Staff Operations Item 7

ERIE COUNTY WATER AUTHORITY
INTEROFFICE MEMORANDUM

DATE: JANUARY 30, 2026

TO: Jennifer Hibit, Secretary to the Authority

FROM: Sabrina Figler, Director of Water Quality

SUBJECT: Analysis of Galvanized Pipe Downstream of Lead Service Lines in ECWA the Service Area

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Under EPA's Lead and Copper Rule Improvements (LCRI), the EPA requires the replacement of galvanized service lines that are or ever were downstream of lead service lines due to potential contamination. These service lines are designated as "Galvanized Requiring Replacement" or "GRR's."

If a service line is marked as "Galvanized Requiring Replacement" in our inventory, it means the service line was found to be made of galvanized material during inspection. Galvanized pipes are iron or steel with a zinc coating to prevent rust and corrosion. The revised Lead and Copper Rule require us to assume there was an upstream lead pipe if we cannot confirm that a galvanized line was *never* connected to one. Because galvanized pipes can trap lead particles, the LCRI states they need to be replaced as a safety precaution in these situations.

Water Quality set out to investigate the impact of lead service line removal (LSLR) on lead release from galvanized service lines over time with the anticipation that EPA may grant an extension to the deadline of galvanized line removal. In Fall 2025, we began identifying homes with galvanized lines downstream of lead service lines. These homes were solicited to participate in the study. From these homes, we collected samples pre-and post-LSLR and analyzed these samples for lead and other trace metals. ECWA also identified a group of homes whose service lines are galvanized downstream of copper, with no history of being downstream of lead. We collected samples from this set of homes to serve as a control group.

Coordinating our sample collection and analysis with the ECWA construction inspectors, the homeowner, and our contractor(s), has proved arduous at times and we were not always able to coordinate post LSLR with a pre-LSLR home. Therefore, the data we have at the current time is limited, but of value.

The attached report and data analysis, completed by Clayton Rumsey, Analytical Chemist, and me, will give you insight into the impact of lead pipe on galvanized. Preliminary results showing lead release is minimal. As more data is acquired, I will continue to update the Board.

The following is a report on ECWA's Galvanized Study, specifically concerning residences that have been served by a portion of the service line being lead followed by a galvanized portion. Such sites have been designated as "Galvanized Requiring Replacement" (GRR) by the US EPA due to their presence downstream of current or historical lead service lines. To evaluate the lead release over time for such addresses within our system, we established a study to evaluate the lead release from these galvanized lines before and after lead service line replacement (LSLR). We employed a sequential sampling methodology to obtain ten liters of sample from one individual fixture within a residence to best understand how lead release correlates with a galvanized service line having been or currently downstream of a lead service line. To date, we have collected data from twenty-two "GRR" sample sites prior to LSLR. Eighteen of the sites had one or more samples with lead levels at or above the detection limit (1.0 ppb). The four sites without detectable levels of lead are well served by current corrosion control efforts and remain intact and undisturbed.

Two of the twenty-two sites have had the lead portion of their service line replaced, leaving the GRR pipe still in service. Sampling has been conducted at these two sites, and the results are presented below (addresses have been redacted):

Figure 1: MEASURED LEAD RELEASE PROFILE FOR xxx ST.

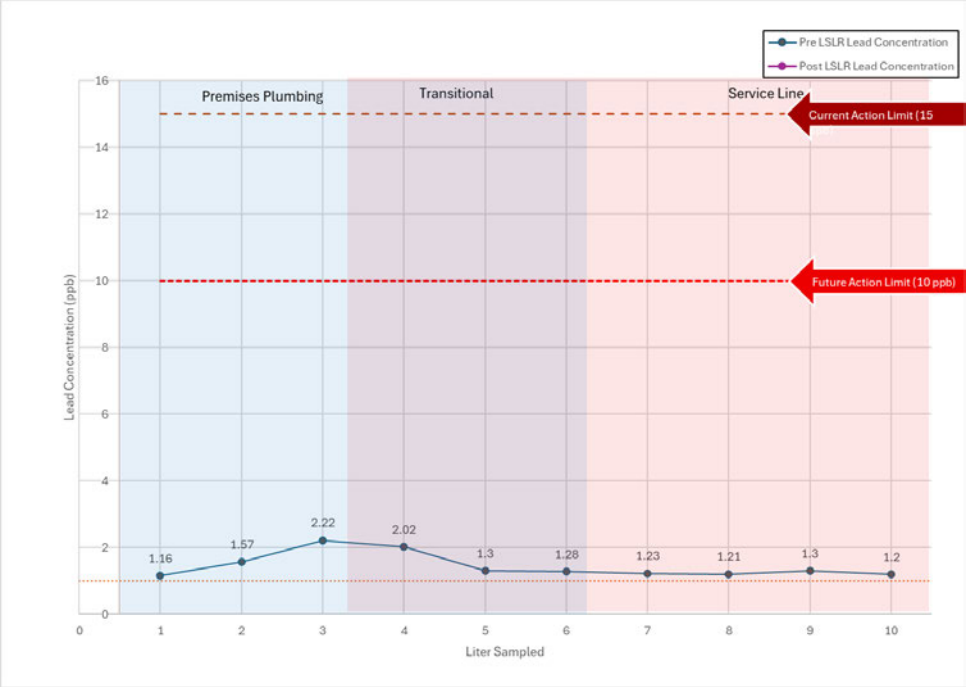
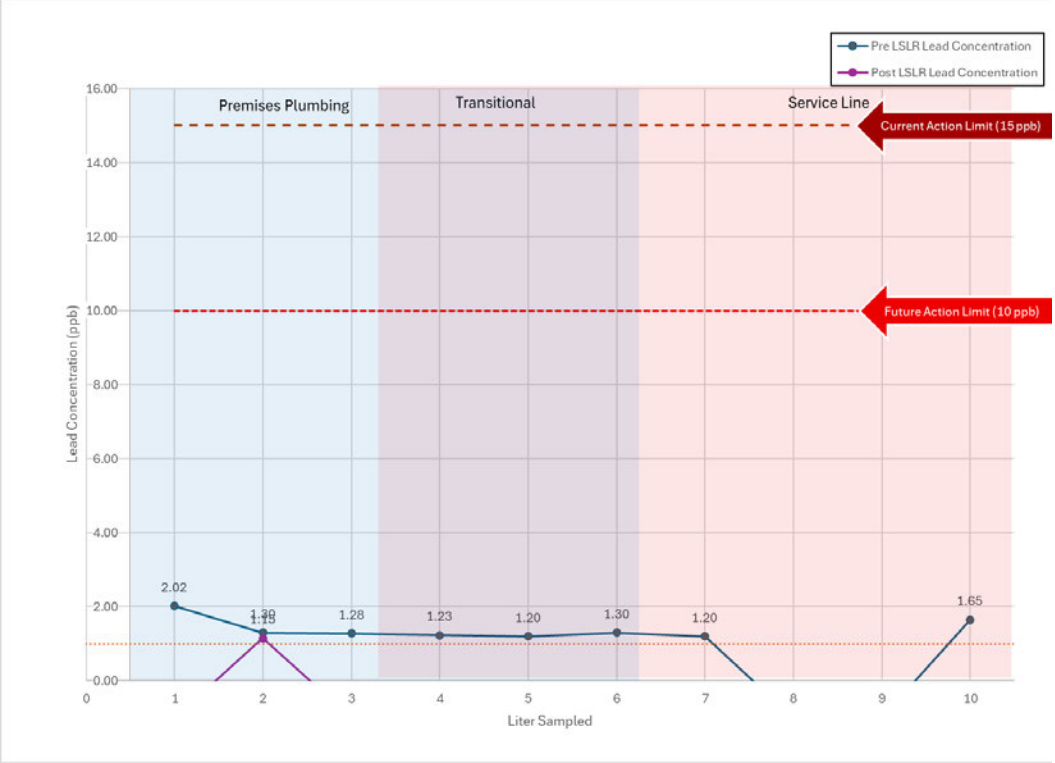


Figure 2: MEASURED LEAD RELEASE PROFILE FOR xxx STREET



For both sites there is a decrease in overall lead release for all ten liters sampled, with all of Figure 1's address' samples post-LSLR falling below detection limits for lead. For Figure 2's address, it is a similar story, but there appears to be a consistent lead release in both pre- and post- LSLR samples on the second liter. This may be attributed to an unknown lead source present within the premises plumbing.

These two properties that have been examined pre- and post- LSLR have also had a section of their galvanized service line harvested to undergo analysis to determine predominant mineral phases and assemblages within the scale accumulated within the pipe. While the result of this analysis is forthcoming, we can expect to be well informed by the determination of mineral phases, lead compound (types) differences.

Lead remains a persistent problem within our system. Through these sampling events we can better determine where our efforts are best placed in terms of galvanized service line replacement throughout the system. This information can help us better assess the level of public health impact from these degraded pipes and better inform changes to treatment methodologies.

In a control group, we have analyzed galvanized service lines downstream of copper service lines with no history of lead ever being present. This data is forthcoming.

Additional studies to better understand and characterize these lead sources within samples, effort has been placed into elemental "fingerprinting" of metal co-contaminants that occur within common lead releasing materials. Using the instrumentation present within the Water Quality Laboratory, these metal co-contaminants can be quantified and used to better understand the plumbing within households without direct inspection. Elemental abundances are assigned to Zinc, Cadmium, and Tin to be correlated with Lead and Copper abundances to identify sources of Lead release into drinking water.

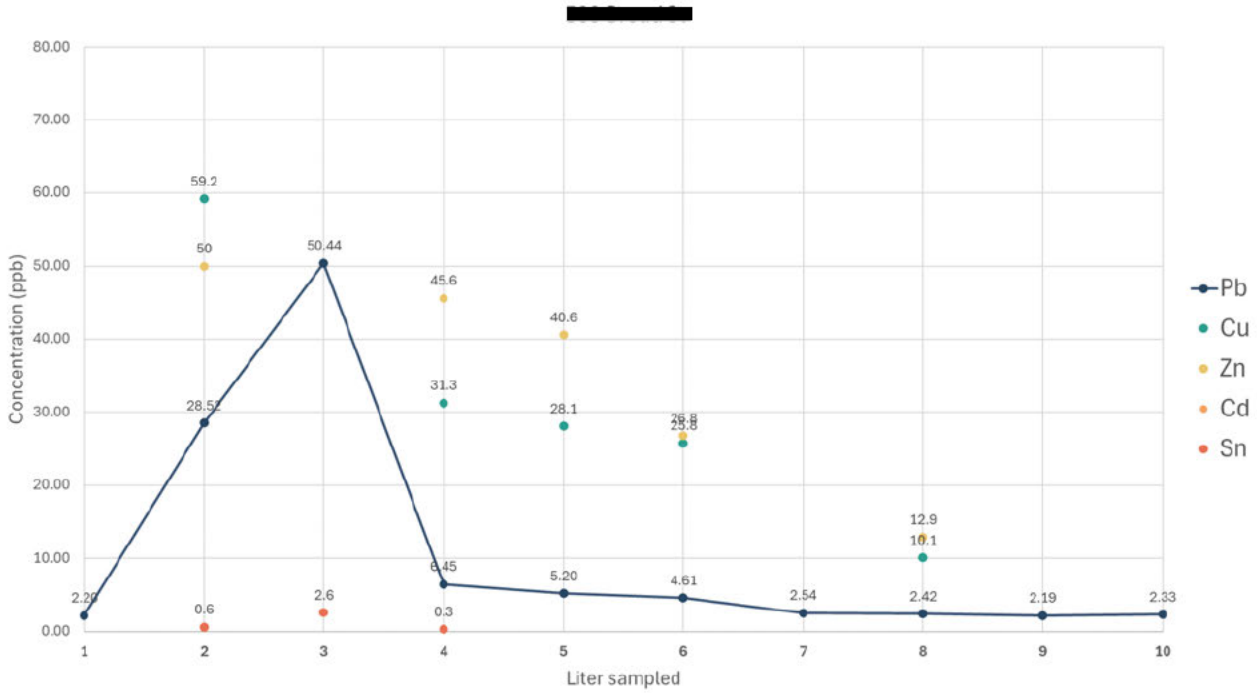
Typical Metal Co-occurrence Fingerprints for Leaded Plumbing Materials

	Co-occurring Metals in Water Sample					
Leaded Material	Lead	Copper	Iron	Zinc	Tin	Cadmium
Galvanized iron pipe	X (if upstream lead source)		X	X (for newer pipe)		X
Lead pipe (e.g., LSL, gooseneck)	X					
Copper pipe with leaded solder	X	X			X	
Leaded brass	X	X		X		

LSL—lead service line

Arnold, R.B., Parks, J., Edwards, M.A. and Rosenfeldt, B. (2024), What's New With Old Galvanized Iron Pipe? A Toolbox for Utilities. J AWWA, 116: 24-34. https://doi.org/10.1002/awwa.2246

Figure 3: ELEMENTAL FINGERPRINTING FOR xxx STREET



The large release of lead (50 ppb) in the third Liter from this site from xxx Street are correlated with a large spike in release of both Copper and Zinc (391 ppb and 694 ppb, respectively, for the 3rd Liter). This indicates through elemental fingerprinting that the premises plumbing includes some form of leaded brass fixture contributing to the extreme lead release. While this capability has not been extensively used, it remains an important capability for expanding both consumers' and utilities' knowledge base.