

# Lead and Copper Rule Long-Term Revisions

The Lead and Copper Rule Long-Term Revision (LCRR) were finalized by the US EPA in January 2021 and effective December 16, 2021. These revisions include:

- Development of a lead service line (LSL) inventory
- Updated tap water sampling locations and modified sample collection procedures
- Development of sampling plans for schools and childcare facilities
- New requirements for full- and partial-lead service line replacement plans
- Additional planning, monitoring, and corrosion control treatment (CCT) requirements based on a new trigger level of 10 µg/L (micrograms per liter) - below the 15 µg/L action level
- Stricter public education and communication requirements

Note, the EPA announced the Lead and Copper Rule Improvements (LCRI) may modify some requirements of the LCRR and compliance dates prior to the current October 16, 2024 compliance date.

## Lead Service Line Inventory

All water systems will be required to develop a lead service line (LSL) inventory within three years of the effective date. These inventories will include both the utility and customer owned portions of the LSL as shown in **Figure 1**.

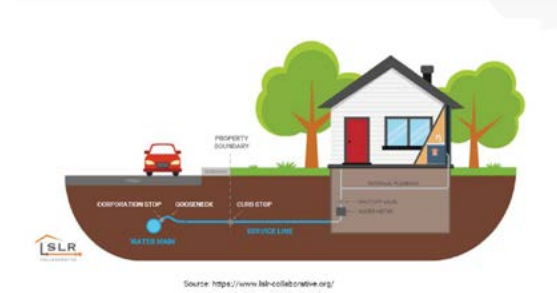
Additionally, LSL inventories for water systems serving over 50,000 must be made publicly available. **Figure 2** displays an example lead service line map.

## Sampling Plans with Modified Tiered Sampling

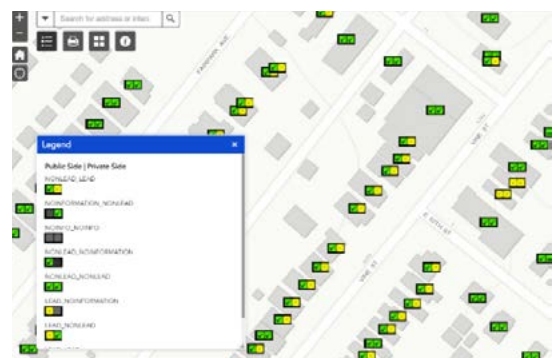
All water systems will be required to adjust sampling locations based on a modified tiered sampling structure. Criteria for tiers are as follows:

- **Tier 1:** Single-family homes with LSL. If multi-family residences served by a LSL equal at least 20% of the structures served by the water system, these may be included in Tier 1 sampling
- **Tier 2:** Buildings, including multiple-family residences that are served by a LSL
- **Tier 3:** Single-family structures with galvanized service lines downstream of a LSL, currently or in the past
- **Tier 4:** Single-family structures that contain copper pipes with lead solder installed before the effective date of lead ban
- **Tier 5:** Single-family structures or buildings (including multiple-family residences) that are representative of sites throughout the distribution system

Additional changes to sampling plans include: collecting a fifth-liter sample from LSLs; no longer removing aerators before sampling; and using wide mouthed bottles for sample collection.



**Figure 1.**  
Example Lead Service Line Schematic  
Source: <https://www.lslr-collaborative.org/>



**Figure 2.**  
Example Lead Service Line Map





## Sampling Plans for Schools and Childcare Facilities

All water systems will be required to sample in **20%** of schools and all licensed childcare facilities in their service area at least once per year over five years. Sampling in schools and childcare facilities is recommended to follow the [EPA's 3Ts](#) for sampling, which differ from tap water compliance sampling in residences. These sampling results and related public education must be provided to each sampled school and childcare facility, State primacy agency and local or State health department.

## Full and Partial LSL Replacement Plans

All water systems will be required to develop full and partial lead service line replacement plans. These plans are also required to be completed within three years of the final rule publication. The LCRR will require:

- A LSL replacement goal rate
- Procedures for conducting full and partial replacements and customer notification
- A program to distribute pitchers with filters to customers during replacement projects with sampling **6 months** after completion
- Flushing plans for service lines and premise plumbing
- Funding strategies such as WIFIA loans

## Strategies: Trigger Level of 10 µg/L, "Find-and-fix", CCT

The action level for lead will not change and will remain 15 micrograms per liter (µg/L). However, there will be a new trigger level of 10 µg/L that will initiate lead service line replacements and potential corrosion control treatment studies. If a water system exceeds the 15 µg/L action level, it will be required to initiate a "find-and-fix" process. This process will include collecting a sample from near the site with elevated lead levels within five days and follow up sampling within **30 days** at the site with the elevated lead levels. The water system will be required to identify and address the elevated lead levels. Corrosion control treatment options per the revisions include pH and alkalinity adjustment and/or silicate or phosphate addition. The revisions instruct that calcium hardness will no longer be an option for CCT.

## Public Education and Communications

Additional public education and communications will be required per the revisions. This includes informing customers of lead service lines or unknown materials within **30 days** of completion of the LSL inventory and as annual updates are made to the LSL inventory, informing customers of the risks of lead and additional communications during lead service line replacements as well as notifications to customers within **24 hours** of action level exceedances during compliance sampling or sampling during LSL replacements.

## Jacobs Experience

The Jacobs team has a long history of helping municipalities resolve the unique water treatment and simultaneous compliance issues essential to optimizing CCT and compliance with the Lead and Copper Rule. For more than **30 years**, Jacobs has been responsible for planning and implementing LCR-related strategies which protect millions of people in the U.S. and Canada. We have extensive experience optimizing CCT for both surface water and groundwater sources and can effectively balance LCR-related lead control efforts with other critical water quality planning needs. Our work includes enhanced water quality monitoring strategies, sampling plan development, harvested pipe-scale analysis, lead service line replacement plans and CCT demonstration studies making use of pipe loops, benchscale evaluations, coupon tests, and full-scale "partial system" tests using isolated sections of client distribution systems.



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