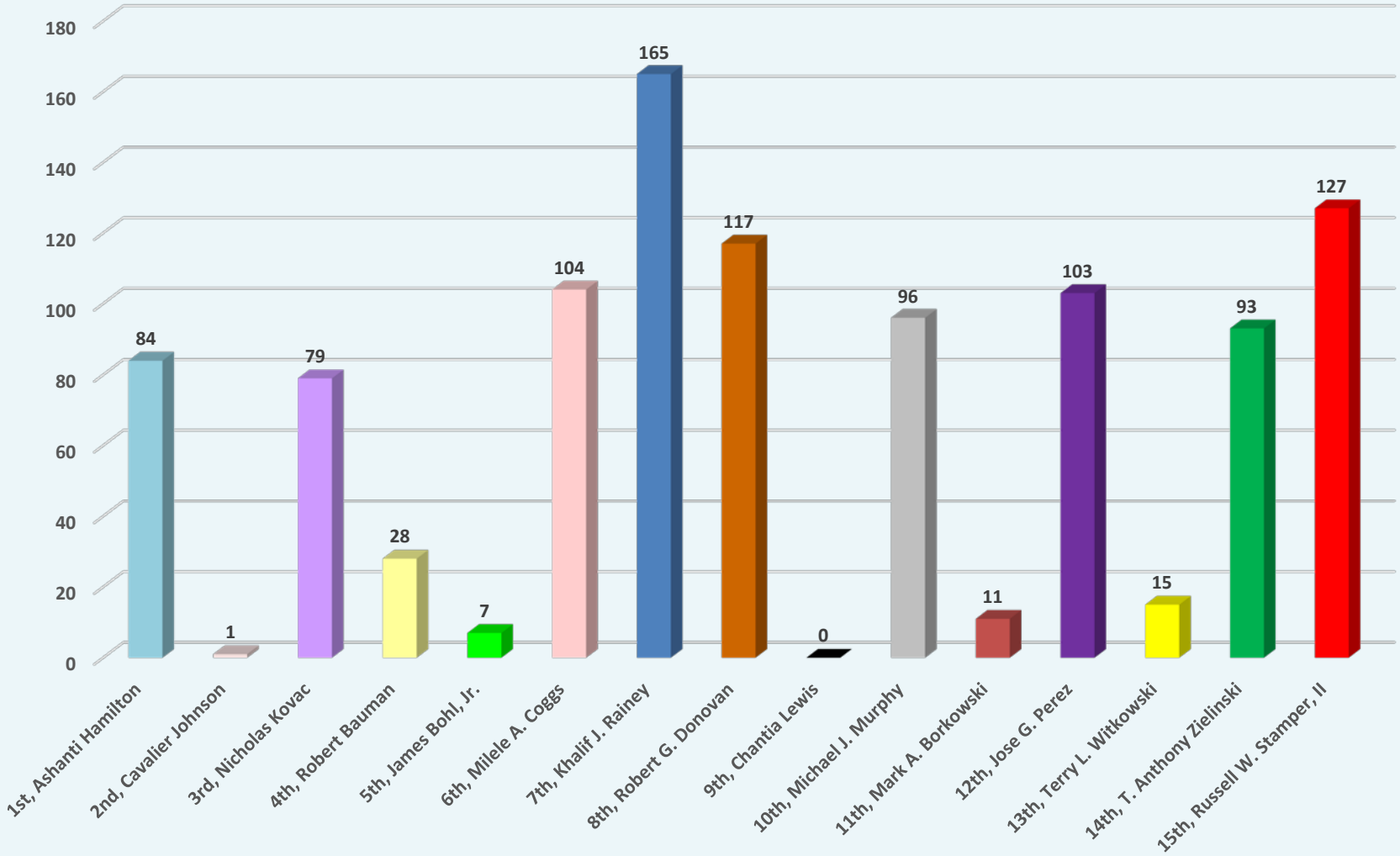
Lead Service Lines Replaced To-Date



LSL Replacements To-Date by Aldermanic District



LSL Replacements Projected in 2018

- 415 completed
- 800 budgeted
- At least 850 projected by year end
  - Mandate is driving numbers higher than budget
  - At least 200 more leaks or disturbances
  - 143 more replacements are under contract with water main relays
  - Approx 103 more licensed child cares

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Child Care LSL Replacements

- Licensed Child Cares
  - Funded in 2017/2018, mandate effective 5/25/18
  - 248 completed
  - 20 under contract for completion by 8/15
  - 78 out to bid tomorrow
  - 5 remaining to respond, overall good response to 45-day notice sent by MWW 5/24
  - Total varies as they open and close, will monitor monthly
  - Bottled water provided during project and at least 30 days afterward
  - Initial filter distribution and water testing done by MHD
- Certified Child Cares added per CCFN 171665
  - Approximately 100 being researched by MWW
  - Testing to be offered, replacements to be funded in 2019

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LSL Crews at Work

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LSL Contracts and Change Orders

Official Notice #	Description	# of Services	Bidders	Awards	Amount	Quantities Added by Change Order	
44-1-2017	Water Main Relay	12	4	Mid City Plumbing and Heating	$111,148		
Serv Order	Lead Service Line Replacements	137	NA	Various Vendors	$1,522,748		
45-1-2017	Lead Service Line Replacements	50	6	None - bids unbalanced	$0		
49-1-2017	Lead Service Line Replacements	50	4	American Sewer Services	$499,595		
71-1-2017	Lead Service Line Replacements	50	4	American Sewer Services	$539,575		
85-1-2017	Lead Service Line Replacements	20	4	Mid City Plumbing and Heating	$221,280	10	$110,640
93-1-2017	Lead Service Line Replacements	100	2	American Sewer Services	$938,618		
97-1-2017	Lead Service Line Replacements	100	3	American Sewer Services	$934,119		
97-1-2017	Lead Service Line Replacements	100	3	Mid City Plumbing and Heating	$1,004,400	20	$200,880
27-1-2018	Lead Service Line Replacements	50	5	Mid City Plumbing and Heating	$543,300	10	$108,660
27-1-2018	Lead Service Line Replacements	50	5	MJ Construction	$549,780	10	$109,956
40-1-2018	Childcare Lead Service Line Replacements	60	4	American Sewer Services	$489,225	12	$102,473
48-1-2018	Water Main Relay (1)	119	3	UPI LLC	$882,177	7	$59,673
70-1-2018	Lead Service Line Replacements	50	4	American Sewer Services	$449,525		
70-2-2018	Lead Service Line Replacements	50	4	MJ Construction	$456,530		
75-1-2018	Childcare Lead Service Line Replacements (2)	40	4	American Sewer Services	$316,026	5	TBD
100-1-2018	Childcare Lead Service Line Replacements	50	4	None - bids unbalanced	$0		
101-1-2018	Lead Service Line Replacements	50	3*	MJ Construction	$408,765		
106-1-2018	Lead Service Line Replacements	50		Bids to be opened 7/24/18			
115-1-2018	Childcare Lead Service Line Replacements	78		Bids to be opened 8/1/18			

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Lead Service Line Cost Update

- Using private contractors in a low bid contracting process – over $9m has been awarded.
- Invoices continue to come in higher than bid prices due to unpredictable project factors.
- Many invoices are outstanding or under review.
- Average full replacement cost to date: $12,675
  - Private Side: $6,536
  - Public Side: $6,139
- Cost has come down by $500/per project since Jan report
- Will exceed 2018 budget and will have better estimates for that in a couple months.

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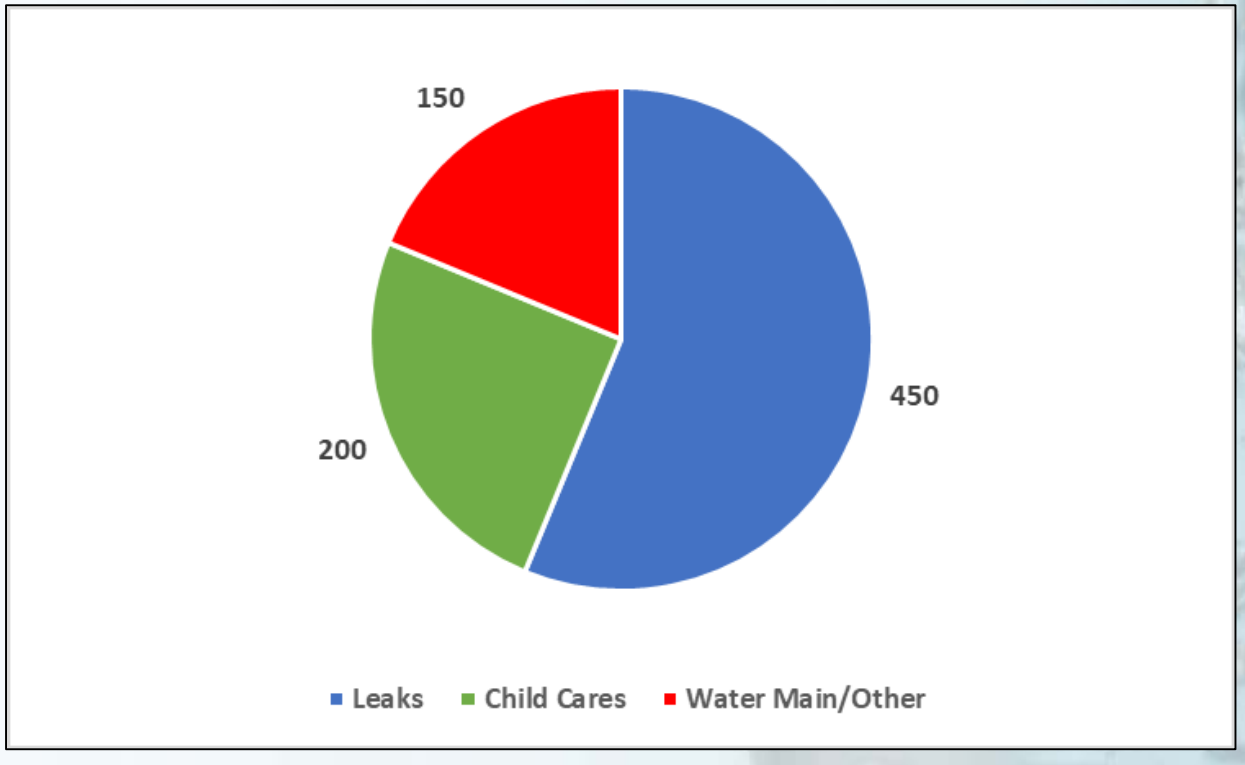
$8.8 Million Budgeted for LSLR in 2018

- Risk-Based
- Vulnerable Populations Prioritized
- Coordinated with Planned Investments



At least 850 projects projected – 6% higher than budgeted
$12,675 average cost – 15% higher than budgeted

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Building LSL Program Capacity

- Recommend adding financial assistance for:
  - Instances where both elevated blood lead levels and elevated water lead levels are documented in a household
    - Ordinance change in drafting to take effect end of year
- Add program capacity for:
  - Certified child cares
  - Completing the private side where partial replacement was conducted
  - More water main related projects
  - Planned replacements related to other street or utility work

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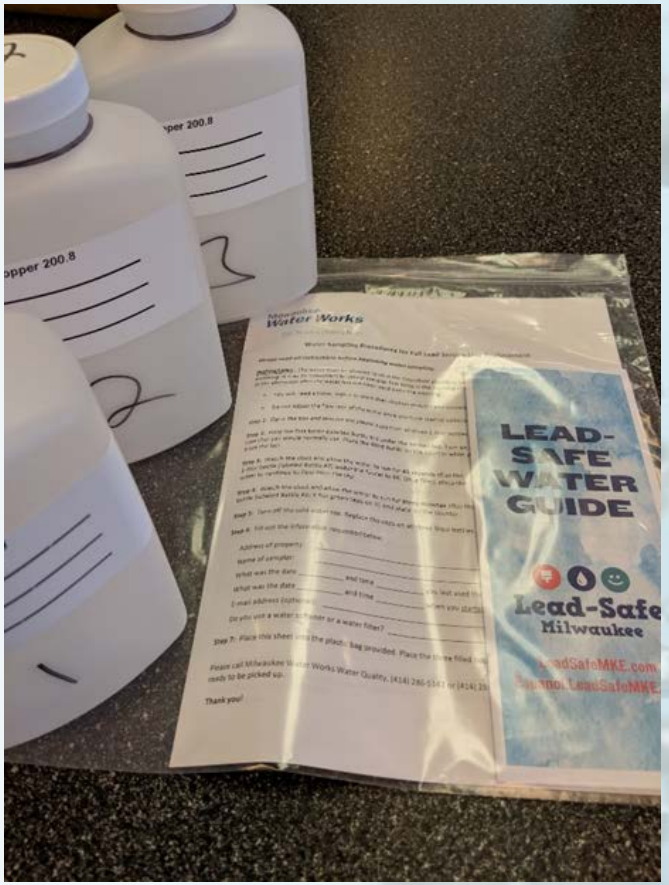
Lead in Water Sampling Protocol

- LSLR project entered into Water Distribution database, filter provided
- Project leader checks if resident is interested in lead sampling
- Call resident, explain process, answer questions, set up appointment
- Deliver 3-bottle kit, instructions, lead safe guide, flushing instructions, contact information
- Resident calls, pick up kit, preserve samples, chain of custody form, UPS to certified laboratory
- Contact resident, mail results, follow-up



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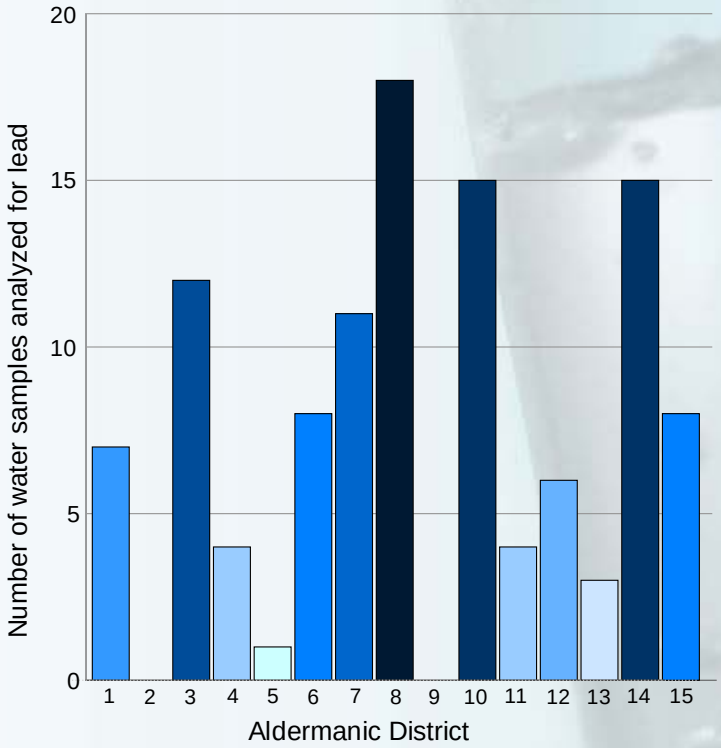
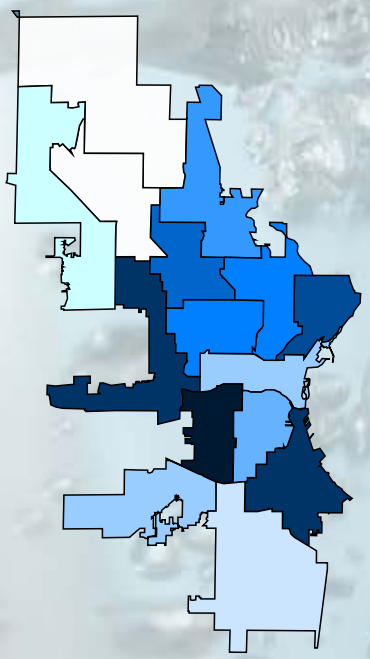
Participation in LSLR Water Quality Testing

- Approximately 1,400 LSLs replaced or pending since January 1, 2017
- 270 residents elected to sample and then declined
- 17 kits not returned in 2017
- 28 kits currently outstanding
- 2 kits being processed, results late July
- Results as of June 30th, 2018
  - 112 Pre-LSLR
  - 51 Post-LSLR
  - 5 Follow-up for rare incidents





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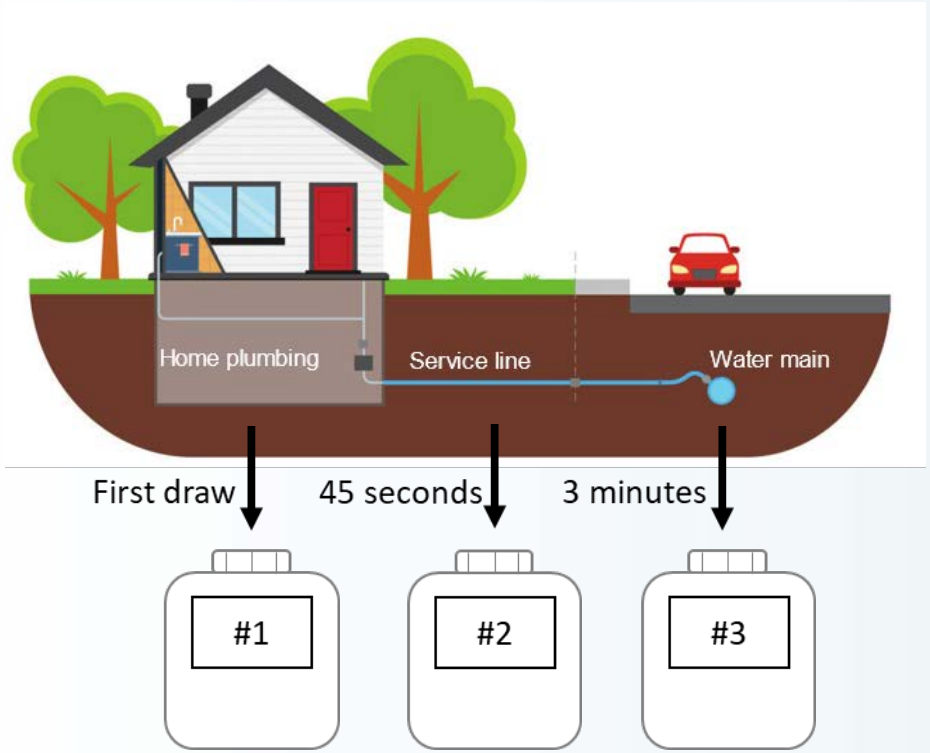
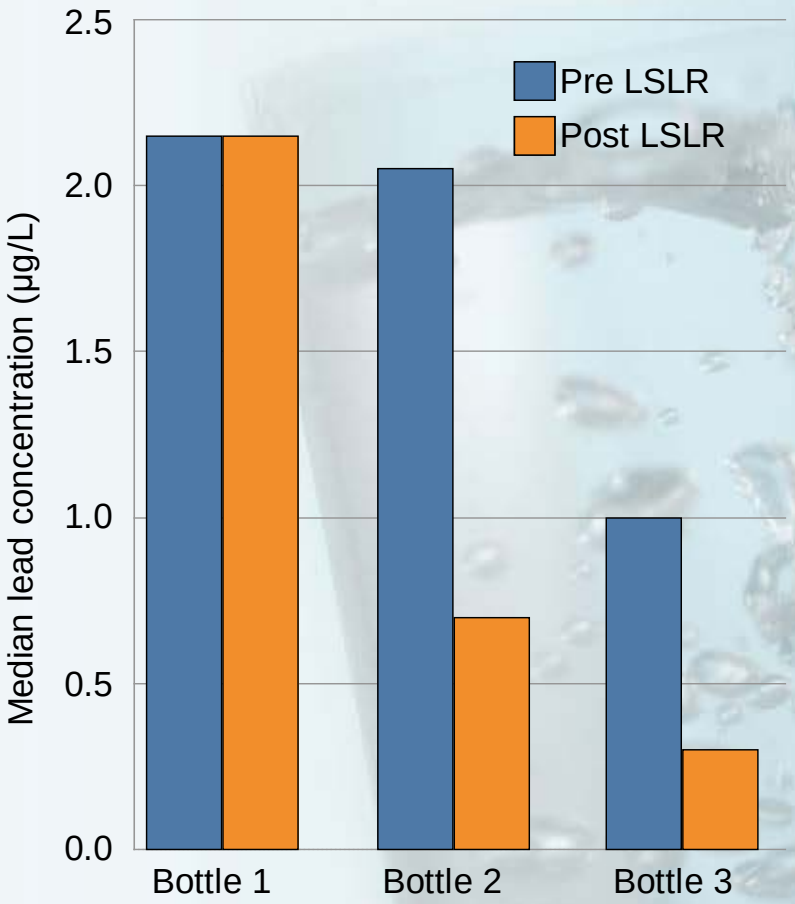
Lead Service Line Replacement Results





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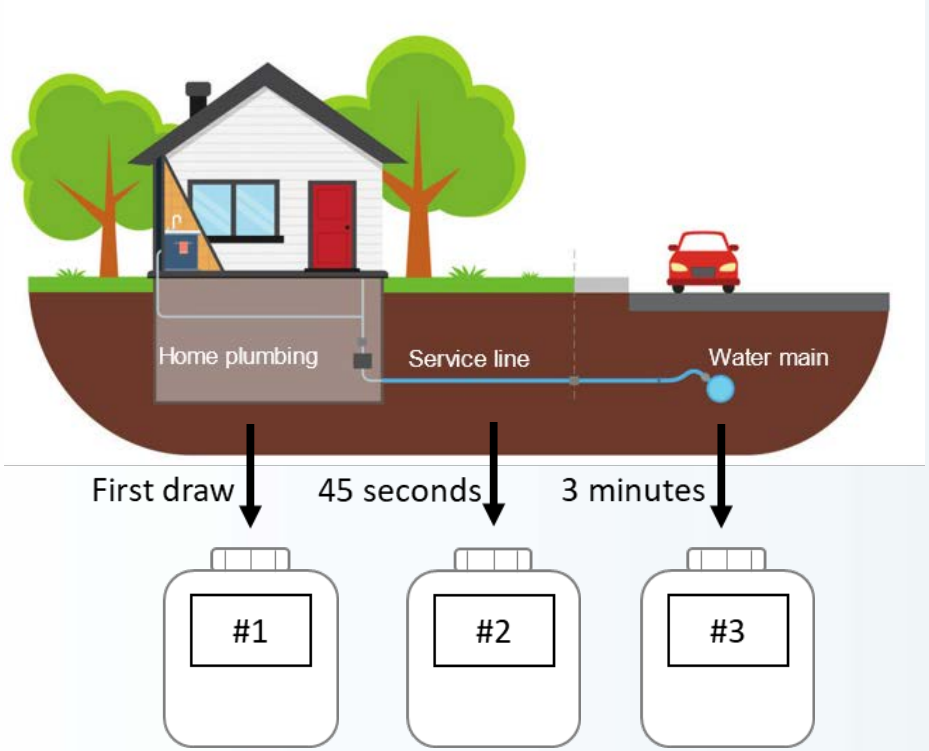
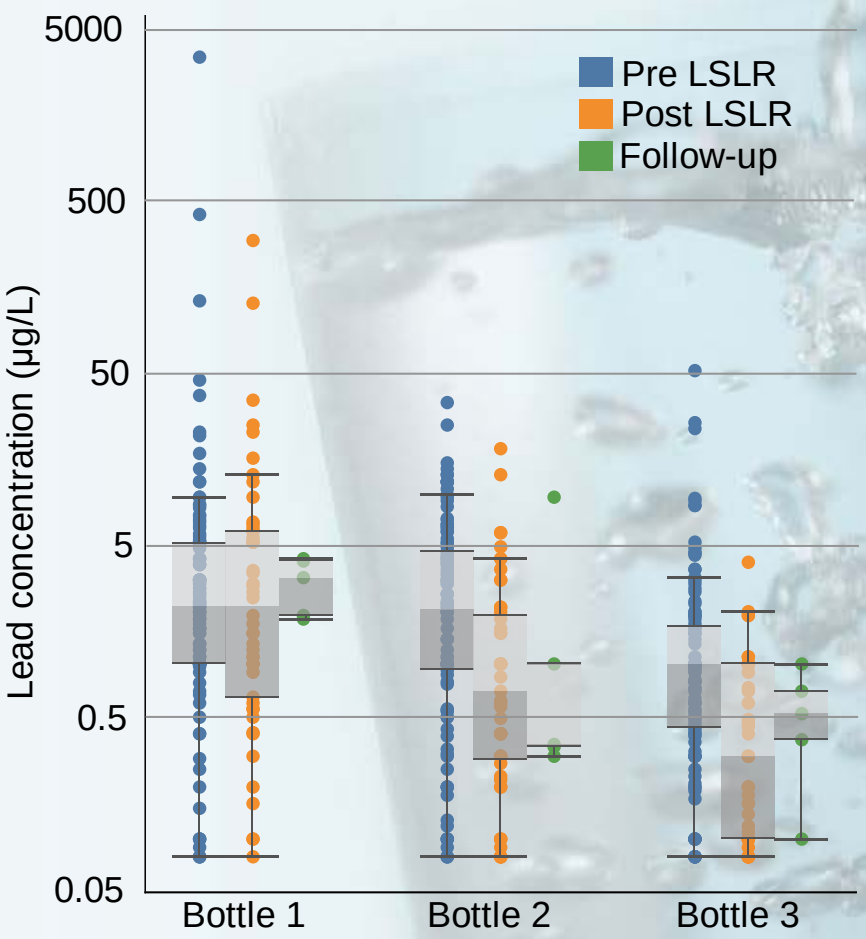
Lead Service Line Replacement Results





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Example of Resident Follow-up

- If lead results come back > 15 µg/L, we immediately reach out to resident
- Go over sampling/flushing procedures
- Inspect plumbing, fixtures, aerators
- Discuss other potential problems (e.g. pipe rattling, visible particulates, air in lines)
- Provide additional filter/cartridge
- Resample
- Follow-up

District 14 Resident

Lead (µg/L)	Before LSLR May 22nd	After LSLR May 25th	Follow-up June 5th
First draw (bottle 1)	11.0	23.0	3.90
45 seconds (bottle 2)	9.00	0.70	0.34
3 minutes (bottle 3)	8.60	0.44	0.52

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Example of Unique Child Care Case with Follow-up

- A child care had moderately high lead concentrations two weeks following LSLR
- Follow-up was conducted and the lead results were sporadic prompting the MHD to consult Water Quality
- Water Quality visited the child care, noticed that there was extensive lead plumbing in the basement after the meter, and collected water samples
- The resident stated a private plumber would fix the issue
- A final follow-up showed reduced lead levels

Lead (µg/L)	2 weeks post LSLR	4 weeks post LSLR	Follow-up 1	Follow-up 2
Bottle 1	5.3	36.0	9.9	1.9
Bottle 2	8.6	34.0	4.8	2.3
Bottle 3	14.3	34.0	4.6	1.0
Bottle 4	1.1	142	23.0	1.0

Data provided by Milwaukee Health Department

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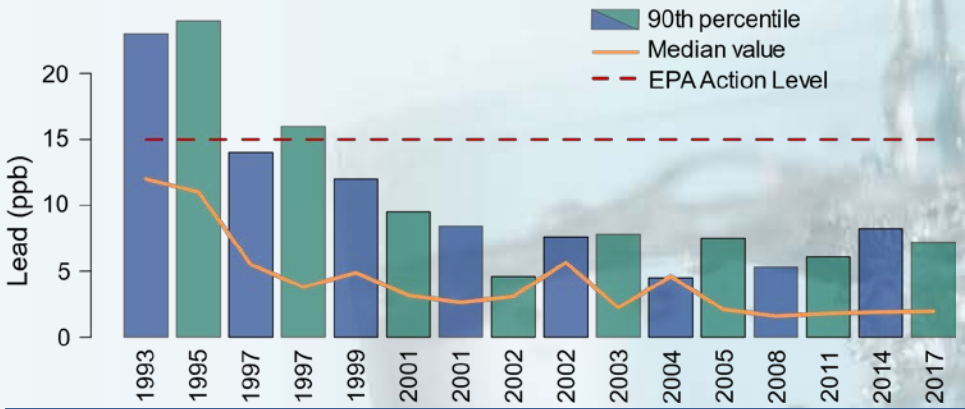
Optimized Corrosion Control Treatment

- 1988 MWW proactive study on lead reduction
- 1991 Lead and Copper Rule promulgation
- CH2M study at MWW to reduce lead, recommendations to DNR by 1994
- 1994 phosphate pilot study in Wauwatosa
- 1995-1996 MWW design, construction, training, startup, 2 rounds of sampling
- Full-scale implementation January 1997
- Addition of orthophosphate at 3 mg/L for 6 months (passivation process)
- Recommended dose reduction to ~1.2 mg/L orthophosphate, but continued 2.0 mg/L per DNR
- 2002 DNR issues letter stating MWW optimization and reduced sampling status for LCR compliance
- After 2002, MWW continues to dose at ~1.9-2.0 mg/L orthophosphate at a cost of $350,000 per year
- 2016 EPA publishes OCCT technical evaluation and recommendations (MWW optimized by EPA standards)
- 2018 MWW working with Comptroller to evaluate lead and copper corrosion control optimization



Water Quality Parameters (2017)	Minimum	Mean	Median	Maximum
Alkalinity, Total (mg/L)	102	104	103	112
Hardness, Total (mg/L)	130	135	140	140
Conductivity (µmhos/cm)	310	318	320	320
Chloride (mg/L)	14.0	14.9	15.0	16.0
Sulfate (mg/L)	25.0	27.7	28.0	30.0
Phosphorus (mg P/L)	**0.53**	**0.60**	**0.60**	**0.71**
Calcium (mg/L)	34.0	34.8	35.0	37.0
Iron (mg/L)	0.02	0.05	0.04	0.10
Magnesium (mg/L)	11.0	12.0	12.0	12.0
Aluminum (µg/L)	36.0	94.8	82.0	240
Manganese (µg/L)	0.14	1.03	0.79	3.30

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Madison and Milwaukee LCR Results from 2011-2017

Madison

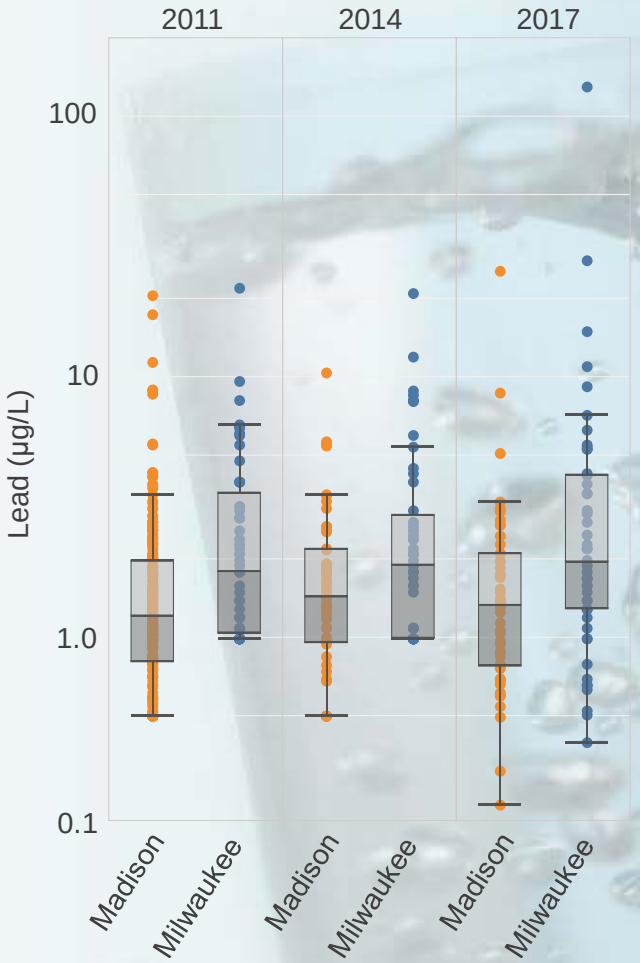
- No lead service lines
- Tier 1 = single family homes copper service lines with lead solder
- Ground water
- None, minimal corrosion control
- Median lead = 1.33 µg/L

Milwaukee

- ~73,000 lead service lines
- Tier 1 = single family homes with lead service line
- Surface water
- Orthophosphate for corrosion control
- Median lead = 1.88 µg/L

Both had > 25% of samples below detection limit

Neither exceeded EPA action level



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Summary of Testing Results

- Vast majority of samples had lead levels < 5 µg/L
- Highest lead levels are often from first draw sample (home plumbing)
- No significant reduction in first draw lead levels after LSLR
- However, significant reduction in lead levels seen after 45 second flush following LSLR
- Most lead levels > 15 µg/L explained by sampling mistakes or insufficient flushing following LSLR
- All follow-up samples were below 10 µg/L
- Corrosion control has been effective at reducing lead and copper in water but does not eliminate it

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MWW Filter Distribution

- 742 pitcher filters distributed year-to-date
- Filters are now provided by MWW when:
  - An LSL replacement is planned
  - A property with a LSL is directly affected by a water main break
  - A sewer or road project is proximate to a property with a LSL (by request)
  - A planned or emergency water shut-off affects a property with a LSL (by request)
  - A frozen service has to be thawed
- MHD responsible for distributing additional filters to vulnerable populations

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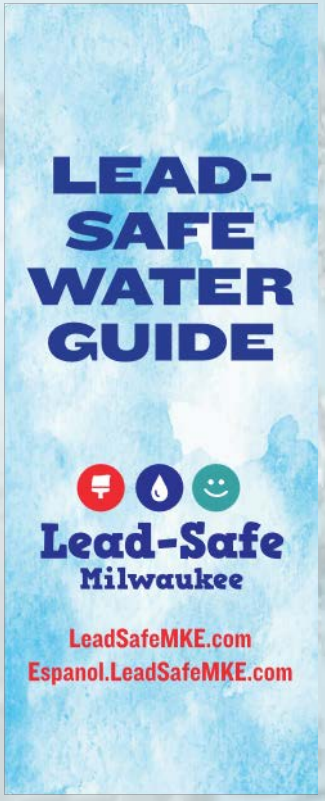
Lead-Safe Milwaukee
SAFE PAINT SAFE WATER SAFE KIDS

LSL Outreach in 2018

- Letter to 31,905 properties built from 1952-62
  - 13% response rate
- Developed new Lead-Safe Water Guide brochure and mailed in 2nd quarter bills
- Presentations Jan-June at community meetings (12 total) – low participation
- Specialized outreach meetings for water main projects including LSL work
- Provided customized lead-safe water info to customers at utility and DPW activities affecting LSLs
- Consumer Confidence Report bill insert 2Q with Lead-Safe Mke info



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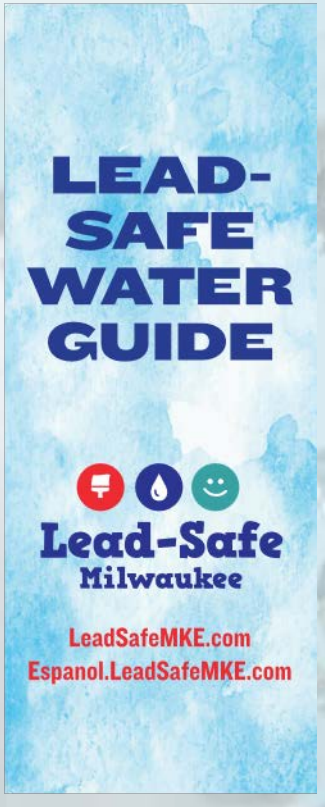
Lead-Safe Milwaukee
SAFE PAINT SAFE WATER SAFE KIDS

LSL Outreach in 2018

- LeadSafeMKE.com Jan-June received 3,262 pageviews (Feb-July 2017 was 3,849 pageviews)
- Provided info at Customer Service Center calls, email and in-person visits
- Lead-Safe info brochures available at health centers, libraries, City Hall complex
- Continuous updating of data search at Milwaukee.gov/Water to see if a property has city-owned side of lead service line
- Updated Lead in Water page on MWW website: https://city.milwaukee.gov/water



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LSL Outreach Next Steps

- Second semi-annual bill insert will be MHD brochure highlighting lead in paint and soil
- Preparing 2019 2Q bill insert
- “Be Lead-Safe” Public Service Announcement Video Contest for MPS high schools first semester 2018
- Establishing “trusted partners” with Zip Code-related organizations for future communications
- Letter to 72K properties with known LSLs to be mailed Sept. 15; includes LSL pipe label promoting awareness through action

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Questions?

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