Service Line Replacement Requirements Webinar – Question Responses
November 6, 2025
Hosted by VDH Office of Drinking Water and presented by TruePani

The following responses address questions submitted during the November 6, 2025, presentation by TruePani covering the Lead and Copper Rule Improvement (LCRI) mandatory service line replacement requirements starting November 1, 2027. Citations to Virginia Department of Health Office of Drinking Water (VDH ODW) guidance are provided when appropriate.

1. **Mandatory Service Line Replacements – What is Required**
   What service line material must be replaced? What portion of the service line must be replaced? When is the requirement due?

   Starting no later than November 1, 2027, regardless of compliance sampling results, all waterworks must begin full service line replacements for all lead and galvanized requiring replacement (GRR) service lines (40 CFR 141.84(d)). All mandatory replacement must proceed at a minimum replacement rate, as described in question 4, below, and be complete by November 1, 2037 (40 CFR 141.84(d)(4)).

   This requirement applies to the entire service line which is defined as the portion of pipe that either connects the water main to the building inlet or an outlet for consumption if a building does not exist (40 CFR 141.2). As such, ownership is not considered and all lead and GRR lines under the waterworks control must be replaced so that no lead or GRR portion remains. In situations where a waterworks previously replaced the system-owned portion of a lead or GRR service line, simply replacing any remaining lead or GRR owned by the customer would complete a full service line replacement.

2. **Mandatory Service Line Replacements - Funding**
   Is the waterworks required to pay for the replacement of customer side service lines? What approaches for funding the customer side service line have been used across the USA?

   LCRI does not define who is required to pay for customer owned service line replacements but does require that waterworks develop and submit funding strategies as part of their service line replacement plan (40 CFR 141.84(c)(1)(vi)). Ultimately, EPA is holding waterworks owners responsible for ensuring the work is funded and completed. As such, many funding strategies appropriate to the waterworks' capacity are available, including the Drinking Water State Revolving Fund, rate revenue, local loan program, and local funds. To address the customer-owned portion of the service line, waterworks can offer customers low interest or no interest loans, negotiate lower rates with licensed plumbers, or replace customer service lines at no cost. In addition, Virginia offers funding assistance through:

- Drinking Water State Revolving Fund
- Financial & Construction Assistance Program (FCAP)
- Capacity Development
- Drinking Water Funding Program Details and Application
- Lead Elimination Assistance Program (LEAP)

LSLR Financing Case Study: Quincy, MA
Funding sources: Rate revenue, local loan program

The Massachusetts Water Resources Authority (MWRA) is providing $100 million in interest-free loans to its member water communities to fully replace lead service lines. MWRA has a total of 50 water communities, of which 45 will be eligible for financial assistance under the Lead Service Line Replacement Loan Program. The funds will be paid back to MWRA by communities over 10 years at zero interest.

The City of Quincy, MA, a member of MWRA, received a $1.5 million loan in December 2016 to fund its program targeting the removal of 141 identified public/private lead services. Quincy is paying the full cost of both public and private lead service line replacement and paying back the loan with rate revenue. It is expected that rates will increase approximately $6 per year over 10 years to eliminate LSLs from their distribution system.

LSLR Financing Case Study: North Providence, RI

Funding source: HUD Community Development Block Grant

In 2017, North Providence with the leadership of Mayor Charles A. Lombardi received Community Development Block Grant (CDBG) funding from HUD to replace privately-owned lead service lines.

As a matter of policy, for every privately-owned line replaced, Providence Water Board will replace the public side. Providence Water Board also provides outreach materials to residents and technical assistance including water testing.

View additional details about their program and about the Town's Remove the Whole Lead Pipe Program.

LSLR Financing Case Study: Green Bay, WI

Funding sources: DWSRF, local funding

Green Bay, WI is replacing lead service lines (LSLs) though several funding mechanisms. Safe Drinking Water Loan Program (SDWLP) funding can be used for replacing LSLs under the control of the municipality. Customer-owned LSLs are being replaced at no cost to the customer using $800,000 in funding though the Wisconsin Department of Natural Resources Private Lead Service Line Replacement Program.

The two-year program awarded loans with principal forgiveness, which means no debt is incurred on behalf of the municipality. The city is also using $300,000 from Lambeau Field stadium tax to assist customer replace their portion of the LSL. If LSLs remain after this funding is used in its entirety, Green Bay will consider applying to the WI Public Service Commission to use rate revenue to fund customer-owned LSLR.

More LSL replacement financing case studies can be found here.

3. **Mandatory Service Line Replacements – Establishing Control**
   If the waterworks does not own the customer side of the service line, how does it obtain the authority to replace a portion of the line that it does not own? How many attempts must the waterworks owner make to establish control? What if a property changes ownership? What are the recordkeeping and reporting requirements?

   The EPA defines control as when the waterworks has access (e.g. legal, physical) to conduct a full service line replacement (40 CFR 141.84(d)(2)). Control is independent of ownership and under this definition of control, states like New Jersey have granted waterworks the ability to replace customer owned service lines and recoup the costs of replacements from all subscribers (Title 58 Section 58:12A-40 (pdf)).

   The waterworks must establish control to complete a full service line replacement for GRR and lead service lines. A waterworks' replacement plan must identify any laws, regulations, water tariff agreements, etc. that affect its ability to complete a full service line replacement (40 CFR 141.84(c)(1)(viii)). VDH is not aware of state laws that would limit the ability of waterworks to complete a full service line replacement, so this most likely refers to county and local laws or agreements.

   Waterworks must also identify any laws, regulations, tariff agreements, etc. that require customer consent or that authorize customer cost-sharing. If customer consent is required, waterworks must make a "reasonable effort" which is defined as four attempts across two different methods to obtain property access (40 CFR 141.84(d)(3)). It is only after failing to obtain consent after completing a "reasonable effort" that a waterworks is no longer required to replace a service line.

If the property changes ownership, the waterworks must offer to complete a full service line replacement within six months and within one year, or must complete a "reasonable effort" if consent is required (40 CFR 141.84(d)(3)(ii)).

By January 30, 2029 after the end of the first program year, which is calendar year 2028, and annually by January 30 thereafter, the water system must submit to the State documentation of the reasons for each service line not replaced due to lack of access (40 CFR 141.90(e)(10)).

4. **Mandatory Service Line Replacements – Replacement Pool and Rate**
What service lines are included in the replacement pool? What is the rate of replacement and how is it calculated? What are the recordkeeping and reporting requirements?

The replacement pool consists of the total number of all lead, GRR, and unknown service lines in the baseline inventory submitted in November 2027 and then annually thereafter (40 CFR 141.84(d)(6)(i)). From this pool, the waterworks must annually replace 10% of lead and GRR service lines in their replacement pool with all lead and GRR lines under the waterworks control removed by November 1, 2037 (40 CFR 141.84(d)(5)(i)). For waterworks with annual replacement rates that exceed 39 per 1,000 connections, the deadline may be deferred while other waterworks may have a shortened deadline if VDH determines a shortened deadline to be feasible (40 CFR 141.84(d)(5)(vi)) and 40 CFR 141.84(d)(5)(v))

Only replacements that result in no lead or GRR remaining (that is, full service line replacement) will count towards the annual replacement rate (40 CFR 141.84(d)(6)(iii)). Therefore, reclassifying a service line as non-lead, coating the inside of a lead or GRR line, or partial replacements do not count towards the required annual replacement rate 40 CFR 141.84(d)(6)(iii)(D). However, if the waterworks disconnects or removes a lead or GRR service line and either installs a new non-lead service line or ensures through policy or law that the line must remain disconnected, such actions will be counted towards the replacement rate (40 CFR 141.84(d)(6)(iii)(B) and 40 CFR 141.84(d)(6)(iii)(C).

Starting on January 30, 2029, and annually thereafter, waterworks must report to VDH the number of full lead and GRR service line replacements for the previous calendar year 40 CFR 141.90(e)(8). Compliance will be first determined after the end of the third year (December 31, 2030) and annually thereafter (40 CFR 141.84(d)(5)(iv)). EPA has posted a guidance document that shows an example with calculations of the replacement rate.

5. **Mandatory Service Line Replacements – Failure to Meet Replacement Rate**
What is required if a waterworks fails to meet the required replacement rate?

   Failure to meet the annual replacement rate will result in a violation and compel waterworks to engage in additional outreach until the waterworks meets its cumulative annual replacement rate or when no lead or GRR service lines remain (40 CFR 141.85(h)(1)). Additional outreach activity is dependent on the population served by the waterworks and includes actions like public meetings, contacting customers by phone or text, or sending certified mail to all customers served by lead or GRR service lines (40 CFR 141.85(h)(2)).

6. **Service Line Replacements – Lead Consumer Notices and Mitigation Requirements**
What are the requirements for consumer notifications and lead mitigation requirements associated with lead service line replacements? When are water filter pitchers required to be provided?

   Consumer notification and mitigation is required to address the temporary increase in lead following the full replacement of a lead or GRR service line or the planned partial replacement of a lead, GRR, or unknown service line. Templates for the notices, including a table outlining notice and mitigation requirements, are available on the VDH ODW Lead and Copper Rule Revisions and Improvement Guidance webpage (link). These templates are included in the Lead Service Line Replacement Plan template.

   Whether it's a full service line replacement, a permissible partial service line replacement, or replacement of the system-owned portion of the service line after a customer replaces their portion of the service line, the following notification and mitigation strategies must be provided.
   - Lead health information
   - Flushing instructions
   - A pitcher or point of use device with six months of ANSI certified filters
   - An offer to collect follow up tap samples within three to six months.

   If the service line serves a multi-unit building, all units must receive a pitcher filter or point of use device and six months of ANSI certified filters (40 CFR 141.84(h)(2)).

   Partial replacements are only allowed if completed as part of an emergency repair (e.g. an emergency main break) or part of a larger infrastructure work that is not solely for the purpose of replacing lead or GRR service lines (e.g. distribution system upgrade) (40 CFR 141.84(g)). In the case of a partial replacement due to planned infrastructure work, customers served by the affected service line must receive a written notification at least 45 days prior to replacement. For all permissible partial replacements, dielectric coupling must be used to separate the remaining service line from the new service line (40 CFR 141.84(g)(1)).

If the customer notifies the waterworks of their intent to replace the private side lead or GRR portion of the service line, the waterworks must replace any remaining portion of the lead or GRR line as soon as practicable but no later than 45 days from the customer replacement. These requirements also apply to customers who notify the waterworks about the completion of the private side service line replacement within six months of completion (40 CFR 141.84(f)(2)).

7. **Service Line Replacement Plan – What is required**
   What is the service line replacement plan, who is required to submit one, and what must it include?

   Any waterworks that submits a baseline inventory on November 1, 2027 that contains a lead, GRR, or lead status unknown service line is required to submit a service line replacement plan (40 CFR 141.84(c)). This plan must be made publicly available (online for waterworks serving 50,000 or more) and updated and resubmitted annually to the State. If there are no changes to the replacement plan, the waterworks can instead certify no changes to the State.

   A template for the service line replacement plan is available on the VDH ODW Lead and Copper Rule Revisions and Improvement Guidance webpage (link). The service line replacement plan must include:

   - Strategies to identify any remaining unknown service line materials
   - Procedures to conduct a full service line replacement, including replacements for both the public and private portion of the service line
   - A strategy to prioritize service line replacements
   - A strategy to fund service line replacements
   - Communication strategies to inform customers and consumers before full or partial lead or GRR replacements
   - Flushing procedures for customers and consumers following a disturbance or replacement of lead, GRR, or unknown service lines
   - Communication strategies about the waterworks replacement plan and program
   - A compiled list of laws, regulations, water tariffs, etc. that prohibit the waterworks' ability to conduct a full service line replacement
   - Strategies to determine the extent of lead-lined galvanized lines in the waterworks, if used. Lead-lined galvanized lines are galvanized lines originally manufactured with a fused lead lining and are different from GRR.

8. **Baseline Inventory – What is Required**
   What is the baseline inventory and when is it due? How does the baseline inventory affect the mandatory service line replacements?

All community and non-transient noncommunity waterworks were required to submit an initial inventory under the 2021 Lead and Copper Rule Revisions (LCRR), which was due on October 16, 2024 (40 CFR 141.84(a)(1)). The baseline inventory is required for this all community and non-transient noncommunity waterworks by the 2024 Lead and Copper Rule Improvements (LCRI). It builds on the initial service line inventory by updating service line materials and adding information about what is known about connectors and must be submitted to VDH-ODW no later than November 1, 2027. (40 CFR 141.84(a)(2) and 40 CFR 141.80(a)(3)). More information about the baseline inventory is available on VDH ODW's Lead and Copper Rule Revision and Improvements website (link) with additional topics addressed in FAQs for the VDH Baseline Inventory Webinar (pdf).

If a baseline inventory contains a lead, GRR, or unknown service line, the waterworks must also submit a service line replacement plan at the time of baseline inventory submittal, or no later than November 1, 2027, and must begin mandatory replacement of lead and GRR service lines. In short, the material determinations submitted in the baseline inventory determine whether a waterworks must begin mandatory service line replacements. Reference question 4, above for a discussion about the required replacement rate.

9. **Baseline Inventory – Updates and Resubmissions**
How often does the baseline inventory need to be resubmitted? What if the inventory is fully known? Are there requirements about when a system must identify service line materials?

All NTNC and community waterworks, even those with initial inventories that are fully known and fully non-lead, must submit a baseline inventory by November 1, 2027. The baseline inventory is intended to be a living document and must first be submitted by November 1, 2027 and then updated by January 30, 2029 and annually thereafter (40 CFR 141.90(e)(4)). It is only after the submission of a baseline inventory that is both a) fully known, fully non-lead and b) all connectors are either non-lead or not present that a waterworks is no longer required to resubmit (40 CFR 141.84(b)(1)(ii)). All service line materials must be identified within ten years of the initial compliance date which is November 1, 2037.

The LCRI maintains the LCRR requirement to identify service line materials during normal operations and adds the requirement to do the same for connectors (40 CFR 141.84(b)(2)(v)). Waterworks are strongly encouraged to identify all service lines prior to the initial November 2027 compliance date to reduce the mandatory replacement pool to a more manageable level.

10. Connectors – Inventory and replacement requirements

What is a connector and what are examples of lead connectors? What are the requirements to identify, locate, and inventory lead connectors? What are the requirements to replace lead connectors?

A connector is a specific distribution component defined as a short (3 feet or less), section of pipe that can be bent and is typically used to connect the service line to the water main, often referred to as a gooseneck or pigtail (40 CFR 141.2 "Connector"). This definition excludes components such as fittings, corporation stops, meter yokes, couplings, etc. None are considered connectors under this definition.

Unlike the service line material, waterworks are not required to proactively identify the presence of connectors and identify connector materials when present. Instead, connector materials are required to be included in the inventory when they are identified through review of historical records (40 CFR 141.84(a)(2)(i)) and during normal operations (40 CFR 141.84(b)(2)(v)).

Where waterworks have information about the presence or absence of connector or connectors, the waterworks must classify the connector materials as "Lead", "Non-Lead", "Unknown" or "No connector present". Where waterworks have no information about the connector, the waterworks would leave the connector field blank in the inventory.

In addition, any lead connectors that are encountered during planned or unplanned infrastructure work are required to be replaced by the waterworks when encountered (40 CFR 141.84(e)).

11. Compliance Sampling - Lead and Copper Rule Improvement Changes

What are the new tap sampling methodology and tier requirements? What waterworks return to standard monitoring?

The LCRI updates sample tiers to prioritize locations with premise plumbing made of lead and/or served by lead service lines (40 CFR 141.86(a)(4)). See the table below. Locations that are served by lead service lines must collect a set of 1st and 5th liter sequential samples, while remaining locations, including those served by GRR service lines only require a 1-liter first draw sample (40 CFR 141.86(b)). Sampling locations must be selected from the highest tier available until the required number of samples have been met. All samples must be collected in widemouth bottles and collected after a stagnation period of at least 6 hours. Widemouth bottles means bottles one liter in volume that have a mouth with an inner diameter that measures at least 40 millimeters wide. (40 CFR 141.2 "Wide-mouth bottles")

Tier	Community Waterworks	NTNC Waterworks
Tier 1	Single-family structures with premise plumbing made of lead and/or served by a lead service line.	Single-family structures with premise plumbing made of lead and/or served by a lead service line.
Tier 2	Buildings, including multiple-family residences, with premise plumbing made of lead and/or served by a lead service line.	Buildings, including multiple-family residences, with premise plumbing made of lead and/or served by a lead service line.
Tier 3	Single-family structures that are served by a lead connector. Single-family structures that are served by a galvanized service line or containing galvanized premise plumbing identified as ever having been downstream of a lead service line.	Sites that are served by a lead connector. Sites served by a galvanized service line or containing galvanized premise plumbing identified as ever having been downstream of a lead service line.
Tier 4	Single-family structures that contain copper premise plumbing with lead solder installed before the effective date of the State's applicable lead ban.	Sites that contain copper premise plumbing with lead solder installed before the effective date of the State's applicable lead ban.
Tier 5	Sites that are representative of sites throughout the distribution system. A representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.	Sites that are representative of sites throughout the distribution system. A representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

(40 CFR 141.86(a)(4)

Effective August 1, 1978, lead water service pipes (service lines) were not allowed. Effective April 1, 1986, lead solder and flux is limited to no more than 0.2% lead. Effective March 1, 1991, lead in all water pipes is limited to 8%, including premise plumbing. (Lead Ban Guidance and Chronology)

All waterworks with lead or galvanized requiring replacement (GRR) service lines will return to a 6-month standard monitoring period (40 CFR 141.86(c)(2)(i))) beginning in 2028 unless the waterworks has already completed compliance monitoring in accordance with the LCRI. In addition, waterworks with 90th percentile lead or copper results that exceed the action level as of November 1, 2027, will also return to standard monitoring following the exceedance (40 CFR 141.86(c)(2)(ii)). Note as well that the lead action level will be reduced to 10 ppb as of the compliance date of Nov 1, 2027, while

the copper action level remains at 1.3 mg/L. Finally, Tier 1 24-hour notifications are also required to be sent to customers in the event of a lead action level exceedance.

12. Compliance Sampling – School and Childcare Sampling

When does this requirement begin? Are exemptions available?

Community water systems (CWS) are required to begin sampling at schools and child care facilities no later than the LCRI initial compliance date of November 1, 2027. Starting on this date, community waterworks must sample at least 20% of elementary schools and 20% of the child care facilities served by the waterworks per year. Sampling must continue at this rate until all elementary schools and child care facilities have been sampled once, declined to participate, or are nonresponsive to outreach (40 CFR 141.92(d)(1)). Sampling must also be conducted on request for secondary schools starting at the compliance date (40 CFR 141.92(e)).

Sampling at secondary schools is required only upon request by the secondary school. A waterworks is not required to sample an individual elementary school, secondary school, or child care facility more than once in a five-year period.

Starting the sixth year after the compliance date, sampling must be conducted when requested by a school or child care facility (40 CFR 141.92(d)(2)). Individual schools are not required to be sampled more than once in a given five-year period.

Sampling requirements may be waived via a written waiver from the State when schools and child care facilities are sampled for lead in drinking water under a state or local program which meets all sampling requirements of the LCRI (40 CFR 141.92(h)). To help, the Virginia Department of Health created the School and Child Care Lead Testing and Reduction Grant Program (link) to offer free lead sampling for qualifying school and child care facilities.

13. Customer-Requested Lead Sampling

Under what circumstances must a waterworks owner offer lead sampling to customers?

The LCRI includes additional provisions to address lead sampling outside of compliance monitoring.

When a waterworks exceeds the lead action level, the waterworks must offer to sample lead in the tap water of any customer who requests it. At sites served by lead, galvanized requiring replacement, or unknown service lines, 1st and 5th liter sampling must be collected (40 CFR 141.85(c)(1)).

In addition, starting after November 1, 2027, customer service line material notifications must also offer lead sampling directly to any customer served by a lead, galvanized requiring replacement (GRR), or unknown service line (40 CFR 141.85(c)(2)