

DATE: November 29, 2019

TO: Wisconsin's Large Community Water Systems

FROM: Cathrine Wunderlich, P.E. - Public Water Engineering Section Chief, Department of Natural Resources

SUBJECT: General comments related to the demonstrative corrosion control study proposals

Thank you for your Demonstrative Corrosion Control Treatment (CCT) Study proposal submittals. In the CCT Study proposals that were received, the Public Water program received most of the information that we were looking for. We have subsequently scheduled individual Skype meetings to discuss specific details of your proposal, and any specific observations or suggestions we may have to offer. Ahead of your Skype call, we would like to share some overall comments that the department would like to see incorporated into each of your final proposals.

1. The final CCT Study proposal should include a discussion on the specific corrosion control treatment technology(ies) which have been selected to test and demonstrate, a description of the testing units (demonstrative stations or pipe loop arrangements) and anticipated testing procedures and parameters. Specifically, the proposal should include the anticipated:
 - number of testing units;
 - timeline for construction of testing units;
 - stabilization condition (time on/off, flow) period and process for testing units;
 - operational conditions (time on/off, flow);
 - corrosion control treatment technology (corrosion control inhibitors, blends, doses, pH ranges);
 - frequency of testing and the water quality parameters being tested.

In all testing scenarios, a 'baseline' or 'control' testing unit should be maintained, while other test units are used to evaluate the changes in lead concentrations as a result of different corrosion control treatment technologies being considered. The objective of this CCT Study is not only to demonstrate what technology *is the best* for your specific water system, but also what *is not the best* technology for your system. Therefore, we encourage you to consider testing a wider range of corrosion control treatment technology variables (corrosion control inhibitors, blends, doses, pH ranges) to accomplish this. Specifically, the [proposed Revised Lead and Copper Rule](#) (RLCR) indicates that future CCT Studies will be required to evaluate 1 mg/L and 3 mg/L of orthophosphate residual when lead service lines are present in your distribution system. This also includes galvanized metal that is, or formerly was, downstream of lead materials. It may be in the best interest of your water system to test 1 mg/L and 3 mg/L of orthophosphate residual along with the others you have proposed, as a part of your upcoming CCT Study, to satisfy RLCR requirements. You would then already have demonstrated if there is, or is not, a measurable reduction in lead corrosion in combination with your water quality at 1 mg/L and 3 mg/L of orthophosphate residual.

2. The demonstrative CCT Study was intended to begin on January 1, 2020, with all background 'desktop work' completed prior to this, in order to guide the CCT Study design and implementation. The full two-year CCT Study duration will be needed to allow time for constructing and conditioning the testing units, installing the proposed treatment technologies, taking samples, evaluating data, making any necessary CCT Study modifications and drawing conclusions. The CCT Study Report due by December 31, 2021

should identify the recommended corrosion control treatment technology, any potential modifications to any existing treatment processes (i.e. pH adjustment), a discussion on why that technology has been selected as the best option, and proposed optimal water quality parameters (OWQPs) that the utility will operate within under s. NR 809.543(8), Wis. Adm. Code, for both the entry point and distribution system. Note, these OWQP recommendations should follow the guidelines presented in EPA’s March 2016 *Optimal Corrosion Control Treatment Evaluation Technical Recommendations for Primacy Agencies and Public Water Systems*.

3. A distribution system evaluation is an equally important component of the CCT Study, as your Utility will need to operate the distribution system within the assigned OWQPs discussed in No. 2 above. Specifically, the CCT Study should include:
 - An evaluation of the operation and maintenance attributes of the distribution system that could influence lead and copper concentrations in the system. This evaluation would include determining if there are areas of higher water age in the distribution system, dead end mains, and/or distribution system storage facilities that may promote stagnation and potentially result in degradation of entry point water quality. Additionally, an evaluation and description of distribution system flushing practices, storage facility operation, etc. The objective of a distribution system evaluation is to understand if there areas of the system that are ‘losing’ the entry point water quality and how that can be improved.
 - A discussion on your current public and private side service line and premise plumbing materials inventory, as well as a plan for developing a complete materials inventory. Three years after the RLCR is promulgated, materials inventories are expected to be completed to the greatest extent possible. Any ‘unknown’ service line materials at that time are treated as lead service lines.
4. Quarterly sequential sampling for one year during the CCT Study will be required from each water system to develop baseline lead and copper concentration data in relation to existing water quality parameters [s. NR 809.543(4)(b), Wis. Adm. Code]. This will also allow an evaluation of the seasonal water quality variability within your system. The number of sites for sequential sampling is outlined below.

Population Served	Number of Sequential Sites
>100,000	5
50,000 – 100,000	4

The selected sites should be a single-family residence with a full lead service line (LSL) and ideally, copper premise plumbing. Additionally, the selected sites should not be ‘planned’ for a LSL replacement in the foreseeable future. The intent is to continue using these sites for sequential sampling following the implementation of optimal CCT to track optimization progress over time. The frequency of sequential sampling at these sites following optimal CCT implementation is anticipated 1-2 times per year until optimization has been demonstrated.

We anticipate covering all of the above items on our upcoming Skype call, as well as more specific details regarding the content of your proposal, and any observations or suggestions we may have to offer. If you have specific questions ahead of our Skype call, please don’t hesitate to contact me or Ann Hirekatur. Thank you for your efforts to date and we look forward to talking with you soon!