



New Mexico Environment Department

Lead and Copper Rule
Improvements Training
Brynn Goe, ERG
June 2026





New Mexico Environment Department

Introductions

**Name, *Water System, *SLI Status*





Agenda

- Welcome
 - Introductions
 - Course Objectives
 - CEUs
- Lead and Copper Rule Fundamentals Refresher
 - Exposure
 - Sources
 - Evolution of the L&C Rule
 - Regulatory Authority
 - Federal
 - New Mexico
- Group Activity



Agenda

■ Lead and Copper Rule Improvements Elements

- 2021 LCRR Framework
- Tap monitoring
 - LCR and LCRI Tiering process
 - LCRI First and Fifth Liter Sampling
- NMED Lead and Copper Sampling Plan
- Action Levels
- *90th Percentile Group Exercise*
- Source Water Monitoring and Treatment
- Change in Source or Treatment
- Corrosion Control Treatment (CCT) and Water Quality Parameters (WQP)
- Initial and Baseline SLI requirements
 - NMED inventory template



Agenda

- Lead and Copper Rule Improvements Elements
 - Materials Investigation Methods
 - Inventory Validation
 - Replacement Planning
 - Small System Flexibility
 - Public Education and Outreach
 - Public Notification
 - Consumer Confidence Reports (CCR)
 - Schools and Childcare Facilities
 - Primacy Agency (or State) Reporting
- Short Group Quiz
- Sample Location Selection Exercise



LCRI Implementation

- Please note that this presentation contains information on the Lead and Copper Rule Improvements (LCRI) published as final in the Federal Register on October 30, 2024, with a current compliance date of November 1, 2027.
- In the event of any changes to the current LCRI rulemaking after this training, water systems and stakeholders should regularly review EPA updates and guidance, along with New Mexico-specific requirements, to ensure alignment with the most current regulatory requirements.



Lead and Copper Rule Fundamentals Refresher



Exposure

Lead is toxic

Lead exposure is especially dangerous to children's developing brains and can result in

to multiple body systems, such as our central nervous system and brain; reproductive system; kidneys, cardiovascular system, blood and immune system.

- Reduced intelligence quotient (IQ) and attention span
- Impaired learning ability
- Increased risk of behavioral problems

World Health Organization

BAN LEAD PAINT

The infographic is a light blue rectangular box with a dashed orange line border. It features several icons: a paint can and brush at the top left, a medical cross at the top right, a brain in a head at the bottom left, a hand holding a book at the bottom center, and a heart with a cross at the bottom right. The text is in orange and black, and the background is light blue.



Sources

■ Inhalation

■ Ingestion

- Lead-containing products
- Food
- **Water**
 - Delivered through lead pipes or pipes joined with lead solder
 - Service lines
 - Premise plumbing





Premise Plumbing



- Premise Plumbing Refers to Internal Plumbing**

Systems: Pipes, fixtures, and appliances inside a building that deliver water from the service line to faucets, showers, and appliances.

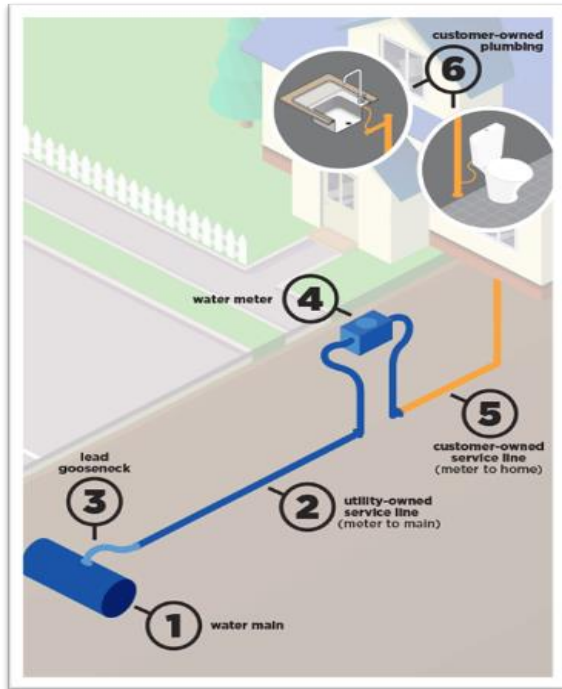
- Varied Materials in Premise Plumbing:** Older homes may have lead, copper, or galvanized steel pipes, while newer homes typically use PEX or PVC.

- Risk of Contamination:** Premise plumbing can be a source of water contamination, especially if pipes corrode or if lead-based solder or connectors are present.

- Influence of Water Quality:** Highly acidic or soft water can accelerate corrosion in metal pipes, increasing the likelihood of harmful substances leaching into drinking water.



Background on Lead Use



Widespread Use in the Early 20th Century: Lead service lines were commonly installed due to their malleability, low cost, and ease of installation.

Durability and Longevity: Lead pipes were valued for their long lifespan, often lasting 50-100 years, leading to widespread use in older infrastructure.

Use of Gooseneck and Pigtail Connectors

Connectors: These flexible lead connectors were commonly used to join pipes to water mains, further increasing the spread of lead in the system.



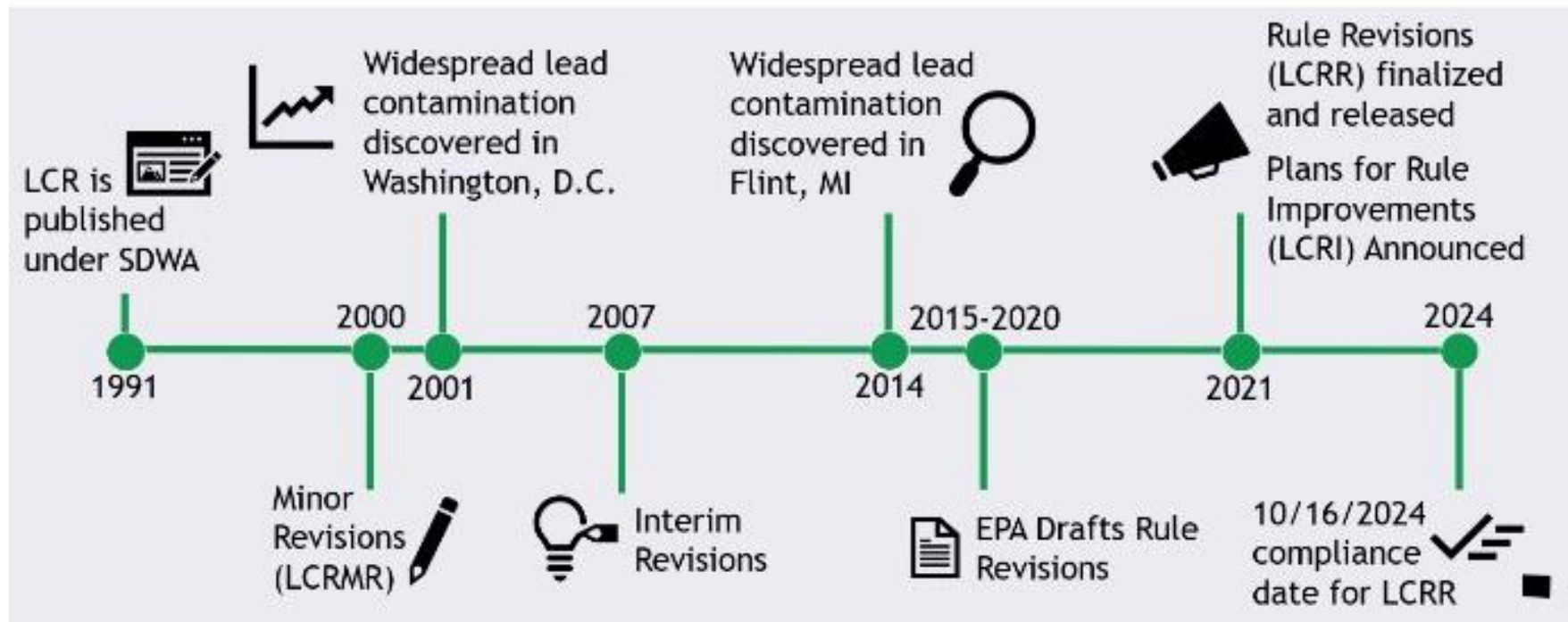
Copper- Why Do We Care?

- **Copper in drinking water can be dangerous** as high levels can lead to gastrointestinal distress, liver damage, and kidney problems, especially for vulnerable populations like infants and those with pre-existing conditions.
- Copper can be toxic if swallowed, inhaled, or absorbed through the skin
- Copper toxicity may first present as nausea, vomiting, abdominal pain, and/or diarrhea
- Copper-containing pipes can leach copper into drinking water
- In older copper pipe systems, lead-based solder was used to join pipes, which can corrode and enter the water over time
- *Note: Small amounts of copper intake/day are necessary for physiological body function*



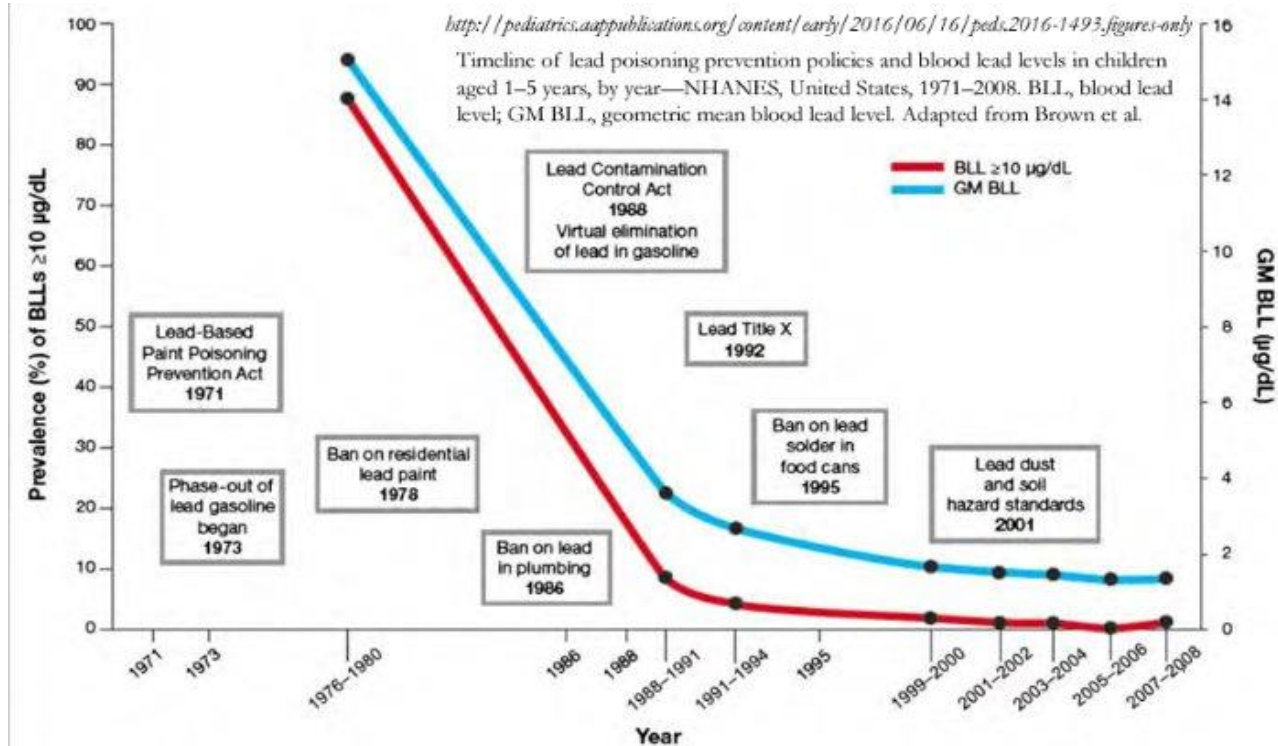


Evolution of the Lead and Copper Rule 1991-2024





Blood Lead Levels





Regulatory Authority - Federal

1986

Lead Ban

- Only lead-free materials in new and repaired plumbing
- Enforcement began two years after the enactment on June 19, 1988.

1991

Lead and Copper Rule (LCR)

- Minor revisions in 2000, 2004, 2007
- 50 ppb at the EP changed to representative tap samples
- Action level of 15 ppb Lead, 1.3 ppm Copper
- MCLG of zero for lead
- TT to reduce corrosion

Lead Contamination Control Act (LCCA)

- Identify and reduce lead in drinking water at schools and childcare facilities

1988

Reduction of Lead in Drinking Water Act

- "Lead-free" lowered from 8% to a weighted average of 0.25%

2011



Regulatory Authority - Federal

2021

Lead and Copper Rule Revisions (LCRR)

- Focus on schools and childcare facilities
- Inventory and replacement of lead lines
- Communication

2022

Guidance for Developing and Maintaining a Service Line Inventory

- Support water systems with preparing inventories
- Support states with oversight and reporting

EPA identified priority improvements for a new regulation: **Lead and Copper Rule Improvements (LCRI)**

2021

2024 – Lead and Copper Rule Improvements (LCRI)

To significantly reduce exposure to lead through drinking water

2024



Regulatory Authority - Federal

Where are we today?

- **Lead and Copper Rule Revisions (LCRR)**
 - **Subpart I – Control of Lead and Copper**
 - 40 CFR § 141.80, (LCRR) effective date December 16, 2021
 - October 16, 2024, LCRR Compliance Date
 - Between October 16, 2024, and November 1, 2027, CWSs and NTNCWSs must comply

Lead and Copper Rule Improvements (LCRI)

- Final LCRI rule published in the Federal Register on October 30, 2024.
- November 1, 2027, LCRI compliance date.



Lead Ban

- The federal ban on installing new lead water pipes and service lines in public water systems and homes occurred in 1986 with the passage of the Safe Drinking Water Act Amendments.
- Specifically, the lead ban, an amendment to the Safe Drinking Water Act, prohibited the use of pipes, solder, or flux that were not "lead-free" in public water systems or plumbing used for human consumption.
- Enforcement of the ban began two years after the enactment, on June 19, 1988
- **New Mexico followed the Federal Ban**



Regulatory Authority – New Mexico

■ State Regulations

- The New Mexico Environment Department (NMED) has adopted and incorporated 40 Code of Federal Regulations (CFR) Section 141 into the New Mexico Drinking Water Regulations, **20.7.10.100 New Mexico Administrative Code (NMAC)**.
 - Therefore, any amendments that are codified in 40 CFR Section 141 at any date are effective, for purposes of state implementation.
- NMED guidance documents
 - Lead and copper program
 - Maintaining a service line inventory
 - Developing lead service line replacement plans

■ https://www.env.nm.gov/drinking_water/lead-and-copper-program/





Regulatory Authority – New Mexico

- NMED has primacy for original LCR
- New Mexico has not applied for primacy of LCRR or LCRI
 - Extension to primacy granted
 - Current enforcement rests solely with EPA
- New Mexico will officially apply for primacy for LCRR and LCRI in 2027
- Until primacy is granted, EPA and NMED will work together to safeguard NM's communities
 - PWS reporting will go to NMED
 - EPA assisting with enforcement actions





Questions and Discussion





Group Activity

Myth vs. Fact – Busting common misconceptions about lead in water.



Boiling water removes lead and copper contamination

false



Lead and copper can dissolve in water without affecting its appearance,
taste or smell

true



Only older homes have a risk of lead in drinking water

false



Only community water systems must follow lead and copper regulations

false



While children are more vulnerable to lead poisoning, adults can also suffer from health effects, including cardiovascular and kidney issues

true



Replacing part of the lead service line eliminates lead exposure

false



If a utility has optimized corrosion control treatment, lead cannot be released from lead service lines

false



A water system that exceeds the lead action level is automatically in violation of a drinking water standard

false



Lead and copper levels can vary significantly from one sample to the next at the same home.

true



Flushing the tap before collecting a water sample will give accurate results

false



Partial replacement can sometimes increase lead levels temporarily due to pipe disturbances

true



Proper lead and copper testing requires a first draw sample (after sitting stagnant for 6 hours) to measure the highest concentration levels

true



A home without a LSL cannot have elevated lead Levels at the tap

false



A customer's lead sample results increased immediately after a nearby water main replacement. Therefore, the corrosion control program has failed.
false



If tier 1 sites are unavailable, tier 2 or tier 3 sites can be used, but systems must justify site selection and ensure consistency in sampling locations.

true



A utility can determine service line material with 100% certainty using historical records alone

false



Sampling locations should remain consistent over time unless a significant reason (removal of lead pipes) justifies changes and approval is required
true



A customer may receive a LSL notification even if sampling results have never shown elevated lead at their home.

true



A utility has not exceeded the lead action level in 15 years. Therefore, replacing lead service lines is unnecessary.

false



a water system has no known LSLs. Therefore, customer notification regarding lead are unnecessary.

false



bonus

The home with the highest lead results always determines compliance

false



Lead and Copper Rule Improvements Elements



Lead and Copper Rule **Improvements** Elements

- The Lead and Copper Rule applies to:
 - All community water systems (CWS)
 - All non-transient, non-community water systems (NTNC)

- Because lead has a chronic, not acute, health effect, LCR does not apply to transient systems.

- Approximately 66,000 PWS across the U.S, serving over 300 million people, are affected by this rule.



2021 LCRR Framework

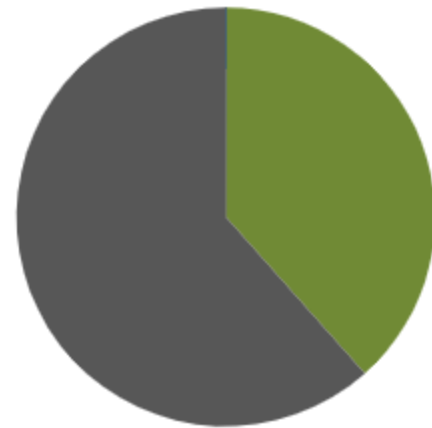
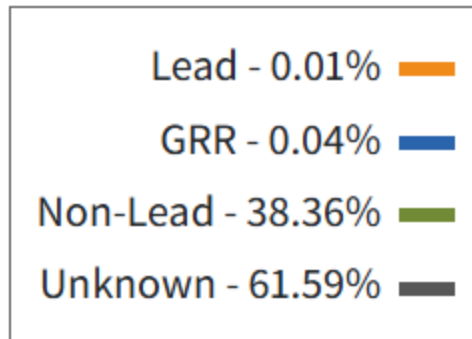
- Initial service line inventory (Due October 16, 2024)
 - Inventory must be publicly accessible
 - Inventory must be online for systems serving more than 50,000 people
- Notification of service line material
 - Initial notification of SL material - due Nov 16, 2024.
 - Certification to NMED that initial notification sent - due July 1, 2025.
 - Annual notification of SL material (required until no longer lead/GRR/Unknown)
 - 2025 notification of SL material - due by Dec 31, 2025.
 - 2025 certification to NMED that notification was sent – due July 1, 2026.
- Tier 1 public notification for lead ALE
- Revised lead health effects language in public education materials
 - Changes again for LCRI



Summary of Service Line Categories in NM

Estimated 7,271
service lines
from 74 water
systems not
reported

Lead	GRR	Non-Lead	Unknown	total
38 lines from 22 systems	299 lines from 22 systems	256,628 lines from 500 systems	411,975 from 302 system	668,940 lines from 689 systems





Tap Monitoring



Sample Site Selection

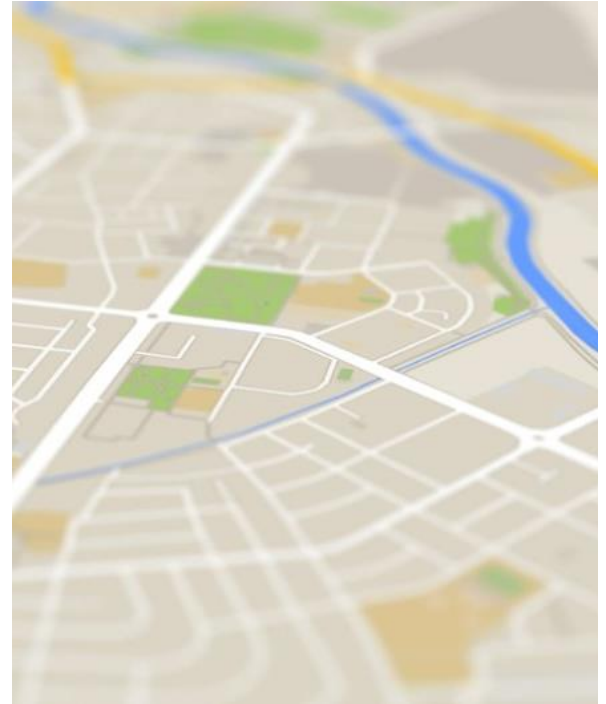
Identify primary sampling sites and at least one alternate sample site on your DSSP Lead and Copper Sampling Plan.

System Size	Number of Lead and Copper Tap Sample Sites	
	Standard	Reduced
>100000	100	50
10,001 – 100,000	60	30
3,301 – 10,000	40	20
501 - 3,300	20	10
101 - 500	10	5
≤ 100	5	5



Sample Site Selection

- *Provide a map of the water system with the primary and alternate sample sites identified.*
- *Include name of the water system and PWSID #*
- Service Line Inventory should be used for sample site selection.
- Combine sample site map:
 - *Lead and copper (standard sites and alternate sites)*
 - *Total coliform*
 - *Chemical*
 - *Disinfection byproducts*
 - *All entry points*

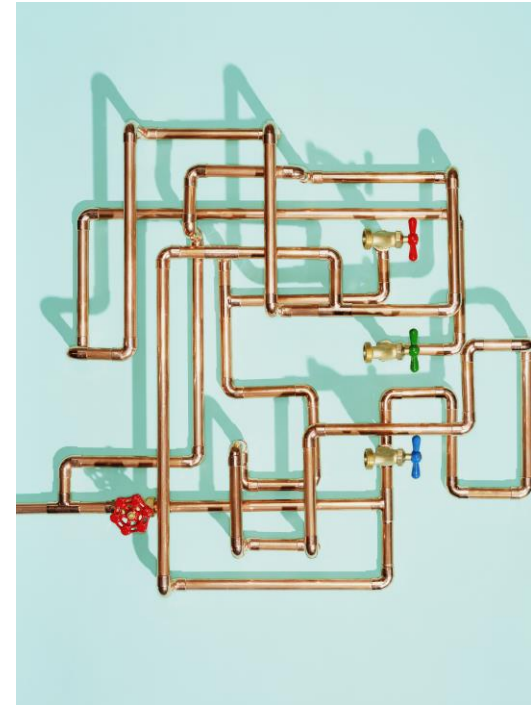




Sample Site Selection Tiers - LCRR

■ Community Water Systems:

- **Tier 1** sampling sites are single-family structures that:
 - contain copper pipes with lead solder installed **after 1982** or contain lead pipes; and/or
 - are served by a lead service line.
- **Note:** When multiple-family structures comprise at least 20 percent of the structures served by a water system, the system may count them as Tier 1 sites.





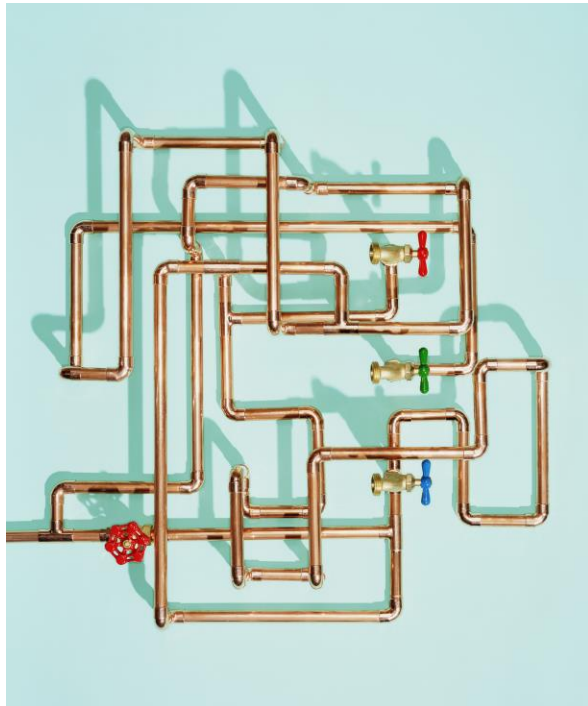
Sample Site Selection Tiers - LCRR

- Community Water Systems:
 - **Tier 2** sampling sites consist of buildings, including multi-family structures that:
 - contain copper pipes with lead solder installed **after 1982** or contain lead pipes; and/or
 - are served by a lead service line.





Sample Site Selection Tiers -LCRR



- Community Water Systems:
 - **Tier 3** sampling sites are single-family structures that contain copper pipes with lead solder installed **before 1983**.



Sample Site Selection Tiers - LCRR

■ NTNCWS:

- **Tier 1** sampling sites consist of buildings that:
- Contain copper pipes with lead solder installed **after 1982** or contain lead pipes; and/or
- Are served by a lead service line.

- **Tier 2** sampling sites consist of buildings that contain copper pipes with lead solder installed before **1983**.



Sample Site Selection - LCRR

Service Line Inventory should be used for sample site selection.

- For CWSs and NTNCWS, all samples must be collected from **single family structure** sites served by LSLs, if available.
 - If Tier 1 sites are exhausted, select Tier 2 sites
 - If Tier 2 sites are exhausted, select Tier 3 sites
 - NTNCWS – Tier 1 -> Tier 3

Sampling sites cannot include locations with POE or POU devices

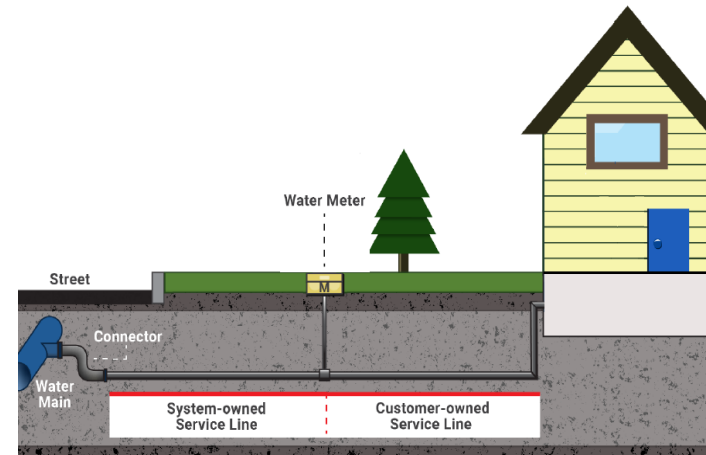
- Representative Sites





Sample Site Selection - LCRI

- Combines the tap sample site selection tiering criteria for **CWSs** and **NTNCWSs**.
- Revises **TIER 3 sites**
 - Includes sites served by a lead connector
 - Sites served by a galvanized service line or containing galvanized premise plumbing that are identified as ever being downstream of a LSL or lead connector
- Sites considered no longer available for sampling after customer refusal or non-response
 - Two outreach attempts.





Tier Structure - **LCR** – *Valid Until Nov. 1, 2027*

LCR Tier Structure			
Community Has Copper Pipes with Lead Solder or Lead Pipes and/or Served by Lead Service Lines		Non-Transient Non-Community Has Copper Pipes with Lead Solder or Lead Pipes and/or Served by Lead Service Lines	
Tier 1	Structure-Installed 1983 through 1985 - <i>Single-Family Structures</i> Or - <i>Multi-Family Structures</i> – Make Up More Than 20% of Total Service Connections	Tier 1	Any Structure- Installed From 1983 through 1985
Tier 2	<i>Multi-Family Structures</i> -Installed by 1983 and After That Make Up 20% or Less of Total Service Connections	Tier 2	Not Applicable
Tier 3	<i>Single Family Structures</i> -Installed By 1982 or Before	Tier 3	Any Structure-Installed By 1982 or Before
Other*	* Structures with Other Plumbing Materials	Other*	Structures with Other Plumbing Materials



Sample Site Selection - LCRI

Table 1: Revised Tiering Criteria under the Final LCRI

Sample Site Tier	Description
Tier 1	Single-family structures (SFS) with premise plumbing made of lead and/or served by an LSL.
Tier 2	Buildings, including multiple-family residences, with premise plumbing made of lead and/or served by an LSL.
Tier 3	SFS served by a lead connector. SFS served by a galvanized service line or containing galvanized premise plumbing identified as ever having been downstream of an LSL.
Tier 4	SFS that contain copper premise plumbing with lead solder installed before the effective date of the State's applicable lead ban.
Tier 5	SFS or a building in which the plumbing materials used at that site would be commonly found at other sites served by the water system (i.e., representative of sites throughout the distribution system).



Sample Collection & Analysis – LCRI

- Requires collection of **first- and fifth-liter sampling for lead** in homes with LSLs after water has sat stagnant for a minimum of 6 hours.
- Requires the **higher value** of the first- and fifth-liter lead concentration to be used to calculate the 90th percentile.
- Not enough Tier 1 and 2 sites to meet the required sampling count:
 - Use highest results from the highest tiers sampled available for 90th percentile calculation.
- Retains the LCRR sampling instruction prohibitions.

TESTING WHERE THE LEAD IS

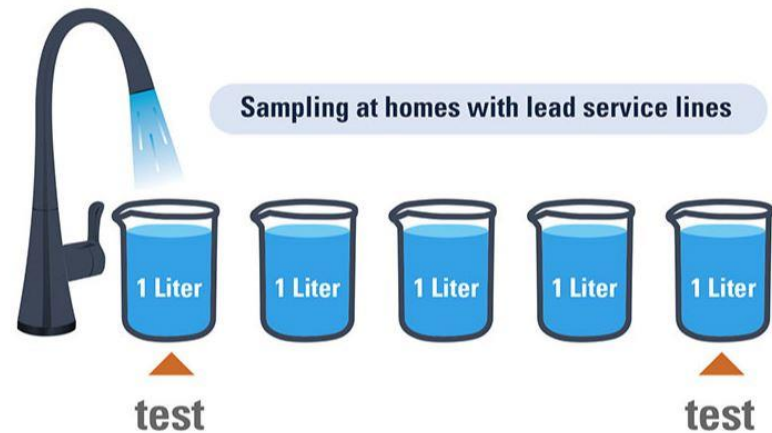
For homes with lead service lines, the 1st and 5th liter of water must be tested for lead.





Sample Collection & Analysis – LCRI

- Maintains **first-liter** sampling protocol for both lead and copper in homes **without LSLs**
- Clarifies the definition of a **wide-mouth bottle** and adds requirement that samples must be collected in wide mouth bottles
- Prohibits sampling instructions that include recommendations for aerator cleaning/removal and pre-stagnation flush prior to sample collection





Sample Collection and Analysis - Challenges

- Samples collected by customers in their residence/building
 - Coordination and significant effort required to educate, train, provide sample bottles, collect sample bottles from customers
 - 5X 1 liter bottles to homes with LSLs
 - Collection of samples must come after a minimum of 6 hours of stagnation – **“first draw”** samples
 - Customers must sign form and chain of custody stating they followed the provided procedure





Site Name	Site name and address	Type of Tier	Type of service line plumbing material	Date of construction/notes
LCR1T1	20 Main St.	1	Lead	1935
LCR2T3	26 Main St.	3	Galvanized	1945
LCR3T3	278 Sunrise Blvd.	3	Galvanized	1985
LCR4T5	13 Birch Tree Rd.	5	Unknown	1977
LCR5T5	1645 Washington Ave.	5	Unknown	1980
LCR 6T4 Standard monitoring	213 Oak Dr.	4	Copper	1986
LCR 7T5 Standard monitoring	9811 Smith St.	5	Unknown	1983
LCR 8T5 Standard monitoring	72 Plymouth Cir.	5	Plastic	1956
LCR 9T5 Standard monitoring	717 Cactus Ln.	5	Plastic	1979
LCR 10T5 Standard monitoring	545 Carter Rd.	5	Unknown	1997
LCR11T5 Alternative	440 Sully Ave.	5	Unknown	1990
LCR12T5 Alternative	301 First St.	5	Unknown	2001
LCR13T5 Alternative	214 Birds nest lane	5	Plastic	2014



Action Levels – LCRI



- Removes the LCRR lead trigger level. - Transition from LCR to LCRI.
- Lead ALE: 0.010 mg/L and copper ALE: 1.3 mg/L requires:
 - Installation or re-optimization of CCT
 - Public education
 - Tier 1 PN (for lead ALE)
 - Mandatory full-service line replacement of LSLs and galvanized requiring replacement (GRR) service lines required despite 90th percentile calculations.



New action level

Between 2023 and 2025

15 systems had their 90th percentile calculation above .015mg/L

- 4 in 2023
- 5 in 2024
- 6 in 2025

36 systems had their 90th percentile calculation above .010mg/L

- 10 in 2023
- 10 in 2024
- 16 in 2025



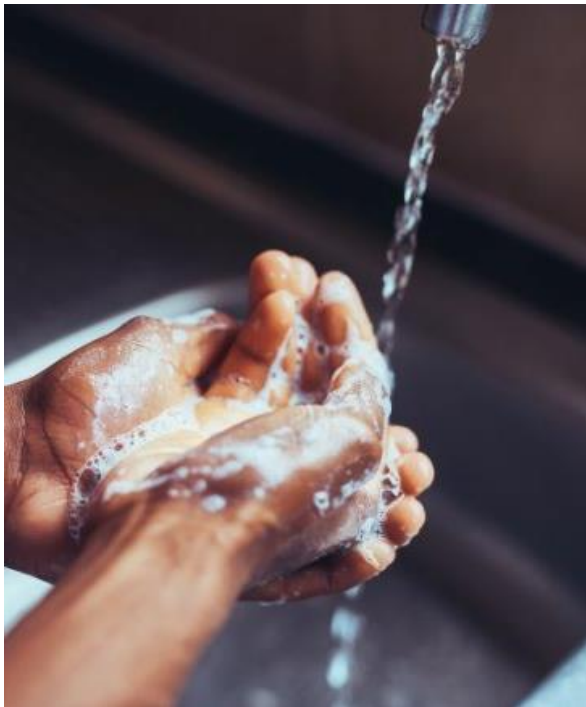
Action Levels - LCR

- Original LCR set action levels for lead and copper in drinking water based on the 90th percentile of tap water samples:
 - Lead: 15 parts per billion (ppb) (0.015 mg/L)
 - Copper: 1,300 ppb (1.3 mg/L)





Action Levels - LCRI



- 1st exceedance
 - 24-hour public notice
 - CCT must be installed after CCT study
 - Conduct public education programming
 - Viciously replace lead service lines
- 2nd exceedance
 - Requires additional outreach and to submit a Point of Use (POU) filtration plan for each customer that may be affected.
- 3rd exceedance
 - Requires implementation of the POU filtration plan.



90th Percentile Calculation

- The 90th percentile is the compliance number reported
 - Examples:
 - 10 samples x 0.9 = 9, report the 9th lowest sample when sorted low to high
 - 30 samples x 0.9 = 27, report the 27th lowest sample

Lead mg/L	sample #
0.001	1
0.001	2
0.001	3
0.002	4
0.002	5
0.002	6
0.002	7
0.003	8
0.003	9
0.023	10





90th Percentile Calculation



Systems collecting five samples

Must use the average of the highest and second highest sample results. This has remained unchanged from the LCR.



LCRI clarifies that systems collecting fewer than five samples must use the sample result with the highest concentration as their 90th percentile value if they:

1. Have been approved to collect multiple samples from the same site on different days during the same tap sampling period; or
2. Failed to collect the required minimum number of samples.



90th Percentile Calculation Exercise

Objective:

Teams will work together to calculate the 90th percentile from a set of sample results and understand its significance.

1. Place results in ascending order
2. Use formula: Rank = # of samples x 0.9
3. Identify the 90th percentile value



Source Water Monitoring and Treatment



Source Water Monitoring

- **If ALE:** System must collect source water samples to analyze for lead and copper within 6 months of exceedance
 - Ground water: 1 sample per entry point
 - Surface water: 1 sample per entry point
- **After installation of source water treatment:**
 - 1 sample per entry point for 2 consecutive 6-month periods
- **After adding a new source:**
 - 1 sample per entry point until lead and copper results < AL





Source Water Monitoring

- States can waive continued source water monitoring for lead and copper if the:
 - System has already conducted source water monitoring for a previous ALE,
 - State has determined that source water treatment is not required, and
 - System has not added any new water sources.

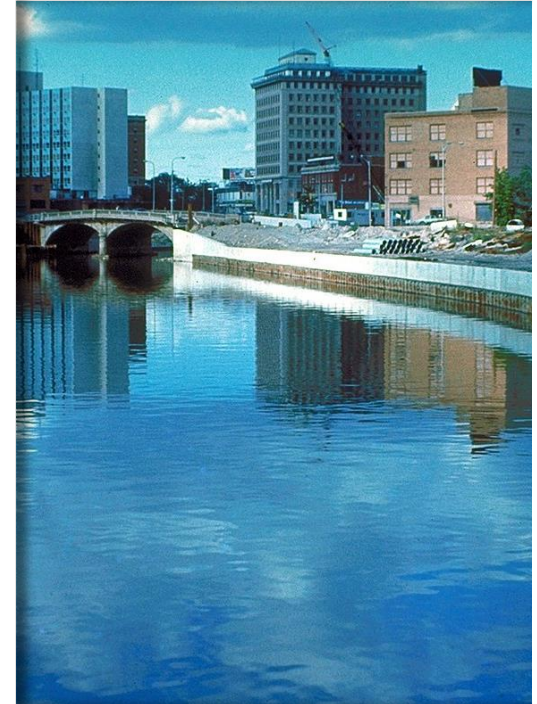
- *No change with LCRI*





Changes in Source or Treatment

- Systems on any tap monitoring schedule must obtain prior state approval before changing their source or treatment. These systems must also conduct biannual tap monitoring.
- *No change with LCRI*
- Flint, MI





Treatment Technique

- LCR/LCRR/LCRI is based on treatment techniques (TT) rather than health limits
 - The SDWA required EPA to establish a TT for contaminants like lead and copper that prevent known or anticipated health effects to the extent feasible
 - Based upon lead and copper sampling results, action may have to be taken to prevent corrosion in the distribution system and in premise plumbing (residential/buildings/etc.)





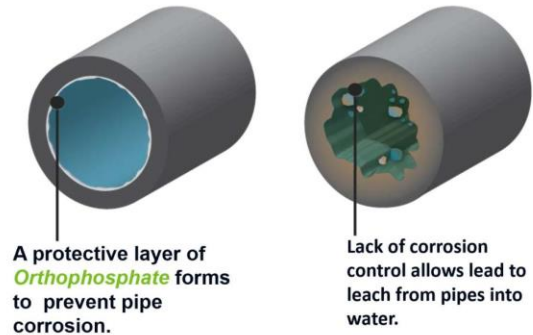
Corrosion Control Treatment

- NMED does not recommend one treatment over another.
- Water systems must notify the state in writing of any treatment changes ahead of implementation.
- LCRI requires that any phosphate inhibitor used must be orthophosphate
- NM water systems must hire an engineer to update treatment to ensure requirements are met.



Corrosion Control Treatment

- Prevent pipe corrosion and the presence of metals in drinking water
- Corrosion inhibitors added prior to entry point to the distribution system
- Balance between optimal pH for corrosion control, disinfection, DBP formation
 - Optimal pH for orthophosphate corrosion inhibitors
 - 7.2 – 8.0 s.u.
 - Optimal pH to reduce DBP formation
 - 5.5 – 7.6 s.u.





Corrosion Control Treatment - LCRI

- Systems with **90th percentile lead level > 0.010 mg/L**:
 - **No CCT**: Must complete CCT installation regardless of their subsequent 90th percentile levels if system has started to install CCT
 - **With CCT**: Must re-optimize CCT
 - Systems with **optimal CCT** (OCCT) meeting optimal WQPs (OWQPs) need only re-optimize OCCT once, unless required to do so by the state.
 - Systems with OCCT **after removing all lead and GRR** service lines will need to re-optimize again.



Corrosion Control Treatment - **LCRI**

CWSs serving $\leq 3,300$ and all **NTNCWSs** can select an option other than CCT to address lead.

Deferred OCCT or re-optimized CCT for systems that can complete removal of 100% LSLs and GRR lines within 5 years of the date they are triggered into CCT steps (20% annual replacement rate).

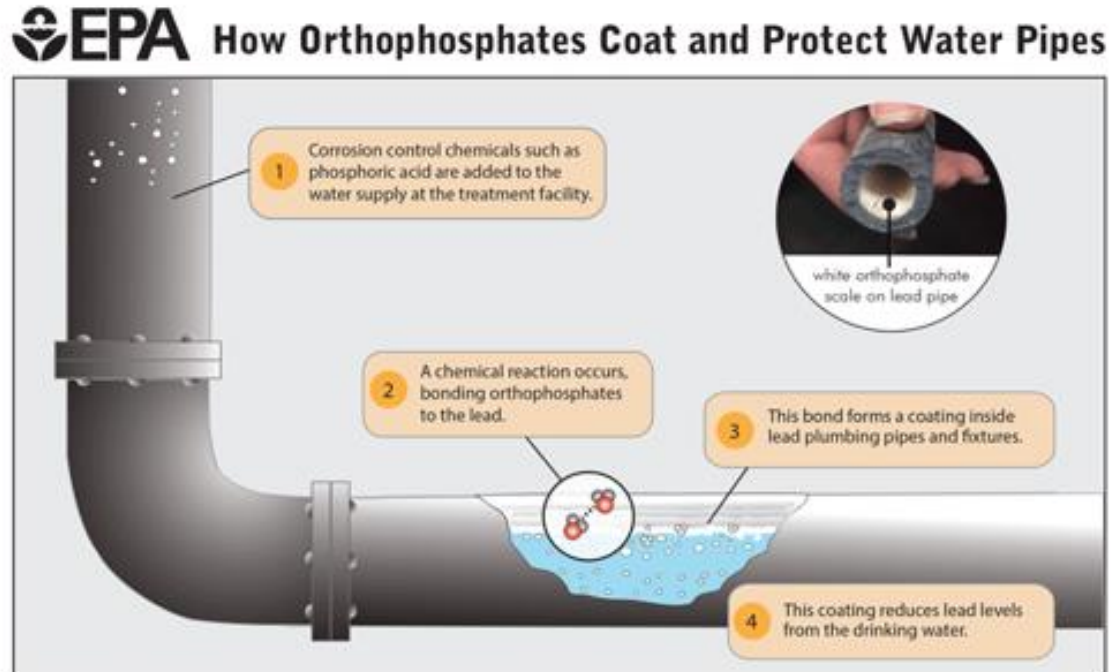
Systems with CCT must maintain CCT during the 5-year service line replacement program.



Corrosion Control Treatment Chemicals

Calcium hardness adjustment removed as a treatment option

Any phosphate inhibitor must be orthophosphate





Water Quality Parameters (WQPs)

■ LCRR

- Eliminated WQPs related to calcium hardness (i.e., calcium, conductivity, and temperature)
- All other parameters are the same as the pre-2021 LCR

■ LCRI

- ***No change for the WQPs***





WQP Monitoring - LCRI

- Systems **with CCT serving $\geq 10,000$** must conduct regular WQP monitoring at entry points and within the distribution system
- Systems **serving $<10,000$** and systems **without CCT serving $\leq 50,000$** that exceed the AL must continue WQP monitoring until they no longer exceed the AL for 2 consecutive 6-month monitoring periods.
- Systems **without CCT serving $> 10,000$ but $\leq 50,000$** that exceed the lead action level that are required to install CCT, must continue to conduct WQP monitoring





CCT and WQP in Sanitary Surveys

■ LCRR

- CCT and WQP data must be reviewed during sanitary surveys against most recent CCT guidance issued by EPA

■ LCRI

- ***No change with LCRI***





Distribution System and Site Assessment - LCRI

“Distribution System and Site Assessment (DSSA)”

- Requirements for systems with individual **tap samples** > **0.010 mg/L lead**:
 - Conduct WQP monitoring at or near the site
 - Collect samples at the same tap sample site within 30 days
 - Perform needed corrective action
 - Document customer refusal or non-response after 2 attempts
 - Provide information to local and State health officials.
- Clarifies that the distribution system repeat sample location must be within a half-mile radius of each site, with a result > 0.010 mg/L





CCT Study Methods

- Water Quality Analysis
- Analogous System
 - Similar size, water chemistry, distribution configuration
- Coupon Testing
 - Not a stand-alone method
- Lead Pipe Harvesting
 - Construct flow-through pipe loops
 - Operate loops with finished water within 1 year of ALE
- Partial System Tests





Service Line Inventory



Service Line Inventory - **LCRR**

- Your system should have developed and submitted an **initial** service line inventory (SLI) by **October 16, 2024**.
 - **Materials notifications to customers within 30 days**
 - **Annual notifications to customers**
- Must identify the **materials of all service lines** connected to the public water distribution system, regardless of ownership: **lead, non-lead, galvanized requiring replacement (GRR), and unknown**.
- Made **publicly available** upon completion
 - Online for systems > 50,000 population





Baseline Inventory - LCRI

- Review records for information on **connector materials** and include connectors in the **baseline** inventory
- Include a **street address** for each service line and connector
- Include the **total amount** of each type of service line
- Update **annually**
- Respond to **customer inquiries** on incorrect material categorizations within 60 days
- **Validate the accuracy** of the non-lead service line category in their inventory - 2034
- **Identify all unknown** service lines by the mandatory service line replacement deadline - 2037

Examples of Non-Lead Materials



Plastic



Copper



Galvanized pipe*



Baseline Inventory - LCRI



■ Connectors

- For each service line, select connector (pipe that does not exceed 3ft in length) material:
 - Lead
 - Non-Lead
 - Unknown
 - No connector present
- Connector material does not change overall service line classification
- Reminder: **must replace lead connectors** under control of system when encountered (LCRR)
- Record date of replacement and new connector material (if installed)





Baseline Inventory - LCRI



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← Connector

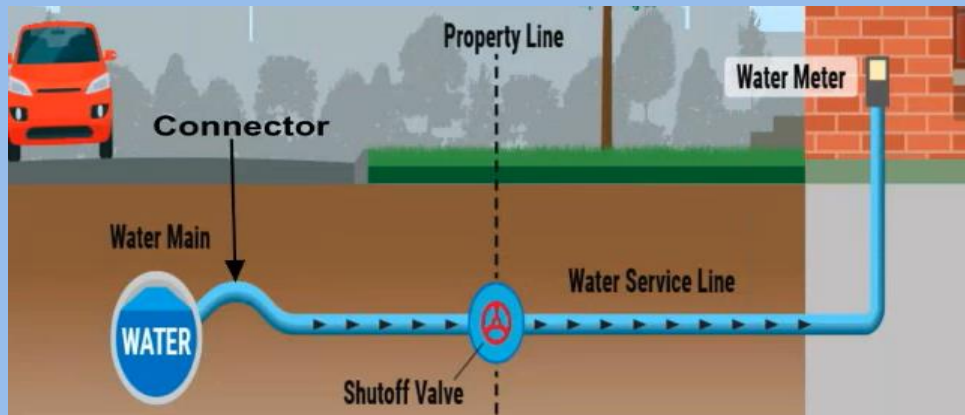
Not a
connector →



96

Connectors (not the service line)

- Is there a connector from the main to the service line?
 - If so, what material is it? It is ok to have “Unknown” connectors



Lead Connector Present

Connectors need be added to the service line inventory line item but do not change the overall classification of a service line

system side	customer side	connector	overall
plastic	plastic	lead	non-lead
plastic	unknown	lead	unknown
non-lead	galvanized	non lead	GRR
non-lead	galvanized	non lead	nonlead

Connector classification

N	O	P	Q	R	S
		Entire Service Line	Other Potential Sources of Lead		
Enter the Date of Field Verification	Notes (Customer Portion)	Entire Service Line Material Classification (by Water System)	Connector?	Is there Lead Solder in the Service Line?	Describe Fittings Equipment Connected
			lead non-lead Unknown no connector		

Categories: Lead, Non-Lead, Unknown or No Connector Present



Materials Verification Methods



Materials Verification Methods

Records Review

- Historical SOPs
- Plumbing Codes, Permits, Records
- Water Main Replacement Cards
- Water Loss Studies
- Tap Cards
- Distribution System Maps and Drawings
- Meter Installation Records
- Historical Capital Improvement Plans

Visual Inspection and Excavation

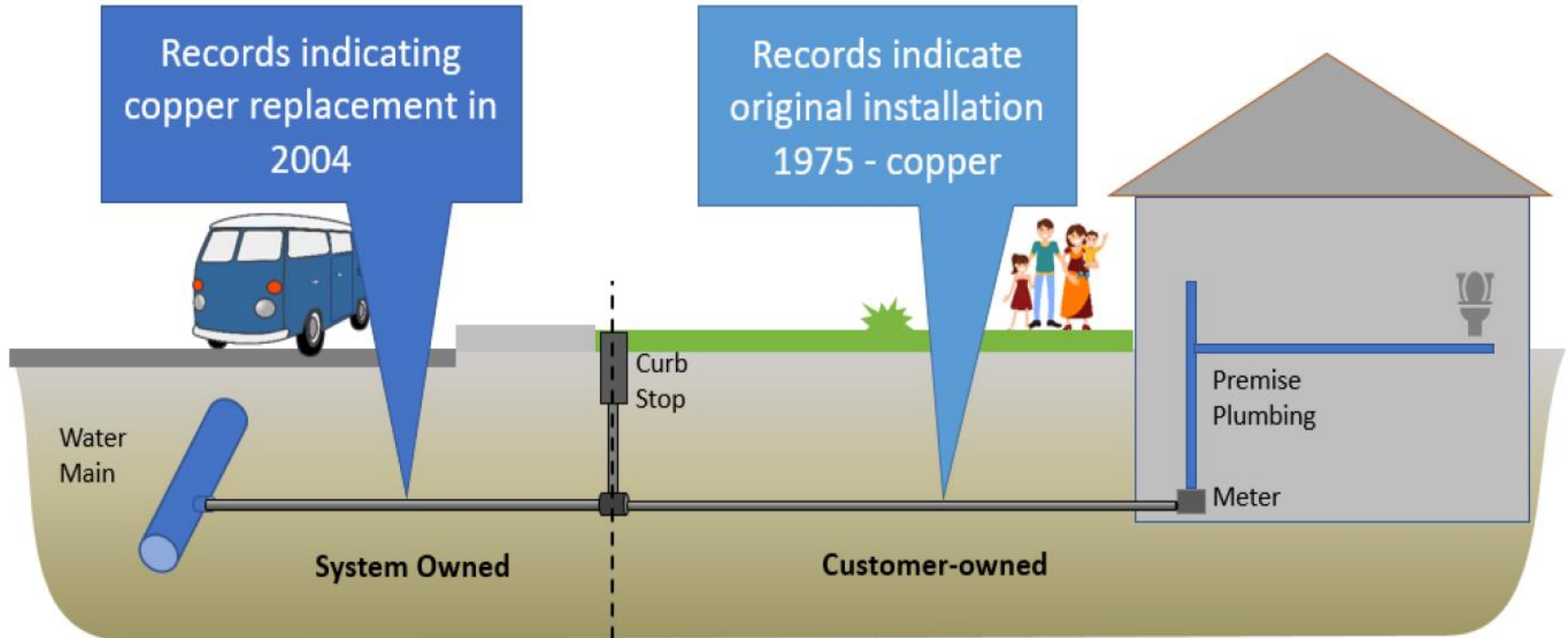
- Scratch/Magnet Test
- Swab Test
- Meter Pit Inspections
- External CCTV Inspections (not internal)
- Crawl space/basement in customer's home
- Vacuum Excavation
- Mechanical Excavation

Predictive Modeling

- Construction Year
- Location
- Nearby Infrastructure
- Local Demographic Data
- Water Quality Data
- Sequential Sampling
- Machine Learning Algorithms
- Google Earth Imagery
- Physical verification

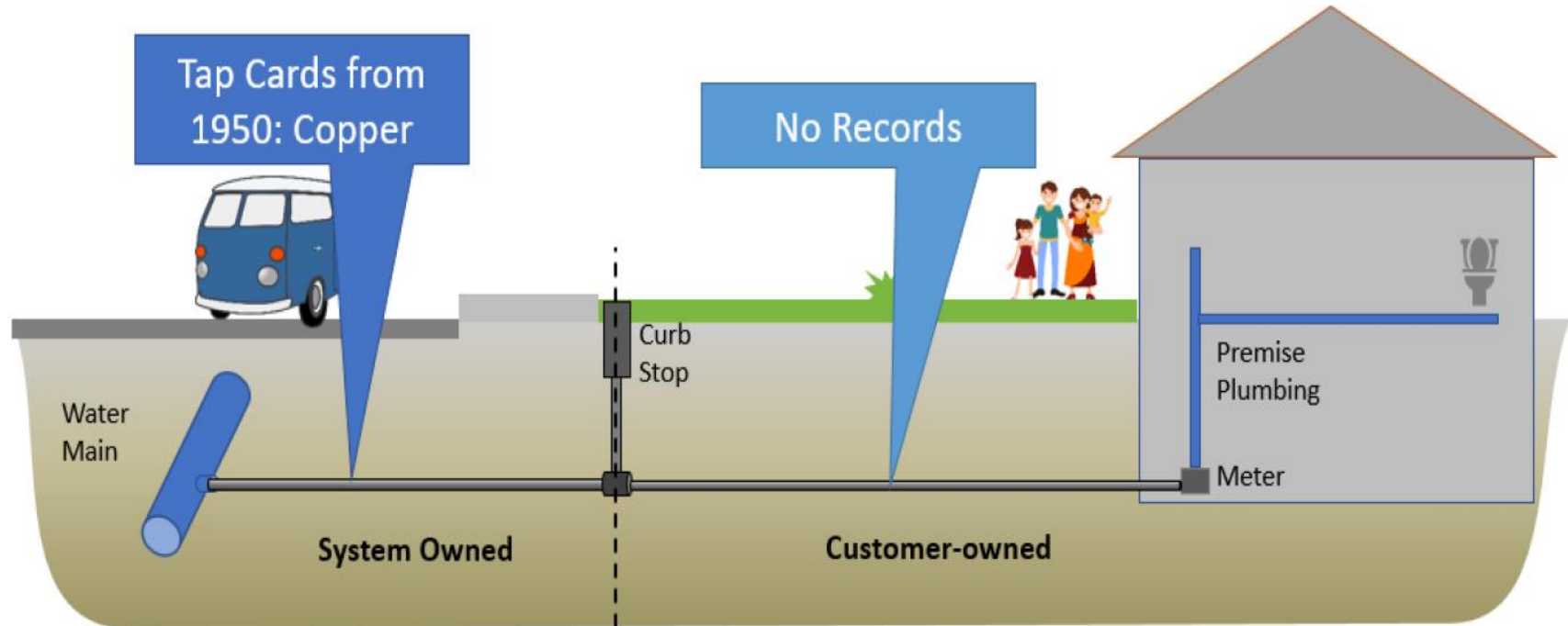


Records Review Example #1



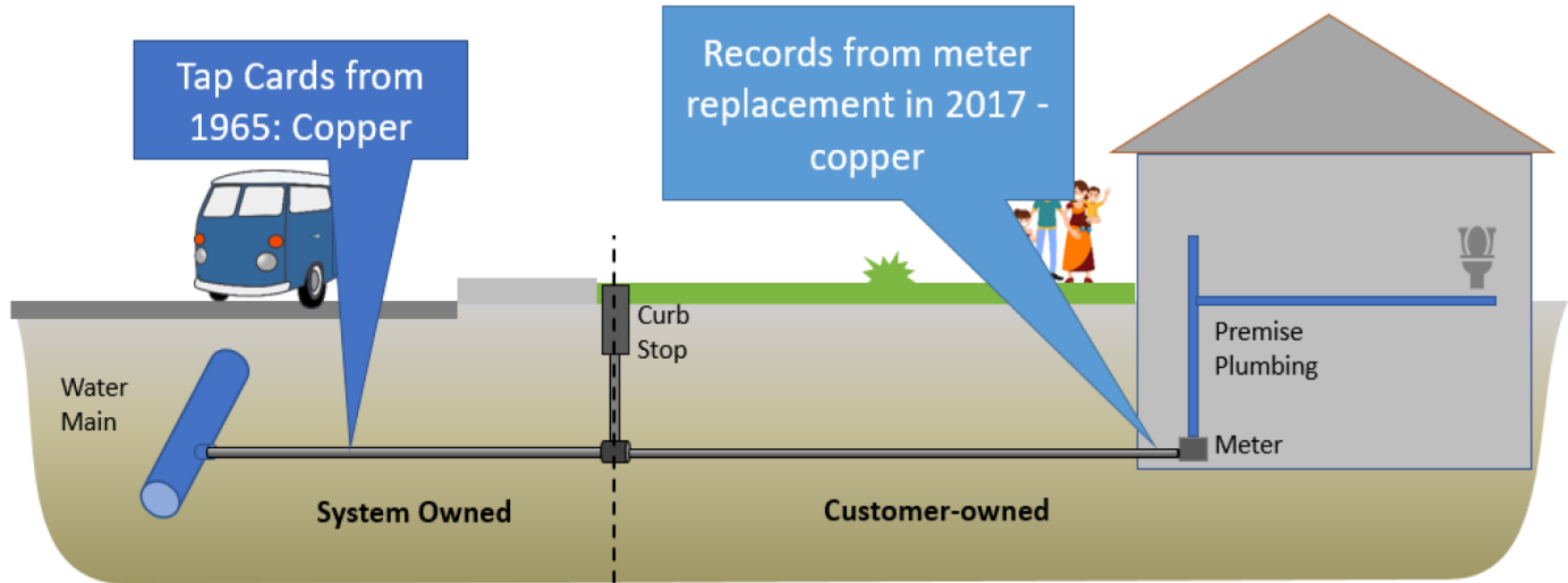


Records Review Example #2



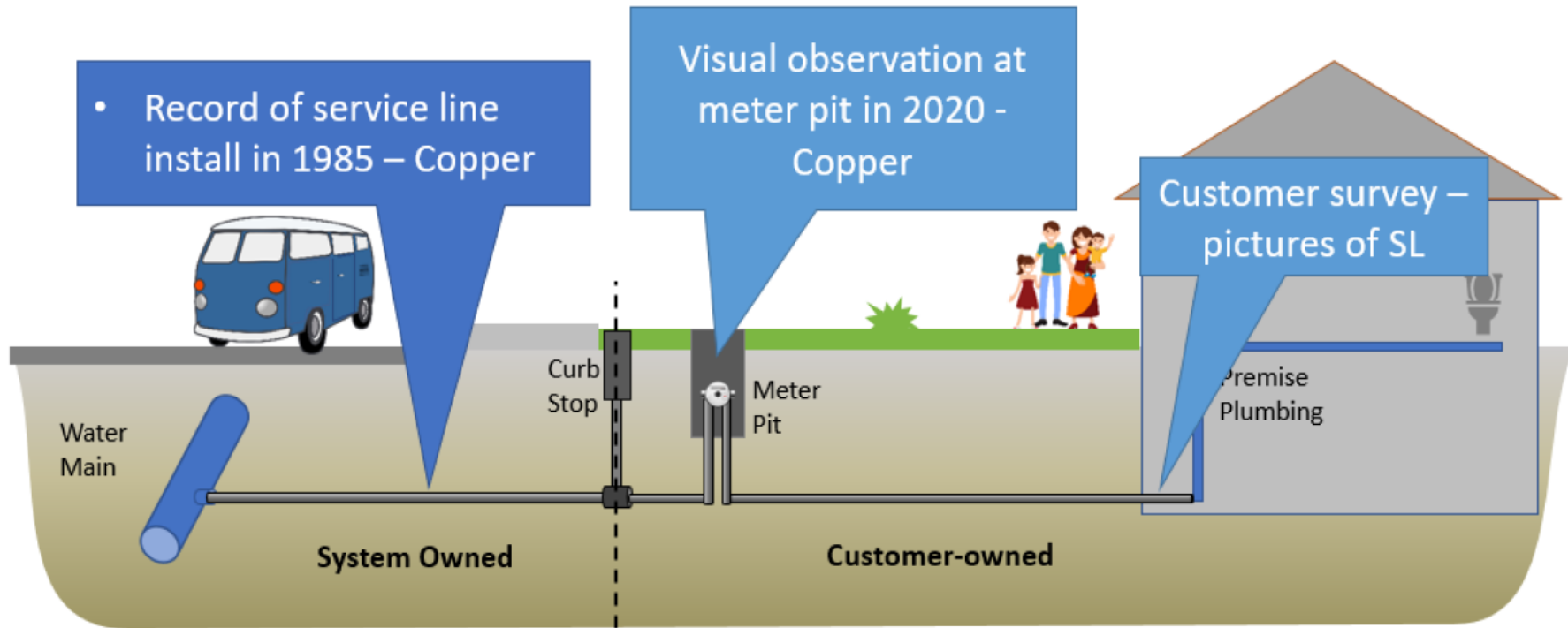


Records Review Example #3



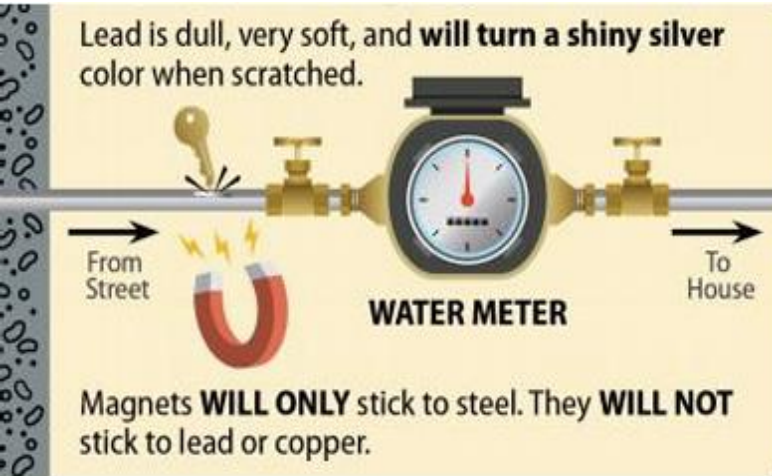


Records Review Example #4





Visual Inspection and Excavation



<https://www.trentonnj.org/DocumentCenter/View/406/Howto-Find-Out-if-You-Have-a-Lead-Service-Line-PDE>





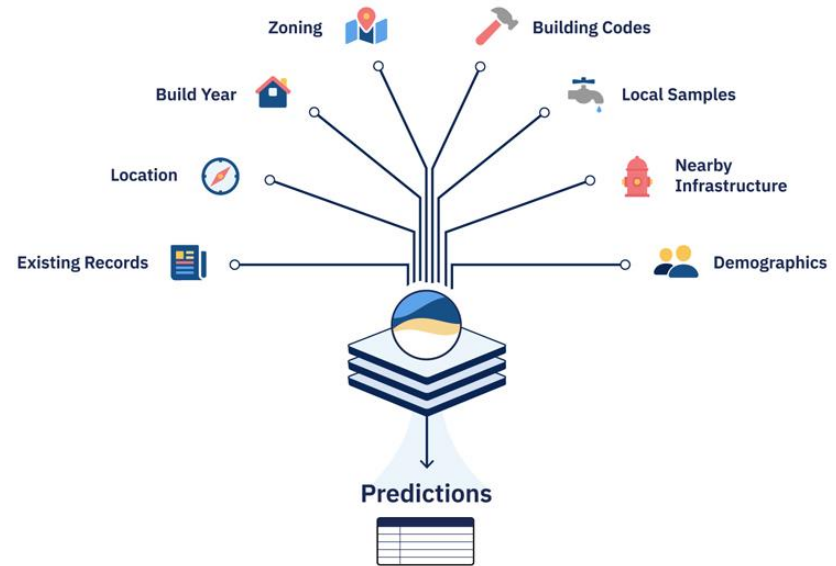
Predictive and Statistical Modeling

■ Statistical Modeling:

- Identify percentage of SLs to physically verify
- Randomly select SLs for verification – Track
- Conduct physical verification – Record
- Evaluate

■ Predictive Modeling:

- Looks for patterns in datasets
 - Rules
 - Algorithms



Source: [Water Online](#)



Probabilistic Modeling

- Probabilistic Modeling:
- Random selection of 20% of unknowns, in order to classify remaining 80% as non-lead (verification pool)
 - If $> 95\%$ are identified as non-lead, remaining 80% can be classified as non-lead
 - If $< 95\%$ are identified as non-lead, expand from 20% to 40%
- Random selection of 40% of unknowns (expanded verification pool)
 - If $> 90\%$ are identified as non-lead, then remaining 60% can be classified as non-lead
 - If $< 90\%$ are identified as non-lead, then probabilistic modeling cannot be used and all remaining unknowns must be individually verified.



Inventory Validation – LCRI 2034

- The Lead and Copper Rule Improvements (LCRI) requires water systems to validate the accuracy of their non-lead service lines in their inventories with a minimum of 95% statistical confidence. This means they need to physically inspect a random sample of non-lead lines to ensure the accuracy of their inventory. The sample size required to achieve this confidence level depends on the total number of non-lead service lines in the system.

Number of Validations Required	
Size of Validation Pool	Number of Validations Required
<1,500	20% of validation pool
1,500 to 2,000	322
2,001 to 3,000	341
3,001 to 4,000	351
4,001 to 6,000	361
6,001 to 10,000	371
10,001 to 50,000	381
>50,000	384



Service Line Replacement Planning



Service Line Replacement - LCRI

NM required to set shortened deadline for systems that can meet a shorter replacement deadline.

If property owner consent is required for replacement, the system must make a reasonable effort to engage owner about full-service line replacement *4 attempts

Systems conducting partial service line replacement must offer to replace the remaining portion of the service line not under their control within 45 days for emergency repair



Service Line Replacement - LCRI

Mandatory full-service line replacement program for all systems

Replacement program requirements are independent of systems' 90th percentile lead levels.

All CWSs and NTNCWSs with one or more lead, GRR, or unknown service line in their inventory
*10 years to replace (10%/year) unless state gives shortened or deferred deadline

Average annual replacement rate applies to number of LSLs and GRR service lines in the baseline inventory submitted by the LCRI compliance date plus the number of unknown service lines updated annually.



Service Line Replacement Plan Elements - LCRI

What information must be included in the Service Line Replacement Plan?

Required for any water systems with at least one lead, GRR, or unknown service line. Due to the State by **November 1, 2027**, and must include:

1. A description of a strategy to identify the material composition of all unknown service lines in the inventory.
2. A standard operating procedure for conducting full-service line replacement.
3. A communication strategy for informing consumers and customers before a full or partial lead or GRR service line replacement.
4. A procedure for consumers and customers to flush service lines and premise plumbing of particulate lead following a disturbance of a lead, GRR, or unknown service lines or following full or partial replacement.
5. A strategy to prioritize service line replacement based on factors such as known lead and GRR service lines and community-specific factors.



Service Line Replacement Plan Elements - LCRI

What information must be included in the Service Line Replacement Plan?

Required for any water systems with at least one lead, GRR, or unknown service line. Due to the State by **November 1, 2027**, and must include:

6. A funding strategy for conducting service line replacement that includes ways to accommodate customers that are unable to pay to replace the portion of the service line they own.
7. A communication strategy to inform both consumers and customers served by the water system about the replacement plan and program.
8. Identification of any laws, regulations, and/or water tariff agreements that affect the water system's ability to gain access to conduct full replacement.
9. For water systems that identify any lead-lined galvanized service lines in the inventory, a strategy to determine the extent of their use in the distribution system.



Funding Avenues for Replacements



- Low to no-cost financing through annual funding provided through the Drinking Water State Revolving Fund (DWSRF).
- Low-cost financing from the Water Infrastructure Financing and Innovation Act (WIFIA)
- Lead remediation grants under authorities established by Water Infrastructure Finance and Innovation (WIIN) Act.
- Funding may also be available from other federal agencies, and state, and local governments.



Small System Flexibility



Small System Flexibility - LCRI

Allows CWSs serving $\leq 3,300$ people and NTNCWSs with 90th percentile levels $>$ lead AL and $\leq$ copper AL to conduct the following actions in lieu of CCT requirements:

- Choose a compliance option:
 - provision and maintenance of POU devices
 - replacement of all lead-bearing plumbing materials.

Maintains option for systems following CCT requirements:

- **With CCT:** Collect WQPs and evaluate compliance options and OCCT.
- **No CCT:** Evaluate compliance options and CCT.



Public Education and Outreach



Public Education and Outreach - LCRI

- Deliver notice and educational materials to consumers during water-related work:
 - That could disturb lead, GRR, or unknown service lines.
 - Includes disturbances due to inventorying efforts.
- If the system fails to meet the mandatory service line replacement rate:
 - Public outreach activities to encourage consumers to participate in the service line replacement program.
- *May need to provide customer with pitcher filter.*





Public Education and Outreach - LCRI

Pitcher Filters

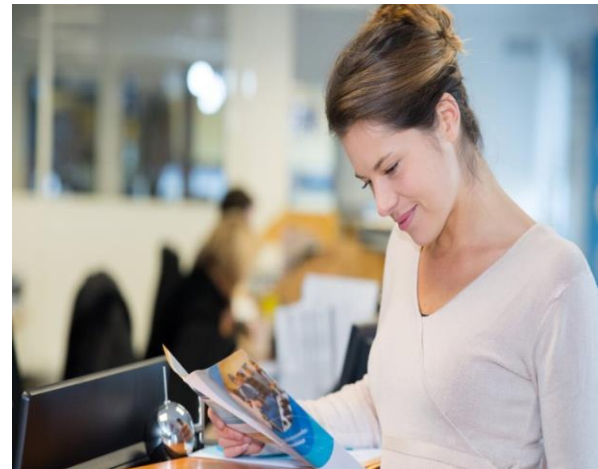
- Must be certified to reduce lead. NSF 42 and 53
- When a pitcher filter must be provided:
 - *Following disturbance to Lead, GRR, Unknown*
 - *Following full or partial service line replacement*
 - *Action level Exceedances (3+ in 5 years) – filter plan to state after 2 in 5 years.*





Public Education and Outreach - LCRI

- Revised mandatory lead health effects language to improve completeness and clarity.
- Water systems must provide the updated health effects language in
 - PN materials
 - PE materials
 - CCR
- For water systems serving a large proportion of consumers with limited English proficiency
- PE materials must include a translated statement regarding the importance of the materials and how consumers can contact the system to get the materials translated into other languages.





Public Education and Outreach - LCRI



- Deliver Lead and Copper sampling results to homes no later than **3 days** after receiving results.
- Offer to sample anyone with LSL, GRR or unknown if requested.
- **ALE:**
 - PE no later than 60 days after end of sampling period
- System with multiple ALE (at least 3 in 5 years):
 - Additional public outreach and make pitcher filters available



Public Notification



Public Notification

- **Tier 1 PN** required for ALE

- Within 24 hours
- Copies to NMED as well as EPA (LeadALE@epa.gov)

- **Tier 2 PN** required for violation of:

- General Requirement of the rule, CCT Requirements, Source Water Monitoring and Treatment Requirements, **SLI** and Replacement Requirements, PE Requirement, Small System Compliance Requirements.
- Within 30 days



Public Notification

- **Tier 3 PN** required for violation of:
 - Monitoring Requirements (i.e. , Sample Site Location, Sample Collection Methods, Number and Timing of Samples), WQP Requirements, Analytical Methods, Reporting Requirements, and Monitoring Schools and Childcare Facilities.
 - CRR
- ***Water System must provide updated lead health effects language**
 - **Language change with LCRI**



Consumer Confidence Report



Consumer Confidence Report (CCR) - LCRI

- Revises mandatory lead **health effects language** and informational statement to improve completeness and clarity.
- CWSs must include a statement in the CCR about the system sampling for lead in **schools and childcare facilities** and direct the public to contact their school or childcare facility for further information.
- CWSs with lead, GRR, or unknown service lines must include a statement in the CCR about how to **access the service line inventory** and replacement plan.



Schools and Childcare Facilities



Schools and Childcare Facilities - LCRI



- All CWSs must submit a list of the schools and licensed childcare facilities they serve to the SWIFT portal by Nov 1, 2027.
- Requires sampling in all elementary schools and licensed childcare facilities within the first five-year testing cycle and sample secondary schools on request.
- Within 5 years of submitting list of schools/childcare facilities:
 - Confirm to NMED the validity of the list (any changes?)
- Every 5 years thereafter, submit an updated list to NMED.



Schools and Childcare Facilities - LCRI

CWS

- Notify schools about sampling eligibility and sample upon request
- Include statement about sampling opportunities in CCR
- Annual public education of risk from lead in drinking water and steps to reduce exposure

Use and Provide EPA's "3Ts"

- EPA's 3Ts for Reducing Lead in Drinking Water in Schools and Childcare Facilities
 - Training
 - Testing
 - Taking Action
- Info for school and childcare facilities on establishing their own sampling program
- CWS must provide guidance as part of public education requirements.



Sampling for Schools and Childcare Facilities - LCRI

Table 2: Requirements for Systems to Notify Schools and Child Care Facilities about Sampling Program

Facility Type	Timing	Notification Description
Elementary schools Child care facilities	During the first five years after November 1, 2027	• Inform facilities that they are eligible to be sampled for lead by the water system • Include a proposed schedule for sampling at the facility; and information about sampling for lead in schools and child care facilities
Elementary schools Child care facilities	Starting in the sixth year after November 1, 2027	• Inform facilities that they are eligible to be sampled for lead by the water system on request • Provide information on how to request sampling for lead at the facility and information about sampling for lead in schools and child care facilities
Secondary schools	At least once per year starting November 1, 2027	

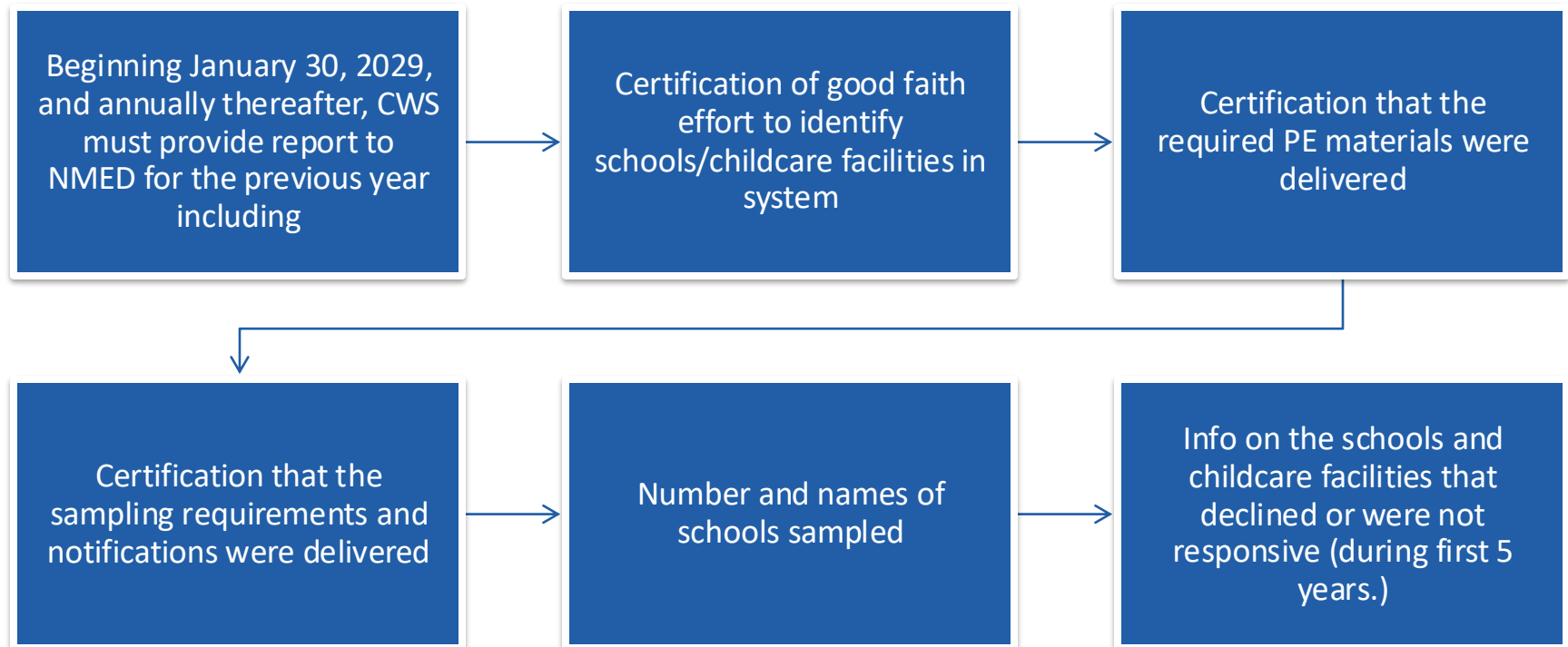


Sampling for Schools and Childcare Facilities - LCRI

	Schools	Child Care Facilities
Frequency	<u>Elementary Schools</u>: 20 percent minimum each year for first 5 years starting on November 1, 2027,¹ then as requested by the facility ("on request") <u>Secondary Schools</u>: On request only	20 percent minimum each year for the first 5 years starting on November 1, 2027, ¹ then on request
Number of Samples	5 samples ²	2 samples ²
Location	• 2 samples at drinking water fountains, • 1 sample at kitchen faucet used for food or drink preparation, • 1 classroom faucet or other outlet used for drinking, and • 1 nurse's office faucet, as available	• 1 at drinking water fountain and • 1 at kitchen faucet used for food or drink preparation, or 1 classroom faucet or other outlet used for drinking
Protocol	250-mL first-draw samples from a cold water tap after an 8- to 18-hours stagnation period	250-mL first-draw samples from a cold water tap after an 8- to 18-hours stagnation period



Schools and Childcare Facilities - LCRI





Schools and Childcare Facilities – Get the Lead Out

■ Get the Lead Out (GTLO) Program

- The GTLO program works directly with the schools and school districts, not the water systems.
- Unless the water system consists only of a school, it may not be aware that its requirement could already be met.
- Testing completed in many of the schools across the state.
- Number of samples collected at each school varies.
- Results are available online at: <https://www.env.nm.gov/gtlo/gtlo-sampling-data/>.



Primacy Agency (or State) Reporting



State Reporting - LCRI

■ NMED must report to EPA:

- Current # of lead, GRR and unknowns in each system
- Current # of non-lead, and lead connectors in each system.
- All 90th percentile values for all systems
- # and type of service lines replaced & replacement rate
- Deadline for systems to complete replacements
- Expected date of completion of all replacements
- ALE values of systems within 15 days of the end of the monitoring period or within 24 hours of receiving the notice from the system.





Prepare now for LCRI!



Identify unknown service lines in the water system – don't wait



Apply for funding and start replacements



Regularly update the SLI and start adding connector materials



Start preparing the Service Line Replacement Plan



Develop a list of schools and childcare facilities (CWS only)



Group Quiz



Group Quiz

- A small rural water system with limited resources is struggling to comply with new lead testing requirements. What options are available?
 - A) Apply for federal or state funding to support compliance efforts
 - B) Ignore the requirements and hope for leniency
 - C) Only test in one location to save money
 - D) Stop providing water to avoid violations





Group Quiz

The 90th percentile calculation for compliance sampling results in 20 ppb (0.020 mg/L). What does the system do?



Group Quiz

The 90th percentile calculation for compliance sampling results is 20 ppb (0.020 mg/L).
What does the system do?

- Action level exceeded
 - Provide a Tier 1 PN within 24 hours of the system being notified of results
 - Sample tap water of any customer who requests a sample
 - Install OCCT or re-optimize existing CCT (varies by system size)
 - Conduct public education no later than 60 days after end of sampling period.



Group Quiz

A consecutive system purchases water from a wholesale system and exceeds the Lead Action Level.

Can the consecutive system rely solely on the wholesale system's CCT to satisfy its LCRI responsibilities?



Sample Location Selection Exercise

- Example: Pine Valley Water System

- Population: 850
- Required lead and copper samples: 10

The system collects samples from 2 Tier 1 sites, 4 Tier 2 sites and 4 Tier 3 sites. All sites meet the sampling protocol requirements. All available Tier 1 sites are exhausted.

- Question: Which samples must be included in the 90th percentile calculation?



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- Question: Which samples must be included in the 90th percentile calculation?

- Answer:

- *For lead, the higher of the first-or fifth – liter samples results from each of the Tier 1 and 2 sites plus the remaining Tier 3 sites.*
- *For Copper, the first-liter sample results from Tiers 1,2 and 3 sites.*



Questions and Discussion





Example Table



