LEAD AND COPPER RULE
Understanding Test Results and Calculating the 90th Percentile

- Lead and copper analytical results are evaluated against an *Action Level*, not an MCL.
- When the concentration in more than 10 percent of tap water samples collected during any monitoring period is greater than the Action Level, your system has an Action Level Exceedance, and will need to notify consumers of the health risks associated with lead and copper in drinking water.
- Your system is in compliance with the Lead and Copper Rule when the 90-percent value of the samples collected are less than or equal to the Action Level for lead or copper.
    - The Action Level for lead is 15 µg/L
    - The Action Level for Copper is 1300 µg/L
- In order to determine compliance, calculate the 90th percentile lead and copper values for samples collected within your system, and compare them back to lead and copper Action Levels.

CALCULATING COMPLIANCE

1.) Place samples in ascending order from the lowest concentration to the highest concentration. Be sure to assess compliance for lead and copper samples separately.
2.) Assign each sample a number, with the sample having the lowest concentration being number 1.
3.) Multiply the number of samples taken by 0.9; the resultant number correlates to the lead or copper value that represents the 90th percentile (EX: if you collect 60 samples, the value of lead or copper of the 54th sample is the 90th percentile. 60 x 0.9 = 54).
4.) If the 90th percentile value is greater than the Action Level, you will be contacted by your DNR Representative, and be instructed to conduct additional activities to determine compliance with the Lead and Copper Rule.
5.) For public water systems sampling at less than 10 locations, the 90th percentile is found by averaging the two highest concentrations.
6.) DON'T FORGET to notify customers of lead and copper sample results REGARDLESS of 90th percentile results.

EXAMPLE CALCULATIONS:

Example 1	
Samples	**Lead Results (µg/L)**
1	0.72
2	0.98
3	1.4
4	2.4
5	3.6
6	6.9
7	9.2
8	12.3
9	**18.6**
10	21.7

Example 2	
Samples	**Copper Results (µg/L)**
1	10
2	91
3	888
4	**1000**
5	**1100**

Example 1 - Calculating Lead 90th Percentile Value:

- 10 samples x 0.9 = 9; the 9th sample is the 90th percentile value for the entire sample set
- The 90th percentile is 18.6 µg/L
- The 90th percentile is > Action Level
- Inform consumers of the health risks associated with lead in drinking water
- Your DNR Representative will contact you and you will be instructed to conduct additional monitoring activities to determine compliance with the Lead and Copper Rule

Example 2 - Calculating Copper 90th Percentile Value:

- 5 samples = less than ten sampling locations (see 6.) above)
- Average two highest concentrations = samples 4 and 5
    - (1000 + 1100)/2 = 1050 µg/L
- The 90th percentile is 1050 µg/L
- The 90th percentile is <Action Level
- System is in compliance until the next round of applicable monitoring

****A FORM FOR YOUR CALCULATIONS HAS BEEN PROVIDED ON THE BACKSIDE****

LEAD AND COPPER RULE
Understanding Test Results and Calculating the 90th Percentile

LEAD SAMPLE RESULTS IN ASCENDING ORDER (LOW TO HIGH)	
Sample Number	Sample Result

COPPER SAMPLE RESULTS IN ASCENDING ORDER (LOW TO HIGH)	
Sample Number	Sample Result

*** USE ADDITIONAL SHEETS IF NECESSARY**