# City of Milwaukee Lead in Drinking Water Data Review for Work Done through 5/23/16

## Number of Homes Tested and Sampling Frequency by Work Type

| Work Type* | Number of Homes | Sampling Frequency |
|---|---|---|
| City Line Replacement | 39 | 1 day post-work: 4 homes; 2 days post-work: 13 homes; 3 days post-work: 7 homes; 4 days post-work: 5 homes; 5 days post-work: 4 homes; 6 days post-work: 1 home; 7 days post-work: 4 homes; 8 days post-work: 1 home; 9 days post-work: 1 home; 10 days post-work: 1 home; 13 days post-work: 1 home; 30 days post-work: 27 homes; 60 days post-work: 9 homes |
| Full Replacement | 4 | Pre-work: 1 home; 1 day post-work: 1 home; 2 days post-work: 1 home; 6 days post-work: 1 home; 7 days post-work: 1 home; 14 days post-work: 1 home; 30 days post-work: 2 homes; 60 days post-work: 1 home; 85 days post-work: 1 home |
| Leak Repair | 2 | 1 day post-work: 1 home; 5 days post-work: 1 home; 30 days post-work: 1 home |
| Meter | 5 | 2 days post-work: 2 homes; 3 days post-work: 1 home; 4 days post-work: 1 home; 8 days post-work: 1 home; 30 days post work: 5 homes; 60 days post-work: 4 homes |
| Sewer Main Replacement | 4 | Pre-work: 4 homes; 1 day post-work: 4 homes; 14 days post-work: 4 homes; 30 day post-work: 4 homes |

*Full Replacement includes: *"City Lead Service Line Replaced; Homeowner Lead Service Line Replaced", "City Lead Service Line Replaced; Owner Previously Replaced Lead Service Line", "Full Lead Service Line Replacement (Internal Plumbing is Lead)", "Owner's Side Lead Service Line Replaced 3/12/2016; City Lead Service Line Replaced 3/24/2016"*

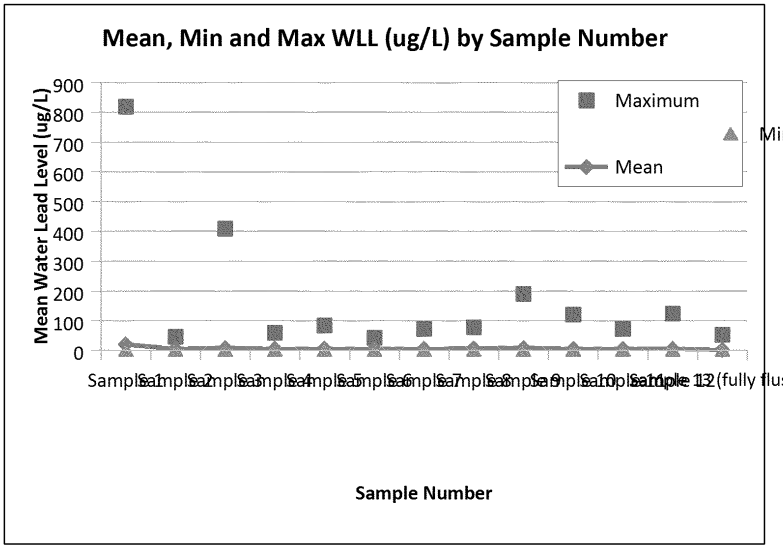
Meter includes: *"Meter Valve", Meter Valve Inlet"*

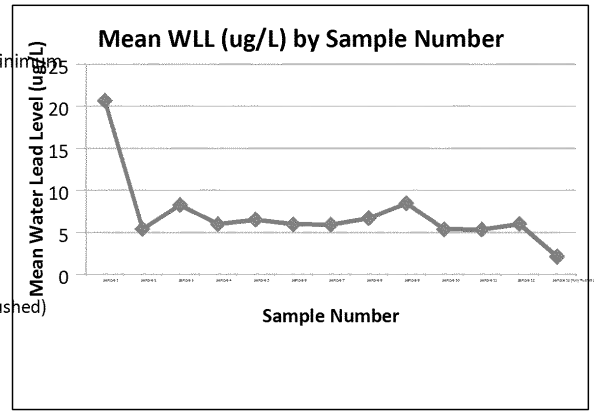
## Summary of all Water Lead Levels (WLLs)

| N (samples) | N (homes) | WLL (µg/L) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Min | Max | Mean | StdDev | P25 | P50 | P75 | P95 |
| 1548 | 54 | 1 | 820 | 7.15 | 29.54 | 1 | 2.2 | 6.1 | 20 |

**Summary of WLLs by Sample Number**

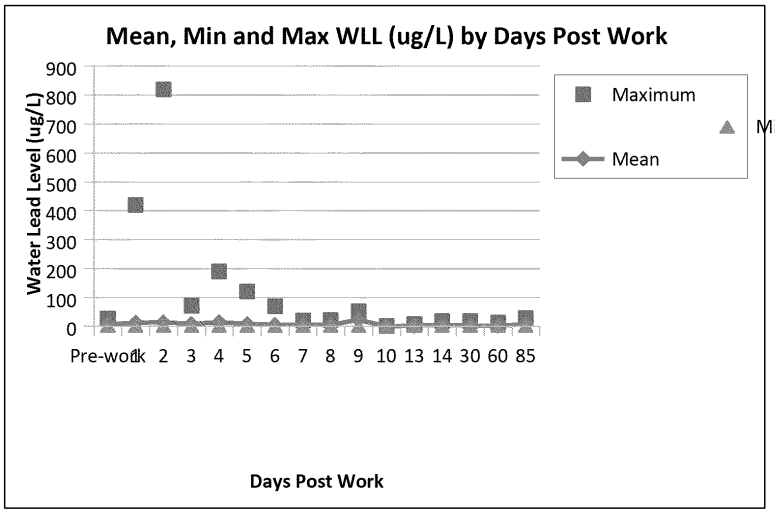
| STATISTIC | Sample 1 | Sample 2 | Sample 3 | Sample 4 | Sample 5 | Sample 6 | Sample 7 | Sample 8 | Sample 9 | Sample 10 | Sample 11 | Sample 12 | Sample 13 (Fully Flushed) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 121 | 121 | 119 | 116 | 119 | 119 | 119 | 119 | 118 | 119 | 119 | 118 | 121 |
| Min | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Max | 820 | 46 | 410 | 60 | 84 | 43 | 72 | 77 | 190 | 120 | 72 | 124 | 52 |
| Mean | 20.68 | 5.41 | 8.28 | 6.00 | 6.52 | 5.97 | 5.94 | 6.71 | 8.48 | 5.39 | 5.36 | 6.00 | 2.12 |
| StdDev | 89.66 | 7.46 | 37.69 | 9.65 | 10.47 | 7.10 | 9.29 | 11.73 | 24.53 | 12.32 | 9.70 | 14.68 | 4.98 |
| P25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| P50 | 3 | 2.9 | 2.8 | 2.6 | 3.1 | 3 | 2.7 | 2.2 | 2.1 | 1 | 1 | 1 | 1 |
| P75 | 6.8 | 5.8 | 5.4 | 5.8 | 7.5 | 8.7 | 7.7 | 7.7 | 6.5 | 5.1 | 6.3 | 6 | 1 |
| P95 | 65 | 22 | 23 | 27 | 23 | 20 | 20 | 33 | 28 | 19 | 21 | 19 | 5.7 |

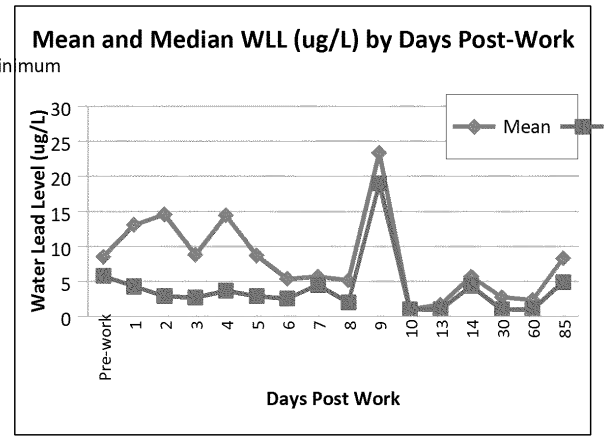


**Summary of WLLs by Days Post-Work**

| STATISTIC | Pre-work | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 13 | 14 | 30 | 60 | 85 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 65 | 130 | 208 | 117 | 75 | 64 | 26 | 45 | 26 | 13 | 13 | 13 | 65 | 507 | 168 | 13 |
| N (homes) | 5 | 10 | 16 | 8 | 6 | 5 | 2 | 5 | 2 | 1 | 1 | 1 | 5 | 39 | 13 | 1 |
| MINIMUM | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| MAXIMUM | 27 | 420 | 820 | 72 | 190 | 120 | 69 | 20 | 22 | 53 | 1 | 7.5 | 19 | 19 | 13 | 28 |
| MEAN | 8.48 | 13.10 | 14.57 | 8.80 | 14.42 | 8.71 | 5.38 | 5.67 | 5.18 | 23.38 | 1.00 | 1.68 | 5.66 | 2.72 | 2.34 | 8.33 |
| STANDARD DEVIATION | 6.41 | 39.70 | 68.52 | 13.56 | 31.85 | 17.83 | 13.25 | 4.73 | 6.05 | 14.02 | 0.00 | 1.86 | 4.27 | 3.11 | 2.53 | 8.46 |
| P25 | 4.1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 17 | 1 | 1 | 2.3 | 1 | 1 | 3.2 |
| P50 | 5.8 | 4.3 | 2.9 | 2.7 | 3.7 | 2.9 | 2.55 | 4.5 | 2 | 19 | 1 | 1 | 4.4 | 1 | 1 | 4.9 |
| P75 | 12 | 11 | 8.25 | 11 | 10 | 5.8 | 3.9 | 8.2 | 7.8 | 32 | 1 | 1 | 8.1 | 3.6 | 2.6 | 9.2 |
| P95 | 21 | 41 | 41 | 35 | 84 | 27 | 14 | 14 | 20 | 53 | 1 | 7.5 | 14 | 8.5 | 8 | 28 |



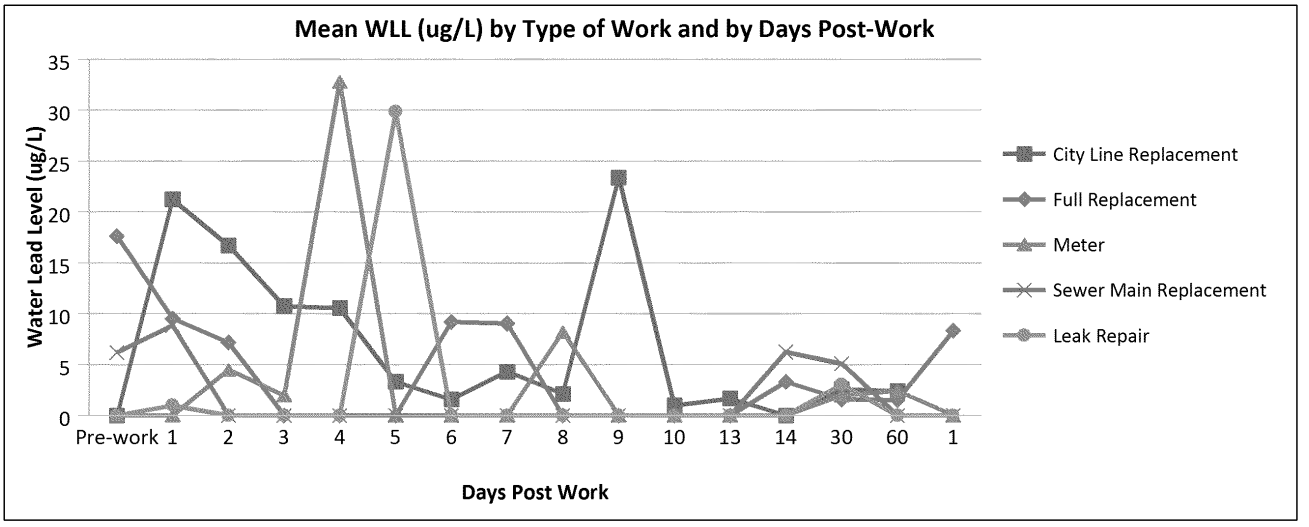



**Summary of Water Lead Levels by Type of Work**

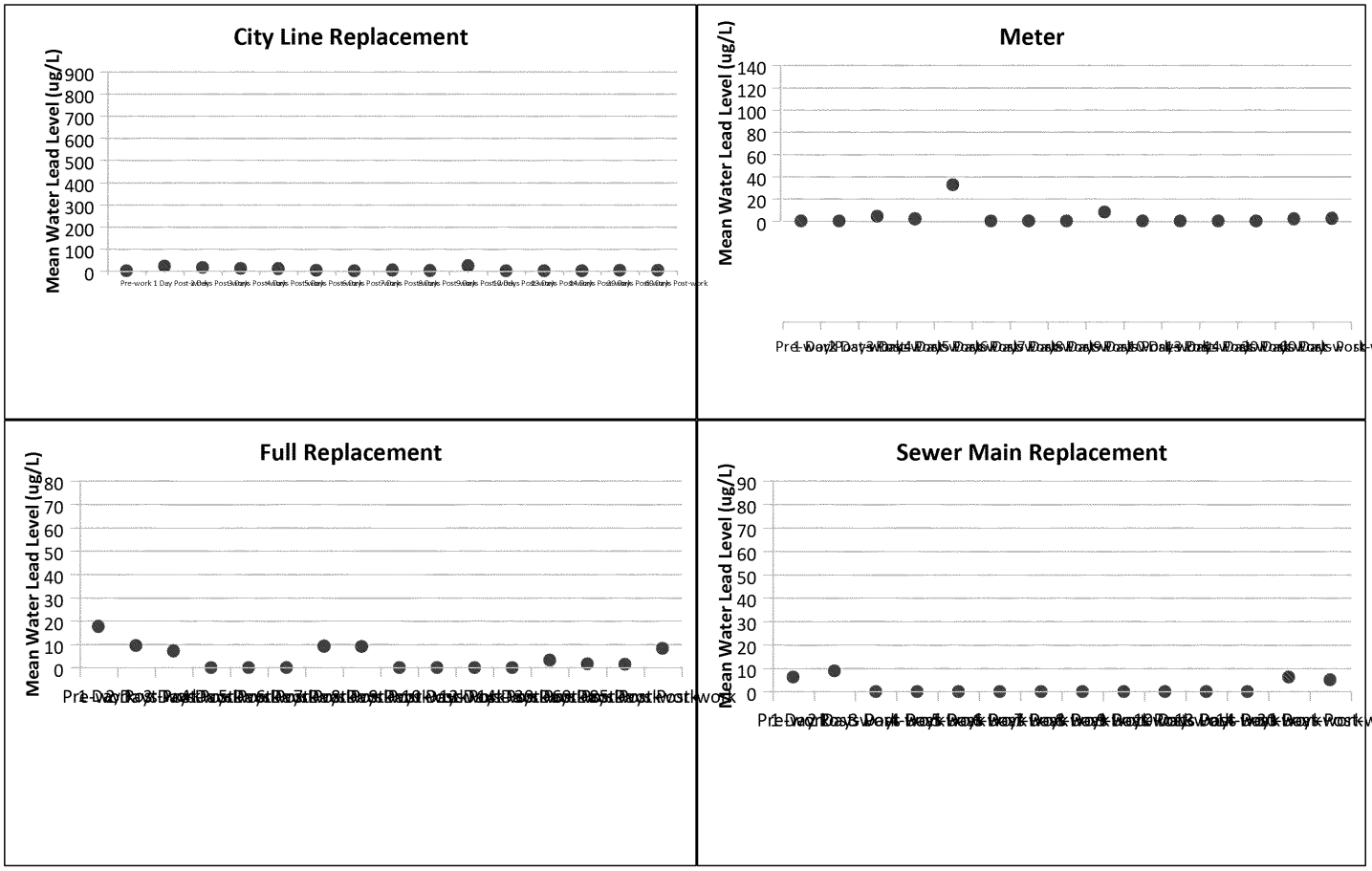
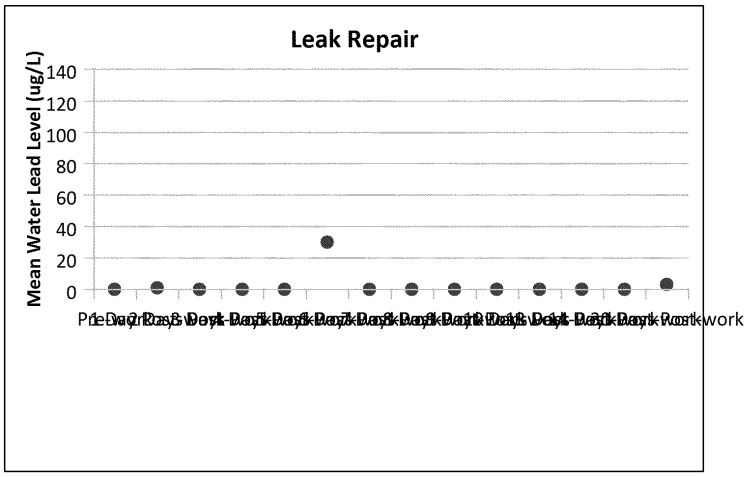
| STATISTIC | City Line Replacement | Full Replacement | Leak Repair | Meter | Sewer Main Replacement |
|---|---|---|---|---|---|
| N | 990 | 130 | 39 | 181 | 208 |
| MINIMUM | 1 | 1 | 1 | 1 | 1 |
| MAXIMUM | 820 | 69 | 120 | 130 | 77 |
| MEAN | 7.52 | 6.89 | 11.30 | 5.10 | 6.60 |
| STANDARD DEVIATION | 35.85 | 10.74 | 22.07 | 13.54 | 7.33 |
| P25 | 1 | 1 | 1 | 1 | 3 |
| P50 | 1 | 3.05 | 2.2 | 1 | 5.1 |
| P75 | 5.1 | 8 | 12 | 4 | 8.3 |
| P95 | 20 | 24 | 66 | 13 | 14 |

**Mean WLLs by Work Type and Days Post-Work**

| | DAYS POST WORK | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WORK TYPE** | **Pre-work** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **13** | **14** | **30** | **60** | **85** |
| **City Line Replacement** | | 21.24 | 16.69 | 10.76 | 10.56 | 3.32 | 1.58 | 4.30 | 2.14 | 23.38 | 1.00 | 1.68 | | 2.58 | 2.41 | |
| **Full Replacement** | 17.63 | 9.51 | 7.18 | | | | 9.18 | 9.05 | | | | | 3.32 | 1.59 | 1.51 | 8.33 |
| **Meter** | | | 4.49 | 1.97 | 32.80 | | | | 8.22 | | | | | 1.99 | 2.43 | |
| **Sewer Main Replacement** | 6.19 | 8.88 | | | | | | | | | | | 6.25 | 5.09 | | |
| **Leak Repair** | | 1.00 | | | | 29.85 | | | | | | | | 3.05 | | |



**By Work Type: WLLs (Mean/Min/Max) by Days Post-Work**



**By Work Type: WLLs (Mean/Min/Max) by Days Post-Work, continued**