

PROJECT DESIGN NOTES/QUESTIONS

PROJECT: City of Chillicothe – Lead

DATE: 2/28/17

General: The following is a summary of how the numbers in the report were generated:

PUBLIC SERVICE AREAS:

1. The service areas designated as *Very Low Probability*, *Low Probability*, and *Moderate Probability* were drawn free hand onto a city map by the employees of the water department and were transferred to the CADD drawing in their approximate location.
2. The employees of the water department also located main lines that were installed after 1998 and these were also transferred to the CADD drawing.
3. Utilizing Carlson Civil the acreage in each area as drawn on the CADD drawing was calculated.

Very Low Probability 1,460 acs.

Low Probability 2,579 acs.

Moderate Probability 1,861 acs.

The percentage of the system was calculated by taking the total acreage of the three areas (5,900 acs.) and then divide into the individual acreage.

For example $1,460/5,900 = 0.247 \times 100 = 24.8\%$

$2,579/5,900 = 0.437 \times 100 = 43.7\%$

$1,861/5,900 = 0.315 \times 100 = 31.5\%$

4. With the information provided by the employees of the City of Chillicothe the approximate lengths of the <8% lines was calculated by CADD. Also, the total length of the system was provided by the employees of the City of Chillicothe to be 106 miles (106 miles x 5,280 ft/mile = 559,680 ft.). The length of the <8% lines was determined to be 48,732 ft.

The % of the total system was calculated as $48,732 \text{ ft}/559,680 \text{ ft} \times 100 = 8.7\%$

PRIVATE SERVICE AREAS:

1. Since no detailed information was available for the private service lines the same percentages as were calculated for the main service lines was utilized except for the structures constructed after 2014.
2. Based on the information provided there were 22 properties constructed after 2014. To obtain a percentage of the system it was assumed that each new property occupied 1 acre and was located in the "*very low probability*" area (1,460 acs.). Therefore the total acreage of new property was calculated to be 22 properties x 1 ac/property = 22 acres. Then this number was divided by the total acreage = 22 acres/5,900 acres x 100 = 0.4% of the system.
3. The acreage in the "*very low probability*" area was reduced by 22 acres yielding 1438 acres versus 1460 acres.

PROBABILITY OF LEAD SOLDER AND FITTINGS IN WATER MAIN:

1. It was determined that there were a total of 2,003 valves in the system. 1,349 of these valves were installed prior to 1998.
2. There were 65 large meters in the system. 40 of these meters were installed after 1998. The remaining 25 meters were installed prior to 1998.
3. There are 9,416 small meters in the system. It was determined that 15%(1,412) of these would have been installed prior to 1998.
4. The problem becomes how to convert this information into a percentage of the system. If one considers the valves only the % of the system = $1,349/2003 \times 100 = 67.3\%$ of the system could have lead solder or fittings. If one looks at the meters only you have 1,412 small meters and 25 large meters prior to 1998. There are 9,416 small meters and 65 large meters in the system, yielding a total of 9,481 meters. Therefore, the % of the system looking at meters is as follows: $(1,412 + 25)/9,481 \times 100 = 15.2\%$ of the system.

So, the valve calculations yield a % of lead solder = 67.3% system

The meter calculations yield a % of lead solder = 15.2%

Conclusion:

In looking at the results it is apparent that the valve calculations are a small portion of the entire system. The total valves represent just 2003 components of the system while the meters number 9,481 components of the system. It is possible to take into consideration the total meters and valves to calculate a percentage of the system.

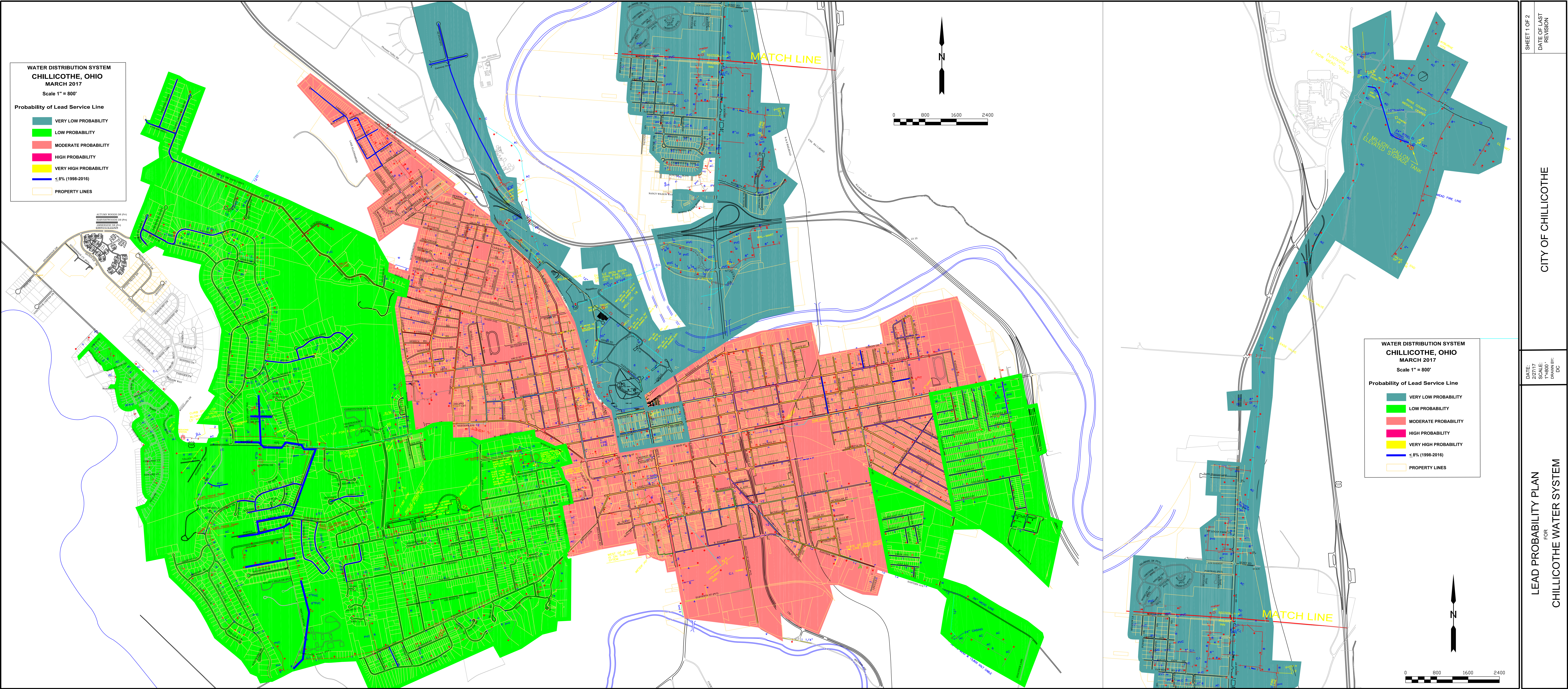
Total valves = 2,003 Before 1998 = 1,349

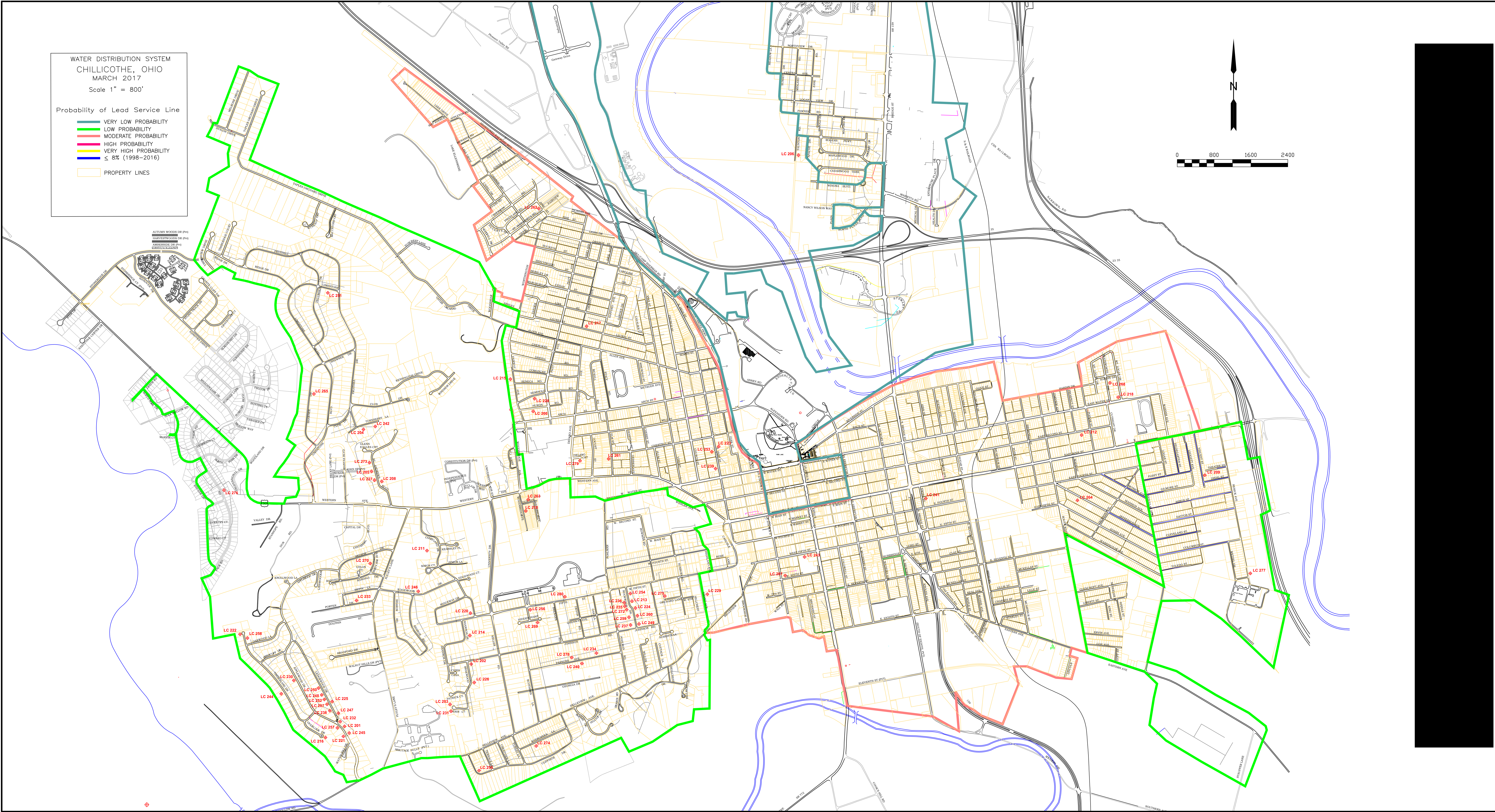
Total Meters = 9,481 Before 1998 = 1,437

Total units before 1998 = 2,786

Total Units = 11,484

% of system = $2,786/11,484 \times 100 = 24.3\%$, This seems reasonable





T5IER 1 AND TIER 3 SAMPLING LOCATIONS
FOR
CHILLICOTHE WATR SYSTEM

DATE:
2/27/17
SCALE:
1"=800'
DRAWN BY:
DC

CITY OF CHILLICOTHE

SHEET 2 OF 2
DATE OF LAST
REVISION

City of Chillicothe

Public Water System Lead (Pb) Components

PWSID# OH 7100112

Prepared February 2017

To comply with Section 6109.121 of the Ohio Revised Code, enacted in September 2016, the City of Chillicothe in Ross County, Ohio has created the following report and attached map to identify known and potential components of water service lines that contain lead (Pb).

The following information and attached map do not verify the presence of lead in any of the lines, components or structures shown. The information and map only show the probable or possible locations based on information made available by the City of Chillicothe Water Department.

The City of Chillicothe Water Department met on February 15, 2017 to review a map of the service area. No applicable historical maintenance and operation records, tap cards, or as-builts were available to identify lead component locations. Locations where lead service components have been replaced, and locations where lead components are likely still being used, were identified by the City of Chillicothe Water Department and placed on the attached map.

Public and Private Ownership of Service Lines

The City of Chillicothe Water Department distributes water to 10,133 customers through 106 miles of service lines. The City owns and maintains these service lines from the water distribution mains up to the meters for each water customer. The remainder of each service line from the meter to the building is the responsibility of the property owner.

The table below provides information about the possibility of lead service lines to the customers the City of Chillicothe serves.

Public Service Line Lead Probability		
Possibility of Lead	Area	% of System
Very Low	1,460 acs.	24.8%
Low Probability	2,579 acs.	43.7%
Moderate Probability	1,861 acs.	31.5%
High Probability	0	0
Very High Probability	0	0
< 8% Lead Alloy	Length of Line	% Est. Total Length
< 8% Lead Alloy in feet	48,732 ft. of line	8.7%

The table below provides information about the possibility of leaded plumbing materials in the private service lines of the customers the City of Chillicothe serves.

Private Service Line Lead Probability		
Possibility of Lead	Area	% of System
Very Low	1,438 acs.	24.4%
Low Probability	2,579 acs.	43.7%
Moderate Probability	1,861 acs.	31.5%
High Probability	0	0
Non-Lead After 2014	22 properties @ 1 ac./property	0.4%

Distribution System

Within the distribution system, none of the pipes themselves are known to contain any lead, however, there are joints, valves, and fittings within the system that may contain lead.

Water meters at each customer location may contain more than 8% lead. Meters installed after 1998 may contain up to 8% lead. Meters installed after 2014 will have less than 0.25% lead.

The City of Chillicothe has approximately 106 miles of water main lines. The table below shows which lines may or may not have lead solder, valves, or fittings according to pre or post regulation. Information is based upon number of valves and number and time of meter installation.

Probability of Lead Solder and Fittings in Water Main		
Lead in Water Main Materials	Number of meters, valves	% of System
Probable (material typical pre-1998)	2,786	24.3%
Improbable (material typical post-1998)	8,698	75.7%

Indoor Plumbing

Buildings in Ohio built prior to 1998 or that use plumbing material or solder manufactured before 1998 may have materials with greater than 8% lead and are at a higher risk of contributing lead to the drinking water than materials manufactured after 1998.

Buildings built and plumbing materials manufactured after 2014 were required to have less than 0.25% lead by weight and have the lowest risk for contributing lead to the drinking water. It should be noted however that, although prohibited, some use of leaded solder or leaded components may have occurred after the prohibitions became effective.

In Chillicothe, only 22 properties are known to have structures built since 2014, and therefore nearly all buildings in the City may have some lead in the solder or fixtures.

Customer Self-Reporting

Property owners are encouraged to inspect their own service lines entering the building if these are in anyway exposed, and notify the City of Chillicothe. A representative from the water department will contact you to confirm and update this information for the next map release.

Contacts and Resources

If you have questions about known and potential lead components within the City of Chillicothe Water System, please contact:

**City of Chillicothe
Water Distribution Department
Chillicothe, Ohio 45601
Phone: (740) 774-1415**

For more information about lead service lines and their removal, we recommend the following resources:

- **The Lead Service line Replacement Collaborative**
<http://www.lslr-collaborative.org/resources-for-concerned-consumers.html>
- **Ohio EPA 'Learn About Lead' page**
<http://epa.ohio.gov/pic/lead.aspx>
- **US EPA Lead in Drinking Water Information Page**
<https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>