



Rural
Community
Assistance
Partnership

Understanding the Revisions to the Lead and Copper Rule: What it Means for Tribes

RCAC, the western RCAP, is an equal
opportunity provider and employer.





Rural Community Assistance Partnership



RCAP National Office



COMMUNITIES
Unlimited

RCAC Programs

- Affordable Housing
- Community Facilities
- Water and Wastewater Infrastructure Financing (Loan Fund)
- Classroom and Online Training
- On-site Technical Assistance
- Median Household Income (MHI) Surveys

Questions?

Let's Keep it Casual

Feel free to raise you hand
at anytime





Who's Here Today?

- Operator
- Manager
- Tribal Council
- Regulator
- TA / Consultant
- Other

Today's Presenter



Quinn Andreas

- Rural Development Specialist
- 541-452-1127
- qandreas@rcac.org



Understanding the Revisions to the Lead and Copper Rule

What it Means for Tribes

Today's Agenda

Lead Basics

The Lead Copper Rule

Focus on Service Line
Inventories

Bipartisan Infrastructure Law

Conclusion / Questions



Lead Basics & Lead and Copper Rule

Exposure to Lead is Harmful to Humans

- Infants and children absorb more lead than adults.
 - Impaired mental development
 - IQ deficits
 - Shorter attention spans
 - Low birth weight
- Adults - Increased blood pressure, kidney damage
- Maximum Contaminant Level Goal (MCLG) for lead is zero – any amount of lead in water is undesirable.

EPA's Lead Action Level

- Not a standard for establishing a safe level of lead
- Measure of the effectiveness of corrosion control in water systems
- Action level set at 0.015 mg/L (15 ppb) using 90th percentile
- If exceeded, perform public education, LSL replacement, corrosion
- Violation if system does not take steps

To calculate the 90th percentile:

- Rank the samples according to their lead or copper concentrations
- Find the “sample” at which:
 - 90% of all samples have a lower concentration
 - 10% of all samples have a higher concentration

Sample #	Lead (mg/L)
1	0.004
2	0.005
3	0.005
4	0.006
5	0.006
6	0.006
7	0.009
8	0.010
9	0.011
10	0.017

Copper

- Exposure to copper can cause stomach and intestinal distress, liver and kidney damage, and complications of Wilson's disease.
- EPA set an MCLG of 1.3 mg/L



Rules that Impact Lead

- Reduction of lead in materials
 - The Lead Ban (1986)
 - The Reduction of Lead in Drinking Water Act (2011)
- Standards and Monitoring Requirements
 - The Safe Drinking Water Act (1974)
 - The Lead Contamination Control Act (LCCA) (1988)
 - The Lead and Copper Rule (1991, revised 2000, 2007)
 - The Lead and Copper Rule Revisions (LCRR initial 2021)

Lead Regulations – In Materials

- 1986 – Required use of “lead free” pipe, solder, and flux
 - 0.2% lead in flux/solder - “lead free”
 - 50% prior to 1986
 - <8% lead for pipes and pipe fixtures
- 1998 – Banned fixtures that were not “lead free”
- 2011 – Redefined lead free as 0.25%

Lead Regulations – Standards and Monitoring Requirements

- 1974 – Maximum Contaminant Level (MCL) - 0.050 mg/L SDWA
- 1988 - Lead Contamination Control Act
 - Lead monitoring and reporting requirements for all schools (not enforceable)
- 1991 - Lead and Copper Rule (LCR)
 - Action levels - 0.015 mg/L lead, 1.3 mg/L Cu
 - Community Water System (CWS) and Non-Transient Non-Community Water System (NTNCWS)
 - Minor revisions 2000, 2007
- 2021 –Jan 2021 Issued LCRR (will revise final by Oct 2024)

The Evolution of Lead in Drinking Water

- Pre-1951– Lead used as Industry Standard
- 1977 – Lead Banned from Paint
- 1986 – Pipes, solder, or flux must be “lead free” (Pipes < 8%)
- 1991 – Lead Removed from Gasoline
- 1991 – Lead & Copper Rule first published
- 1996 – New plumbing fittings & fixtures must be “lead free”
- 2011 – Reduction of Lead in Drinking Water Act Passes
- 2020 – EPA published final “Lead Free” Rule (less than 0.25%)

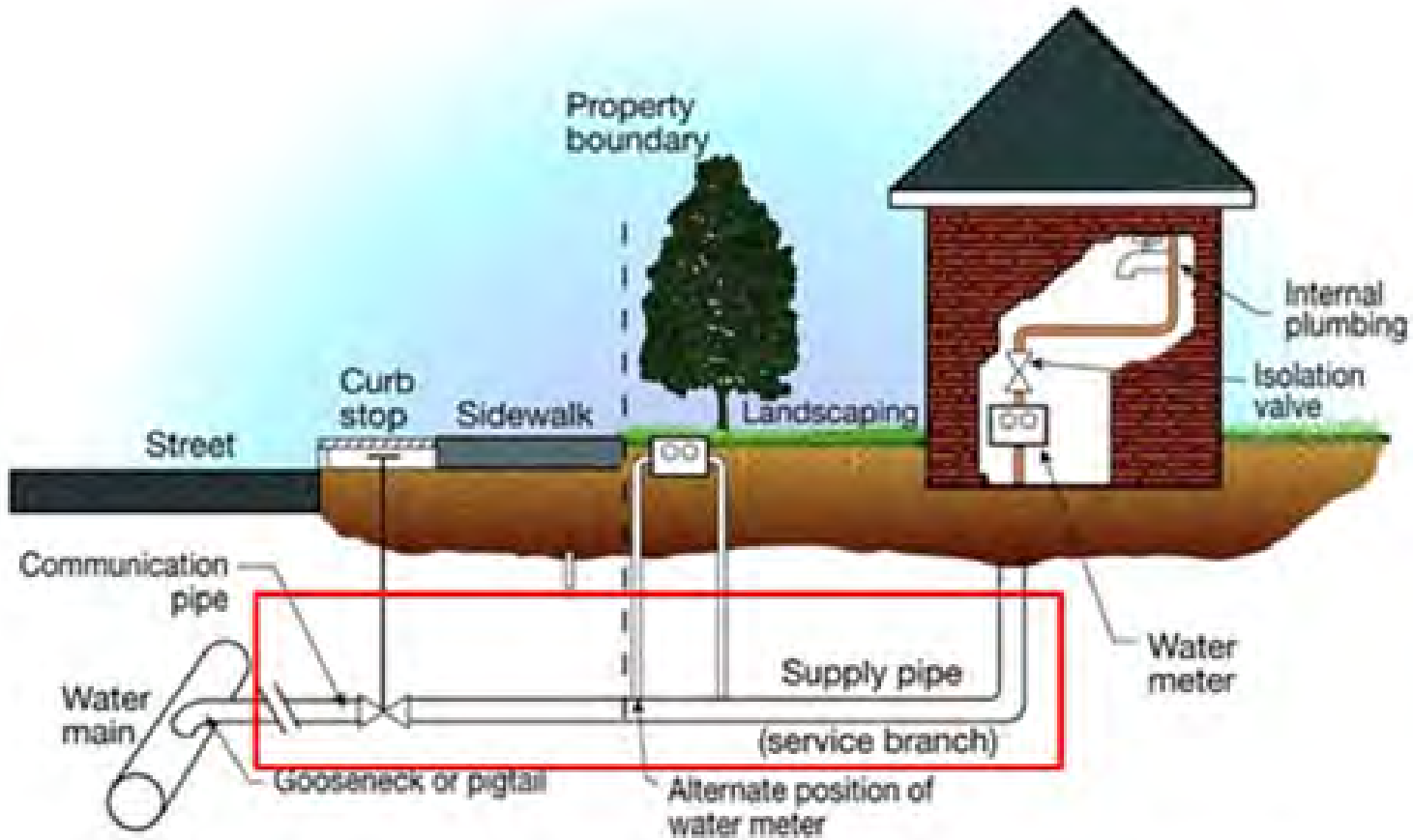


Sources of Lead

- Rarely from source water or distribution mains
- Service lines
 - Lead service lines, on either side of the meter
 - Goosenecks or pigtails (see next slide)
 - Galvanized steel pipe downstream of lead source
- Customer plumbing
 - Leaded solder
 - Brass plumbing fixtures



Ownership of System Components



Forms of Lead

- There are two forms of lead commonly found in water:
- Dissolved lead
- Particulate lead

- They can occur separately
- or together



Factors that Impact Dissolved Lead Concentration

Parameter	Impact on Dissolved Lead
pH	Higher pH lowers lead levels
Dissolved inorganic carbon (DIC)/Alkalinity	Higher DIC generally lowers lead levels, but not always
Disinfectant residual	Higher residual lowers lead levels
Orthophosphate corrosion inhibitor	Use lowers lead levels
Polyphosphate sequestering agent	Use may increase lead levels
Iron, manganese, aluminum or organic matter	Presence can increase lead levels
Temperature	Higher temp can increase lead levels
Stagnation time	Stagnation increases lead levels

Factors That Can Impact Particulate Lead Concentration

- Operational practices can increase lead levels
- Physical disturbances
 - Repairing a main break
 - Meter repair
 - Repair of other nearby underground service
- Hydraulic changes
 - Flushing
 - Valve/ hydrant testing

CHANGES IN WATER QUALITY OR OPERATIONS CAN INCREASE LEAD LEVELS!

- Lead levels are sensitive to changes in:
 - Source water quality
 - Variability in treated water quality
 - pH and DIC
 - Treatment process
 - Sequestrant or corrosion inhibitor
 - Disinfectant residual (loss)
 - Residual loss changes ORP which impacts lead solubility
 - System hydraulics

Monitoring Requirements

- Sampling sites – with highest potential levels
- Frequency – Set by regulation – Reduced monitoring possible
- Procedures – First-draw, try to observe the highest concentrations

Site Selection for Community Water Systems (CWS)

- Three tier criteria to identify home with the highest risk
 - Tier 1
 - Single family
 - If lead service lines (50% of those sites must be sampled)
 - Copper pipe and lead solder after 1982 (and before lead ban 87/88)
 - Tier 2 - Building/multi-family
 - Tier 3 – Lead solder before 1983
- Changes with LCRR?:
 - Require sampling as many Tier 1 sites as possible and modify Tier 3 to any site with lead solder

Non-Transient Non-community Water Systems (NTNCWS)

- 2 tier criteria
 - Tier 1
 - Lead service lines or
 - Copper pipe and lead solder after 1982 (and before lead ban 87/88)
 - Tier 2
 - Lead solder before 1983
- Changes with LCRR?:
 - Require sampling as many Tier 1 sites as possible and modify Tier 2 to any site with lead solder

Minimum Number of Tap Samples

System Population	Number of Sampling Sites (on Routine Monitoring)	Number of Sampling Sites (on Reduced Monitoring)
>100,000	100	50
10,001 to 100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
≤100	5	5

Monitoring Schedules

- Standard monitoring:
 - Conducted at 6-month intervals from January-June or July-December
- Reduced monitoring
 - Can be annual, triennial, or 9-year monitoring schedules.
 - Conducted during a 4-month period from June-September
 - Time of normal operation when highest likely lead levels
- Changes with LCRR?:
 - Additional monitoring if lead trigger level (TL) is exceeded



Procedures for Sampling

- First-draw
- 6-hour standing time
- One-liter volume
- System or residents can collect
- Samples are taken from kitchen/bathroom taps

Issues and Recent Recommendations

- No water softeners or POU/POE treatment devices
- Aerators – Leave on
- Use wide mouth sample bottles (encourages higher flow rates)
- No pre-stagnant flushing

Other Samples

- Customer requested samples should not be included in the 90th percentile calc. (*states are still requiring these to be reported*)
- Sampling not required at schools or public buildings (but recommended)
- Changes with LCRR?:
 - LCRR proposes that for any tap sample exceeding the Action Level (AL), utility must resample and attempt to find and fix the reason for the exceedance
 - LCRR proposes that utility take samples at schools and day care centers

Without an Action Level Exceedance

- Notify consumers of lead tap results
- Consumer Confidence Reports



Lead Consumer Notice

- Impacts all CWS and NTNCWS
- Requirements (varies by state)
 - Provide notice of lead tap water monitoring results
 - Regardless of whether sample exceeds lead AL
 - To all served by sampling site -- not just the person who pays the bills (i.e. renters)
 - As soon as practical but within 30 days after receiving results
 - By mail or other State-approved methods

Consumers tips for reducing lead exposure

- Flushing – Stagnant water
- Clean aerators
- Get your water tested
- Install filters



Lead Service Lines – do they need to be replaced

Full replacement – From main to inside the home

-currently not required (BMP)

Partial replacement – From the main to the meter

Disturbance on the main or service line

You are not required, but recommended to:

- Have a program to replace lead service lines
- Have a program to help customers monitor their tap
- Sample schools, daycares, and other public buildings
- Changes with LCRR?:
 - LCRR proposes to require you to test in schools and day care facilities

Service Line Inventories

Inventory EPA Links

LCRR Service Line Guidance Web Page:

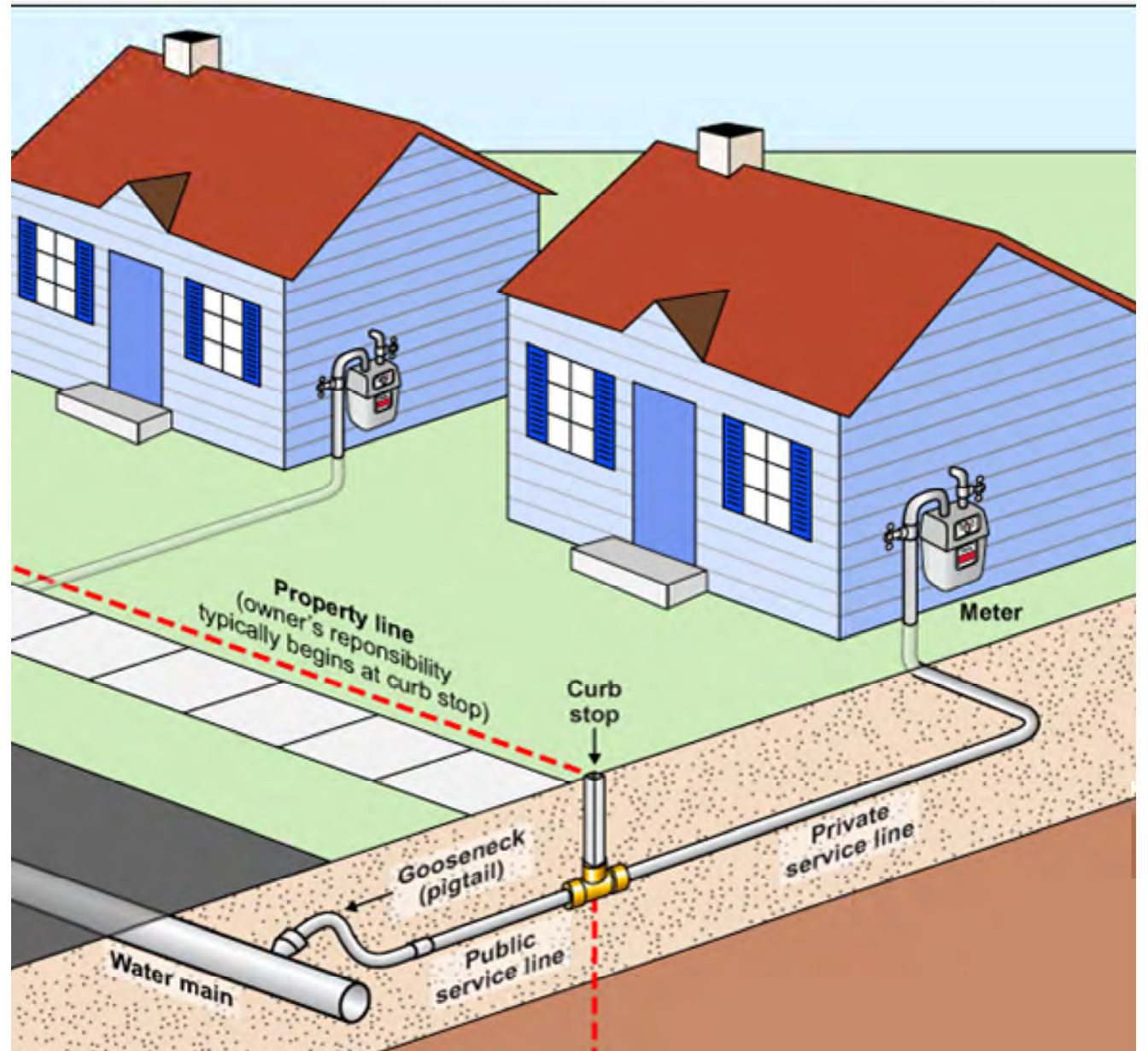
<https://www.epa.gov/ground-water-and-drinking-water/revised-lead-and-copper-rule>

Guidance for Developing and Maintaining a Service Line Inventory PDF:

https://www.epa.gov/system/files/documents/2022-08/Inventory%20Guidance_August%202022_508%20compliant.pdf

What Is A Service Line?

The Line From the Main to the Building Foundation, Regardless of Ownership



What's Required Under the LCRR?

- All community and non-transient non-community water systems to develop a service line inventory and submit it to EPA by
- October 16, 2024
- Every service line at the system will have to be classified into one of four categories:
 - Lead
 - Galvanized needing replacement- (Galvanized service line is or was downstream of a lead or unknown material)
 - Non-Lead – SL determined through evidence-based record, method, or technique not to be lead or GRR
 - Unknown – No documented evidence supporting material classification

What if We Don't Have Any Lead Lines?

- Submit a statement to that fact (citing supporting documentation)
- No Regular Updates Will Be Required to EPA or the Public
- *EPA R10 will release more information and guidance soon

What is Acceptable Documentation?

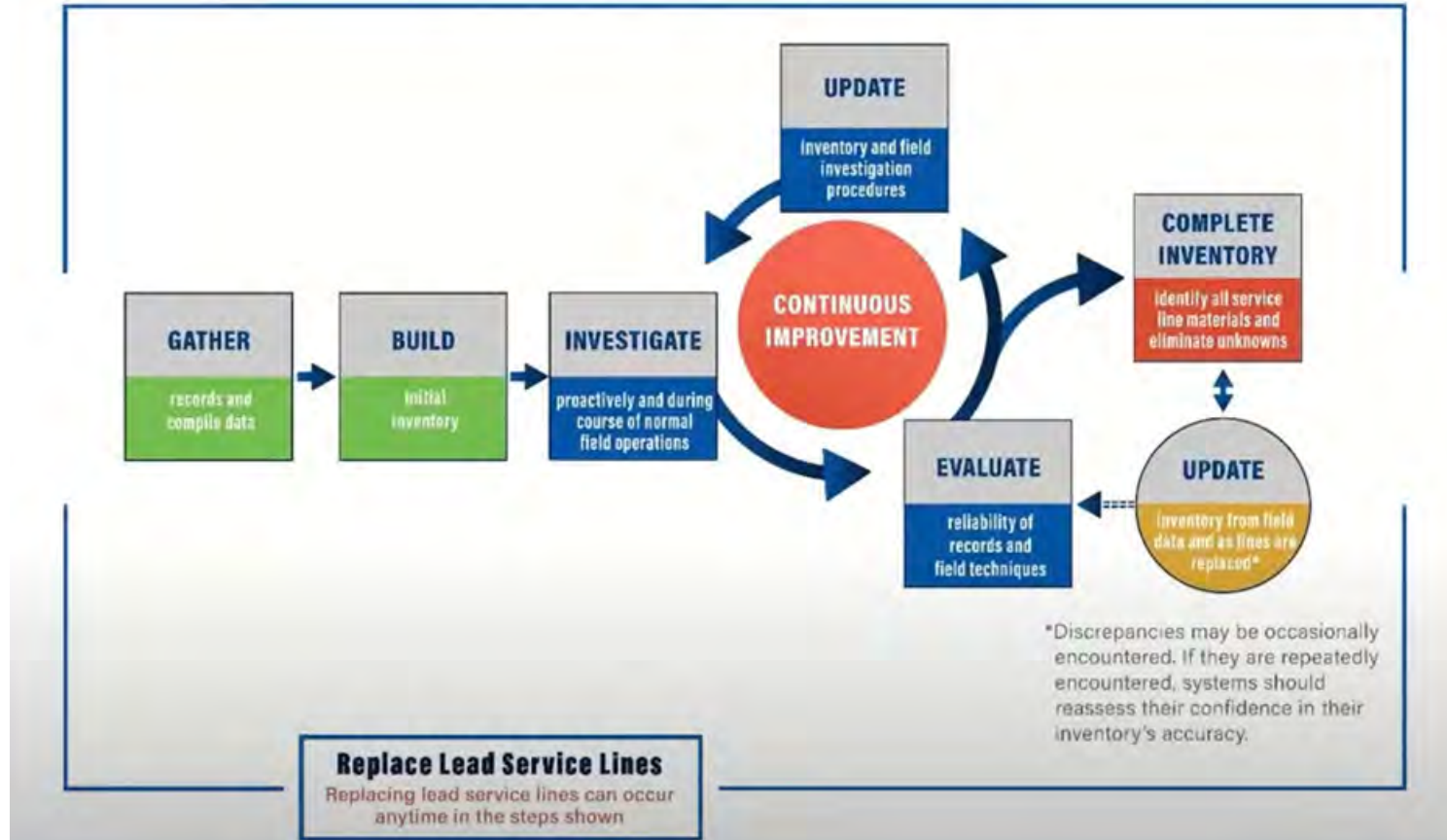
- Construction and plumbing codes, permits, and existing records
- Water system records, including distribution system maps and drawings, historical records on each service connection, meter installation records
- Inspections and records of the distribution system

Service Lines Do Contain Lead or Unknown

- Identify which lines are non-lead
- What category the SL's fall under
- Develop a service line replacement plan by October 16, 2024
- Notify customers with a known or potential SL consisting of lead
- Provide regular updates of the inventory to EPA

Where to Start?

Inventory Planning



Where to Start?

Historical Records Review and Research:

- Review any available as-builts and contact IHS for historical documents
- Document information from long-time operators or past operators
- Become aware of plumbing codes, state and federal rules

Type of Historical Records	Regulatory Requirement (citation)	Primary Uses for Inventory Development (Including but not limited to)
Previous Materials Evaluation	Water systems must use the information on lead and galvanized iron or steel that it identified under 40 CFR § 141.42(d) ⁴ when conducting the inventory of service lines in its distribution system for the initial inventory (40 CFR §141.84(a)(3)).	<ul style="list-style-type: none"> • Reporting construction materials present in their distribution systems. • Identifying LSL material for subset of sites that were used for lead and copper tap monitoring.
Construction and Plumbing Codes and Records	Systems must review all construction and plumbing codes, permits, and existing records or other documentation which indicates the service line materials used to connect structures to the distribution system to identify service line materials for the initial inventory (40 CFR §141.84(a)(3)(i)).	<ul style="list-style-type: none"> • Identify when LSLs were allowed/specified or banned from use. • Identify service areas most likely to have LSLs by home/building construction date and service line size. • Review construction and plumbing permits for identification of service line (customer and/or system-owned) and plumbing materials.
Water System Records	Systems must review all water system records, including distribution system maps and drawings, historical records on each service connection, meter installation records, historical capital improvement or master plans, and standard operating procedures, to identify service line materials for the initial inventory (40 CFR §141.84(a)(3)(ii)).	<ul style="list-style-type: none"> • Identify service line material for system-owned and customer-owned sides.
Distribution System Inspections and Records	Systems must review all inspections and records of the distribution system that indicate material composition of the service connections that connect a structure to the distribution system to identify service line materials for the initial inventory (40 CFR §141.84(a)(3)(iii)).	<ul style="list-style-type: none"> • Identify service line material for system- and customer-owned portions. • Verify construction and water system records.

Where to Start?

Historical Records Review and Research:

- Other types of Installation records

Type of Water System Record Required under the LCRR ¹	Relative information	Possible Formats
Distribution system map and drawings	Date of construction of different parts of the distribution system may help inform when and where LSLs were used.	Hard copy maps, digital maps, or web-based map applications
Historical records on each service connection	Detailed information on service line material, location, and size.	Ledgers, cards (e.g., tap cards or drill records), or databases
Meter installation records	May contain the service line material. Meter size and/or type can indicate service line size or building usage.	Water system files and records
Historical capital improvement or master plans	Historical installation patterns may help inform when LSLs were used.	Archived report or electronic document
Standard operating procedures	Allowable materials for construction of service lines and for service line repairs.	Specifications and standards used by the water system

Service Line Investigation Methods

- Visual inspection of service line
- Water quality sampling
- Excavation
- Predictive modeling
- Emerging methods

Visual Inspection of Service Line

- Plastic is a smooth pipe of various colors (e.g. white, blue, black, and green)
- Lead is a soft metal that is dull, silver-gray color.
- Copper Is the color of a penny
- Galvanized is a dull silver-gray color that is difficult to scratch. Magnetic.

Ways to tell if a pipe is lead

- Scratch test
 - Grey or color like a penny?
 - Easy to scratch?
- Lead swabs
- Shape
- Magnet (will stick to steel, not lead)





Examples of Lead Piping

Water Quality Sampling

Targeted Service Line Sampling:

Flushing out the volume of water in the plumbing to collect water in the service line.

Flushed Sampling:

Collecting a sample after a set flushing time. (5 minutes could result in a difference in levels to distinguish LSL from non-LSL)

Sequential Sampling

Uses a series of consecutive samples collected from an interior tap after stagnation period

Excavation

Mechanical Excavation

- -Backhoe or mechanical device to expose the service line
- -Labor intensive, expensive and disruptive

Vacuum Excavation

- -Uses water jet or compressed air to loosen soil resulting in a small hole to access service line
- -Less intrusive, cheaper, less likely to damage



Example of Vacuum Excavation.

Source: Hensley et al., 2021



Example of a Mechanical Excavation

Source: Duffy and Pickering, 2021

Funding Sources

The Bipartisan Infrastructure Law (BIL): A once-in-a-generation investment in infrastructure across the nation

Also Known as the Infrastructure Investments and Jobs Act (IIJA)

Signed November 15, 2021

EPA will be investing more than \$60 billion in the health, equity, and resilience of American communities, including resources for Tribal Nations and their communities

The Bipartisan Infrastructure Law (ctd)

More than \$50 billion to improve drinking water, wastewater, and stormwater infrastructure and to protect our regional waters

\$11.7 billion for safe drinking water, \$15 billion to replace lead pipes, \$11.7 billion to ensure clean water for communities

Appropriates \$700 million in each fiscal year from FY 2022 through FY 2026, for a total of \$3.5 billion for the IHS

The Bipartisan Infrastructure Law (ctd)

\$43.4 billion in funding through State Revolving Funds. Each of these EPA funding streams includes a 2% Tribal set-aside, meaning that Tribal governments are eligible to receive approximately \$868 million

R10 Tribal Set-Aside Funding FY22:

DWSRF Supplemental	\$9,933,000
DWSRF Emerging Contaminants	\$4,178,000
DWSRF Lead Service Lines	\$15,669,000

EPA Regions are responsible for working with the Indian Health Service (IHS) and the tribes, to identify, prioritize, and select projects to receive funding from its share of the program funds

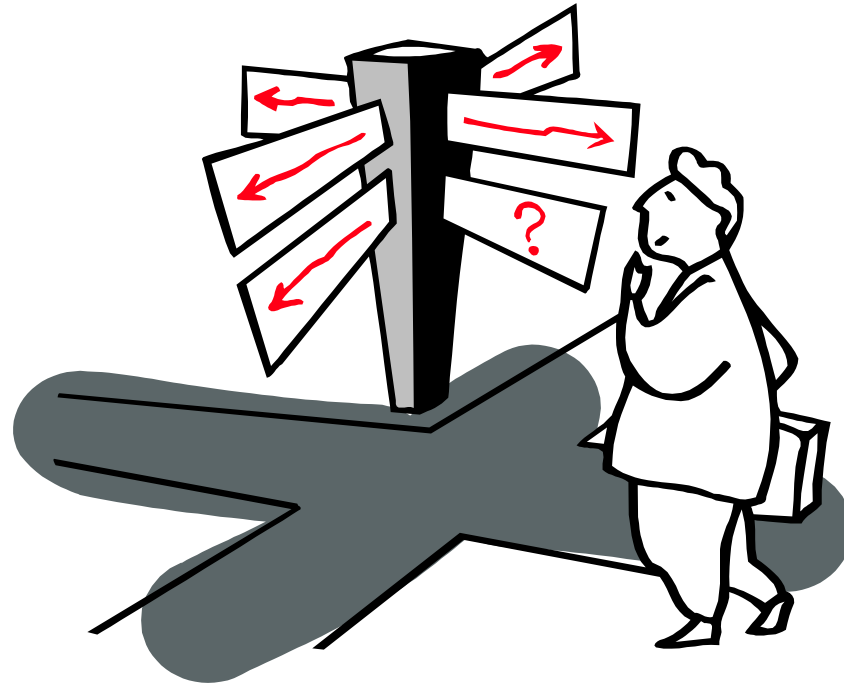
Other Funding Opportunities

- EPA:
 - WIIN 2104 SUDC
 - -For small, underserved and disadvantaged
 - -Administered by Washington DOH
 - WIIN 2107 Lead Testing in Schools and Childcare Facilities
 - -BIL modified to allow monitoring and reduction/remediation in addition to testing
 - WIIN 2105 Reducing Lead in Drinking Water
 - \$20M nationally for FY22
 - Community Grants (Earmarks)
 - Administered by EPA, request funding via member of Congress

Other Funding Opportunities (ctd)

- USDA Rural Development:
 - RD Water and Environmental Program (WEP)
 - -Rural areas (pop less than 10,000)
 - -Priority for small areas 5,500 or less for deteriorating WS
- Washington DOH:
- Community Economic Revitalization Board (CERB)

Questions?



Technical Assistance

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