



# **Lead and Copper Rule Monitoring and Reporting Guidance for Public Water Systems**

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# LIST OF ACRONYMS AND ABBREVIATIONS

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AL	Action level
ALE	Action level exceedance
CCR	Consumer Confidence Report
CCT	Corrosion control treatment
CFR	<i>Code of Federal Regulations</i>
Cu	Copper
CWS	Community water system
EP	Entry point
EPA	United States Environmental Protection Agency
FR	<i>Federal Register</i>
GWUDI	Ground water under the direct influence of surface water
HNO <sub>3</sub>	Nitric acid
LCR	Lead and Copper Rule
LCRMR	Lead and Copper Rule Minor Revisions
LSL	Lead service line
LSLR	Lead service line replacement
MCL	Maximum contaminant level
MCLG	Maximum contaminant level goal
MDL	Method detection limit
MFR	Multi-family residence
mg/L	Milligrams per liter
MPL	Maximum permissible level
NPDWR	National primary drinking water regulation
NTNCWS	Non-transient non-community water system
OCCT	Optimal corrosion control treatment
OWQP	Optimal water quality parameter
Pb	Lead
ppb	Parts per billion
PQL	Practical quantitation level
PSA	Public service announcement
PWS	Public water system
QA/QC	Quality assurance/Quality control
SFR	Single family residence

SMF	Standardized monitoring framework
SOWT	Source water treatment
WQP	Water quality parameter

# SECTION I: OVERVIEW

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## A. What Is the Purpose of this Guidance Document?

This guidance document has been developed for water system owners and operators of community and non-transient, non-community water systems. It provides a comprehensive discussion of the monitoring and monitoring-related reporting requirements of the Lead and Copper Rule (LCR). The United States Environmental Protection Agency has updated this guidance from the February 2002 version to include the requirements of the October 10, 2007, Lead and Copper Rule Short-Term Regulatory Revisions and Clarifications (hereafter referred to as the “Short-Term Revisions” or “Revisions”) under the Safe Drinking Water Act (SDWA).

EPA first promulgated maximum contaminant level goals (MCLGs) and national primary drinking water regulations (NPDWRs) for lead and copper in 1991 (56 FR 26460, June 7, 1991). EPA proposed minor revisions to the LCR (LCRMR) in 1996 (60 FR 16348) and finalized these minor revisions on January 12, 2000 (65 FR 1950). These minor revisions streamlined the requirements of the LCR, promoted consistent national implementation, and reduced the reporting burden for water systems and States. EPA promulgated the Short-Term Revisions to strengthen implementation of the LCR in the following seven targeted areas:

- Minimum number of samples required;
- Definitions for compliance and monitoring periods;
- Reduced monitoring criteria;
- Consumer notice of lead tap water monitoring results;
- Advanced notification and approval of long-term treatment changes;
- Public education requirements; and
- Reevaluation of lead service lines.

The compliance date for all of the provisions of this Rule is 180 days after publication in the *Federal Register* (i.e., April 7, 2008), except if by that date, the State has not adopted this rule, in which case compliance with this final rule is required the earlier of either the State’s adoption of the rule, or two years after December 10, 2007. Systems for which EPA is the Primacy Agency (i.e., Wyoming, District of Columbia, and most Indian territories) and in States that incorporate EPA’s drinking water regulations by reference automatically or incorporate based on the Federal publication date were required to begin complying with the Short-Term Revisions on April 7, 2008.

Most of the provisions of the Short-Term Revisions are clarifications to the LCR or are more stringent than the current requirements. These revisions must be adopted by States to retain primacy. This guidance document identifies those provisions that are not more stringent than the current LCR but allow flexibility and improvements in implementation. States have the option to incorporate these revisions into their drinking water regulations. Therefore, you should first check with your State to determine if they apply to your water system.

Please note that the SDWA provisions and EPA regulations described in this document contain legally-binding requirements. This document does not substitute for those requirements, nor is it a regulation itself. It does not impose legally-binding requirements on EPA, States, Tribes, or the regulated community and may not apply to a particular situation based upon the circumstances.



EPA and State decision makers retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance, where appropriate. Any decisions regarding a particular facility will be made based on the applicable statutes and regulations. Therefore, interested parties are free to raise questions and objections about the appropriateness of the application of this guidance to a particular situation. EPA will then consider whether or not the recommendations or interpretations in the guidance are appropriate in that situation based on the law and regulations. EPA may change this guidance in the future.

## **B. How Is this Document Organized?**

The document contains five sections, including this overview and a discussion of the four monitoring protocols contained in the LCR. These sections are listed below.

- Section I: Overview
- Section II: Lead and Copper Tap Water Monitoring and Reporting Requirements
- Section III: Water Quality Parameter Monitoring and Reporting Requirements
- Section IV: Lead and Copper Source Water Monitoring and Reporting Requirements
- Section V: Lead Service Line Monitoring and Reporting Requirements

Section I includes a discussion of the purpose of the lead and copper regulations, and an overview of the corrosion control treatment, source water treatment, public education and public information requirements, and lead service line replacement requirements. Sections II through V address the following topics:

- The purpose of sample collection;
- Which systems are subject to the monitoring requirements;
- When, where, and how to conduct the monitoring;
- How to evaluate the results;
- What happens if the system does not meet its requirements;
- Criteria that allow systems to reduce and/or eliminate its monitoring requirements;
- Information that must be reported to the State;
- How the Short-Term Revisions have impacted monitoring and reporting requirements; and
- Key points to remember.

Section II also contains a detailed discussion on how to calculate 90<sup>th</sup> percentile levels and an explanation of monitoring requirements for systems that purchase water from another system.

Please note that parenthetical references to the *Code of Federal Regulations* (CFR), Title 40 (i.e., EPA's regulations) are included throughout the document so that system owners and operators can consult the federal regulations for further details. Note also that the term "State" is used throughout the guidance document to refer to the government agency that enforces compliance with drinking water regulations and assists you in understanding and implementing these regulations. For most systems, this is an organization within the State government (e.g., Department of Natural Resources, Department of Environmental Quality, or Department of Health). For the District of Columbia, Wyoming, and Native American Lands (except for the Navajo Nation), the contact is often from the respective EPA Regional Office.

This guidance document focuses on those revisions that impact monitoring and reporting requirements. Those revisions that are unrelated to monitoring and reporting requirements (e.g., public education requirements) are discussed in more detail in separate guidance documents. All available LCR-related guidance documents can be obtained by visiting EPA's Web site: [www.epa.gov/safewater/lcrmr/compliancehelp.html](http://www.epa.gov/safewater/lcrmr/compliancehelp.html) or contacting the Safe Drinking Water Hotline at (800) 426-4791. A list of these guidance documents and outreach materials is provided as Appendix A and includes guidance and fact sheets to help utilities implement the new public education and information requirements.

In addition to Appendix A, this document includes the following appendices:

- Appendix B: Definitions that explain the terms used in this guidance.
- Appendix C: Summary of Monitoring and Reporting Violation Definitions.
- Appendix D: Worksheets and instructions to assist in identifying sampling sites, sample collection, and the documentation and justification of decisions.
- Appendix E: Lead Consumer Notice Certification Form.

### **C. What Is the Purpose of the Lead and Copper Regulations? (40 CFR 141.80 & 141.81(b))**

The purpose of the lead and copper regulations is to protect public health by minimizing lead and copper levels in drinking water, primarily by reducing water corrosivity. Most regulations require sampling at entry points to the distribution system. Because lead and copper in drinking water is mainly due to the corrosion of service lines and household plumbing materials, tap water samples are collected at kitchen or bathroom taps of residences and other buildings. This requirement significantly complicates sample collection, requiring coordination with the people you serve.

### **D. What Systems Are Affected by the Lead and Copper Regulations? (40 CFR 141.80(a))**

Lead and copper tap monitoring applies to all community water systems (CWSs) and non-transient non-community water systems (NTNCWSs). The regulations divide these systems into three broad size categories (large, medium, and small). System size is a factor in determining the number of samples that must be collected, as well as the applicability and timing of some of the requirements.


<b>System Size Categories</b>	
<b>Size</b>	<b>No. of people served</b>
Small	25 - 3,300
Medium	3,301 - 50,000
Large	over 50,000

## E. What Are the Requirements of the Lead and Copper Regulations? (40 CFR 141.80-141.91)

Tap monitoring results are the primary factor for determining your ongoing monitoring requirements and whether you need to undertake any of the following treatment technique requirements:

- Corrosion control treatment;
- Source water treatment;
- Public education; and/or
- Lead service line replacement.

There is no maximum contaminant level (MCL) for lead or copper. However, if your lead and copper tap 90<sup>th</sup> percentile monitoring results are higher than the lead action level of 0.015 milligrams per liter (mg/L) and/or the copper action level of 1.3 mg/L, corrosion control treatment is required. To determine whether an action level has been exceeded, the value at the 90<sup>th</sup> percentile of all lead or copper samples collected is compared against its respective action level. This means that no more than 10 percent of your samples can be above either action level.


 *The Short-Term Revisions have modified the calculation of the 90<sup>th</sup> percentile for systems that are permitted to collect fewer than five tap samples (if allowed by their State). A detailed explanation of how to calculate the 90<sup>th</sup> percentile levels is provided in Section II.*

***If your 90<sup>th</sup> percentile level exceeds the lead action level of 0.015 mg/L, you must:***

- Conduct corrosion control treatment steps, which include water quality parameter (WQP) monitoring during the same monitoring period in which the exceedance occurs;
- Conduct source water monitoring at entry points to the distribution system, make a treatment recommendation, and install source water treatment, if needed;
- Deliver public education that informs your users about the health effects of lead, measures that will reduce their exposure to lead, and sources of additional information; and
- Replace lead service lines if you still exceed the lead action level after installing treatment or the State requires their replacement.

***If your 90<sup>th</sup> percentile level exceeds the copper action level of 1.3 mg/L, you must:***

- Conduct corrosion control treatment steps which include WQP monitoring during the same monitoring period in which the exceedance occurs; and
- Conduct source water monitoring, make a treatment recommendation, and install source water treatment, if needed.


 *Public education and lead service line replacement are not required if only the copper action level is exceeded.*

A basic requirement of the lead and copper regulations is for systems to optimize corrosion control. This means that the water system is delivering water that is minimally corrosive, thereby reducing the likelihood that lead and copper will be introduced into the drinking water from the corrosion of lead and copper plumbing materials. Some systems must install corrosion control to reduce the corrosivity of their water and thereby, their lead and copper levels. On the other hand, some systems have naturally non-corrosive water and would not benefit from installing treatment or have already installed corrosion control treatment.

A State can deem a system to have optimized corrosion control in one of the three ways that are listed below. For some systems, this can happen without installing treatment. As discussed in more detail later in this document, systems that have optimized corrosion control have fewer monitoring and/or treatment requirements.

***Your water system can be deemed to have optimized corrosion control if:***

1. It is a small or medium system (i.e., serve 50,000 or fewer people) and its 90<sup>th</sup> percentile levels are at or below both the lead and copper action levels for two consecutive six-month monitoring periods. EPA also refers to these systems as “(b)(1) systems” because they meet the requirements of 40 CFR 141.81(b)(1).
2. It already has treatment in place, prior to the effective date of the 1991 LCR (i.e., prior to December 7, 1992) and has conducted activities equivalent to those outlined in 40 CFR 141.81(b)(2). EPA also refers to these systems as “(b)(2) systems.”
3. It demonstrates that the difference between the 90<sup>th</sup> percentile tap water lead level and the highest source water lead level is less than 0.005 mg/L. To make this demonstration, you must collect tap water samples for lead at the standard number of sites (refer to Exhibit II-2), and source water samples for lead at each entry point to the distribution system during each of two consecutive six-month monitoring periods. EPA also refers to these systems as “(b)(3) systems” because these criteria are specified in 40 CFR 141.81(b)(3) of the federal regulations.
4. It demonstrates that for two consecutive six-month periods, its source water lead levels are below the method detection limit (MDL) *and* its 90<sup>th</sup> percentile lead levels are less than or equal to the practical quantitation level (PQL) of 0.005 mg/L. These criteria were added in the January 12, 2000, LCRMR and were optional for States to include in their drinking water regulations. If you believe your water system meets these criteria, first check with your State to determine if this provision applies.

 ***A (b)(3) system that exceeds the copper action level after July 12, 2001 no longer qualifies as a (b)(3) system. Such a system must begin corrosion control treatment steps, unless this treatment is already in place.***

## F. What Are the Corrosion Control Treatment Requirements? (40 CFR 141.81 & 141.82)

You must conduct the corrosion control treatment steps described below if: 1) you serve more than 50,000 people and you do not qualify as a (b)(2) or (b)(3) system; or 2) you serve 50,000 or fewer people and you exceed either the lead or copper action level.

- Step 1: A system serving 50,000 or fewer people submits a recommendation regarding the type of corrosion control to be installed (for large systems, the recommendation is included as part of the corrosion control study referred to in Step 2).
- Step 2: The State decides if systems serving 50,000 or fewer people must conduct a corrosion control study to help evaluate the most effective type of corrosion control treatment for the system. For systems serving more than 50,000 people, the study is required.
- Step 3: The system submits the corrosion control study, if required.
- Step 4: The State determines the type of corrosion control treatment to be installed.
- Step 5: The system installs corrosion control treatment.
- Step 6: The system collects follow-up lead and copper tap and WQP samples after the installation of corrosion control treatment. *Note: Systems serving  $\leq 50,000$  people are only required to collect WQP samples if they continue to exceed the lead or copper action level or if required by the State.*
- Step 7: The State sets WQP ranges or minimums (called optimal water quality parameters or OWQPs) that indicate that a system is operating corrosion control treatment at a level that most effectively minimizes the lead and copper concentrations at users' taps. *Note: The State is not required to set OWQPs for systems serving  $\leq 50,000$  people if they are at or below the lead and copper action levels, although the State may opt to do so.*
- Step 8: The system conducts periodic lead and copper tap and WQP monitoring. *Note: Systems serving  $\leq 50,000$  people are only required to collect WQP samples during any monitoring period in which they exceed the lead or copper action level or if required by the State.*

Systems serving 50,000 or fewer people can discontinue these steps whenever their 90<sup>th</sup> percentile levels are at or below both action levels for two consecutive six-month monitoring periods. However, if these systems exceed the lead or copper action level, they or their State must recommence completion of the applicable corrosion control treatment steps, beginning with the first step that was not previously completed. The State can also require the system to repeat any previously completed steps if the State determines that this is necessary to properly implement the corrosion control treatment requirements. In this instance, the State must notify the system in writing of its determination and provide an explanation for its decision.


Water systems that meet the (b)(2) criteria are not required to conduct a study, install corrosion control treatment, or conduct follow-up monitoring. However, (b)(2) systems must conduct lead and copper tap and WQP monitoring after the State sets OWQPs. A system that meets the (b)(3) criteria based on initial monitoring is not subject to the corrosion control treatment requirements.

Exhibit I-1 shows the schedule for completing corrosion control treatment steps for those systems that are subject to these requirements.

<b>Exhibit I-1: Corrosion Control Treatment Steps</b>		
<b>Requirement</b>	<b>Timetable for Completing Corrosion Control Treatment for Systems Serving:</b>	
	<b>50,000 or fewer people <sup>1</sup></b>	<b>More than 50,000</b>
Step 1: System recommends type of treatment to be installed	6 months <sup>2</sup>	N/A (Part of corrosion control study)
Step 2: State decides whether study is required	12 months <sup>2</sup>	N/A (System must conduct study)
Step 3: System completes study	18 months after State decision to conduct study	July 1, 1994
Step 4: State determines type of treatment to be installed	1. <b>If study is required:</b> 6 months after study is completed 2. <b>If no study is required:</b> Serves ≤ 3,300: 24 months; Serves 3,301 - 50,000: 18 months <sup>2</sup>	January 1, 1995
Step 5: System installs treatment	24 months after State decision regarding type of treatment to be installed	January 1, 1997
Step 6: System conducts follow-up monitoring	12 months after treatment installation (2 consecutive 6-month periods)	January 1, 1998
Step 7: State designates OWQPs <sup>3</sup>	6 months after follow-up monitoring	July 1, 1998
Step 8: System conducts continued monitoring	The schedule based on whether an action level is exceeded and/or compliance with OWQP ranges or minimums	
<sup>1</sup> A system whose population exceeds 50,000 after July 1, 1994, must follow the schedule for medium-size systems, beginning with the requirement to complete a corrosion control study. <sup>2</sup> Indicates the number of months <i>after the end of the monitoring period during which</i> the lead and/or copper action level was exceeded. Prior to the Short-Term Revisions, this was expressed as number of months after exceeding an action level. <sup>3</sup> The State is not required to designate OWQPs for systems serving 50,000 or fewer people that no longer exceed both action levels after installing treatment. However, some States have opted to do so.		

Form 141-C, *Optimal Corrosion Control Treatment/Water Quality Parameters*, has been provided in Appendix D. This form can help you to document the results of corrosion control treatment studies, your optimal corrosion control treatment recommendation, certification that optimal corrosion control treatment has been installed, and request for modification of State decisions regarding current corrosion control treatment or WQPs. You need only complete those boxes that apply.

Lead and copper tap monitoring and WQP monitoring requirements are discussed in detail in Sections II and III, respectively.



For more information on corrosion control treatment, refer to the technical guidances listed in Appendix A. These documents can be found on EPA's Web site:  
<http://www.epa.gov/safewater/lcrmr/compliancehelp.html>

## G. What Are the Source Water Treatment Requirements? (40 CFR 141.83)

Systems that exceed the lead or copper action level are triggered into source water treatment requirements. In general, these requirements will be limited to source water monitoring. EPA anticipates that few systems have high source water lead or copper levels and will require source water treatment. The source water treatment steps are as follows:

- Step 1: The system conducts source water monitoring for lead *and* copper at each entry point (EP) to the distribution system and submits a recommendation to the State regarding source water treatment (required of all systems that exceed the lead and/or copper action level).
- Step 2: The State decides if source water treatment is needed.
- Step 3: The system installs source water treatment (if required).
- Step 4: The system collects follow-up lead and copper samples at the tap and at each EP (only required if source water treatment is installed).
- Step 5: The State sets maximum permissible levels (MPLs) of lead and copper in source water (generally only specified by the State for systems installing source water treatment).
- Step 6: The system conducts periodic lead and copper source water monitoring (required regardless of whether source water treatment is installed).

Exhibit I-2 indicates the timing of these source water treatment requirements. Please note that Steps 3 and 4 only apply to those systems that are required to install source water treatment.

<b>Exhibit I-2: Source Water Monitoring and Treatment Requirements</b>				
<b>Action</b>	<b>Deadline for Completing Action</b>		<b>Number of Months from ALE <sup>1</sup></b>	
	<b>Source Water Treatment (SOWT) Required</b>	<b>SOWT Not Required</b>	<b>SOWT Required</b>	<b>SOWT Not Required</b>
Step 1: System monitors at each EP & submits recommendation	180 days after the <i>end of the monitoring period during which</i> the lead and/or copper action level was exceeded <sup>2</sup>		180 days	
Step 2: State determines if SOWT is required	6 months after receipt of results & recommendation		12 months	
Step 3: System installs SOWT	24 months after State requires SOWT	N/A	36 months	N/A
Step 4: System conducts follow-up monitoring	12 months after installing treatment	N/A	48 months	N/A
Step 5: State sets MPLs for lead & copper <sup>3</sup>	Within 6 months after follow-up monitoring	N/A	54 months	N/A



## Exhibit I-2: Source Water Monitoring and Treatment Requirements


Action	Deadline for Completing Action		Number of Months from ALE <sup>1</sup>	
	Source Water Treatment (SOWT) Required	SOWT Not Required	SOWT Required	SOWT Not Required
Step 6: System conducts periodic water monitoring <sup>4</sup>	Annually for surface water/combined sources		66 months	24 months
	Triennially for ground water systems		Depends on 3-year compliance period in effect	
	Once during each nine-year compliance cycle		Depends on 9-year compliance cycle in effect	

<sup>1</sup> Indicates the number of months *after the end of the monitoring period during which* the lead and/or copper action level was exceeded. Prior to the Short-Term Revisions, this was expressed as number of months after exceeding an action level. State will set MPLs for both lead and copper even if the system exceeded only one action level. In some cases, the State will set MPLs for systems that are not required to install source water treatment.

<sup>2</sup> Prior to the Short-Term Revisions, initial monitoring and the source water treatment recommendation were due within six months after the exceedance.

<sup>3</sup> The Short-Term Revisions require the first year of annual monitoring to begin during the year the State set MPLs or determined that SOWT is not needed versus the date the applicable determination was made. Triennial monitoring begins with the three-year compliance period in effect when the State makes the applicable determination.


<sup>4</sup> Systems can qualify for reduced monitoring, at a frequency of once every nine-year compliance cycle, if they are in compliance with their MPLs for three *consecutive* compliance periods (i.e., three annual periods for surface water/combined sources; three, three-year periods (equals nine years) for ground water systems).

 **F.Y.I.** Unlike corrosion control treatment, systems that are at or below both action levels must complete the source water treatment steps once begun (i.e., Steps 1 - 4). However, once the State sets MPLs or determines that source water treatment is not needed, the system is not required to collect source water samples during any source water monitoring period in which its 90<sup>th</sup> percentile lead and copper tap water levels are at or below their action levels.

Source water monitoring requirements are discussed in more detail in Section IV of this guidance. Detailed information regarding source water treatment is provided in *Lead and Copper Rule Guidance Manual, Volume II: Corrosion Control Treatment*, September 1992, which is available on EPA's Web site at <http://www.epa.gov/safewater/lcrmr/compliancehelp.html>.

## H. What Are the Public Education and Public Information Requirements? (40 CFR 141.85)

If you exceed the lead action level, you must deliver public education to your customers to inform them of the health effects of lead, sources of lead, and what they can do to minimize their exposure to lead. The Short-Term Revisions modify the required content of public education materials to provide greater specificity on the health effects that can result from exposure to lead and require CWSs and NTNCWSs to deliver the same mandatory

 **F.Y.I.** The Short-Term Revisions require that you submit your public education language to your State for review. Check with your State to determine if this language must be approved before you can use it in your public education materials.



language that consists of an opening statement, health effects language, and sources of additional information. In addition, the Revisions specify that you must provide information regarding the sources of lead, steps to reduce lead exposure in water, why there are elevated levels of lead in the system's drinking water, what the water system is doing to reduce lead levels, and where to go for more information; however, they allow you to tailor much of the language to better fit your community and/or situation. Further, the Revisions add a new set of delivery requirements for CWSs to better reach "at-risk" populations (e.g., pregnant women, infants, and young children).

The Short-Term Revisions also clarify that the time frame for initiating or recommencing public education delivery is within 60 days after the end of the monitoring period in which the lead action level was exceeded (as opposed to within 60 days of the lead exceedance). In addition, the Revisions allow the State discretion to extend this 60-day delivery deadline for CWSs and NTNCWSs, provided that before the end of the 60-day deadline, the State has approved the extension in writing. *The State may grant an extension on a case-by-case basis if the system has initiated public education activities prior to the end of the 60-day deadline.*



*A system can stop delivering public education whenever it no longer exceeds the lead action level for one monitoring period. If it subsequently exceeds the lead action level, it must recommence public education within 60 days after the end of the monitoring period in which the lead action level was exceeded.*

The requirements for delivering public education are different for CWSs and NTNCWSs. An overview of these requirements is provided below. To further assist you in implementing the new public education requirements, EPA has developed CWS and NTNCWS fact sheets and guidance documents. These documents explain the public education requirements and other public information requirements that include consumer notice of lead tap results, and for CWSs, the revised Consumer Confidence Report (CCR) Rule requirements. The public education guidances also explain how to design and implement an effective public education program, and include public education, lead consumer notice, and CCR templates (CWS guidance only) that can be adapted for use.



*These public education documents are listed in Appendix A and are available at EPA's Web site:*  
<http://www.epa.gov/safewater/lcrmr/compliancehelp.html>

### Community Water Systems


Within 60 days *after the end of the monitoring period* in which the lead action level was exceeded (either for the first time or again after having a monitoring period at or below the lead action level), a CWS must:

- Deliver printed materials (pamphlets and brochures) to all bill paying customers and put new mandatory language on or in water bills.
- Deliver printed materials to local public health agencies, even if they are not located within its distribution system. The printed materials must include an "informational notice" that encourages the local health agencies to distribute materials to any potentially affected customers; or CWS users.
- Contact its local health agencies via phone or in person to obtain a list of additional community-based organizations that serve target populations and deliver public education materials to these organizations.

- Contact at-risk customers by delivering printed materials to public and private schools or school boards; women, infants and children (WIC), and Head Start programs; public and private hospitals and medical clinics; pediatricians; family planning clinics; and local welfare agencies. The printed materials must include the “informational notice” described above.
- Make a good faith effort to locate and deliver printed materials to licensed childcare centers, public and private pre-schools, and obstetricians-gynecologists and midwives. The printed materials must include the “informational notice” described above.
- Post the printed material content on its Web site if it serves more than 100,000 people.
- Submit a press release to newspaper, television, and radio stations.
- Implement activities from the following (in consultation with its State): public service announcements, paid advertisements, public area informational displays, e-mails to customers, public meetings, household deliveries, targeted individual customer contact, direct material distribution to all multi-family homes and institutions, or other methods approved by your State.


Most public education requirements must be repeated annually until the system no longer exceeds the lead action level. Some activities must be conducted more frequently as follows:

- CWSs must provide the mandatory informational statement on or in water bills with each billing cycle but no less frequently than quarterly;
- CWSs must deliver press releases twice every 12 months on a schedule agreed upon with the State; and
- CWSs serving more than 100,000 people must retain material on their publicly-accessible Web site for as long they have an action level exceedance.

 *The Short-Term Revisions continue to allow small systems (those serving 3,300 or fewer people) to limit certain aspects of their public education program. Refer to the public education guidances for specific requirements.*


### Non-transient Non-community Water Systems

The Short-Term Revisions do not modify the delivery requirements for NTNCWSs. Within 60 days *after the end of the monitoring period* in which the lead action level was exceeded (either for the first time or again after having monitoring periods at or below the lead action level), a NTNCWS must distribute public education by:

 *The Short-Term Revisions continue to allow “special CWSs”, such as prisons and hospitals, to apply to the State in writing (unless prior approval is waived) to use the same delivery requirements as NTNCWSs.*

- Posting informational posters in public places or in common areas of buildings served by the system; and
- Distributing informational pamphlets and/or brochures to each person served by the NTNCWS.

A NTNCWS or “special CWS” must repeat this information annually for as long as it exceeds the lead action level.

 *The Short-Term Revisions allow a State to extend this 60-day delivery deadline if it has approved the extension before the end of the 60 days. This extension may be granted on a case-by-case basis if the system has initiated public education activities prior to the end of the 60-day deadline*

### CWS and NTNCWS Consumer Notice of Lead Tap Results

The Short-Term Revisions added a new consumer notice of lead tap results requirement to 40 CFR 141.85(d). CWSs and NTNCWSs must provide consumers who occupy homes or buildings that are part of the utility’s monitoring program with results when their drinking water is tested for lead (including those who do not receive water bills). These requirements are discussed in detail in Subsections II.O and II.P.

### Revised Consumer Confidence Report Rule Requirements

The Short-Term Revisions modify the requirements of the CCR Rule in 40 CFR 141.154. Previously, all CWSs that detected lead above the action level in more than 5 percent of the homes sampled had to include a short informational notice about lead in their CCR. EPA is requiring all CWSs to provide information in their CCRs on lead in drinking water irrespective of whether the system detected lead in any of its samples.

EPA believes that exposure to lead can be a localized phenomenon and has revised the rule based on concerns that exposure to lead may be taking place, even though the action level is not exceeded. Consumers, therefore, currently may not receive sufficient information on how to reduce their exposure to lead.

This short educational statement will help to ensure that all vulnerable populations or their caregivers receive information (at least once a year) on how to reduce their risk to lead in drinking water (refer to Exhibit I-3 for this statement). EPA incorporated the National Drinking Water Advisory Council’s recommended changes to the informational notice, which clarify the risk of lead in drinking water, include basic steps on how to reduce exposure to lead in drinking water, and provide sources of additional information. Additionally, requiring all systems to have one statement will simplify compliance with this provision of the rule for the systems and the States. However, the CCR revisions allow you to write your own educational statement, but only in consultation with the State. For example, you may wish to revise the flushing time of “30 seconds to 2 minutes” if it conflicts with the flushing information in your public education materials.

### Exhibit I-3: Short Informational Statement

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. [NAME OF UTILITY] is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

F.Y.I.

You must begin to include this lead informational statement in CCRs that are due to your consumers by July 1, 2009 (i.e., the CCR for 2008), except in those States that have not incorporated the requirements of the Short-Term Revisions into their regulations by December 2008. Please check with your State to determine when this CCR requirement takes effect.

## I. What Are the Lead Service Line Replacement Requirements? (40 CFR 141.84)

If treatment is not effective in reducing lead levels, systems with lead service lines must replace at least 7 percent of their lines annually (the State can require a higher rate). The State can also require systems to begin lead service line replacement if they do not meet their deadline for installing corrosion control or source water treatment. Systems can discontinue lead service line replacement if they are at or below the lead action level for *two consecutive monitoring periods*.

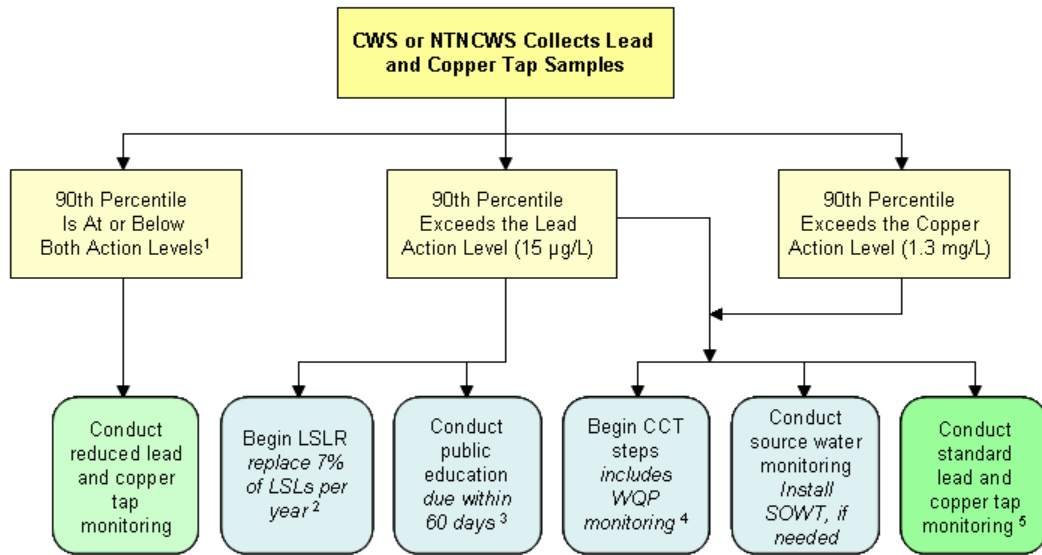
The monitoring requirements that are associated with lead service line replacement are discussed in Section V. A detailed discussion of the lead service line replacement requirements is provided in *Lead and Copper Rule Guidance Manual, Volume II: Corrosion Control Treatment*, September 1992.



This and other guidance documents pertaining to the LCR and Short-Term Revisions are listed in Appendix A of this document and are available on EPA's Web site at: <http://www.epa.gov/safewater/lcrr/compliancehelp.html>.

Exhibit I-4 illustrates how your lead and copper monitoring results and system size impact your requirements under the LCR.

**Exhibit I-4. Follow up Actions Resulting from Lead and Copper Tap Monitoring**



<sup>1</sup> Includes systems serving  $\leq$  50,000 people and (b)(3) systems; (b)(2) systems also must conduct WQP monitoring.

<sup>2</sup> Required if lead action level is exceeded after treatment.

<sup>3</sup> Counted from the end of the monitoring period with the lead ALE.

<sup>4</sup> Includes non-(b)(3) systems serving more than 50,000 people, irrespective of their 90<sup>th</sup> percentile levels.

<sup>5</sup> Systems that meet their OWQPs and do not exceed the lead action level can qualify for reduced lead and copper tap monitoring.

# SECTION II: LEAD AND COPPER TAP WATER MONITORING AND REPORTING REQUIREMENTS

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## A. What Is the Purpose of Collecting Lead and Copper Tap Samples?

The tap water monitoring protocol for lead and copper is designed to identify those residences or sampling locations with lead service lines, lead interior plumbing, or copper pipes with lead solder. Samples collected from these locations are most likely to have high levels of lead and/or copper caused by the contact of corrosive water with lead- and copper-containing plumbing materials. You are required to monitor at these “high-risk” locations, whenever possible (versus collecting a random sample) to better ensure that high levels of lead or copper are detected and that you institute treatment that provides uniform and adequate levels of health protection throughout the distribution system. Tap water monitoring for lead and copper is used to assess the effectiveness of corrosion control treatment and/or source water treatment.



**See Exhibit II-10 for a summary of Revisions that impact lead and copper tap monitoring and reporting requirements and the corrosion control treatment schedule. See Exhibit II-11 for a summary of Revisions that impact lead consumer notice of tap results and CCR requirements.**

## B. Is My System Required to Collect Lead and Copper Tap Samples? (40 CFR 140.80(a) & 141.86(c)&(d))

All CWSs and NTNCWSs must collect lead and copper tap samples. Transient, non-community water systems are not subject to the lead and copper regulations. The frequency of the monitoring and number of samples to be collected and analyzed is based primarily on how many people you serve and your tap water monitoring results.

## C. When Do I Collect Lead and Copper Tap Samples? (40 CFR 141.86(c) & (d))

Lead and copper monitoring can be divided into two broad categories:

- **Standard monitoring** encompasses all monitoring other than reduced monitoring. Standard monitoring is conducted at six-month intervals. Both initial monitoring (required of all systems) and follow-up monitoring (corresponds to the two consecutive six-months after a system completes the installation of corrosion control and is only required for systems that install treatment) are a type of standard monitoring. Refer to Exhibit II-2 for the number of sampling locations for systems on standard monitoring.
- **Reduced monitoring** corresponds to monitoring that occurs at a reduced frequency and a reduced number of sample locations. The criteria that a water system must meet to qualify for reduced monitoring are discussed in Subsection D below.

Each type of monitoring is discussed in greater detail below.

## Standard Lead and Copper Tap Monitoring

**Initial Lead and Copper Tap Monitoring:** The LCR specifies dates by which you were required to begin monitoring. The date was dependent on the number of people that you served as shown in Exhibit II-1 below, and was specified for discrete six-month monitoring periods of January through June and July through December.

Exhibit II-1: Schedule for Initial Monitoring		
System Size (No. of People Served)	1 <sup>st</sup> Initial Monitoring Period <sup>1</sup>	2 <sup>nd</sup> Initial Monitoring Period
3,300 and under	7/1/93 – 12/31/93	1/1/94 - 6/30/94 <sup>2</sup>
3,301 - 50,000	7/1/92 – 12/31/92	1/1/93 - 6/30/93 <sup>2</sup>
50,001 and more	1/1/92 - 6/30/92	7/1/92 - 12/31/92

<sup>1</sup> If you are a new system, consult with your State LCR Coordinator to find out when you must begin lead and copper monitoring.

<sup>2</sup> Required if you do not exceed either action level during the 1<sup>st</sup> initial monitoring period, or if your State specifies that you must conduct this monitoring.

**If you serve more than 50,000 people,** you were required to conduct *both* six-month rounds of initial lead and copper tap monitoring at the standard number of sites, required for your system size (refer to Exhibit II-2).

**If you serve 50,000 or fewer people,** you were required to conduct a minimum of *one*, six-month round of initial monitoring at the standard number of sites (refer to Exhibit II-2). The requirement for you to conduct a second round of initial lead and copper tap monitoring was based on your 90<sup>th</sup> percentile lead and copper levels during the first round of monitoring as follows:

Exhibit II-2: Minimum Number of Lead and Copper Tap Samples for Systems on Standard Monitoring	
System Size	No. of Samples
> 100,000	100
10,001 - 100,000	60
3,301 - 10,000	40
501 - 3,300	20
101 – 500	10
≤ 100	5

If fewer than five tap sites are used for human consumption, the Revisions clarify that you must collect more than one sample from the same location on different days to obtain the minimum number of required samples. Alternatively, your State may allow you to collect one sample per available sample tap.

- You were not required to collect a second round of initial monitoring if you exceeded the lead or copper action level (unless required by your State). Instead, you were triggered into corrosion control treatment steps (refer back to the corrosion control treatment discussion in Section I).
- You also had the option to continue lead and copper tap monitoring while conducting the corrosion control treatment steps to determine if you were eligible to stop these steps (i.e., you had two consecutive six-month periods in which your 90<sup>th</sup> percentile lead and copper levels were at or below their respective action levels).



- You were required to conduct a second round of initial monitoring during the next six months if you were at or below the lead and copper action levels during the first round of monitoring.

**F.Y.I.** If you serve 50,000 or fewer people and never exceed an action level, you only have to conduct periodic lead and copper tap monitoring. No other monitoring (e.g., source water monitoring) or treatment requirements apply.

### Follow-up Lead and Copper Tap

**Monitoring:** If you are required to install corrosion control treatment, you must conduct two consecutive six-month rounds of follow-up lead and copper tap monitoring at the standard number of sites. If you serve more than 50,000 people and you did not meet either the (b)(2) or (b)(3) criteria, this monitoring was required to be conducted by January 1, 1998. If you serve 50,000 or fewer people, this monitoring must be completed within one year of installing corrosion control treatment. The State uses this information and any WQP data to set OWQP ranges or minimums. OWQPs represent the conditions under which systems must operate their corrosion control treatment to most effectively minimize the lead and copper concentrations at their users' taps.

**→ DON'T FORGET!** A (b)(2) system has completed corrosion control treatment steps prior to 12/7/92 that are equivalent to those described in 40 CFR 141.81(b)(2) of the federal regulation.

A (b)(3) system has demonstrated that it has minimal levels of corrosion entering the distribution system based on lead and copper source and tap water samples in accordance with 40 CFR 141.81(b)(3) of the federal regulation.

**Other Standard Monitoring:** After the State sets OWQPs, systems must monitor semi-annually and collect the standard number of samples until they qualify for reduced monitoring. Refer to Subsection II.D below for a discussion of the reduced monitoring criteria. In addition, as explained in detail in Subsection II.L, systems that no longer meet the reduced monitoring criteria must return to standard monitoring until they re-qualify for reduced monitoring.

### D. Am I Eligible for Reduced Lead and Copper Tap Monitoring? (40 CFR 141.86(d)(4) & (g))

#### Annual Monitoring Criteria

You can reduce the frequency of your monitoring to annually beginning in the calendar year immediately following the end of the second consecutive six-month monitoring period and collect from a reduced number of sites, as shown in Exhibit II-3, if:

Exhibit II-3: Minimum Number of Lead and Copper Tap Samples for Systems on Reduced Monitoring	
System Size	No. of Samples
> 100,000	50
10,001 - 100,00	30
3,301 - 10,000	20
501 - 3,300	10
101 - 500	5
≤ 100 <sup>1</sup>	5

<sup>1</sup>The number of samples for systems serving ≤100 people is the same under standard and reduced monitoring.



1. You serve 50,000 or fewer people, and you are at or below both action levels during two consecutive six-month monitoring periods. The earliest that you could qualify for reduced monitoring is after initial monitoring. You do not need prior approval from the State.

**OR**

2. For any size system, you operate in accordance with State-specified OWQPs *and do not exceed the lead action level* during two consecutive six-month monitoring periods. You must receive written permission from your State to proceed to reduced monitoring.

F.Y.I.

*The Short-Term Revisions no longer allow water systems to qualify for reduced monitoring based on meeting their OWQP specifications if they have a lead action level exceedance.*

### Triennial Monitoring Criteria

You can reduce the frequency of sampling to once every three years and collect the reduced number of samples if your water system meets any of the following criteria:

1. Serves 50,000 or fewer people and its 90<sup>th</sup> percentile lead and copper levels are at or below both action levels for three consecutive years. *You do not need prior approval from the State.* Two consecutive six-month periods at or below both action levels (such as the two initial monitoring periods) can count as the first year of the three years needed to qualify for triennial monitoring.
2. Serves a population of any size and for three consecutive years, operates in accordance with State-specified OWQPs *and is at or below the lead action level.* Note that prior to the Short-Term Revisions a water system could qualify for reduced lead and copper tap monitoring if it had a lead action level exceedance but met its OWQP specifications. *You must receive written permission to proceed to reduced monitoring.*
3. Serves a population of any size and demonstrates that it meets the (b)(3) criteria. These systems were required to conduct one round of monitoring at the reduced number of sites between September 1, 1997, and September 30, 2000, and collect lead and copper tap samples at least once every three calendar years thereafter. If you no longer meet the (b)(3) criteria for any of the following reasons, you must begin corrosion control treatment steps, beginning with the study:
  - The difference between your 90<sup>th</sup> percentile lead level at the tap and the lead level in your source water is 0.005 mg/L or higher; or
  - You exceed the lead action level; or
  - You exceed the copper action level on or after July 12, 2001.
4. Any size system with 90<sup>th</sup> percentile lead levels of less than or equal to 0.005 mg/L and 90<sup>th</sup> percentile copper levels of less than or equal to 0.65 mg/L, for two consecutive six-month periods (also known as accelerated reduced lead and copper tap monitoring). *These criteria were introduced under the January 2000 LCRMR and were optional for the State to include in its regulations. Check with your State to determine if this provision applies.*


## Monitoring Waiver Criteria

If you serve 3,300 or fewer people, you may be eligible for a lead and/or copper monitoring waiver that allows you to collect lead and copper samples at nine-year intervals at the reduced number of sites if you meet specific materials and monitoring criteria.

- The lead materials criteria require you to certify that the plumbing materials in your water system contain no plastic pipes that contain lead plasticizers, or plastic service lines that contain lead plasticizers, and are free of lead service lines, lead pipes, lead soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless the fittings and fixtures meet the specifications of any standard established by SDWA section 1417(e).
- The copper material criteria require you to certify that the plumbing materials in your water system do not contain any copper pipes or copper service lines.
- The monitoring criteria specify that your 90<sup>th</sup> percentile lead level cannot be higher than 0.005 mg/L and your 90<sup>th</sup> percentile copper level cannot be higher than 0.65 mg/L.

Full waivers may be granted if you meet the materials and monitoring criteria for both lead and copper. Partial waivers for lead or copper may be granted if you demonstrate to the State that you meet the materials and monitoring criteria for either lead or copper, but not both. States may elect not to grant full or partial monitoring waivers. *You must first check with your State to determine if it has adopted this provision.*

A few States granted waivers prior to the April 11, 2000, the effective date of the LCRM. If you were granted a “pre-existing waiver” and were not required to monitor, you were required to collect at least one set of lead and copper samples at the tap at the standard number of sites by September 30, 2000.




**For more information on monitoring waivers, refer to: *Monitoring Waivers under the Lead and Copper Rule Minor Revisions for Systems Serving 3,300 or Fewer People, April 2000, EPA 815-R-99-021* on EPA's Web site at: <http://www.epa.gov/safewater/lcrm/compliancehelp.html>.**

Exhibit II-4 below summarizes the criteria that you must meet to qualify for reduced monitoring. For systems serving more than 100 people, monitoring is conducted at a reduced number of sites. For systems serving 100 or fewer people, the number of samples remains at five.


Exhibit II-4: Reduced Lead and Copper Tap Monitoring Criteria		
System Size (No. of people served)	Criteria	Monitoring Frequency
50,000 and fewer	At or below both action levels for two consecutive six-month monitoring periods.	Annual
Any size	Meet OWQP specifications and <i>do not exceed the lead action level</i> for two consecutive six-month monitoring periods. <sup>1</sup>	
50,000 and fewer	At or below both action levels for three consecutive years of monitoring.	Triennial <sup>2</sup>
Any size	Meet OWQP specifications and <i>do not exceed the lead action level</i> for three	

Exhibit II-4: Reduced Lead and Copper Tap Monitoring Criteria		
System Size (No. of people served)	Criteria	Monitoring Frequency
	consecutive years of monitoring. <sup>1</sup>	
Any size	90 <sup>th</sup> percentile lead level is $\leq 0.005$ mg/L and 90 <sup>th</sup> percentile copper level is $\leq 0.65$ mg/L for two consecutive, six-month periods. <sup>1</sup> <i>Check with your State to determine if you may reduce monitoring to once every third calendar year based on these criteria.</i>	
Any size	Meet (b)(3) criteria: 1. 90 <sup>th</sup> percentile lead level minus the highest source water level is $< 0.005$ mg/L for two consecutive six-month monitoring periods. <i>or</i> 2. Source water lead levels are below the MDL <i>and</i> the 90 <sup>th</sup> percentile lead level is $\leq 0.005$ mg/L for two consecutive six-month monitoring periods. <i>After July 12, 2001, your 90<sup>th</sup> percentile copper levels cannot exceed the copper action level.</i>	
25 to 3,300	Meet monitoring waiver criteria: <sup>1</sup> 1. 90 <sup>th</sup> percentile levels are $\leq 0.005$ mg/L for lead and/or $\leq 0.65$ mg/L for copper. <i>and</i> 2. Plumbing materials meet specified criteria that indicate they are free of lead-containing and/or copper-containing materials. <i>and</i> 3. Waiver is approved by the State.	Once every nine years
<sup>1</sup> Requires State approval before proceeding to reduced monitoring. <sup>2</sup> Two consecutive six-month monitoring periods in which the 90 <sup>th</sup> percentile is at or below both action levels can count as the first year of the three years needed to qualify for triennial monitoring.		

 If you have fewer than five taps that are used for human consumption, the Short-Term Revisions: 1) clarify that you must collect multiple samples from the same location on different days to collect the minimum number of required samples or; 2) allow you to collect one sample from each tap that is used for human consumption if the State agrees in writing. Check with your State to see which applies to your system.

## E. When Must I Collect My Samples If I Am on Reduced Monitoring (40 CFR 141.86(d)(4))

Many of the Short-Term Revisions help clarify when monitoring must be conducted for systems that qualify for or are on a reduced monitoring schedule. One of these clarifications is to define the “monitoring period” as the specific period in which water systems must conduct their required monitoring. For a system that is on reduced lead and copper tap monitoring (i.e., annual, triennial, or nine-year monitoring), samples must be conducted during the summer months of June through September because these are the months in which the highest lead levels are expected to occur.

 For systems on standard monitoring, the monitoring period remains the six-month period of January through June or July through December.

Thus, for systems on reduced monitoring, the monitoring period is the four-month period of June through September of the same calendar year.

The 2000 LCRMR introduced the provision that allows a State to establish an alternate monitoring period (not to exceed four consecutive months in the same calendar year) in which water systems may conduct reduced lead and copper tap monitoring if it believes that another time period better represents a time of normal operation where the highest lead levels are likely to occur. For example, a State may decide to set an alternate schedule for a system that is closed during the summer months. The Short-Term Revisions further clarify the timing of monitoring requirements for systems on these alternate schedules.

Although a water system has a four-month monitoring window, it should not wait until the end of the monitoring period to collect its samples for two main reasons. First, medium and small systems should allow time to collect WQPs should they have an action level exceedance (refer to Section III for more detail regarding WQP monitoring requirements). Second, the Short-Term Revisions clarify that for systems on reduced lead and copper tap monitoring, the end of the monitoring period is September 30 or for systems on an alternate monitoring period, the last day of that period. Because lead and copper monitoring information is due within 10 days after the end of the monitoring period, a system that collects samples during June – September would be required to report these data to the State by October 10 (refer to Subsection II.P for more information on reporting requirements).

The remainder of this section discusses the timing of reduced monitoring requirements for systems monitoring during June through September or a State-designated alternate monitoring period.

#### Transitioning to Less Frequent Monitoring

If you are transitioning to a less frequent monitoring schedule (e.g., semi-annually to annually, annually to triennially), the Short-Term Revisions clarify when the new monitoring period must begin or when samples must be collected during compliance periods.

***For water systems that qualify for annual monitoring,*** the Short-Term Revisions clarify that the first year of annual monitoring begins during the calendar year immediately following the end of the second consecutive six-month monitoring period in which it met the criteria for annual monitoring. This clarification is illustrated in the following example.



### **EXAMPLE: Annual Monitoring**

- ★ A water system on standard monitoring is below both action levels and OWQPs during July 1- December 31, 2008, and January 1- June 30, 2009.
- ★ It would begin annual monitoring in 2010 because it completed its 2<sup>nd</sup> six-month monitoring period below the lead and copper action levels in 2009.
- ★ It would collect the annual samples during June - September 2010 or during the State-designated alternate four-month period in 2010 if applicable.
- ★ It would report its lead and copper tap information to the State by October 10, 2010, or 10 days after the end of the State-designated period.

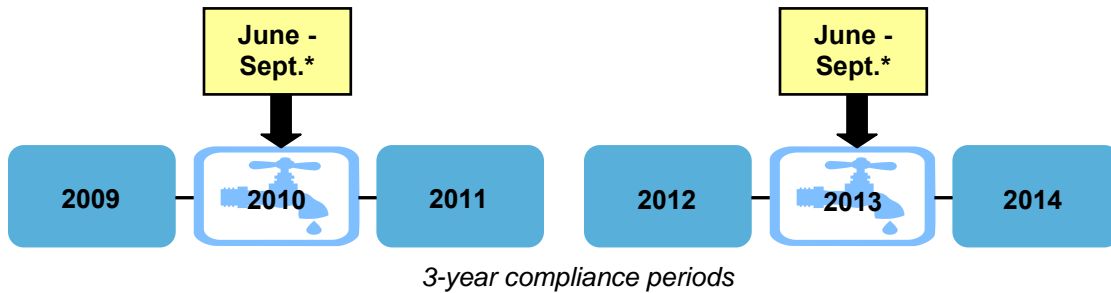
*For water systems that qualify for triennial monitoring*, the Short-Term Revisions clarify that the first year of triennial monitoring begins during the calendar year immediately following the end of the third consecutive year of monitoring in which it met the criteria for triennial monitoring. In addition, the Revisions specify that triennial samples must be collected no later than every third calendar year as illustrated in the example below and Exhibit II-5.



### **EXAMPLE: Triennial Monitoring**


- ★ The PWS meets its OWQP specification and is below the lead action level for the three consecutive years of 2006, 2007, and 2008.
- ★ The first year of triennial monitoring begins in 2009. Therefore, the system must monitor during June – September (or State-designated alternate four-month period) in 2009, 2010, or 2011.
- ★ It samples in July 2010 and reports no later than October 10, 2010.
- ★ Because these samples must be collected every 3 years, the next set of samples must be collected no later than June -September of 2013 (or State-designated alternate four-month period in 2013).

**Exhibit II-5. Three-Year Compliance Period for Systems on Reduced Triennial Monitoring**



\*Samples must be collected during this monitoring period or alternate State-designated period.

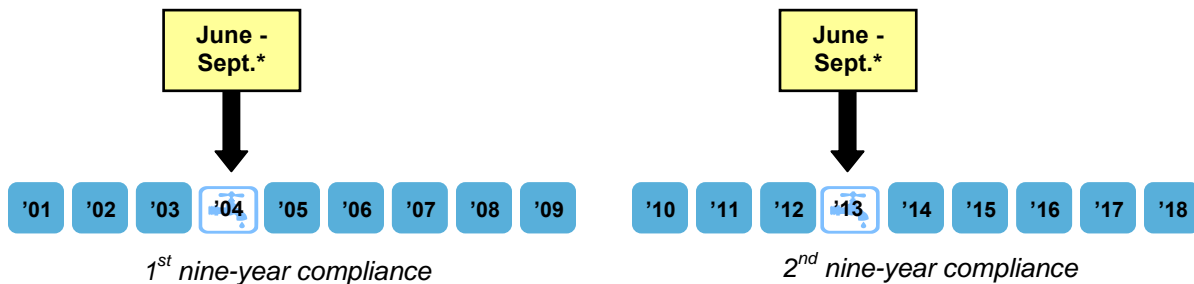
*For small water systems that qualify for a nine-year monitoring waiver, the Short-Term Revisions clarify that the first monitoring must occur at least every nine years (refer to the example below and Exhibit II-6).*



**EXAMPLE: Nine-Year Monitoring Waiver**

- ★ A small PWS with a monitoring waiver is required to collect samples during 2001 - 2009.
- ★ The PWS conducts monitoring during August 2004.
- ★ Because these samples must be collected every nine years, the next set of samples must be collected no later than June -September of 2013 (or State-designated alternate four-month period in 2013).

**Exhibit II-6. Nine-Year Compliance Period for Systems on Monitoring Waivers**



\*Samples must be collected during this monitoring period or alternate State-designated period.



Systems that are on reduced lead and copper tap monitoring must collect their samples during June - September (or a State-designated alternate four-month period) of the **same calendar year**. Samples collected outside this period (except proper replacement samples for invalidated samples) cannot be counted toward compliance or used in your 90<sup>th</sup> percentile calculation. Therefore, if you have an insufficient number of samples that were collected on-time, you will be in violation of your monitoring requirements.

### Transitioning to a State-specified Monitoring Schedule

The 2000 LCRM specified a one-time *transition period* to enable water systems to facilitate their transition from a June through September monitoring period to a State-specified reduced monitoring period as follows:

<i>If you monitor:</i>	<i>Then the next round of samples is due no later than:</i>
Annually	21 months after the previous monitoring period
Triennially	45 months after the previous monitoring period
Every nine years	The end of the nine-year cycle

For example, assume a system is on annual monitoring and last sampled on July 7, 2007. The system is typically closed during the summer months and the State requires the system to collect its samples during October through December. The system is allowed a *maximum* of 21 months from the end of the “previous round” (or from September 30, 2007, in this example) to transition to the new monitoring schedule or June 30, 2009, in this example. However, since this system must collect its samples during October through December, it only has until December 31, 2008, to complete this monitoring (i.e., 15 months).



Although not explicitly stated in the Short-Term Revisions, EPA interprets the regulation to begin the transition period from the end of the reduced monitoring period (i.e., from September 30).

## **F. Where Must I Collect My Samples? (40 CFR 141.86(a))**

The lead and copper regulations require you to sample at locations that may be particularly susceptible to high lead or copper concentrations. The LCR establishes a tiering system for prioritizing sampling sites. A materials evaluation is required to help classify sampling sites into tiers. You must perform a materials evaluation before you begin lead and copper tap monitoring (refer back to Exhibit II-1). Exhibit II-7, below, defines the tiering system for prioritizing sampling sites.

<b>Exhibit II-7: Tiering Classification</b>	
<b><i>If you are a CWS</i></b>	<b><i>If you are an NTNCWS</i></b>
<p><b>Tier 1</b> sampling sites are single family structures:</p> <ul style="list-style-type: none"> <li>with copper pipes with lead solder installed after 1982 (<i>but before the effective date of your State's lead ban</i>) or contain lead pipes; and/or</li> <li>that are served by a lead service line.</li> </ul> <p><b>Note:</b> When multiple-family residences (MFRs) comprise at least 20% of the structures served by a water system, the system may count them as Tier 1 sites.</p> <p><b>Tier 2</b> sampling sites consist of buildings, including MFRs:</p> <ul style="list-style-type: none"> <li>with copper pipes with lead solder installed after 1982 (<i>but before effective date of your State's lead ban</i>) or contain lead pipes; and/or</li> <li>that are served by a lead service line.</li> </ul> <p><b>Tier 3</b> sampling sites are single family structures with copper pipes having lead solder installed before 1983.</p>	<p><b>Tier 1</b> sampling sites consist of buildings:</p> <ul style="list-style-type: none"> <li>with copper pipes with lead solder installed after 1982 (<i>but before the effective date of your State's lead ban</i>) or contain lead pipes; and/or</li> <li>that are served by a lead service line.</li> </ul> <p><b>Tier 2</b> sampling sites consist of buildings with copper pipes with lead solder installed before 1983.</p> <p><b>Tier 3:</b> Not applicable.</p>
<p><b>Representative Sample:</b> If a CWS or NTNCWS cannot collect enough samples from tiered sites, it must collect them from sites where the plumbing is similar to that used at other sites served by the water system.</p>	

Once monitoring begins, you must use the same sites, unless a site is no longer accessible to you or no longer fits the requirements of a priority site (e.g., the lead service lines that served the site have been removed).

Sites chosen for reduced monitoring (i.e., monitoring that is conducted at a one-year, three-year, or nine-year frequency) must be representative of those sites that were used during standard monitoring and must follow tiering requirements. For example, if a system has 100 sites, of which 75 are Tier 1 and 25 are Tier 2, it must collect all 50 reduced sites from Tier 1 sites if they are available. Otherwise, the rule does not specify which sites must be chosen for reduced monitoring. You may wish to randomly select the reduced number of sites from the larger pool used during standard monitoring. The intent of the rule is that you do not use only those sampling locations with the lowest lead or copper levels. Your State may determine which sample locations you must use. Before proceeding, check with your State to find out what method the State uses in selecting reduced monitoring sampling sites.

#### Sources of Information That You Should Review

To identify enough sites that meet targeting criteria, you should survey all records documenting the materials used to construct and repair your distribution system and buildings connected to your distribution system. Relevant information can be attained through the following sources:

- Plumbing Codes;



- Plumbing Permits;
- Distribution Maps and Drawings;
- Inspection and Maintenance Records;
- Meter Installation Records;
- Capital Improvement and Master Plans;
- Standard Operating Procedures;
- Operation and Maintenance Manuals;
- Permit Files;
- Existing Water Quality Data;
- Interviews with Senior Personnel, Building Inspectors, and Retirees; and
- Community Survey.

EPA recommends that you identify more sampling sites than the number of samples you are required to collect during each monitoring period in case volunteers drop out. The regulations specify the minimum number of tap samples that you must collect each monitoring period, as shown in Exhibits II-2 and II-3. For example, if you serve 3,301 to 10,000 people, you are required to collect 40 tap water samples during each of (at least) two consecutive six-month monitoring periods. You should try to maintain a list of about 60 to 80 sampling sites that meet the Tier 1 targeting criteria. If you cannot identify 60 to 80 sites meeting the Tier 1 targeting criteria, then you should complete your list with sites meeting Tier 2 criteria, followed by those meeting Tier 3 criteria (for CWSs only). If you do not have enough Tier 1, 2, and 3 sites, you must complete your sampling pool with representative sites. A site is representative if its plumbing is similar to that of other sites in your system. EPA encourages you to use sites with copper plumbing installed subsequent to the local implementation of the lead ban (typically 1988 or 1989), provided these sites can be considered representative.

If your system has fewer than five drinking water taps, the Short-Term Revisions clarify that you must collect at least one sample from each tap and additional samples from those taps on different days during the monitoring period to meet the minimum number of required samples. For instance, if you have only one sample site, you may be required to collect five separate samples from that sample site on different days. Alternatively, under the Short-Term Revisions, your State may allow you to collect fewer than five tap samples if you collect samples from all taps that can be used for human consumption (e.g., kitchen or bathroom taps). Your State must approve this reduction in the number of tap samples in writing, so check with your State to determine if you may further reduce the number of samples required to be collected.

If your system contains lead service lines, then, if possible, half of the required sampling sites should be served by a lead service line. For a system required to collect 40 tap samples, your sampling plan should include 20 sites that are served by a lead service line, and you should try to maintain a list of about 30 to 40 sampling sites served by lead service lines to ensure access to enough sites.

Three worksheets for organizing the information collected during the materials evaluation are included in Appendix D as follows:

- Worksheet 1: Materials Survey Investigation Results
- Worksheet 2: Materials Survey Results by Number of Service Connections for each Plumbing Materials Type
- Worksheet 3: Summary of Material Survey Results

These worksheets can help you determine the sites that contain the highest priority materials. You do not have to send them to the State unless requested. In addition, you may want to conduct some site surveys to be sure you have identified sites with lead.

#### If You Cannot Find Enough Tier 1 Sampling Sites

If you are unable to collect all your samples from Tier 1 sites, then you must follow the procedures discussed below:

- When a sufficient number of Tier 1 sites do not exist or are inaccessible (e.g., homeowner denies permission for you to collect a sample), you must complete your sampling pool with Tier 2 sites.
- For CWSs, when a sufficient number of Tier 1 and 2 sites do not exist or are inaccessible, you must complete your sampling pool with Tier 3 sites.
- Any water system that cannot complete its sampling at sites that meet the applicable tier criteria must complete sampling at representative sites throughout the distribution system.
- You are not required to target buildings with lead solder installed after the effective date that the lead ban was adopted in your State.
- You should not monitor at sampling sites that have water softeners; however, if all of your available sampling sites have water softeners, you should identify the highest risk sites (Tier 1) and monitor at those locations (such as a kitchen or bathroom tap).
- If you are not able to draw at least half of your samples from taps served by lead service lines, you must collect a sample from each *available* site that is served by a lead service line.
- If you have no lead service lines, but you have lead goosenecks or pigtails, you can collect tap water samples at the sites with the goosenecks and/or pigtails.



### **EXAMPLE: Selecting Tiered Sites**

- ★ A water system serving 3,301 to 10,000 people is on standard monitoring.
- ★ It is required to collect tap samples for a total of 40 sites, 20 of which must be from sites served by a lead service line.
- ★ After reviewing its records (refer back to “Sources of Information that You Should Review”), the water system can identify only 12 sites served by lead service lines.
- ★ It must collect a tap sample from each of these available sites and the remaining 28 samples from other Tier 1 sites.
- ★ If an insufficient number of Tier 1 sites are available, the system must use Tier 2 sites, followed by Tier 3 sites, and lastly by representative sites.

*Note: Refer back to Exhibits II-2 (standard monitoring) and II-3 (reduced monitoring) to identify the appropriate number of sites for your system size.*

#### If You Cannot Use Original Sampling Site

If you cannot gain access to an original sampling site during any subsequent monitoring period (e.g., homeowner no longer wishes to participate in the sampling program), you must collect a tap water sample from another site which meets the same targeting criteria as the original site. The replacement site should be located within reasonable proximity of the original site. *(Note: Some States require prior notification or approval of any changes in sampling sites, and you must report any sampling site changes when submitting data.)* Form 141-A in Appendix D provides you with an easy-to-follow format for tracking sample site identification and certification.

## **G. How Do I Collect Lead and Copper Tap Water Samples? (40 CFR 141.86(b))**

When collecting lead and copper tap samples, you must follow the procedures listed below:

- Always collect a 1-liter sample in one container only (e.g., do not split the sample between two containers).
- Always collect a first-draw sample from a tap where the water has stood in the pipes for at least six hours (e.g., no flushing, showering, etc). However, make sure it is a tap that is used regularly, and not an abandoned or infrequently used tap.
- If your water system is a NTNCWS or CWS (such as a prison or hospital) that does not have enough inside taps where the water stands unused for at least six hours, you are allowed to use interior taps from which water is typically drawn for consumption and which are the most likely to have remained unused for the longest period of time. Your State will tell you whether you must submit a sampling plan for State approval prior to sampling at non-first-draw sample locations or if you can proceed with sampling and submit the plan with your sampling results. *Please check with your State before collecting any non-first draw samples.*

- First-draw samples collected at single-family residences must always be drawn from the cold-water kitchen tap or bathroom tap.
- First-draw samples collected from buildings other than single-family homes must always be drawn from an interior tap from which water is typically taken for consumption.
- You may allow residents to collect samples, but you must supply the residents with instructions as to the sample collection procedures. You can use the revised instruction form provided in Appendix D (refer to FYI box below). Be sure to properly label sample bottles prior to distributing them to residents.



*This instruction form was revised as part of EPA's October 20, 2006, Memorandum: Management of Aerators during Collection of Tap Samples to Comply with the Lead and Copper Rule. This memorandum clarifies that water systems should not instruct customers to remove or clean aerators prior to or during the collection of tap samples for lead. Aerators are part of some faucet assemblies and are used to introduce air into the water flow. Although not intended to remove inorganic contaminants, screens that are part of the aerator may trap particulate matter or debris within the faucet. Removal and cleaning of the aerator is advisable on a regular basis. However, if customers are only encouraged to remove and clean aerators prior to drawing a sample to test for lead, the water system could fail to identify typically available contribution of lead from the tap, and thus, fail to take additional actions needed to reduce exposure to lead in drinking water. A copy of this memorandum is available at <http://www.epa.gov/safewater/lcrmr/compliancehelp.html>.*

- As a general rule, you should collect your lead and copper tap water samples early in the monitoring period in case you exceed the lead or copper action level. This is because you will be required to also collect WQP samples during the same monitoring period (refer to Section III for a more detailed discussion of WQP monitoring). In addition, you will need to submit your monitoring information to your State within 10 days after the end of the monitoring period (e.g., by October 10 for systems that monitoring during June - September).
- After the sample is drawn, acidification of the sample should be completed by the laboratory personnel upon receipt of the sample, but in no case later than 14 days after sample collection. Neither the homeowner nor the sample collector should handle the nitric acid used for sample acidification.

## **H. What Are the Approved Methods for Analyzing Water Samples for Lead and Copper?**

The approved analytical methods for lead, copper, and all WQPs (pH, calcium, alkalinity, silica, orthophosphate, conductivity, and temperature) are shown in Exhibit II-8. A summary of the preservation protocols, sample containers, and maximum holding times for analysis is provided in Exhibit II-9.

## Exhibit II-8: Approved Analytical Methods for the Lead and Copper Rule

Contaminant	Methodology <sup>13</sup>			
	EPA	ASTM <sup>3</sup>	SM <sup>4</sup>	Other
<b><i>Alkalinity</i></b>				
Titrimetric		D1067-92B	2320 B	
Electrometric titration				I-1030-85 <sup>5</sup>
<b><i>Calcium</i></b>				
EDTA titrimetric		D511-93A	3500-Ca D	
Atomic absorption; direct aspiration		D511-93B	3111 B	
Inductively-coupled plasma <sup>2</sup>	200.7		3120 B	
<b><i>Copper</i></b>				
Atomic absorption; furnace		D1688-95C	3113 B	
Atomic absorption; direct aspiration		D1688-95A	3111 B	
Inductively Coupled Plasma (ICP) <sup>2</sup>	200.7		3120 B	
ICP-Mass spectrometry <sup>2</sup>	200.8			
Atomic absorption; platform <sup>2</sup>	200.9			
<b><i>Conductivity Conductance</i></b>				
		D1125-95A	2510 B	
<b><i>Lead</i></b>				
Atomic absorption; furnace		D3559-95A	3113 B	
ICP-Mass spectrometry <sup>2</sup>	200.8			
Atomic absorption; platform <sup>2</sup>	200.9			
Differential pulse anodic stripping voltammetry				Method 1001 <sup>15</sup>
<b><i>Orthophosphate<sup>12</sup></i></b>				
Colorimetric, automated, ascorbic acid <sup>6</sup>	365.1		4500-P F	
Colorimetric, ascorbic acid, single reagent		D515-88A	4500-P E	
Colorimetric, phosphomolybdate				I-1602-85 <sup>5</sup>
Colorimetric, automated-segmented flow				I-2601-90 <sup>5</sup>
Colorimetric, automated discrete				I-2598-85 <sup>5</sup>
Ion Chromatography <sup>6</sup>	300.0	D4327-91	4110 B	
<b><i>pH</i></b>				
Electrometric <sup>1</sup>	150.1, 150.2	D1293-95	4500-H <sup>+</sup> B	
<b><i>Silica</i></b>				
Colorimetric: molybdate blue				I-1700-85
Colorimetric: automated-seg. Flow				I-2700-85
Colorimetric		D859-95		
Colorimetric: molybdosilicate			4500-Si D	
Colorimetric: heteropoly blue			4500-Si E	
Colorimetric: automated method for molybdate-reactive silica			4500-Si F	
Colorimetric: inductively-coupled plasma	200.7		3120 B	
<b><i>Temperature</i></b>				
Thermometric			2550	

## Exhibit II-8: Approved Analytical Methods for the Lead and Copper Rule

Contaminant	Methodology <sup>13</sup>			
	EPA	ASTM <sup>3</sup>	SM <sup>4</sup>	Other
<p><sup>1</sup> "Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79/020, March 1983. Available at NTIS, PB84-128677.</p> <p><sup>2</sup> "Methods for the Determination of Metals in Environmental Samples Supplement I", EPA/600/R-94/111, May 1994. Available at NTIS, PB95-125472.</p> <p><sup>3</sup> Annual Book of ASTM Standards, 1994 and 1996, Vols. 11.01 and 11.02, American Society for Testing and Materials. The previous versions of D1688-95A, D1688-95C (copper), D3559-95D (lead), D1293-95 (pH), D1125-91A (conductivity) and D859-94 (silica) are also approved. These previous versions D1688-90A, C; D3559-90D, D1293-84, D1125-91A and D859-88, respectively are located in the Annual Book of ASTM Standards, 1994, Vols. 11.01. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.</p> <p><sup>4</sup> 18th and 19th editions of Standard Methods for the Examination of Water and Wastewater, 1992 and 1995, respectively, American Public Health Association; either edition may be used. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005.</p> <p><sup>5</sup> Method I-2601-90, Methods for Analysis by the U.S. Geological Survey National Water Quality Laboratory Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments, Open File Report 93-125, 1993; For Methods I-1030-85; I-1601-85; I-1700-85; I-2598-85; I-2700-85; and I-3300-85. See Techniques of Water Resources Investigation of the U.S. Geological Survey, Book 5, Chapter A-1, 3rd ed., 1989; Available from Information Services, U.S. Geological Survey, Federal Center, Box 25286, Denver, CO 80225-0425.</p> <p><sup>6</sup> "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA/600/R-93/100, August 1993. Available at NTIS, PB94-120821.</p> <p>***</p> <p><sup>12</sup> Unfiltered, no digestion or hydrolysis.</p> <p><sup>13</sup> Because MDLs reported in EPA Methods 200.7 and 200.9 were determined using a 2X preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis (i.e., no sample digestion) will be higher. For direct analysis of cadmium and arsenic by Method 200.7, and arsenic by Method 3120 B sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by Method 200.9; antimony and lead by Method 3113 B; and lead by Method D3559-90D unless multiple in-furnace depositions are made.</p> <p>***</p> <p><sup>15</sup> The description for Method Number 1001 for lead is available from Palintest, LTD, 21 Kenton Lands Road, P.O. Box 18395, Erlanger, KY 41018. Or from the Hach Company, P.O. Box 389, Loveland, CO 8053.</p>				

Laboratory certification will only be required for lead and copper analyses, and is based on the performance requirements included with the method detection limits (MDLs). The use of the approved analytical methods for all of the WQPs as well as lead and copper is necessary to assure consistent results and high quality data. Further, sample collection and analysis procedures in the field can contribute to errors in measurement. A quality assurance/quality control (QA/QC) program for field sampling/analysis and laboratory analysis should be developed and implemented by all water systems. If a commercial or State laboratory performs the laboratory analyses, it is still important that quality control measures be taken for the field sampling portion of the monitoring program.

A complete QA/QC program should contain components at each step in the data collection process, including sample collection and methods, laboratory sample handling and analysis, and recording/reporting of the results. An important element in implementing a successful QA/QC program is the ability to properly track a sample from its collection through analysis and ultimate recording in either the State or your database. The QA/QC program requirements for sample tracking include: (1) sample identification; (2) complete sample labeling; (3) training sample collectors and field data collectors; (4) parallel construction of laboratory record keeping and database format to sample labeling and identification; and, (5) periodic self-audits of the QA/QC procedures.

Significant benefits could be gained by the implementation of a program to properly label and identify samples to track their collection, analysis, and results. Minimally, the data fields (i.e., variables defined within the laboratory and/or your database) needed to fully identify a sample are:

1. Water System Identification Number.
2. Applicable Water System Entry Point Identification Numbers. (There may be multiple entry points to a distribution system which should be identified for each sample collected within it.)
3. Sample Identification Number.
4. Sample Type Identifier: First-Draw Tap, Distribution System, Source Water for Lead and Copper, Source Water for WQPs, or Lead Service Line.
5. Sample Site Identifier: (3 Fields)
  - Region of Distribution System.
  - Subregion of Distribution System.
  - Sample Site Specific Identifier.
6. Sample Collection Date.
7. Sample Collection Time.
8. Sample Period.
9. Sample Collector Identifier: Public Water System (PWS) Staff, Resident, State, or Other.
10. Parameters for Analysis: Lead, Copper, WQPs, or pH and Temperature (field measurements).
11. Sample Site Street Address - for Water System Use.
12. Sample Collection Route - for Water System Use.
13. Tier Assignment and Presence/Absence of a Lead Service Line - for Water System Use. (This information may be useful in case the location needs to be replaced “on the fly” and allows the water system to maintain the correct type of locations included in the tap sampling program.)
14. Water System Name.
15. Water System Contact Person and Telephone Number.

You should include data fields to identify those samples delivered to the laboratory representing travel blanks and blind spikes. As part of your routine QA/QC program for analytical results, travel blanks should be included in at least 10 percent of the sampling kits delivered to and returned from homeowners performing tap monitoring. Additionally, for lead and copper analyses, at least three blind spike samples should be included during every 6-month monitoring period for medium and large water systems, and at least one such sample for small water systems.



## Exhibit II-9: Sample Handling Requirements for Lead, Copper, and Water Quality Parameters

Contaminant or Parameters	Preservative	Container <sup>1</sup>	Maximum Holding Time <sup>2</sup>
Lead	Conc. HNO <sub>3</sub> to pH <2 <sup>3</sup>	P or G	6 months
Copper	Conc. HNO <sub>3</sub> to pH <2 <sup>3</sup>	P or G	6 months
pH	None	P or G	Test Immediately <sup>4</sup>
Conductivity	Cool, 4°C	P or G	28 days
Calcium	Conc. HNO <sub>3</sub> to pH <2 <sup>5</sup>	P or G	6 months
Alkalinity	Cool, 4°C	P or G	14 days
Orthophosphate	Cool, 4°C	P or G	48 days
Silica	Cool, 4°C	P only	28 days
Temperature	None	P or G	Test Immediately <sup>4</sup>

<sup>1</sup> P = Plastic, hard or soft; G = Glass, hard or soft.

<sup>2</sup> In all cases, samples should be analyzed as soon after collection as possible.

<sup>3</sup> If nitric acid (HNO<sub>3</sub>) cannot be used because of shipping restrictions or is not used because homeowners are collecting samples, the sample for analysis can be shipped to a laboratory where it must be acidified (generally to pH < 2 with concentrated HNO<sub>3</sub> as soon as possible but not later than 14 days after sample collection. Samples must stand in the original container used for sampling for at least 28 hours after acidification. Laboratories should match the acid matrix of their samples, quality control, and calibration standards for accurate results. The latter two sets of solutions will have the same, fixed concentration of acid. It is recommended that good laboratory practice would be to determine by prior tests the amount of acid necessary to achieve some pH <2, and make it consistent with the standards used. For instance, for most waters, the previous EPA recommendation of 0.15% v/v of HNO<sub>3</sub> will result in a pH < 2. Therefore, all samples can be automatically preserved with 1.5 mL of the acid, and all standards can be made with the same acid concentration. In some extreme, high-alkalinity cases, more acid may be necessary.

<sup>4</sup> “Test Immediately” generally means within 15 minutes of sample collection. In the case of pH, the sample should be measured as soon as the sample is taken and should be measured under closed system conditions, particularly if the water is poorly buffered.

<sup>5</sup> If HNO<sub>3</sub> cannot be used because of shipping restrictions or safety concerns for sampling personnel, the sample for analysis may be initially preserved by icing and immediately shipping it to the laboratory. Upon receipt in the laboratory, the sample must be acidified with concentrated HNO<sub>3</sub> to pH < 2.



## I. How Do I Evaluate My Results? (40 CFR 141.80(c)(3) & 141.86(f))

Lead and copper analytical results are evaluated against an action level, not an MCL. The lead action level is exceeded if the concentration of lead in more than 10 percent of tap water samples collected during any monitoring period is greater than 0.015 mg/L (i.e., if the 90<sup>th</sup> percentile level lead level is greater than 0.015 mg/L). The copper action level is exceeded if the concentration of copper in more than 10 percent of tap water samples collected during any monitoring period conducted is greater than 1.3 mg/L (i.e., if the 90<sup>th</sup> percentile copper level is greater than 1.3 mg/L). All samples that meet the proper site selection and sample collection procedures are used to determine the 90<sup>th</sup> percentile calculation, even if you collect samples from more sites than required.

The 90<sup>th</sup> percentile is calculated separately for lead and copper. The procedure for determining the lead 90<sup>th</sup> percentile value is as follows:

### If you are required to collect more than five samples:

- Step 1: Place *lead* results in ascending order (from lowest to highest value).
- Step 2: Assign each sample a number, 1 for lowest value.
- Step 3: Multiply the total number of samples by 0.9.
- Step 4: Compare the 90<sup>th</sup> percentile level to the action level of 0.015 mg/L (can also be expressed as 15 parts per billion (ppb)). If your 90<sup>th</sup> percentile value is higher than 0.015 mg/L, you have an exceedance.


*Repeat this procedure for copper sample results, except compare the 90<sup>th</sup> percentile copper level against its action level of 1.3 mg/L. If your 90<sup>th</sup> percentile value is greater than 1.3 mg/L, you have an exceedance.*

### If you are required to collect five samples:

- Step 1: Place lead or copper results in ascending order.
- Step 2: Take the average of the 4<sup>th</sup> and 5<sup>th</sup> highest sample. This is your 90<sup>th</sup> percentile level.
- Step 3: Compare the 90<sup>th</sup> percentile level against the lead or copper action level.

### If you are allowed under the Short-Term Revisions to collect fewer than five samples:

- Step 1: Place lead or copper results in ascending order.
- Step 2: Compare the highest sample value (this is considered to be your 90<sup>th</sup> percentile level) against the lead or copper action level.

 All valid sample results taken during the monitoring period must be included in your 90<sup>th</sup> percentile calculations, unless a result has been invalidated (refer to Subsection II.J). If a sample is invalidated, its replacement sample must be included in the 90<sup>th</sup> percentile calculation, unless it is collected more than 20 days after the State invalidates the sample or outside the monitoring period (whichever is later). Late samples (regular or replacement samples) cannot be included in the calculation. Refer to Section II.J for additional information on sample invalidation.

Below are two examples to help demonstrate the 90<sup>th</sup> percentile calculation for systems that are required to collect more than five samples. The first example explains how to determine whether you have exceeded an action level when your 90<sup>th</sup> percentile level is a whole number. The second example shows how to make this determination, using either rounding or interpolation, when your

90<sup>th</sup> percentile level contains a decimal. This may happen when you collect more than the minimum required number of samples.

In Example 1, a system serving 150 people is on standard monitoring, and collects the minimum number of required samples for its size category (i.e., 10 samples). The 90<sup>th</sup> percentile level corresponds to the 9<sup>th</sup> highest sample (i.e., 10 samples x 0.9). It does not exceed the lead action level because its 90<sup>th</sup> percentile level is 0.015 mg/L, which equals the lead action level. To have an exceedance, the 90<sup>th</sup> percentile level must be greater than 0.015 mg/L.

In Example 2, the system is required to collect a minimum of 10 valid samples. It collects 12 valid samples and thus, all 12 are used in the 90<sup>th</sup> percentile calculation. The 90<sup>th</sup> percentile level is 10.8 (i.e., 12 samples x 0.9 = 10.8). Either rounding or interpolation can be used to determine the 90<sup>th</sup> percentile level when the sample that represents it is not a whole number (*see explanation below*). Your State may specify which method you should use.


**Using Rounding:** EPA's policy is to:

1. Round down to the nearest whole number if the decimal is 0.4 or lower.
2. Round up to the nearest whole number if the decimal is 0.5 or higher.

In this example, the 90<sup>th</sup> percentile level is 10.8, and you would round up to 11. So, the sample that is ranked 11<sup>th</sup> in the list (0.018 mg/L) is the 90<sup>th</sup> percentile value that you compare to the relevant action level. Thus, the system exceeds the lead action level of 0.015 mg/L.


**Using Interpolation:** To determine the 90<sup>th</sup> percentile level, using interpolation, you would:

1. Subtract the difference of the two samples between which your 90<sup>th</sup> percentile falls. In this example, the 90<sup>th</sup> percentile level is 10.8 so you would subtract the 10<sup>th</sup> sample result of 0.014 mg/L from the 11<sup>th</sup> sample result of 0.018 mg/L, for a difference of 0.004 mg/L.
2. Subtract the difference between the 90<sup>th</sup> percentile level ranking of 10.8 and the lower of the two sample rankings between which the 90<sup>th</sup> percentile level falls or 10, for a difference of 0.8.



**Example 1: 90<sup>th</sup> Percentile Is a Whole Number**

<u>Sample Rank</u>	<u>Sample Value</u>
1	0.000
2	0.000
3	0.002
4	0.005
5	0.005
6	0.006
7	0.006
8	0.010
<b>9 (90<sup>th</sup> percentile)</b>	<b>0.015</b>
10	0.020




**Example 2: 90<sup>th</sup> Percentile Contains a Decimal**

<u>Sample Rank</u>	<u>Sample Value</u>
1	0.000
2	0.000
3	0.002
4	0.005
5	0.005
6	0.005
7	0.006
8	0.006
9	0.010
10	0.014
<b>10.8 (90<sup>th</sup> percentile)</b>	
11	0.018
12	0.020

3. Multiply the difference of 0.004 mg/L (from Step 2) by 0.8 (from Step 3):  $0.004 \times 0.8 = 0.0032$  mg/L (or 0.003 when rounded to the number of significant figures).
4. Add 0.003 to the lower of the two sample results, in this example to the 10<sup>th</sup> sample result of 0.014 mg/L:  $0.003 + 0.014 = 0.017$  mg/L.

Thus, the 90<sup>th</sup> percentile lead level is 0.017 mg/L and the system exceeds the lead action level.



**F.Y.I.**

**Your State may perform the 90<sup>th</sup> percentile calculation for you if:**


- your State has notified you that it will perform this calculation;
- you provide your sampling results and sampling site information by the State-specified date; and
- your State gives you the results of the 90<sup>th</sup> percentile calculation before the end of the monitoring period.

*If you do not meet all three of these criteria, you must calculate the 90<sup>th</sup> percentile results yourself, and provide them to the State.*

Example 3 shows how the 90<sup>th</sup> percentile value is calculated under the Short-Term Revisions. Assume a system has only three valid tap sites that are used for human consumption. The system serves 105 people and receives written approval from its State to collect one sample from each of its three sites. For systems that are allowed to collect fewer than five samples, the highest test result is the 90<sup>th</sup> percentile level. In this example, the 90<sup>th</sup> percentile lead level is equal to the third highest sample result of 0.020 mg/L. Therefore, this system has a lead action level exceedance.

<u>Sample Rank</u>	<u>Sample Value</u>
1	0.006
2	0.008
<b>3 (90<sup>th</sup> percentile)</b>	0.020

Please note that the Short-Term Revisions supersede the March 9, 2004, memorandum from Cynthia C. Dougherty, Office Director for EPA’s Office of Ground Water and Drinking Water, and the November 23, 2004, memorandum from Benjamin Grumbles, Assistant Administrator for EPA’s Office of Water related to the 90<sup>th</sup> percentile calculation when the system has fewer than five taps and the State allows a reduction in the number of samples. These memoranda stated that when the minimum number of samples is not collected, the 90<sup>th</sup> percentile level is based on the number of samples collected. For example, if 3 samples were collected, the 90<sup>th</sup> percentile level would be the 2.7<sup>th</sup> sample (i.e., 0.9 multiplied by the number of samples). The 90<sup>th</sup> percentile could be calculated by rounding to the nearest whole number (the 3<sup>rd</sup> or highest sample result in this example) or by interpolation (using the 2<sup>nd</sup> and 3<sup>rd</sup> sample results in this example). In addition, the water system would be assigned a lead and copper tap monitoring and reporting violation and be subject to Tier 3 public notification requirements.



A copy of these memoranda can be downloaded at <http://www.epa.gov/safewater/lcrrm/compliancehelp.html>.



If you receive State permission to collect fewer than five samples, you are not in violation of your monitoring requirements. Therefore, you would not be subject to public notification requirements.

## J. What If the State Determines that My Samples Are Invalid? (40 CFR 141.86(f))

The State can invalidate a lead or copper tap water sample if *any* one of the following is true:

1. The laboratory establishes that improper analysis caused errors;
2. The State determines that the sample site did not meet the site selection criteria;
3. The sample container was damaged in transit; or
4. Substantial reason exists to believe that the sample was tampered with.

For the State to make this determination, you must provide your State with all sample results and documentation of the reasons that the samples should be invalidated. Samples may not be invalidated solely on the grounds that a follow-up sample result is higher or lower than the original sample. *Please check with your State before requesting sample invalidation to determine whether it applies in your State.*

**Replacement Samples:** If the State invalidates your sample(s), you only need to collect a replacement sample if the number of valid samples is below the minimum number of required samples. For example, assume you are on standard monitoring and only collect the required number of samples (use 40 as an example). If one of these samples is invalidated, you only have 39 valid samples, and therefore, must collect 1 replacement sample. Conversely, if you initially collected 41 samples and 1 was invalidated, you would still have 40 valid samples and would not need to collect a replacement sample.

A yellow sticky note with a blue pushpin at the top left corner. The text on the note reads "F.Y.I." in black, bold, uppercase letters.

If a replacement cannot be taken at the same location, it must be taken at a location other than one already used for sampling during the monitoring period.

Replacement samples must be taken as soon as possible, but within 20 days of the date of invalidation, or by the end of the applicable monitoring period, whichever is later. If these samples are taken after the end of the applicable monitoring period, they cannot be used to fulfill the sampling requirements of a subsequent period. For example, assume a system is on a six-month monitoring schedule. It collects a replacement sample in July 2009 for one invalidated sample that was collected during the January through June 2009 monitoring period. It cannot include this replacement sample as part of its samples for the July through December 2009 monitoring period.

Please note that you may find yourself in a situation where the State invalidates your sample(s) on a date that does not allow you to collect a replacement sample during the months in which you are required to conduct monitoring (i.e., June through September or an alternate period designated by the State). In this event, you can collect this sample outside this time period, as long as you collect the sample(s) no later than 20 days after the date the sample(s) was(were) invalidated or by the end of the monitoring period, whichever occurs later. For example, assume you are required to conduct monitoring during June through September and the State invalidates one of your samples on

October 15, 2009. You have until November 4, 2009 (i.e., 20 days after the State's invalidation decision) to collect the replacement sample. You also need to submit the results of that replacement sample to the State, along with recalculated 90<sup>th</sup> percentiles for lead and copper. Your State may give you specific instructions for reporting when it notifies you of the invalidation(s).



*If a sample is determined to be invalid, you cannot include it in your 90<sup>th</sup> percentile calculations. However, the replacement sample must be included in the calculation, provided this sample was collected no later than 20 days after the sample was invalidated or by the end of the monitoring period (whichever of the two dates occurs later).*

## **K. What If I Exceed an Action Level While on a Six-Month Monitoring Schedule? (40 CFR 141.86(d)(4)(vi)(B))**

If the 90<sup>th</sup> percentile lead level exceeds 0.015 mg/L or if the 90<sup>th</sup> percentile copper level exceeds 1.3 mg/L, you must:

- Conduct WQP monitoring in each monitoring period in which you exceed an action level, if you serve 50,000 or fewer people. If you are a large system, you are required to collect WQPs regardless of whether you exceed an action level (unless you meet the (b)(3) criteria) (refer to 40 CFR 141.87). Also refer to Section III, which discusses WQP requirements in more detail.
- Collect lead and copper source water samples and submit a source water treatment recommendation to the State if you have not already done so within 180 days of the end of the monitoring period in which the exceedance occurred (refer to 40 CFR 141.83(b)). Refer to Section IV of this document for detailed information regarding source water monitoring requirements. Form 141-D, Source Water Monitoring and Treatment, in Appendix D has been provided to assist you with compiling the information needed to support and provide your recommendation. You do not need to complete the boxes entitled “Certification that Source Water Treatment Has Been Installed” or “Request for Modification of State Treatment Decisions and/or Maximum Permissible Lead and Copper Levels.”
- Submit an optimal corrosion control treatment recommendation to the State, if you have not already done so within six months of the end of the monitoring period in which the exceedance occurred for systems serving 50,000 or fewer people. Systems serving more than 50,000 people were required to provide this recommendation as part of their corrosion control study by July 1, 1994 (refer to 40 CFR 141.81(e)(1)).

In addition, for lead action level exceedances, you must:

- Conduct public education (refer to 40 CFR 141.85 and the updated public education guidance documents for CWSs and NTNCWSs that are available at <http://www.epa.gov/safewater/lcrmr/compliancehelp.html>).
- If your system has never previously exceeded, or if the exceedance occurred after a monitoring period without a lead exceedance, then delivery is due within 60 days of the end of the monitoring period. If it is a continued exceedance, then repeated delivery is

required, depending on whether you are a CWS or NTNCWS and depending on the form of public education delivery required (refer to 40 CFR 141.85 or the revised public education guidance documents).



*The State may extend this 60-day delivery deadline if you have begun your public education activities before the end of the 60 days.*

- If you exceed the lead action level after installing optimal corrosion control treatment and/or source water treatment (whichever occurs later), you must replace 7 percent of your lead service lines within 12 months of the exceedance. You also must replace an additional 7 percent every 12 months thereafter for as long as you continue to exceed the lead action level. However, the State may require that more than 7 percent be replaced each year (refer to 40 CFR 141.84). Section V provides an overview of the lead service line replacement requirements and a more detailed discussion regarding the related monitoring and reporting requirements.

## **L. What Should I Do If I Exceed the Lead or Copper Action Level or Have an Optimal Water Quality Parameter Excursion During Reduced Monitoring? (40 CFR 141.80 & 141.86(d)(4)(vi))**

Water systems on reduced monitoring must return to standard lead and copper monitoring if they: 1) serve 50,000 or fewer people, exceed the copper action level, and the State has not set Optimal Water Quality Parameter Excursion (OWQPs); 2) exceed the lead action level regardless of whether they meet their OWQP specifications (*new requirement under the Short-Term Revisions*); or 3) do not meet their OWQP specifications for more than nine days in a six-month period (i.e., have an excursion). The Short-Term Revisions clarify that standard monitoring for systems for which OWQPs have been established must begin no later than the six-month monitoring period beginning January 1 of the calendar year following the lead action level exceedance or WQP excursion (refer to Section III for more information on WQPs).



### **EXAMPLE: Resuming Standard Monitoring**

- ★ A PWS meets its OWQP specifications but exceeds the lead action level based on samples collected during July 2009.
- ★ This PWS must resume standard lead and copper tap monitoring beginning with the six-month monitoring period of January-June 30, 2010.

In addition, if you exceed the lead or copper action level, you must:

- Conduct WQP monitoring in each monitoring period in which you exceed an action level, if you serve 50,000 or fewer people. If you are a large system, you are required to collect WQPs regardless of whether you exceed an action level (unless you meet the (b)(3) criteria) (refer to 40 CFR 141.81(b)(3) & 141.87).
- If you have not collected source water samples or submitted a source water treatment recommendation to the State, do so no later than 180 days after the end of the monitoring period during which the exceedance occurred (refer to 40 CFR 141.83(b)).



As mentioned previously, you can use Form 141-D to assist you with preparing and documenting your source water treatment monitoring results and recommendation.

- If you exceed the lead action level after installing optimal corrosion control treatment and/or source water treatment (whichever occurs later), you must begin lead service line replacement (refer to 40 CFR 141.84).
- Within 60 days of a lead action level exceedance, you must begin delivering your public education program (refer to 40 CFR 141.85).

## **M. Can I Ever Resume A Reduced Monitoring Schedule? (40 CFR 141.86(d)(4)(vi))**

Yes, you can requalify for annual reduced monitoring if you meet the criteria specified in Subsection II.D (Am I Eligible for Reduced Lead and Copper Tap Monitoring?). The Revisions specify that annual monitoring will begin during the calendar year immediately following the end of the second consecutive six-month monitoring period in which the system meets the reduced monitoring criteria. The timing of this requirement is illustrated in Subsection II.E (When Must I Collect My Samples If I Am on Reduced Monitoring?).

## **N. Can I Ever Discontinue Lead and Copper Tap Monitoring?**


No, the lead and copper regulations do not allow you to discontinue lead and copper tap monitoring, only to reduce the number and frequency of this monitoring if you meet the specific criteria outlined in Subsection II.D.

## **O. Am I Required to Provide the Analytical Results to My Consumers? (40 CFR 141.80(g) & 141.85(d))**

The Short-Term Revisions add a new consumer notification requirement to 40 CFR 141.85(d) that requires all water systems to provide consumers who occupy homes or buildings that are part of the utility's monitoring program with their individual sample result when their drinking water is tested for lead (including those who do not receive water bills). This notification is required irrespective of whether the utility exceeds the lead action level and applies to each valid lead sample result regardless of whether it is below the action level or detection limit. The consumer notice of lead tap results will help occupants determine what actions to take to reduce their exposure to lead in drinking water. Although some water systems may have provided customers with testing results, they were not previously required by EPA to notify occupants of the lead levels found in their drinking water.

Specifically, you must:

- In addition to the lead results, provide an explanation of the health effects of lead, steps consumers can take to reduce exposure to lead in drinking water, contact information for the water utility, the MCLG and the action level for lead, and the definitions for these two terms from 40 CFR 141.153(c) of the CCR Rule.

 *EPA recommends that the consumer notice of lead tap results include the 90<sup>th</sup> percentile level if known prior to the delivery deadline.*





*The Short-Term Revisions also impact your CCR requirements. Refer to Subsection H in Section I for a discussion of these revised requirements.*

- Send the notice by mail or other State-approved method (e.g., NTNCWSs can post the results on a bulletin board in the tested facility, if approved by the State).
- Provide the consumer notice of lead tap results to your consumers within 30 days of when you learn of the results.
- Provide this notice to each individual unit that was tested (i.e., notification does not need to extend to the entire building), where testing occurs in buildings with many units:
- Submit to the State a sample copy of the consumer notice of lead tap results and a certification that you met your delivery requirements (refer to 40 CFR 141.90(f)(3)). For example, if you sent out 10 notices, you only need to provide a copy of one of these notices and one certification for these 10 notices. Appendix E provides a sample consumer notice of lead tap results certification form that you can adapt for your use.

*F.Y.I.*

*A separate lead consumer notice of lead tap results must be provided for each lead test result.*

*Thus, a water system that collects 10 samples must provide 10 separate notices within 30 days of receiving each result. This notice should include the test result that is specific to that home or building (i.e., do not provide all 10 lead results to each home/building).*



*Although the requirements to notify consumers of their lead tap results have been added to 40 CFR 141.85, they are distinct from other public education requirements. They apply to all CWSs and NTNCWSs, including those with 90<sup>th</sup> percentiles at or below the lead action level of 0.015 mg/L. A violation of the consumer notice of lead tap results is a reporting violation and does not trigger public notification. On the other hand, a public education violation is a treatment technique violation and triggers Tier 2 public notification.*



*Templates for consumer notice of lead tap results are available in the CWS and NTNCWS public education guidance documents. The suggested language includes both the individual lead result and the 90<sup>th</sup> percentile level. A copy of these guidances can be downloaded at <http://www.epa.gov/safewater/lcrml/compliancehelp.html>*

## **P. What Lead and Copper Tap Monitoring and Related Information Must I Report to the State? (40 CFR 141.90(a), (f), & (h))**

Within 10 days of the end of the monitoring period, you must report:

- All tap sample results, including any samples which meet the lead and copper monitoring protocol and are above the minimum required number of samples for standard or reduced monitoring.
- Documentation for any tap sample for which you are requesting sample invalidation (if applicable).
- 90<sup>th</sup> percentile calculations. Your State may elect to do this for you. However, if the State has not contacted you about this, you are responsible for these calculations.

- Written explanation for any changes in sampling location (e.g., if homeowners no longer allow sampling from their taps or if a location no longer qualifies as Tier 1 because of plumbing renovations.)



*The Revisions clarify that the end of the monitoring period for systems on reduced lead and copper tap or reduced WQP tap monitoring is the last date on which samples can be collected during that period. For most systems on reduced lead and copper tap monitoring, the last day samples can be collected is September 30 (if the State has not designated an alternate period). Therefore, the above reporting requirements are due to the State no later than October 10 of the year in which the samples were collected (compared to January 10 of the following year).*

Water systems that are subject to the public education requirements (i.e., they exceed the lead action level during their most recent monitoring period), must provide the following written documentation to the State. This information is due within 10 days after the end of each period in which they are required to perform public education tasks.

- A demonstration that they have delivered public education materials that meet the content and delivery requirements of the rule; and
- A list of all the newspapers, radio stations, television stations, and facilities and organizations to which they delivered public education materials during the period in which the system was required to perform public education tasks. *Note: See “Reporting No Longer Required by the 2000 LCRMR” below for an explanation of when submitting this distribution list may not be required.*

### Reporting No Longer Required by the 2000 LCRMR

To reduce reporting burden, the 2000 LCRMR removed some of the system reporting requirements that EPA considered non-critical to the protection of public health. States were not required to adopt the following provisions into their State regulations. Therefore, please check with your State to determine whether the reporting requirements apply. Note that the Short-Term Revisions have not modified any of these requirements.

The 2000 LCRMR removed the requirement for systems to provide the State with a:

- certification showing that residents who took samples were informed of proper sampling procedures;
- certification that each sample represents a first-draw sample;
- justification for using sites that do not meet the Tier 1 criteria; or
- written request for moving to a reduced lead and copper tap monitoring schedule when you meet your optimal WQPs (under 40 CFR 141.86(d)(4)).

In addition, the 2000 LCRMR allowed NTNCWSs or CWSs (such as a prison or hospital) that do not have enough inside taps where the water stands unused for at least six hours, to use inside taps that are the most likely to have remained unused for the longest period of time. The State had the option to determine whether these systems must receive prior approval to collect non-first draw samples, or whether they can submit documentation that identifies each site and length of standing time for the samples collected at these sites with their sample results. Unless a water system makes additional changes to its sampling plan during subsequent monitoring periods, this was a one-time reporting requirement.

For water systems that are delivering public education, the 2000 LCRMR allows them to forego submittal of the distribution list if: they have previously submitted this information to the State, the distribution list has not changed, they certify that the public education materials were distributed to the same list submitted previously, and the State does not require this information.

### Requirements Modified or Added by the Short-Term Revisions

#### **Consumer Notice of Lead Tap Results:**

As discussed in Subsection II.O, you must provide a consumer notice of lead tap results to people served at the specific sampling site from which a lead and copper tap sample was collected, even if your lead 90<sup>th</sup> percentile did not exceed the action level or the sample results are non-detects. In addition, the Short-Term Revisions add a reporting requirement in 40 CFR 141.90(f)(3), which requires you to submit a sample copy of the lead consumer notice of lead tap results and a certification to the State that you have met the delivery requirements for this notice. This information is due to the State within three months following the end of the monitoring period (i.e., by December 31 for systems on a reduced monitoring schedule).



*The lead consumer notice and certification requirements apply to all systems regardless of their lead levels.*

**Change in Long-Term Treatment or Addition of a New Source:** Previously, water systems on reduced monitoring (including (b)(3) systems and those on monitoring waivers) were required to report changes in treatment or addition of a new source but were not required to receive prior State approval before implementing these changes or additions. The Short-Term Revisions modify this requirement by specifying that these changes must be *long-term* in nature and that the State must approve the treatment change or new source before it can be implemented. The Revisions require that you notify your State in writing at a time specified by your State or if your State does not specify a date, to notify your State as soon as possible prior to adding a new source or implementing the change.



*A change in treatment or source may necessitate a change in OWQP specifications and corrosion control treatment plans.*

40 CFR 141.90(a)(3) (of the Revisions) also provides examples of long-term treatment changes. These examples include the addition of a new treatment process or modification of an existing treatment process such as:

- Switching secondary disinfectants (e.g., chlorine to chloramines),
- Switching coagulants (e.g., alum to ferric chloride),
- Switching corrosion inhibitor products (e.g., orthophosphate to blended phosphate), and
- Changing the dosage of existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration.

**F.Y.I.** Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes.

Additional examples of long-term treatment changes include the installation of membrane filters, ozonation, and enhanced coagulation/enhanced softening to reduce disinfectant by-product precursors. Other treatments to consider are those processes or combinations of processes that can greatly affect the pH, oxidation-reduction potential, alkalinity, or the major composition of the ionic background of the water. These include:

- Initiation of an aeration process (e.g., for radon removal).
- Initiation of disinfection.
- Installation of oxidation/removal process for iron, manganese, hydrogen sulfide, ammonia, and other similar contaminants, in a system previously having minimal or no disinfectant residual. Examples include aeration and filtration, permanganate addition, breakpoint chlorination, greensand, or biologically-active filtration followed by disinfection.
- Change from lime softening to ion exchange softening (alkalinity may increase greatly, causing corrosivity), particularly in ground water systems (more likely to have high alkalinities and thence, copper problems).
- Change from orthophosphate inhibition to pH/alkalinity adjustment as a corrosion control treatment strategy, or vice versa.
- Installation of sorptive or ion-exchange media for arsenic, radionuclide, or other contaminant removal that requires or is operated in such a way as to cause a pH decrease.

Examples of source additions include, but are not limited to:

- (1) Shifting from ground water to surface water supply.
- (2) Adding any new source to a system that has different general background water quality. Examples include:
  - Switching source types.
  - Adding a treated surface water to a ground water only system.
  - Adding a new well from an aquifer with different water quality characteristics pertinent to corrosivity (e.g., alkalinity, pH, chloride, sulfate) than the current supply.

**F.Y.I.** Regularly changing among sources on a seasonal or interannual basis that have been covered by previous LCR OCCT studies and sampling, and are covered within the OCCT designation framework, do not require notification.



The March 2007, “Simultaneous Compliance Guidance Manual for the Long Term 2 and Stage 2 DBP Rules,” can assist you in identifying those situations where optimal corrosion control can be affected by long-term changes in treatment or source water. This document is available at: <http://www.epa.gov/safewater/lcrrm/compliancehelp.html>.

## **Q. What Should I Do If I Sell Water To, or Buy Water From, Another Water System? (40 CFR 141.29)**

EPA’s position on the consolidation of sampling requirements under the LCR was stated in a January 10, 1992, memorandum, entitled “*Consecutive Systems Regulated under the National Primary Drinking Water Regulations for Lead and Copper*” (EPA water supply guidance 85A). Highlights and excerpts from this memorandum are presented below.

EPA believes it is reasonable to reduce monitoring in consecutive systems if the systems can demonstrate they are interconnected in a manner that justifies treating them as a single system, in accordance with 40 CFR 141.29.

Prior to allowing consecutive systems to consolidate their sampling, the State should submit to its EPA Regional office a written explanation of how the monitoring, treatment, and reporting requirements will be administered and enforced in consecutive systems that consolidate their operations for lead and copper. These proposals should clearly identify which systems will be held accountable for violations of any of the rule’s requirements. Should enforcement actions ever become necessary, it is vital that the party responsible for monitoring, or, if needed, subsequent treatment and/or other activities (including public education or lead service line replacement) be clearly identified and accept responsibility for any rule violations.

The key elements that should be contained in the proposal are:

1. Rationale for reduced monitoring;
2. Explanations of the responsibilities among systems involved, including which water system(s) is (are) responsible for:
  - Collecting and reporting to the State the results of the lead and copper tap monitoring and all WQP monitoring;
  - Completing corrosion control requirements under 40 CFR 141.81 and 141.82; and
  - Lead service line replacement.

F.Y.I.

EPA expects that the parent water system will take responsibility for corrosion control throughout the entire area served. Depending on contractual agreements, the size and configuration of the satellite system(s), and the distance from the parent treatment facility, individual corrosion control treatment may need to be installed at a point or points other than the parent plant.

3. How the following provisions will be modified:
  - Determination of 90<sup>th</sup> percentile lead and copper concentrations in the consolidated system; and
  - WQP monitoring to determine baseline values and ensure that optimal corrosion control treatment is properly installed and maintained.
4. If applicable, how the responsibility for public education, source water monitoring, and source water treatment will differ from the responsibilities as assigned in the preamble to the LCR.

F.Y.I.

*In the preamble to the 1991 LCR, EPA stated that responsibility for public education delivery resides with the retailer (i.e., the consecutive or “satellite” system) and responsibility for source water monitoring and treatment resides with the wholesaler or “parent” system.*

*As previously discussed, the Short-Term Revisions add the consumer notice of lead tap monitoring results (see Section I.H and II.P). The wholesaler and retailer(s) should coordinate to clearly identify the role each party will have in fulfilling this requirement.*

## **R. What Happens If I Do Not Fulfill My Lead and Copper Tap Monitoring and Reporting or Consumer Notice of Lead Tap Results Requirements? (40 CFR 141.80(k))**

If you do not meet all of the following lead and copper tap monitoring and reporting requirements within the time frame specified by the rule, you are in violation:

- Use appropriate sampling procedures in accordance with 40 CFR 141.86(a) and (b);
- Collect the required number of samples during the specified time frame in accordance with 40 CFR 141.86(c) and (d);
- Ensure samples are analyzed properly in accordance with 40 CFR 141.89(a);
- Submit all required monitoring information on time in accordance with 40 CFR 141.90(a);
- Report a change in *long-term* treatment or addition of a new source within the time frame specified by the State or as soon as possible, or to receive State approval before implementing the change or addition, as required by 40 CFR 141.90(a)(3). *Note: This requirement applies only to systems on reduced lead and copper tap monitoring including (b)(3) systems and those on a monitoring waiver.*

Depending on whether the State adopted the following provisions that were introduced under the 2000 LCRM, you may also be in violation if you do not meet the following requirements within the timeframe specified by the rule:

- Meet replacement sample requirements for invalidated samples as described in 40 CFR 141.86(f)(4) where these samples are needed to meet minimum sampling requirements;
- Meet the conditions of your monitoring waivers in 40 CFR 141.86(g) or provide the required information in 40 CFR 141.90(a)(4)(ii)-(iv);
- Provide sample information needed for your State to perform the 90<sup>th</sup> percentile



calculation as outlined in 40 CFR 141.90(h);

- Collect non-first draw samples that did not meet the criteria in 40 CFR 141.86(b)(5); **or**
- Meet the monitoring deadline for transitioning to an alternate period (i.e., months other than June through September) for collecting reduced lead and copper tap samples, as specified in 40 CFR 141.86(d)(4)(iv)(B).

If you do not meet all of the following requirements for consumer notification of lead tap results within the time frame specified by the rule, you are in violation:

- Provide the following information specified in 40 CFR 141.85(d)(3) to individuals whose taps were used to collect lead and copper compliance samples: the results of lead tap water monitoring for the tap that was tested an explanation of the health effects of lead, steps consumers can take to reduce exposure to lead in drinking water, contact information for the water utility, the MCLG and the action level for lead, and the definitions for these two terms from 40 CFR 141.153(c) of the CCR Rule;
- Provide this notification within 30 days of learning the results, as specified in 40 CFR 141.85(d)(2);
- Send this notice by mail or other State-approved method, as required by 40 CFR 141.85(d)(4); and
- Submit to the State a sample copy of the notification and a certification that you met the delivery requirements within 3 months following the end of the applicable monitoring period, as required by 40 CFR 141.90(f)(3).

If you are out of compliance, you must:

1. Report the violation to the State within 48 hours of determining the noncompliance (refer to 40 CFR 141.31(b)).
2. Deliver public notification to your customers (refer to 40 CFR 141.201 & 141.203 - 141.206 and additional information, available at <http://www.epa.gov/safewater/publicnotification/index.html>).
3. Include a discussion of the violation in your CCR if you are a CWS, (refer to 40 CFR 141.153 and additional information, available at <http://www.epa.gov/safewater/ccr/index.html>). *Note: This CCR requirement is unrelated to the new 40 CFR 141.154 provision that requires all CWSs to provide a short informational notice about lead in their CCR (also refer back to Subsection H in Section I for more information).*

Also keep in mind that:

1. An action level exceedance is not a violation and does not trigger public notification requirements. However, if you exceed the lead action level, you must deliver public education to your customers. In addition, if you are a CWS, you must include in your CCR the 90<sup>th</sup> percentile value for the most recent sampling (if it is a value greater than 0) and the number of sites that exceeded the action level.
2. If you have been granted a monitoring waiver and do not conduct your lead and copper monitoring properly or on-time, you no longer meet the conditions of your waiver and



the State may revoke your waiver. You can reapply at a later date when you again meet the eligibility requirements for a waiver.

3. Consecutive rounds of monitoring are needed to qualify for reduced lead and copper tap monitoring. Thus, noncompliance with your lead and copper tap monitoring requirements can impact how quickly you can qualify for reduced monitoring.

## S. What Provisions of the Short-Term Revisions Pertain to Lead and Copper Tap Monitoring and Corrosion Control Treatment Requirements?

Exhibit II-10 summarizes each of the revisions that impact your lead and copper tap monitoring requirements and corrosion control treatment schedule. Those revisions that impact your WQP, source water treatment, or lead service line replacement requirements can be found in Sections III – V, respectively.

If you own or operate a water system on Tribal lands (other than the Navajo Nation), in Wyoming, or the District of Columbia, the Federal version of the LCR applies to you. Therefore, you were required to implement the following provisions beginning April 7, 2008. Water system owners or operators in other States should check with their Primacy Agencies to determine when these provisions will be in effect.

<b>Exhibit II-10: Revisions to Lead and Copper Tap Monitoring and Reporting Requirements and Corrosion Control Treatment Schedule</b>		
<b>CFR Citation</b>	<b>New Requirements under the Short-Term Revisions</b>	<b>Previously Required under the 1991 Rule as Amended by LCRMR</b>
<b>Lead and Copper Monitoring and Reporting Requirements</b>		
§141.80(c)(3)(v)	For systems permitted by their State to collect fewer than five samples in accordance with 40 CFR 141.86(c), the <i>90<sup>th</sup> percentile value is the highest concentration.</i>	Systems were required to collect a minimum of five tap samples.
§141.80(g)	Systems must provide notice of lead tap sampling results to persons served at the sites that are tested.	Systems were not required to notify individual homeowners of their tap monitoring results.
§141.81(b)(3)(iii)	(b)(3) systems must report any <i>upcoming long-term</i> change in treatment or addition of a new source to the State and must receive prior approval before implementing the change or addition.	(b)(3) systems were required to report changes in treatment or addition of a new source but the Rule did not limit reporting of treatment changes to those that were “long-term” changes. Also, prior State approval was not needed before implementing the change or addition.
§141.86(c)	Systems with fewer than five drinking water taps must collect at least one sample from each tap and additional samples from those taps on different days to meet the required number of sites. Alternatively, States may permit these systems to collect	Systems were required to collect a minimum of five tap samples.

<b>Exhibit II-10: Revisions to Lead and Copper Tap Monitoring and Reporting Requirements and Corrosion Control Treatment Schedule</b>		
<b>CFR Citation</b>	<b>New Requirements under the Short-Term Revisions</b>	<b>Previously Required under the 1991 Rule as Amended by LCRMR</b>
	fewer than five tap samples if all available drinking water taps are sampled. State must approve this in writing.	
§141.86(d)(4)(i)	Small or medium systems collecting fewer than five tap samples, and do not exceed the lead and copper action levels during two consecutive six-month monitoring periods may reduce sampling to annually, beginning in the next calendar year. Systems cannot reduce the number of tap samples to less than one per available tap.	Systems were required to collect a minimum of five tap samples. Systems were permitted to reduce monitoring to once per year, but the Rule did not specify when reduced monitoring would begin.
§141.86(d)(4)(ii)	Systems that do not exceed the lead action level and that meet OWQP specifications during two consecutive six-month monitoring periods may reduce sampling to annually, beginning in the next calendar year.	Systems that had a lead and/or copper action level exceedance could monitor annually if they met their OWQP specification for two consecutive six-month monitoring periods. The Rule did not specify when this reduced monitoring would begin.
§141.86(d)(4)(iii)	Systems that do not exceed the lead action level and that meet OWQP specifications during three consecutive years of monitoring may reduce sampling to triennially. <i>Note: The Revisions retain the provision for medium and small systems to qualify for triennial monitoring if they do not exceed an action level for three consecutive years of annual monitoring.</i>  Clarifies that triennial monitoring must be conducted no later than every third calendar year.	Systems that had a lead and/or copper action level exceedance could monitor triennially if they met their OWQP specification for three consecutive years of monitoring.  The Rule did not specify that triennial monitoring was to be conducted no later than every third calendar year.
§141.86(d)(4)(iv)(A)	Systems that are on a State-specified four-month period must begin monitoring during the calendar year immediately following the end of the second six-month monitoring period, or the end of the three-year period for triennial monitoring.	The Rule did not specify when annual or triennial monitoring must begin for a system on a State-specified alternate four-month monitoring schedule.

**Exhibit II-10: Revisions to Lead and Copper Tap Monitoring and Reporting Requirements and Corrosion Control Treatment Schedule**

<b>CFR Citation</b>	<b>New Requirements under the Short-Term Revisions</b>	<b>Previously Required under the 1991 Rule as Amended by LCRMR</b>
§141.86(d)(4)(vi)(B)	<p>Systems on reduced monitoring that exceed the lead action level or exceed OWQPs for more than nine days in any six-month period must return to standard monitoring (two consecutive six-month samples).</p> <p>The monitoring begins no later than the six-month period beginning January 1 of the calendar year following the lead action level exceedance or OWQP excursion.</p>	<p>The Rule did not require systems to return to standard monitoring if they met their OWQPs but exceeded the lead action level.</p> <p>The Rule did not specify when standard monitoring would begin.</p>
§141.86(d)(4)(vi)(B)(1)	<p>Clarifies that a return to annual sampling begins in the calendar year following the end of the second consecutive six-month monitoring period in which the system was at or below the lead action level and met its OWQP specifications.</p>	<p>The Rule did not specify when reduced monitoring would begin.</p>
§141.86(d)(4)(vii)	<p>Any system on reduced monitoring must report any <i>upcoming long-term</i> change in treatment or addition of a new source to the State and must receive prior approval before implementing the change or addition.</p>	<p>Systems were required to report changes in treatment or addition of a new source but the Rule did not limit reporting of treatment changes to those that were “long-term” changes. Also, prior State approval was not needed before implementing the change or addition.</p>
§141.86(g)(4)(i)	<p>Systems with a nine-year tap monitoring waiver must collect samples no later than every ninth calendar year.</p>	<p>The Rule did not specify that this monitoring was to be conducted every ninth calendar year.</p>
§141.86(g)(4)(iii)	<p>Systems on a monitoring waiver must report any <i>upcoming long-term</i> change in treatment or addition of a new source to the State and must receive prior approval before implementing the change or addition.</p>	<p>Systems were required to report changes in treatment or addition of a new source but the Rule did not limit reporting of treatment changes to those that were “long-term” changes. Also, prior State approval was not needed before implementing the change or addition.</p>
§141.90(a)(1)	<p>Clarifies that for monitoring periods of less than six months (e.g., four-month tap monitoring), the end of the monitoring period is the last date samples can be collected during that period (e.g., Sept. 30).</p>	<p>The Rule did not include this clarification.</p>

**Exhibit II-10: Revisions to Lead and Copper Tap Monitoring and Reporting Requirements and Corrosion Control Treatment Schedule**

<b>CFR Citation</b>	<b>New Requirements under the Short-Term Revisions</b>	<b>Previously Required under the 1991 Rule as Amended by LCRMR</b>
§141.90(a)(3)	Systems on reduced monitoring (including (b)(3) systems or those on monitoring waivers) must notify their State in writing, at a time specified by their State, or as soon as possible before adding a new source, or changing <i>long-term</i> treatment processes. States must review and approve new source additions and long-term treatment changes. This section also provides examples of long-term treatment changes.	Systems were to notify their State within 60 days after adding a new source or making a treatment change, and were encouraged to notify their State before making this addition or treatment change. The Rule did not limit the reporting of treatment changes to those that were “long-term” changes.
§141.90(f)(3)	Systems must mail a copy of the consumer notification of lead tap results with a certification that the notice was distributed as required to its State no later than three months after the end of the monitoring period.	The Rule did not require lead consumer notice or the corresponding State reporting requirement.
<b>Corrosion Control Treatment</b>		
§141.81(e)(1)	Systems exceeding the lead or copper action level must recommend optimal corrosion control treatment within six months after <i>the end of the monitoring period during which</i> the exceedance occurs.	Systems were required to submit this recommendation within six months after exceeding an action level.
§141.81(e)(2)	States may require systems to perform a corrosion control study within 12 months after <i>the end of the monitoring period during which</i> the exceedance occurs.	States were required to make this decision within 12 months after the exceedance occurred.
§141.81(e)(2)(i)	States will specify optimal corrosion control within 18 months after <i>the end of the monitoring period during which</i> the exceedance occurs for medium systems that are not required to perform a study.	States were required to make this decision within 18 months after the exceedance occurred.
§141.81(e)(2)(ii)	States will specify optimal corrosion control within 24 months after <i>the end of the monitoring period during which</i> the exceedance occurs for small systems that are not required to perform a study.	States were required to make this decision within 24 months after the exceedance occurred.

## T. What Provisions of the Short-Term Revisions Pertain to Consumer Notice of Lead Tap Results and CCR Requirements?

Exhibit II-11 summarizes each of the revisions that impact your consumer notice of lead tap results and CCR requirements. Those revisions that impact your public education requirements are highlighted in Subsection I.H. In addition, EPA has developed guidance documents that provide detailed information and templates to help you comply with the revised public education and CCR requirements, and the new lead consumer notice of tap results.



These documents are listed in Appendix A and are available at EPA's Web site:  
<http://www.epa.gov/safewater/lcrrm/compliancehelp.html>

Remember if you own or operate a water system on Tribal lands (other than the Navajo Nation), in Wyoming, or the District of Columbia, the Federal version of the LCR applies to you. Therefore, you were required to implement the following provisions beginning April 7, 2008. Water system owners or operators in other States should check with their Primacy Agencies to determine when these provisions will be in effect.

<b>Exhibit II-11: Consumer Notice of Lead Tap Results and Revisions to Consumer Confidence Report Requirements</b>		
CFR Citation	New Requirements under the Short-Term Revisions	Previously Required under the 1991 Rule as Amended by LCRMR
<b>Consumer Notice of Lead Tap Results</b>		
§141.80(g); 40 CFR 141.85(d)	PWSs must provide lead tap sampling results, lead health effects language, steps to reduce exposure, contact information, and the lead MCLG and AL values and definitions to persons served at tested sites within 30 days of learning of results.	PWSs were not required to notify individual homeowners of their tap monitoring results.
§141.90(f)(3)	PWSs must provide the State with a sample consumer notification and certification of its proper delivery within 3 months after the end of the applicable monitoring period.	Rule did not require lead consumer notice or the corresponding State reporting requirement.
<b>Consumer Confidence Report</b>		
§141.154	All CWSs must provide information in their CCRs on lead in drinking water irrespective of whether they detected lead in any of its samples. Revisions also provide mandatory language that clarifies the risk of lead in drinking water, include basic steps on how to reduce exposure to lead in drinking water, provide sources of additional information, and add EPA's Web site as an information source.	Only CWSs that detected lead above the action level in more than 5 percent of the homes sampled were required to provide a short informational statement. The CCR Rule included suggested language that was less specific about the risks of lead in drinking water, possible sources of lead, and the types of information that are available from EPA.

## U. What Key Points Should I Remember About Lead and Copper Tap Monitoring? (40 CFR 141.81 & 141.86)



### **90<sup>th</sup> Percentile Levels Calculations and Follow-up Actions**

- ★ All CWSs and NTNCWSs must conduct lead and copper tap monitoring.
- ★ Lead and copper analytical results are evaluated against an action level, not an MCL.
- ★ No more than 10 percent of your samples can exceed the lead action level of 0.015 mg/L or copper action level of 1.3 mg/L. This is determined by calculating the 90<sup>th</sup> percentile level.
- ★ The 90<sup>th</sup> percentile is determined by multiplying the number of *all valid* samples by 0.9 (e.g., 10 samples x 0.9 = 9 or the 9<sup>th</sup> highest sample result). For 5 samples, it is the average 4<sup>th</sup> and 5<sup>th</sup> highest results, for fewer than 5 samples, it is the highest result.
- ★ An action level exceedance is not a violation (thus, no public notification) but triggers other actions.
- ★ A lead action level exceedance triggers corrosion control treatment, source water monitoring, public education, and lead service line replacement (if the exceedance continues after treatment).
- ★ A copper action level triggers corrosion control treatment and source water monitoring.
- ★ You must initiate corrosion control treatment steps if you serve more than 50,000 people and you are not a (b)(2) or (b)(3) system, regardless of whether you have an action level exceedance.
- ★ If you serve 50,000 or fewer people, you can stop corrosion control treatment steps when you are at or below both action levels for two consecutive six-month monitoring periods. You must recommence these steps if you again exceed either action level, beginning with the last uncompleted step, or as specified by the State in writing. However, if you have installed corrosion control treatment, you must continue to operate it in compliance with your OWQP specifications.

### **Site Selection and Sampling Procedures**

- ★ You must sample at Tier 1 sites. If an insufficient number of Tier 1 sites exist, then use Tier 2, followed by Tier 3 sites, and finally by representative sites. (*Note: Tier 3 sites only apply to CWSs.*)
- ★ If you have lead service lines in your distribution system, you must collect at least half of your samples from sites served by available lead service lines. If you have none, but you have lead goosenecks or pigtails, you can collect tap water samples at sites with goosenecks and/or pigtails.
- ★ You should identify more sampling sites than the number of samples you are required to collect during each monitoring period, in case volunteers drop out.
- ★ If you have fewer than five taps that are used for human consumption, you must collect more than one sample from the same location on different days to obtain five samples, unless your State allows you to collect one sample from each of these taps.
- ★ Samples must be 1-liter in volume and be taken from an interior tap where the water has stood in the pipes for at least six hours (*except as noted below*).
- ★ If you do not have enough inside taps that have been unused for at least six hours, your State may allow you to sample inside taps that have remained unused for the longest period of time.
- ★ You should sample early enough in the monitoring period in case WQP samples are required and to meet your reporting deadline (e.g., October 10 is the deadline for most systems on reduced monitoring).
- ★ If a tap has an aerator, it should not be removed prior to sample collection.

## **Reduced Monitoring**

- ★ If you serve more than 100 people and qualify for monitoring at a reduced frequency of annually, triennially, or every nine years, you are required to collect half as many samples as standard monitoring.
- ★ If you serve 50,000 or fewer people, you qualify for reduced annual monitoring if you have two consecutive six-month periods at or below both action levels.
- ★ If you serve 50,000 or fewer people, you can qualify for triennial monitoring if you have three consecutive years of monitoring at or below both action levels. Your first year of annual monitoring can count as the first year of the three years needed to qualify for triennial monitoring.
- ★ Regardless of the number of people that you serve, you can qualify for annual reduced monitoring if you are in compliance with your OWQP specifications, do not exceed the lead action level for a minimum of two consecutive six-month periods and you receive written approval from the State.
- ★ Regardless of the number of people that you serve, you can qualify for triennial monitoring at the reduced number of sites, if: 1) you meet your OWQPs and are at or below the lead action level for three consecutive years of monitoring; or 2) your 90<sup>th</sup> percentile lead level is  $\leq 0.005$  mg/L and 90<sup>th</sup> percentile copper level is  $\leq 0.65$  mg/L, for two consecutive six-month periods (*if the State has adopted this provision*).
- ★ If you serve 3,300 or fewer people, you can monitor once every nine years at the reduced number of sites, if your State has adopted this provision and you qualify for a monitoring waiver.
- ★ If you are on reduced monitoring, you must collect your samples during June through September in the same calendar year unless the State has designated an alternate monitoring period.
- ★ The monitoring period is the specific period in which you must conduct your required monitoring (e.g., June through September for most water systems on reduced monitoring).
- ★ Triennial and nine-year monitoring must be collected no less frequently than every three years and nine years, respectively.

## **Reporting**

- ★ If you are on a reduced lead and copper tap monitoring schedule, you must notify your State as soon as possible if you plan to add a source or make a *long-term* change to your treatment. Your State may specify the timing of this advanced notice.
- ★ Your State must approve the new source or long-term treatment change before you implement them.
- ★ You must notify consumers of lead sampling results collected from their home (or business) within 30 days of being notified of the results, regardless of whether these results are less than the lead action level or are non-detects.
- ★ You also must provide your State with a sample copy of this consumer notice of lead tap results, and a certification that it meets the rule requirements no later than three months from the end of the monitoring period.
- ★ If you are a CWS, you must provide information in your CCRs on lead in drinking water irrespective of whether you detected lead in any of your samples. You also must use the amended language in 40 CFR 141.154 or your own educational statement after consultation with the State.



# SECTION III: WATER QUALITY PARAMETERS MONITORING AND REPORTING REQUIREMENTS

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## A. What Is The Purpose of Collecting Water Quality Parameter (WQP) Samples? (40 CFR 141.87)

WQPs are used to determine the corrosivity of the water, and if needed, to help the State to determine the type of corrosion control that a system should install and how the treatment should be operated. For most water systems that require treatment, corrosion control treatment is the primary mechanism for reducing their lead and copper levels.

WQP samples include analysis for:

- pH;
- Alkalinity;
- Calcium;
- Conductivity;
- Water temperature;
- Orthophosphate, if an inhibitor containing phosphate is used; and
- Silica, if an inhibitor containing silica is used.

WQP samples are collected at two separate locations:

- At entry points to the distribution system; and
- At representative taps throughout the distribution system (*approved coliform sampling sites may be used*).



**See Exhibit III-6 for a summary of Revisions that impact water quality parameter monitoring and reporting requirements.**

## B. Which Systems Must Collect Water Quality Parameter Samples? (40 CFR 141.87)

*If your water system serves more than 50,000 people*, you must conduct some WQP monitoring. However, if you can demonstrate that your water system has minimal levels of corrosion entering the distribution system based on lead and copper source and tap water samples (i.e., you are a (b)(3) system), you are only required to conduct WQP monitoring during the same two consecutive six-months in which you conducted initial lead and copper tap monitoring. *Refer back to Subsection I.E for the specific (b)(3) criteria.*

*If your water system serves 50,000 or fewer people*, you do not have to collect WQP samples unless you exceed an action level. During any monitoring period in which you exceed the lead or copper action level, WQP samples must be collected from entry points to the distribution system and from a set of representative sites located throughout the distribution system.

## C. When Do I Collect Water Quality Parameter Samples? (40 CFR 141.87(b)-(e))

WQP monitoring can be divided into three phases:

- Initial WQP monitoring;
- Follow-up monitoring that occurs during two consecutive six-month monitoring periods immediately following the installation of corrosion control treatment; and
- Monitoring that occurs after the State sets OWQPs.

Each of these is discussed in greater detail below.

### Initial WQP Monitoring

Initial WQP monitoring is conducted during the same monitoring period(s) as initial lead and copper tap monitoring. During initial monitoring, WQP samples are collected at representative sites in the distribution system (also referred to as tap samples) and at each entry point to the distribution system for:

- pH;
- Alkalinity;
- Calcium;
- Conductivity;
- Temperature;
- Orthophosphate, when a phosphate-based corrosion inhibitor is used; and
- Silica, when a silicate-based corrosion inhibitor is used.


***If your water system serves more than 50,000 people***, you were required to conduct WQP monitoring during the same two consecutive six-month monitoring periods as initial tap monitoring. Thus, for systems that were in existence prior to 1992, WQP monitoring was required to be conducted during the monitoring periods of January 1 through June 30, 1992, and July 1 through December 31, 1992.

***If your water system serves 50,000 or fewer people***, and exceeds the lead and/or copper action level, you must monitor before the end of the six-month initial tap monitoring period(s) during which the action level is exceeded. Because WQP samples must be collected in the same monitoring period in which you exceed an action level, you should collect lead and copper tap water samples early in the monitoring period. If you exceed during the first round of initial tap monitoring, you are immediately triggered into corrosion control treatment requirements. If your State requires you to collect a second set of lead and copper tap samples or you elect to conduct this monitoring and you exceed the action level, you will also be required to collect WQP samples during this six-month monitoring period.

Exhibit III-1 below illustrates the timing for systems serving 50,000 or fewer people that were in existence prior to January 1992.

<b>Exhibit III-1: Initial WQP Requirements for Systems Serving 50,000 and Fewer People</b>		
<i>If you serve...</i>	<i>And you exceeded the lead or copper action level during the...</i>	<i>You were required to collect WQP samples during...</i>
3,301 to 50,000 people	1 <sup>st</sup> monitoring period of July - December 1992	July - December 1992
	2 <sup>nd</sup> monitoring period of January - June 1993	January - June 1993
25 to 3,300 people	1 <sup>st</sup> monitoring period of July - December 1993	July - December 1993
	2 <sup>nd</sup> monitoring period of January - June 1994	January - June 1994
<b>Note:</b> If your water system is new, the State will specify when you must begin initial lead and copper tap monitoring. WQP samples must be collected before the end of the six-month initial tap monitoring period(s) during which an action level is exceeded.		

During each initial monitoring period in which you are required to conduct WQP monitoring, you must collect:

 *A small or medium system that does not exceed an action level does not have to conduct any WQP monitoring unless required by the State.*

- two sets of samples at each of the number of distribution system tap sites specified in Exhibit III-2; and
- two sets of samples at each entry point to the distribution system.

<b>Exhibit III-2: Standard Number of WQP “Tap” Sites and Samples</b>		
<b>System Size (No. of People Served)</b>	<b>No. of Sites (Standard)</b>	<b>No. of Samples (2 per site)</b>
> 100,000	25	50
10,001 to 100,000	10	20
3,301 to 10,000	3	6
501 to 3,300	2	4
≤ 500	1	2

As an example, assume a system serving 50,200 people has three entry points. The regulation requires the system to collect two sets of distribution samples at 10 sites and two sets of samples at each entry point to the distribution system. Therefore, during July through December 1992, these systems would have collected 20 sets of WQP tap samples and 6 sets of entry point samples. During January through June 1993, the system would have collected the same number of entry point and WQP samples.

#### Follow-up WQP Monitoring

Follow-up monitoring occurs in the 12 months immediately following the installation of corrosion control treatment. These samples are collected during the same two consecutive six-month monitoring period(s) as follow-up lead and copper tap monitoring.

***If your water system serves more than 50,000 people***, you were required to conduct this monitoring during two consecutive six-month monitoring periods of January through June 1997 and July through December 1997, unless the State determined you met the criteria of a (b)(2) or a (b)(3) system. As discussed in Subsection I.E, (b)(2) systems have already installed treatment that is equivalent to that required under the lead and copper regulations. These systems are not required to conduct initial or follow-up WQP monitoring.

***If your water system serves 50,000 or fewer people***, WQP monitoring is only required during each of the six-month follow-up monitoring periods in which you exceed the lead or copper action level. Therefore, if you install corrosion control treatment and are at or below both action levels, you are not required to conduct follow-up WQP monitoring. However, your State may require you to continue WQP monitoring to demonstrate that you are properly operating corrosion control treatment.

You must collect two sets of samples at each of the number of WQP sites specified in Exhibit III-2, during each of two consecutive six-month monitoring periods for:

- pH;
- Alkalinity;
- Calcium, when calcium carbonate stabilization is used;
- Orthophosphate, when a phosphate-based inhibitor is used; and
- Silica, when a silicate-based inhibitor is used.

You also must immediately begin taking one set of the following WQP samples at each entry point at least once every two weeks:

- pH;
- When alkalinity is adjusted, a reading of the dosage rate of the chemical used to adjust alkalinity and the concentration of alkalinity; and
- When an inhibitor is used, a reading of the dosage rate of the inhibitor used and the concentration of orthophosphate or silicate (whichever is used).

**F.Y.I.** Once treatment has been installed, entry point monitoring changes from two sets of samples per entry point at six-month intervals to one set of samples per entry point at least every two weeks.

After corrosion control treatment has been installed, water systems that use ground water exclusively can limit sampling points to those that are representative of the water quality and corrosion control treatment conditions throughout the system if:

- This option is allowed by the State; and
- Prior to sampling, the water system demonstrates to the State that the selected sites are representative.

**F.Y.I.** This option does not apply to initial monitoring. You should first check with your State to determine if it allows this representative WQP monitoring.

### Monitoring after the State sets OWQPs

The State uses the lead and copper tap and WQP data collected before and after the installation of corrosion control treatment to set WQP ranges or minimums (called optimal water quality parameters or OWQPs) that indicate that a system is operating corrosion control treatment at a level that most effectively minimizes the lead and copper concentrations at users' taps. The State sets ranges or minimums for the following OWQPs at entry points and within the distribution system (i.e., tap samples) within six months of receiving lead and copper and WQP follow-up monitoring results:

- pH;
- Alkalinity (when alkalinity is adjusted);
- Orthophosphate (when a phosphate inhibitor is used);
- Silica (when a silicate inhibitor is used); and
- Calcium (when calcium carbonate stabilization is used as part of corrosion control).

For example, the State might require you to maintain pH between 7.8 and 8.2 at each entry point and a pH of 7.0 to 8.0 at all sampling sites in the distribution system. Similarly, the State might require you to install sodium bicarbonate at a dosage rate of 10 mg/L (measured at each entry point) to maintain alkalinity above 20 (measured at all distribution system sites). The State can also designate values for additional water quality control parameters.

The concentration of each applicable WQP is measured at entry points and at a specified number of sites within the distribution system (refer back to Exhibit III-2). Measurements at the entry points also include a reading of the dosage rate of the chemical used to adjust the alkalinity (if applicable) and a reading of the dosage rate of the inhibitor used (if applicable).

After OWQPs are set, the frequency of WQP tap monitoring remains semi-annually (unless you qualify for reduced monitoring), and the frequency for entry point monitoring remains every two weeks.

***If your water system serves more than 50,000 people and does not qualify as a (b)(3) system,*** you must collect WQP samples and operate in compliance with the OWQPs designated for your system. If you installed corrosion control treatment prior to the effective date of the rule (i.e., you are a (b)(2) system), the State will designate OWQPs with which you must comply.

***If your water system serves 50,000 or fewer people,*** you are only required to collect WQP samples during those monitoring periods in which an action level exceedance occurs, unless required by the State.

You must collect two sets of samples every six months at the standard number of WQP tap sampling sites that is specified in Exhibit III-2 for:

- pH;
- Alkalinity;
- Calcium, when calcium carbonate stabilization is used;

- Orthophosphate, when a phosphate-based inhibitor is used; and
- Silica, when a silicate-based inhibitor is used.

You must collect one set of samples at each entry point (except those ground water systems that can limit entry point monitoring to representative sites) at least once every two weeks for:

- pH;
- When alkalinity is adjusted, a reading of the dosage rate of the chemical used to adjust alkalinity and the concentration of alkalinity; and
- When an inhibitor is used, a reading of the dosage rate of the inhibitor used and the concentration of orthophosphate or silicate (whichever is used).

The Short-Term Revisions clarify when the first six-month WQP monitoring period begins after the State specifies OWQPs. Previously, this monitoring was to begin on the date the State specified these values. Under the Revisions, large systems or those small or medium-sized systems that are on standard lead and copper tap monitoring must begin WQP monitoring on either January 1 or July 1 (whichever comes first) after the State specifies the optimal values. For small or medium-size systems that were on reduced lead and copper tap monitoring but exceed an action level, the Revisions require the start of the six-month WQP monitoring period to coincide with the start of the four-month monitoring period during which the exceedance occurred. This will allow small and medium systems on reduced monitoring that exceed the action level an additional two months to take WQP samples after the end of the four-month monitoring period in which they had to take lead and copper tap samples (see example below). This provision is intended primarily for systems that are not aware of the exceedance until the end of the lead and copper monitoring period. However, those systems that are aware of the action level exceedance earlier in the four-month lead and copper monitoring period should conduct their WQP monitoring when they learn of the exceedance to better capture the water quality conditions at the time of the exceedance.

F.Y.I.

*As described above, the six-month OWQP monitoring period is June 1 through November 30 for small or medium water systems that were on reduced lead and copper tap monitoring when they exceeded the lead or copper action level. This compliance period should be used in place of the July 1 – December 31 compliance period, that is recommended for these systems on page 11 in the February 2001 guidance (EPA 815-R-99-019) “How to Determine Compliance with Optimal Water Quality Parameters as Revised by the Lead and Copper Rule Minor Revisions.” Please note that the Short-Term Revisions do not revise the basic procedure for assessing compliance with OWQPs as described in this February 2001 guidance (i.e., compliance is still based on six-month compliance periods).*



### **EXAMPLE: Timing of WQP Monitoring for Small or Medium Systems Exceeding an Action Level during Reduced Lead and Copper Tap Monitoring**

- ★ A water system exceeds the copper action level in tap samples collected between June and September 2009.
- ★ The start of the six-month WQP monitoring period is June 1, 2009. (i.e., coincides with the start of the monitoring period in which the exceedance occurred).
- ★ The system has until November 30, 2009, to collect its WQP samples, and until December 10, 2009, to report its results to the State.



*For those systems with treatment in place, the State must take measures to ensure that systems are operating treatment properly. Thus, the State could require you to collect WQP samples, even if you serve 50,000 or fewer people, or qualify as a (b)(3) system.*

## **D. How Do I Select My Sampling Sites? (40 CFR 141.87(a))**

### Distribution Samples

You must identify sampling sites in your distribution system that are representative of the water quality throughout the distribution system. These samples are also referred to as WQP tap samples. The number of tap WQP sampling sites is specified in Exhibit III-2. For ease, you may want to sample from sites used for coliform monitoring. The advantages associated with using these sites are: (1) access is available since the sites are already being used as sampling locations; (2) personnel are already in place to perform monitoring at these sites; and (3) the locations should be representative of the distribution system conditions as required by the Total Coliform Rule. You also can use the taps from which you collect lead and copper tap samples.

In order to ensure that your distribution sampling sites (or “tap” samples) are representative of water quality throughout the distribution system, you should consider the following:

- Size of the population you serve and where the population is located;
- All of the different sources of water you currently use;
- All of the different treatments installed and operating;
- The effects of seasonal variability on treatment and water quality;
- The proximity of WQP sites to lead and copper tap water sampling sites;
- The proximity of WQP sites to supplemental chlorination feed points;
- The proximity of WQP sites to ground or elevated storage locations;
- The sampling sites’ representativeness of typical retention times of water in the distribution system;
- The sampling sites’ representativeness of distinct pressure zones located throughout the distribution system; and
- The sampling sites’ representativeness of distribution system materials.



Also, avoid areas in the distribution system where maintenance or flushing is conducted because water quality upsets are more likely to occur in these places. Remember, you are trying to collect data that are representative of typical water quality conditions in the distribution system.

#### Entry Point Samples

You must sample from each entry point to the distribution system (except those ground water systems that can limit entry point monitoring to representative sites) to obtain a sample that is representative of the source after treatment. If two or more sources are combined before distribution, your sample must be representative of all sources used.

### **E. How Do I Collect Water Quality Parameter Samples? (40 CFR 141.87(a))**

#### At the Sampling Site

Unlike lead and copper tap samples, WQP samples should be fully flushed. Samples collected at entry points to the distribution system must be collected at locations representative of each source of water after treatment.

If your system draws water from more than one source, the sources are combined before distribution, and samples are not collected at the entry point to the distribution system, you must collect samples at sites in the distribution system where the water is representative of all sources being used.

If you collect the WQP samples in the distribution system from the same location as coliform and disinfectant residual samples, you should collect the WQP samples in the following manner:

- Fully flush the tap and collect the coliform sample;
- Collect a sample to measure disinfectant residual;
- Collect and analyze sample for temperature and pH; and
- Collect the samples for the other WQPs.

When you collect WQP samples, you should always record your observations about color, suspended solids, and the flushing time required prior to achieving acceptable sampling conditions. During collection of the WQP samples, care should be taken to avoid the introduction of air bubbles into the sample which can affect the pH, conductivity, and dissolved oxygen content of the water sample.

Plastic or glass containers can be used when collecting WQP samples unless silica analyses are required, in which case, plastic must be used. All samples should be stored in a cool environment until analyzed. During transportation, care should be taken to avoid breakage of the sample.

F.Y.I.

EPA's October 20, 2006, Memorandum: *Management of Aerators during Collection of Tap Samples to Comply with the Lead and Copper Rule*, explains how samples should be collected if a tap has an aerator. As previously discussed in Subsection II.G, screens that are part of aerators may trap particulate matter or debris within the faucet and should not be removed prior to collecting lead and copper tap samples. Otherwise, water systems could fail to identify the typically available contribution of lead from the tap, and thus, fail to take additional actions needed to reduce exposure to lead in drinking water. This memorandum also clarifies that the **aerator should be removed**, and the faucet outlet cleaned and thoroughly flushed to remove scale particles, prior to collection of samples that may be monitored for pH and/or dissolved oxygen. A copy of this memorandum is available at <http://www.epa.gov/safewater/lcrrm/compliancehelp.html>.

### Parameter-specific Procedures

**Temperature and pH:** Temperature analyses must be conducted in the field to ensure accuracy. Measure temperature using either a hand-held thermometer or a combined temperature/pH electrode and meter. Measurements of pH must also be conducted in the field and must be made with a pH electrode and meter within 15 minutes of sample collection. The meter should be capable of measuring to 1/10 of a unit. The pH probe should be placed in a holding bottle and secured during transport. The probe's membranes are very delicate and should not come in contact with hard surfaces or be allowed to dry out. Pack a replacement probe just in case. In addition:

- Before collecting the pH sample, the pH electrode should be calibrated at pH 7.0 and a second pH level; either 4.0 or 10.0, depending on the pH range typically found within the distribution system.
- Before collecting the sample, remove the faucet aerator and run the water gently to flush the line.
- Fill the sample bottle to slightly overflowing.
- Use a closed-system bottle -- which allows you to insert the thermometer or pH probe -- to reduce measurement error.
- If you use a hand-held thermometer, insert it in the sample and record the reading when it stabilizes. Insert the pH electrode immediately after removing the thermometer.
- If you use a combined electrode and meter, insert it in the sample immediately after filling the bottle and measure temperature. Change the meter to measure pH levels and gently rotate the bottle until the pH reading stabilizes (may take several minutes).
- Record the pH measurement, rinse the electrode with deionized water and replace it in the holding bottle.

**Other WQPs:** When you collect WQP samples for alkalinity, calcium, conductivity, orthophosphate, and silica, you should take two, 500 mL samples at each sampling location. Two samples are needed because the calcium analysis is conducted using a separate sample in order to acidify the sample prior to measurement. The two 500 mL samples count as one set of samples; thus, you must repeat this for each of your two entry point sample sets during initial monitoring, as well as your two distribution ("tap") samples sets that are required during each WQP monitoring period.

## F. How Does the State Determine If I Am In Compliance With My Optimal Water Quality Parameter Values? (40 CFR 141.82(g))

Prior to the 2000 LCRMR, you would incur a violation if the WQP value of any sample or the average of the original sample and confirmation sample was below the minimum value or outside the range designated by the State. If you elected to collect a confirmation sample, you were required to collect it within three days of collecting the original sample.

In each monitoring period in which you did not meet your OWQP specifications, you would incur a violation. For entry point monitoring, compliance was determined every two weeks. For tap WQP monitoring, compliance was determined for the monitoring period in effect (i.e., six months, one year, or three years).

Under the 2000 LCRMR, EPA revised the procedure for calculating compliance with OWQPs based on concerns raised by several States and water systems. *This approach has not been modified by the Short-Term Revisions.* A major concern was that the 1991 compliance approach created a significant disincentive for sampling WQPs more frequently than

required, since the more frequently measurements are taken, the greater the potential that some of the results will be outside the OWQP ranges or below the OWQP minimums set by the State. Under the 1991 Rule, a water system was out of compliance if the results of any WQP sample, or the average of the original sample and a confirmation sample, did not meet the State-designated OWQP ranges or values. Another concern was that “averaging” of results was not the best approach from an effective corrosion control perspective. A system might have to increase pH scale and cause other problems simply to set the average within range. The 2000 LCRMR no longer allowed the use of confirmation samples.

Under the January 2000 LCRMR, compliance determinations are always based on a six-month period, regardless of the system’s monitoring schedule (e.g., daily, biweekly, semi-annually, annually, triennially) or whether the WQP results are from an entry point of the distribution system. Based on the Short-Term Revisions that clarify the timing of WQP monitoring (refer back to previous subsection) the six-month WQP periods will be January 1 through June 30 and July 1 through December 31 for all systems except those medium and small systems that exceeded an action level while on reduced lead and copper tap monitoring. For these systems, the six-month monitoring periods will be June 1 through November 30 and December 1 through May 31.

You cannot be outside the OWQP ranges or below the OWQP minimum (also known as an excursion) for more than a total of nine days at a specific sampling point or combination of sampling points, or for a specific WQP or combination of WQPs during a six-month period. The nine days can occur anytime during the six-month period and do not have to be consecutive. The nine days allow you to make necessary repairs that may be causing your system to not meet its OWQP specifications.



F.Y.I.


Please note that the State is not required to use the OWQP compliance procedure that was established under the 2000 LCRMR.

First check with your State to determine when and if you should use this procedure for assessing compliance with your OWQPs.

You must use the results of all WQP samples collected during the six-month period at a sampling location to determine OWQP compliance and report these results to the State. However, States have discretion to delete results of obvious sampling errors from this calculation (40 CFR 141.86(g)).

Daily values are calculated for each WQP at each sampling location. The procedure for determining the daily value is based on the sampling frequency for that WQP and sampling point. It is quite possible for you to collect several samples a day for a given WQP at one sampling location and to conduct annual monitoring at another. Although the term “daily values” contains the word “daily” in many instances, the daily value represents a measurement that was collected more or less frequently than once per day. Exhibit III-3, below, explains how to calculate the daily value based on the sampling frequency for a given WQP.

<b>Exhibit III-3: Daily Value Calculation Based on Monitoring Frequency</b>	
<i><b>If you are monitoring for a specific WQP at a sampling site:</b></i>	<i><b>Then the daily value is:</b></i>
More frequently than Daily	<p>Calculated by averaging all the results measured at the sampling location for that WQP during the day. If both continuous monitoring results and grab samples are collected on the same day, both must be included in the calculation of the daily value. States can specify the frequency with which continuous monitoring results should be recorded.</p> <p>A State can also require systems to determine the “daily value” using another formula when they monitor more frequently than daily at the same sampling location. <i>First check with your State regarding the frequency of recording values and procedures for aggregating results.</i></p>
Daily	Results of each daily sample for that WQP at that location.
Biweekly	Results of each sample collected during the two-week period for that WQP at that location.
Semi-annually	Results of each sample collected during the six-month period for that WQP at that location.
Annually or Triennially	<p>The most recent measurement(s) taken, even if the measurement(s) was (were) collected during a previous monitoring period.</p> <p><b>Example:</b> A system is on annual WQP tap monitoring during January - December 2009. It measures pH at the tap on January 10, 2009 (pH = 7.5) and June 20, 2009 (pH = 7.6). For the six-month period of January - June 2009, there are two daily values because both measurements were collected during the six-month period being evaluated. For the 6-month period of July - December 2009, only the most recent value of 7.6 is used.</p>



*For more information on this OWQP compliance procedure, refer to: **How to Determine Compliance with Optimal Water Quality Parameters as Revised by the Lead and Copper Rule Minor Revisions, February 2001, EPA 815-R-99-019.***

## G. Can I Ever Reduce My WQP Monitoring? (40 CFR 141.87(e))

After the State sets OWQPs, you can qualify for a reduction in the amount of monitoring conducted at tap locations *only* if you are in compliance with your OWQPs (i.e., do not have excursions for more than nine days in a six-month period). This reduction does not apply to entry point WQP monitoring. Entry point monitoring remains at a frequency of every two weeks.

### Criteria for Reducing the Number of WQP Tap Samples

If your water system is in compliance with its OWQPs after two consecutive six-month monitoring periods *and serves more than 10,000 people*, you can reduce the number of sample sites at which you collect tap WQP samples from the standard number to the reduced number as shown in Exhibit III-4. However, two sets of samples are still required at each location and the frequency remains at semi-annually.

Exhibit III-4: Reduced Number of WQP Tap Sites and Samples		
System Size (No. of People Served)	No. of Sites (Reduced)	No. of Samples (2 per site)
> 100,000	10	20
10,001 to 100,000	7	14
3,301 to 10,000	3	6
501 to 3,300	2	4
25 to 500	1	2
<b>Note:</b> The number of WQP tap samples for systems serving $\leq$ 10,000 people is the same under standard and reduced monitoring.		

### Criteria for Annual Monitoring

If you are in compliance with your OWQP specifications for three consecutive years of monitoring, you may also reduce the frequency with which you collect your distribution WQP samples from once every six months to once per year and collect from the reduced number of sites. *These samples should be collected evenly throughout the year to reflect seasonal variability.*

The Short-Term Revisions clarify that the annual reduced WQP tap monitoring period begins during the calendar year immediately following the end of the monitoring period in which the third consecutive year of six-month monitoring occurred. Previously, the start of this monitoring period was not explicitly stated.



### **EXAMPLE: Timing of Annual WQP Monitoring**

- ★ Water system is in compliance with its OWQP requirements during January 1 - June 30 and July 1 - December 31 of 2007, 2008, and 2009 (i.e., six consecutive six-month monitoring periods).
- ★ The start of the annual monitoring period is January 1, 2010.

### Criteria for Triennial Monitoring

If you are on an annual WQP tap monitoring frequency and you are in compliance with your OWQPs for *three consecutive years* of monitoring, you may reduce the frequency with which you collect WQP tap samples from annually to once every three years. Systems serving more than 10,000 people would continue to collect from the reduced number of sites.



*Unlike lead and copper tap monitoring, the first year of semi-annual monitoring does not count toward the first year of meeting the triennial monitoring criteria. Instead, you must collect WQP tap samples at the annual frequency for three consecutive years to qualify for triennial WQP tap monitoring.*



*The number of WQP tap sampling locations for systems serving 10,000 or fewer people is the same under standard and reduced monitoring. As shown in Exhibit III-4, systems serving 501 to 3,300 people that qualify for reduced WQP tap monitoring would continue to collect 2 sets of WQP tap samples at 2 sampling locations. Those serving 25 to 500 people would collect 2 sets of WQP tap samples at 1 location.*

The Short-Term Revisions clarify that the triennial reduced WQP tap monitoring must begin no later than three calendar years after the end of the monitoring period in which the system qualifies for triennial monitoring. Prior to the Revisions, the rule language did not explicitly state when this monitoring was to begin.



#### **EXAMPLE: Tap WQP Triennial Monitoring**

- ★ A PWS meets its OWQP specifications for the 3<sup>rd</sup> consecutive year during 2008.
- ★ This system must collect its tap WQP samples by the end of 2011 (i.e., within 3 years after it qualifies for triennial monitoring).

You can also qualify for accelerated reduced WQP tap monitoring, which allows you to conduct triennial WQP tap monitoring after only two consecutive monitoring periods (either six-month or annually) if:

1. Your 90<sup>th</sup> percentile lead level does not exceed 0.005 mg/L;
2. Your 90<sup>th</sup> percentile copper level does not exceed 0.65 mg/L;
3. You are in compliance with your OWQP requirements; and
4. Your State allows accelerated reduced WQP monitoring.




*In general, this allowance applies to large systems because unless required by the State, small and medium systems that are at or below both action levels are not subject to WQP monitoring requirements.*

The Short-Term Revisions also added language specifying that triennial monitoring must be conducted at least every three calendar years. This language was added to help ensure that water systems would not misinterpret the regulations to mean that samples could be collected anytime



during a three-year period. For instance, if a water system collects its first round of triennial samples in 2008 within the compliance period of 2007 through 2009. The next compliance period would be 2010 through 2012. Because samples must be collected every three years, the system would have to collect the sample no later than the end of 2011 (i.e., it would not have until the end of 2012 to collect the sample).

Exhibit III-5 in the next section summarizes the criteria you must meet to qualify for reduced WQP tap monitoring. For systems serving more than 10,000 people, WQP tap monitoring is conducted at a reduced number of sites. Remember, this reduction does not apply to entry point samples. Once corrosion control treatment is installed, these samples are collected at least every two weeks.



*If your State is using the new OWQP compliance procedure, you are in compliance with your OWQPs if you have excursions on no more than nine days in a six-month period (at any entry point or WQP tap sampling site or combination of sites). As long as this is the case, you can count this monitoring period toward qualifying for reduced monitoring.*

## H. Can I Ever Discontinue Water Quality Parameter Monitoring? (40 CFR 141.81(b)(3), 141.82(g), 141.87(b)-(e))

If you serve 50,000 or fewer people and you no longer exceed an action level, you can discontinue WQP monitoring. However, if you meet these criteria after installing corrosion control treatment, your State may require you to continue WQP monitoring or undertake other measures to ensure that your treatment is operating properly.

Similarly, you are not required to continue WQP monitoring if you are a large system and the State deems you to be a (b)(3) system (i.e., a water system that demonstrates it has minimally corrosive water by meeting the requirements in 40 CFR 141.81(b)(3)). However, if the State makes this determination after you have installed treatment, the State may require you to continue to conduct some WQP monitoring.

<b>Exhibit III-5: Reduced WQP Tap Monitoring Criteria</b>	
<b>Criteria<sup>1</sup></b> <i>(Required time period in which system is in compliance with its OWQP Specifications)</i>	<b>Monitoring Frequency</b> <i>(Samples are collected at reduced number of sites)</i>
Two consecutive six-month periods	Every six months
Three consecutive years (equals six, six-month periods)	Annual
Three consecutive years of <i>annual</i> monitoring <sup>3</sup>	Triennial
Two consecutive monitoring periods: 1) 90 <sup>th</sup> percentile lead level $\leq$ 0.005 mg/L; 2) 90 <sup>th</sup> percentile copper level $\leq$ 0.65 mg/L; and 3) in compliance with OWQP specifications.	
<sup>1</sup> Compliance with OWQPs must occur in consecutive periods to qualify for reduced monitoring. <sup>2</sup> Assumes that maximum of six months would occur before the system starts WQP monitoring. For example, if the State sets OWQPs on January 1, 2009, the Short-Term Revisions would require WQP monitoring to begin on July 1, 2009 for systems on standard lead and copper tap monitoring. <sup>3</sup> Unlike lead and copper tap monitoring, semi-annual monitoring cannot count as the first year toward the triennial monitoring criteria. A system must be in compliance with its OWQP specifications for three years in which it collects WQP tap samples at the annual frequency before qualifying for triennial monitoring.	





If you serve 50,000 or fewer people, and if you again exceed the lead or copper action level, you will be required to resume WQP monitoring. Similarly, if you are a large system and no longer meet the (b)(3) criteria, you also will be required to collect WQPs.

## I. What Water Quality Parameter Monitoring Information Must I Report to the State? (40 CFR 141.90(a)(1)(vi)-(viii) & (a)(5))

You must report WQP monitoring results within the first 10 days following the end of each six-month compliance period. *This reporting requirement still applies even if your State is not using the OWQP compliance procedure that was introduced under the 2000 LCRMR.* For example, during the year of 2009, any WQP samples that you collected during January through June 2009 would be due to the State by July 10, 2009. Those samples that you collected during July through December 2009 would be due to the State by January 10, 2010 (or if you sample during June through November, you would report your results no later than December 10, 2009). If you are on annual or triennial WQP tap monitoring, there will be some six-month monitoring periods in which you will not have any tap WQP results to report.

If you are a ground water system and you are requesting approval to limit entry point monitoring to representative sites, you must provide a demonstration that selected sites represent water quality and treatment conditions. *Please check with your State before providing this demonstration to be sure this provision is included in the State's regulations.*

## J. What If I Do Not Fulfill My WQP Requirements? (40 CFR 141.80(k), 141.82(g), 141.87(e)(4))

If you do not meet all of the following monitoring and reporting requirements within the timeframe specified by the rule, you are in violation of at least one of these requirements:

- Use appropriate sampling procedures in accordance with 40 CFR 141.87(a)(1);
- Collect the required number and type of samples in accordance with 40 CFR 141.87(a)(2),(b)-(e);
- Ensure samples are analyzed properly in accordance with 40 CFR 141.89(a);
- Submit all required monitoring information on time in accordance with 40 CFR 141.90(a)(vi)-(viii); **or**
- Meet the State-approved sampling plan for collecting WQPs at representative entry point locations in accordance with 40 CFR 141.87(c)(3) (*this criterion would only apply if you are a ground water system and your State's regulation allows you to limit entry point WQP monitoring to representative sites*).

In addition, you are in violation if you do not meet your OWQP ranges or minimums set by the State. If your State assesses compliance using the 1991 LCR procedure, you are out of compliance if the results of any WQP sample, or the average of the original sample and a confirmation sample, does not meet the State-designated OWQP ranges or minimums. Under the 2000 LCRMR compliance procedure, you are in violation of your requirements if you have OWQP excursions for more than nine days in a six-month compliance period.

If you are out of compliance with your monitoring, reporting, or OWQP requirements, you must:

1. Report the violation to the State within 48 hours of determining the noncompliance (refer to 40 CFR 141.31(b)).
2. Deliver public notification to your customers (refer to 40 CFR 141.201 & 141.203 - 141.206 and additional information, available at <http://www.epa.gov/safewater/publicnotification/index.html>).
3. Include a discussion of the violation in your CCR if you are a CWS, (refer to 40 CFR 141.153 and additional information, available at <http://www.epa.gov/safewater/ccr/index.html>). *Note: This CCR requirement is unrelated to the new 40 CFR 141.154 provision that requires all CWSs to provide a short informational notice about lead in their CCR (also refer back to Subsection H in Section I for more information).*
4. Return to semi-annual WQP tap monitoring and lead and copper tap monitoring at the standard number of sites, if you are on reduced monitoring and you are in violation of your OWQP requirements. *Note: A monitoring and reporting violation does not impact your WQP monitoring schedule.*

## K. What Provisions of the Short-Term Revisions Pertain to Water Quality Parameter Monitoring and Reporting?

The exhibit below summarizes those provisions of the Short-Term Revisions that directly impact your WQP monitoring and reporting requirements. If you own or operate a water system on Tribal lands (other than the Navajo Nation), in Wyoming, or the District of Columbia, the Federal version of the LCR applies to you. Therefore, you were required to implement the following provisions beginning April 7, 2008. Water system owners or operators in other States should check with their Primacy Agencies to determine when these provisions will be in effect.

Exhibit III-6: Revisions to Water Quality Parameters		
CFR Citation	New Requirements under the Short-Term Revisions	Previously Required under the 1991 Rule as Amended by LCRMR
§141.87(d)	<p>Clarifies that systems on standard lead and copper tap monitoring must begin monitoring for WQPs in the first six-month period after the State sets OWQPs. Begin dates will either be January 1 or July 1, whichever comes first.</p> <p>Defines the start of the first six-month WQP monitoring period for small or medium systems that are required to monitor for WQPs due to an action level exceedance during a reduced lead and copper tap monitoring period. The beginning of the six-month WQP monitoring period is the same as the lead and copper tap monitoring period in which the exceedance occurred (e.g., if exceedance occurred during June 1 - Sept. 30, 2009, the WQP monitoring period will start June 1, 2009, and end</p>	<p>Large systems began monitoring for WQPs on the date the State sets OWQPs.</p> <p>Synchronized the <i>end</i> of the six-month monitoring period for WQP monitoring with the <i>end</i> of the reduced lead and copper tap monitoring period during which an action level was exceeded. (e.g., if exceedance occurred during June 1 - Sept. 30, 2009, the WQP monitoring period would start July 1, 2009 and end Dec. 31, 2009). <sup>1</sup></p>

<b>Exhibit III-6: Revisions to Water Quality Parameters</b>		
<b>CFR Citation</b>	<b>New Requirements under the Short-Term Revisions</b>	<b>Previously Required under the 1991 Rule as Amended by LCRMR</b>
	Nov. 30, 2009).	
§141.87(e)(2)(i)	<p>Specifies that annual WQP tap monitoring will begin during the calendar year that immediately follows the end of the monitoring period in which the third consecutive year of six-month monitoring occurs.</p> <p>Specifies that triennial monitoring must begin no later than three calendar years after the system qualifies for triennial monitoring.</p>	Was not specified.
§141.87(e)(2)(ii)	Clarifies that triennial WQP monitoring must be conducted no later than every third calendar year.	Was not specified.
<p><sup>1</sup> Prior to the Short-Term Revisions, the end of the monitoring period for systems on reduced lead and copper tap monitoring was defined as December 31 (although samples had to be collected by September 30). The Short-Term Revisions clarify that the “monitoring period” is the specific period in which water system must conduct monitoring. Therefore, the end of the monitoring period for systems on reduced monitoring is September 30 or for systems where the State has designated an alternate period, the last day of that period.</p>		

## L. What Key Points Should I Remember About Water Quality Parameter Monitoring? (40 CFR 141.82(g), 141.87)



- ★ If you serve more than 50,000 people, you must conduct some WQP monitoring.
- ★ If you serve 50,000 or fewer people, you do not have to collect WQP samples unless you exceed an action level or are required by the State. However, you must collect WQP samples during any monitoring period in which you exceed the lead or copper action level.
- ★ Samples must be collected from entry points to the distribution system and from a set of representative sites located throughout the distribution system (coliform sites may be used).
- ★ Unlike lead and copper tap samples, WQP samples should be fully flushed. Samples collected at entry points to the distribution system must be collected at locations representative of each source of water after treatment.
- ★ Before collecting a sample for pH and temperature (or dissolved oxygen, if needed) remove the faucet aerator and run the water gently to flush the line.
- ★ After you install corrosion control treatment, entry point monitoring changes from two sets of samples per site every six months to one sample per site every two weeks.
- ★ You can collect WQP tap samples from a reduced number of sites and/or a reduced frequency by meeting your OWQP requirements for a specified number of consecutive monitoring periods for both WQP entry points and distribution samples. Entry point monitoring remains biweekly.
- ★ Unlike lead and copper tap monitoring, you cannot count semi-annual monitoring toward meeting the triennial monitoring criteria. You must have conducted WQP tap monitoring annually for three *consecutive* years and be in compliance with your OWQPs for these three years to qualify for triennial WQP tap monitoring.
- ★ If your State uses the 2000 LCRMR OWQP compliance approach, you are in compliance with your OWQP requirements if you have excursions for no more than a total of nine days at a specific sampling point or combination of sampling points, or for a specific WQP or combination of WQPs during a six-month period.
- ★ WQP six-month monitoring periods are July 1 - December 31 and January 1 - June 30 for all systems except medium and small that had an exceedance during a reduced lead and copper tap monitoring period. For these systems, the six-month WQP periods are June 1 - November 30 and December 1 - May 31.
- ★ If you are on reduced monitoring for lead and copper tap monitoring or WQP tap monitoring, you must return to standard monitoring if you have excursions on more than nine days in a six-month period (based on the 2000 LCRMR compliance approach.)

# SECTION IV: LEAD AND COPPER SOURCE WATER MONITORING AND REPORTING REQUIREMENTS

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## A. What Is The Purpose of Collecting Source Water Samples? (40 CFR 141.81(b)(3) & 141.88(a))

The purpose of requiring lead and copper sampling at the entry points to the distribution system is to:

1. Determine the contribution from source water to total tap water lead and copper levels.
2. Assist you and the States in designing an overall treatment plan for reducing lead and copper levels at the tap.
3. Assist the State in determining whether source water treatment is necessary to reduce lead and copper levels at the tap.

Source water samples are also required if you are trying to demonstrate that you have optimized corrosion control by meeting the criteria under 40 CFR 141.81(b)(3) (i.e., are a (b)(3) system). Refer back to Subsection I.E, for a discussion of the (b)(3) criteria.



**See Exhibit IV-1 for a summary of Revisions that impact source water monitoring and reporting requirements.**

## B. Which Systems Must Collect Source Water Samples? (40 CFR 141.88(a))

For systems of any size, source water monitoring for lead and copper is required if a system exceeds the lead or copper action level based on the 90<sup>th</sup> percentile lead or copper level *in tap water samples*. Source water monitoring is also required for systems electing to demonstrate that they qualify as (b)(3) systems. Therefore, if a system never exceeds the lead or copper action level or is not trying to demonstrate that it qualifies as a (b)(3) system, lead and copper source water monitoring is not required.



*If you are a (b)(3) system, your State may require you to collect source water samples every 3 years when you conduct lead and copper tap monitoring to confirm your (b)(3) status.*

## C. When Do I Collect Source Water Samples? (40 CFR 141.88(a)-(e))

### If This Is the First Time You Have Exceeded an Action Level

When you exceed the lead or copper action level for the first time, you must collect a sample at each entry point to the distribution system. Each sample must be analyzed for both lead and copper.

The Short-Term Revisions clarify that these samples must be collected no later than 180 days *after the end of the monitoring period* during which the lead or copper action level was exceeded. Previously, this monitoring had to be conducted within six months of exceeding the action level. The Short-Term Revisions also clarify that for systems that were on a reduced monitoring schedule when they exceeded the lead or copper action level, the end of the monitoring period is September 30 or if the State sets an alternate four-month monitoring period, the last day of the period.

You are also required to submit a source water treatment recommendation to the State no later than 180 days after the end of the monitoring period during which you exceeded the lead or copper action level. Previously, this recommendation was due to the State within six months of exceeding the action level. Your source water treatment recommendation is based on source water monitoring results. You are not required to conduct a source water treatment study. As part of your recommendation, you should consider ion exchange, reverse osmosis, lime softening, and coagulation/filtration. You can also recommend that no source water treatment is needed. EPA's guidance document *Lead and Copper Rule Guidance Manual Volume II: Corrosion Control*, September 1992 (page 3-34), recommends source water treatment when the concentration of lead in the source water is greater than 0.010 mg/L or the concentration of copper in source water is greater than 0.800 mg/L. The State will use your sample results and recommendation to help determine if or what type of source water treatment is needed.

Form 141-D in Appendix D may be used to report your source water monitoring results and your source water treatment recommendation. If you use this form, you must also attach a copy of the analytical results from the laboratory. The State will make a decision regarding source water treatment and notify you within six months of its receipt of your sample results.

#### Immediately Following Source Water Treatment Installation

If the State requires you to install source water treatment, you have 24 months to install this treatment. After installing this treatment, you must collect one sample from each entry point during two consecutive six-month monitoring periods, and analyze this sample for both lead and copper even if you exceeded only one of the action levels prior to treatment. With the “before and after treatment” lead and copper results, the State will designate MPLs for lead and copper. These MPLs represent the highest lead and copper concentrations that are allowed in water entering the distribution system after source water treatment. The State will set MPLs for both lead and copper even if you exceeded the action level for only one of these contaminants. Also note that some States may set MPLs for systems that are not required to install source water treatment.

#### After the State Sets MPLs or Determines Source Water Treatment Is Not Needed

After the State sets MPLs and/or determines that source water treatment is not needed, your monitoring requirements are based on your source type as explained below.

***If your water system uses ground water as its only source***, you must monitor during three-year compliance periods. The first three-year compliance period is the one in effect when the State specified MPLs for lead and copper or determines that source water treatment is not needed. These are the same compliance periods that were established under the Standardized Monitoring Framework (SMF) for Phase II/V contaminants (e.g., 2005 - 2007, 2008 - 2010, 2011 - 2013, etc.). This was done to allow you to coordinate your source water monitoring for lead and copper with other monitoring requirements.

F.Y.I.

The Short-Term Revisions clarify that triennial monitoring must occur every three years. Therefore, if you collected your source water sample in 2008, the next sample would be due no later than 2011 (i.e., you would not have until the end of the compliance cycle (2013) to collect your sample).

***If your water system uses surface water, ground water under the direct influence of surface water (GWUDI), or any combination of these sources with ground water,*** you must monitor annually. The Short-Term Revisions clarify that the first annual monitoring period begins during the year in which the State set your MPLs or determines that source water treatment is not needed. Therefore, both the determination and sample collection must occur before the end of December. This clarification encourages States to make timely decisions to allow systems to meet the December 31 deadline. Previously, this monitoring period began on the date the State made the applicable determination. The example below illustrates the timing of annual monitoring.



### EXAMPLE I: Annual Source Water Monitoring

- ★ A surface water system submits initial source water monitoring results to the State on May 15, 2008.
- ★ On October 31, 2008, the State determines that no treatment is needed.
- ★ The system must collect a sample from each entry point to the distribution system by December 31, 2008.

*Note: Assume instead that the State set MPLs on October 31, 2008. The system would also be required to complete source water monitoring by December 31, 2008.*

#### Reduced Monitoring

You can further reduce your source water monitoring frequency to once every nine years based on the SMF nine-year compliance cycle (i.e., 1993 - 2001, 2002 - 2010, 2011 - 2019, etc.) if you meet the criteria listed below. The number of sites from which you must collect source water samples remains at one sample per entry point. Once you are on nine-year monitoring, the Short-Term Revisions specify that this monitoring must occur no more than nine years apart.

***If your water system uses ground water exclusively,*** you can collect source water samples once every nine years if you do not exceed either the lead or copper MPL for three *consecutive*, three-year compliance periods (i.e., nine years).

***If your water system uses surface water, GWUDI, or any combination of these sources with ground water,*** you can collect source water samples once every nine years if you do not exceed either MPL for three *consecutive* years. Refer to Example 2 below.


***If the State has determined that source water treatment is not needed and has not set MPLs,*** you can collect source water samples once every nine years if (*see note below*):

- your source water lead concentrations are  $\leq 0.005$  mg/L; and
- your source water copper concentrations are  $\leq 0.65$  mg/L; and



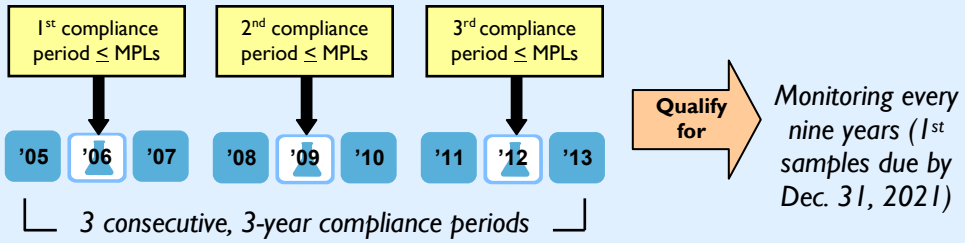
- you maintain these levels for three consecutive three-year compliance periods if your system uses ground water only or for three consecutive years if your system uses surface or a combined source(s).

Note: This provision was added by the 2000 LCRMR and was optional for States to adopt. *First check with your State to determine whether this provision applies.*



### EXAMPLE 2: Criteria to Qualify for Reduced Source Water Monitoring for Ground Water Systems

- ★ A ground water system collects source water samples in 2006, 2009, and 2012 (during three consecutive three-year compliance periods). The value of these samples does not exceed the MPLs set by the State.
- ★ It qualifies for nine-year monitoring and the next source water samples must be collected by December 31, 2021. See *diagram below*.



3 consecutive, 3-year compliance periods

**F.Y.I.** Once you qualify for reduced source water monitoring (regardless of whether you install source water treatment or not), you are not required to return to standard monitoring. In other words, an exceedance of an action level or of an MPL does not impact your source water monitoring schedule. However, you do not have to conduct source water monitoring if you are at or under the lead and copper action level for the entire source water monitoring period in effect.

## D. Where Are These Samples Collected? (40 CFR 141.88(a))

The sample location, collection methods, and number of samples required are the same as for Phase II/V contaminants, as explained below.

### Sampling Requirements Based on Your Source

***If you use ground water as your only source,*** you must take at least one sample at every entry point to the distribution system which is representative of each well after treatment. If there are separate entrances to your distribution system from either individual wells or wellfields, a sample must be collected from each discrete entry point. If you use multiple wells that draw from the same aquifer, the State can identify an individual well for monitoring, as long as there is no treatment or blending.

***If you use surface water, GWUDI, or any combination of these sources with ground water,*** you must take at least one sample at every entry point to the distribution system after the application of treatment or in the distribution system at a point which is representative of each source after treatment. These samples may be collected after storage during normal operating conditions or at high service pumps.

#### Other Considerations for All Systems Conducting Source Water Monitoring

You must have your samples analyzed for *both lead and copper* even if you have only exceeded the action level for one of these contaminants.

If you are drawing from sources that are combined, samples must be taken during normal operating conditions so that the water is representative of all sources being used.

Some States allow a maximum of five samples to be combined together and analyzed as one sample (known as compositing). The compositing must be done by a certified laboratory. There are two types of compositing: (1) compositing of samples collected within the same system (intra-system compositing) and (2) compositing among different systems (inter-system compositing). Inter-system compositing is only allowed for systems serving 3,300 or fewer people. *First check with your State to determine whether compositing of source water samples is allowed.*

If the lead concentration in a composite sample is greater than or equal to the lead resampling trigger of 0.001 mg/L, or if the copper concentration is greater than or equal to the copper resampling trigger of 0.160 mg/L, then a follow-up sample for the contaminant which exceeded the trigger must be taken at each site and analyzed within 14 days of when the original sample was collected. If duplicates of or sufficient amounts are available from the original samples from each sampling point, these may be used instead of resampling.

You must take each repeat sample at each sampling point included in the composite unless conditions make sampling at another site more representative of each source or treatment plant.



*Compositing allows you to save on analytical costs. It does not reduce the number of samples that you must collect. Also remember to first check with your State to determine if compositing of samples is allowed.*

## **E. How Does the State Evaluate My Source Water Monitoring Results? (40 CFR 141.83(b)(4) & 141.88(a)(2))**

If the State sets MPLs for lead and copper, it will compare your source water results to these levels. If you exceed the lead or copper MPL, you can take a confirmation sample for the contaminant that exceeded its MPL within 14 days of collecting the original sample. This result of the contaminant for which the MPL was exceeded is averaged with the initial sample and compared against your MPL. Any sample value below the detection limit must be considered as zero. Any sample that is above the detection limit but below the practical quantitation level (PQL) of 0.005 mg/L for lead or 0.050 mg/L for copper must be considered as measured or as  $\frac{1}{2}$  the PQL.

If the average of the initial and confirmation results is still higher than the MPL, you are in violation of a treatment technique requirement. (Refer to Subsection IV.H for additional steps.) The State may require you to make changes to your source water treatment. If the State does not set these levels, it will review your results to determine if there are any significant fluctuations in your source water levels, indicating a possible need for source water treatment.

**F.Y.I.** 90<sup>th</sup> percentile levels are never calculated for source water samples.

## F. Can I Ever Discontinue Source Water Monitoring? (40 CFR 141.88(d)(2))

After the State has designated MPLs and/or determines that you are not required to install source water treatment, you *are not required to collect any source water samples* during any monitoring period in which your 90<sup>th</sup> percentile lead and copper levels of tap water samples are at or below their action levels for the entire source water monitoring period in effect. If your lead and copper tap and source water monitoring periods do not overlap, then source water monitoring is not required if your 90<sup>th</sup> percentile lead and copper levels from the last monitoring period were at or below their respective action levels. These points are illustrated in Examples 3 through 5 below.



### EXAMPLE 3: System on Nine-Year Source Water Schedule that Is Not Required to Monitor

- ★ A system qualifies for reduced source water monitoring for the nine-year compliance cycle of 2002 - 2010.
- ★ It conducts tap monitoring during the 2001 - 2003, 2004 - 2006, 2007 - 2009, and 2010 - 2012 compliance periods, and all 90<sup>th</sup> percentile values are below the action levels.
- ★ Therefore, source water monitoring is not required because all samples were below the action levels during the entire source water monitoring period in effect (i.e., the compliance cycle of 2002 - 2010).



### EXAMPLE 4: System on Nine-Year Source Water Schedule that Is Required to Monitor

- ★ A system qualifies for reduced source water monitoring for the 2002 - 2010 compliance cycle.
- ★ It conducts tap monitoring during 2002, 2005, 2008, and 2011 and has a copper action level exceedance in 2011.
- ★ It is not required to collect source water samples during the 2002 - 2010 compliance cycle because it did not exceed either action level during this time period.
- ★ However, it must collect source water monitoring during the 2011 - 2019 compliance cycle because it exceeded the copper action level in 2011.



### **EXAMPLE 5: System on Annual Source Water Schedule that Is Required to Monitor**

- ★ A surface water system is on an annual source water monitoring schedule, and a triennial lead and copper tap monitoring schedule.
- ★ It collects lead and copper tap samples during 2008 and exceeds the copper action level. It remains on triennial tap monitoring because it is in compliance with its OWQPs and does not exceed the lead action level.
- ★ It collects lead and copper tap samples in 2011 and is below both action levels.
- ★ It is required to collect source water samples in 2008, 2009, and 2010 due to the copper action level exceedance. Assume it collects these samples but exceeds the copper MPL in 2008 and thus, does not qualify for nine-year source water monitoring (i.e., does not have three consecutive years at or below both MPLs).
- ★ It is not required to collect an annual source water sample in 2011 because the lead and copper 90<sup>th</sup> percentile levels were below the action levels.



*If you are required to install source water treatment, you must complete the two consecutive six-month rounds of follow-up source water monitoring even if you no longer exceed the lead or copper action level in your tap water samples.*

## **G. What Source Water Monitoring Information Must I Report to the State? (40 CFR 141.90(b))**

You must provide the following information within 10 days of the end of the monitoring period (*based on your source water lead and copper sampling schedule of six months, one year, three years, or nine years*):


- All source water sample results; and
- With the exception of your first round of source water monitoring, the identification of any new sampling location(s) and an explanation for any changes in your sampling site(s).

## **H. What If I Do Not Fulfill My Source Water Monitoring And Reporting Requirements? (40 CFR 141.80(k) & 141.83(b)(5))**

If you do not meet all of the following monitoring and reporting requirements within the timeframe specified by the rule, you are in violation of at least one of these requirements:


- Use appropriate sampling procedures (40 CFR 141.88(a)(1) and (2));
- Collect the required number of source water samples (40 CFR 141.88(a)(1) - (e));
- Ensure samples are analyzed properly (40 CFR 141.89(a)); *or*
- Submit all required sampling information on time (40 CFR 141.90(b)).

You are also in violation if you exceed your State-designated or approved MPLs. If you are above either MPL, you can take a confirmation sample for the contaminant with the MPL exceedance within two weeks of the original sample, if allowed by the State. The results of the original and confirmation samples are averaged to determine whether you are in compliance with your MPLs (40 CFR 141.88(a)(2)).

 You must analyze both lead and copper source water samples even if you exceeded only one of the action levels in tap water monitoring. However, if you exceed the lead or copper MPL, you only need to collect a confirmation sample for the contaminant with the MPL exceedance.

If you are out of compliance with your monitoring, reporting, or MPLs, you must:

1. Report the violation to the State within 48 hours of determining the noncompliance (40 CFR 141.31(b)).
2. Deliver public notification to your customers (refer to 40 CFR 141.201 & 141.203 - 141.206 and additional information, available at <http://www.epa.gov/safewater/publicnotification/index.html>).
3. Include a discussion of the violation in your CCR if you are a CWS, (refer to 40 CFR 141.153 and additional information, available at <http://www.epa.gov/safewater/ccr/index.html>). *Note: This CCR requirement is unrelated to the new 40 CFR 141.154 provision that requires all CWSs to provide a short informational notice about lead in their CCR (also refer back to Subsection H in Section I for more information).*

 You cannot qualify for reduced source water monitoring unless the three compliance periods in which you meet the reduced monitoring criteria are consecutive. Thus, noncompliance with your monitoring requirements will impact how quickly you can qualify for reduced monitoring.

## I. What Provisions of the Short-Term Revisions Pertain to Source Water Monitoring and Reporting Requirements?

Exhibit IV-1 summarizes each of the Short-Term Revisions that impact your source water monitoring and replacement requirements.

Exhibit IV-1: Revisions to Source Water Requirements		
CFR Citation	New Requirements under the Short-Term Revisions	Previously Required under the 1991 Rule as Amended by LCRMR
§141.83(a)	Clarifies that initial source water monitoring results and a source water treatment recommendation are due to the State no later than 180 days after the end of the monitoring period during which the lead or copper action level was exceeded.	This information was due within six months after exceeding the lead or copper action level.

<b>Exhibit IV-1: Revisions to Source Water Requirements</b>		
<b>CFR Citation</b>	<b>New Requirements under the Short-Term Revisions</b>	<b>Previously Required under the 1991 Rule as Amended by LCRMR</b>
§141.88(b)	<p>Clarifies that initial source water monitoring must be conducted no later than 180 days after the end of the monitoring period during which the lead or copper action level was exceeded. <sup>1</sup></p> <p>Defines the end of the monitoring period for systems on reduced monitoring to be September 30 of the calendar year in which the sampling occurred or if applicable, the last day of the State-established alternate period.</p>	<p>Required this monitoring to be completed within six months after the exceedance.</p> <p>The end of the monitoring period was not defined.</p>
§141.88(d)(1)(i)	Retains the requirement for systems on a triennial source water monitoring schedule to monitor once during the three-year compliance cycle but clarifies that samples must be collected at least every three years.	Required samples to be collected once during the three-year compliance period.
§141.88(d)(1)(ii)	Clarifies that the first annual source water monitoring period for systems using surface water or a combined source(s) begins during the year in which the State sets MPLs or determined that source water treatment is not required.	Required this monitoring to begin on the date that the State set MPLs or determined that source water treatment was not needed.
§141.88(e)(1) & (e)(2)	Retains the requirement for systems on a nine-year source water monitoring schedule to monitor once during the compliance cycle but clarifies that samples must be collected at least every nine years.	Required samples to be collected once during the nine-year compliance cycle.
<p><sup>1</sup> It was EPA's intent to revise the rule language in 40 CFR 141.88(b) to be consistent with that in 40 CFR 141.83(a), which requires water systems to complete initial source water monitoring within 180 days (versus 6 months).</p>		

## J. What Key Points Should I Remember About Source Water Monitoring and Reporting? (40 CFR 141.83 & 141.88)



- ★ Source water lead and copper monitoring is not required if you do not exceed the lead or copper action level based on tap water monitoring or you are not trying to qualify as a (b)(3) system.
- ★ You must analyze for both lead and copper even if you exceeded only one of the action levels in lead or copper tap monitoring.
- ★ You must collect a set of samples at each entry point and provide a source water treatment recommendation (that can include no treatment needed) within 180 days after the monitoring period in which an action level was exceeded. No source water treatment study is required.
- ★ Source water samples are compared against your lead and copper MPLs. If you exceed an MPL, you may collect a confirmation sample for the contaminant with the MPL exceedance within 14 days and average it with the initial sample.
- ★ 90<sup>th</sup> percentile levels are not calculated for source water samples or compared against the action level.
- ★ If you are required to install source water treatment, you must complete follow-up source water monitoring regardless of whether your 90<sup>th</sup> percentile lead and copper tap monitoring results are at or below the lead and copper action levels.
- ★ If you are required to install source water treatment, the State will establish MPLs for both lead and copper even if you only exceeded one of the action levels in tap water monitoring.
- ★ Once the State sets MPLs or determines that source water treatment is not needed:
  - ground water systems must monitor every three years beginning with the SMF compliance period in effect when the State made the applicable decision.
  - surface water systems or ones using a combined source must monitor annually. The first year begins during the year in which the State made the applicable determination.
  - any water system is not required to collect any source water samples during any monitoring period in which its 90<sup>th</sup> percentile lead or copper levels of tap water samples are at or below their action levels for the entire source water monitoring period in effect.
- ★ You can collect source water samples once every nine years based on SMF compliance cycles, if for three *consecutive* compliance periods you do not exceed your MPLs (equals nine years for systems using ground water exclusively and three years for all other systems).
- ★ Your State may allow you to collect source water samples once every nine years if:
  - you continue to exceed the lead action level and are not required to install source water treatment, *but*
  - for three *consecutive* compliance periods your source water lead and copper levels do not exceed 0.005 mg/L and 0.65 mg/L, respectively.
- ★ Once you are on reduced source water monitoring, an exceedance of an action level in lead or copper tap monitoring or an exceedance of an MPL does not alter your monitoring schedule.



# SECTION V: LEAD SERVICE LINE MONITORING AND REPORTING REQUIREMENTS

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## A. What Is The Purpose of Collecting Lead Service Line Samples? (40 CFR 141.84(a) - (d)(1))

Lead service line replacement is intended as an additional step to reduce lead exposure when corrosion control treatment is unsuccessful. You must begin replacing lead service lines if you continue to exceed the lead action level after installing corrosion control treatment and/or source water treatment. In other words, if you install both corrosion control and source water treatments, you are not required to begin lead service line replacement unless you continue to exceed the lead action level after installing both treatments. The State can also require you to begin lead service line replacement if you are required to install corrosion control treatment and/or source water treatment and have not installed such treatment(s).

There are two reasons for collecting lead service line samples.

1. To determine if a lead service line must be replaced. You are not required to replace an individual lead service line if the lead concentration of all samples from the line is less than or equal to 0.015 mg/L. This line is considered “replaced through testing” and counts as a replaced line. You are required to replace a minimum of 7 percent of your lead service lines annually for as long as you continue to exceed the lead action level. *This “replaced through testing” monitoring is optional, but it may save you the expense of replacing a lead service line.*
2. To determine the impact of partial lead service line replacement on lead levels. Partial lead service line replacement occurs when you do not replace the entire line up to the building inlet (e.g., a water system does not replace the privately-owned portion due to legal restrictions or the owner’s declining to have his/her portion replaced). In this event, you must collect a sample that is representative of the water in the service line that you partially replaced and have the sample analyzed for lead within 72 hours after the partial lead service line replacement. *This monitoring is required.*



**See Exhibit V-2 for a summary of Revisions that impact lead service line replacement.**

## B. Which Systems Must Collect Lead Service Line Samples? (40 CFR 141.84(a) & (d)(1))

As stated above, testing to determine whether a line needs to be replaced is optional. However, the cost of a lead analysis is less expensive than the cost to replace a line.


If you replace a line, but do not replace the privately-owned portion of the line, then you must collect a sample that is representative of the water in the service line. This sample is *not* required if

you replace the *entire* lead service line, or if you only replace a gooseneck, pigtail, or other fittings and these are the only lead components in your service line.

## C. When Do I Collect Lead Service Line Samples? (40 CFR 141.84(b) & (e)(3))

The Revisions clarify that the first year of lead service line replacement begins *on the first day following the end of the monitoring period* in which you exceed the lead action level in tap samples collected after installing corrosion control or source water treatment, whichever is later, or as specified by the State.

You are required to replace at least 7 percent (*or more if required by the State*) of the initial number of lead service lines in your distribution system. The initial number of lead service lines is the number in place at the time the replacement program began. You must continue replacing the required percentage of lines each year until you no longer exceed the lead action level during *two consecutive monitoring periods* or have replaced all your lead service lines.



The Short-Term Revisions clarify when a monitoring period ends. For systems on reduced monitoring, it is September 30 of the calendar year in which the sampling occurs, or for systems on a State-specified alternate monitoring period, the last day of that period.

If you are trying to replace lead service lines through testing, you should collect your lead service line samples early enough in the 12-month replacement period to allow the time needed to physically replace a line should your test results be greater than 0.015 mg/L.

## D. How Do I Collect Lead Service Line Samples? (40 CFR 141.86(b)(3))

You can collect these samples using one of the following procedures. For each method, collect a 1-liter sample from the tap by filling the sample bottle to the 1-liter mark, then cap immediately.

- *Flushing a Specified Volume:* The sample should be collected from the building tap which is closest to the portion of the lead service line that was not replaced (i.e., the first tap in the building, most likely a kitchen or bathroom tap on the first floor). Flush the estimated volume of water between the service connection and the sample tap. You can estimate the volume of water by using Exhibit V-1, Pipe Volume Table. EPA recommends selecting the pipe diameter that is one size larger than the actual pipe size, since pipe material thickness can vary, affecting the interior diameter and the actual volume of water. You can also estimate the volume by measuring the length and diameter of piping from tap to connection and the length and diameter of the service connection itself into a graduated beaker or cylinder to ensure that you have collected the correct volume, and then close the tap.
- *Direct Service Line Samples:*
  - Sampling at a pre-existing tap: In communities where the meters are located outside the buildings (or unmetered areas) service line taps may already exist. Prior to collecting the sample, flush the estimated volume of the existing tap and the pipe that is directly connected to the service line (similar to the procedure described above under *Flushing a Specified Volume*). This will help ensure that the water collected for the sample resided in the service line.

- Sampling when no tap exists: If *no tap exists*, but the lead service line can be made accessible, a tap constructed of lead-free materials can be installed directly into the line for sample collection purposes. However, because installation of a tap directly into the lead service line could induce additional corrosion activity and is an expensive process as well, this option is not recommended when there are existing service line taps.
- *Temperature Variation*: This method is recommended if the temperatures of lead service line and interior piping are easily distinguishable (for example in a single-family home). A tap sample should be collected by gently opening the tap and running the water at a normal flow rate, keeping a hand/finger under the flowing water. When a change in water temperature is detected, a 1-liter sample should be collected by filling the sample bottle to the appropriate level and capping.

<b>Exhibit V-1: Pipe Volume Table (Volumes Listed in Liters)</b>						
<b>Pipe Length (Feet)</b>	<b>Pipe Diameter (Inches)</b>					
	<b>3/8</b>	<b>1/2</b>	<b>5/8</b>	<b>3/4</b>	<b>1</b>	<b>1-1/2</b>
2	0.06	0.09	0.14	0.19	0.32	0.50
3	0.09	0.14	0.21	0.29	0.49	0.74
4	0.11	0.18	0.27	0.38	0.65	0.99
5	0.14	0.23	0.34	0.48	0.81	1.24
6	0.17	0.27	0.41	0.57	0.97	1.48
7	0.20	0.32	0.48	0.67	1.14	1.73
8	0.23	0.36	0.55	0.76	1.30	1.98
9	0.26	0.41	0.62	0.86	1.46	2.22
10	0.28	0.45	0.69	0.95	1.62	2.47
11	0.31	0.50	0.75	1.05	1.78	2.72
12	0.34	0.55	0.82	1.14	1.95	2.96
13	0.37	0.59	0.89	1.24	2.11	3.21
14	0.40	0.64	0.96	1.33	2.26	3.46
15	0.43	0.68	1.03	1.43	2.43	3.71
16	0.46	0.73	1.10	1.52	2.60	3.95
17	0.49	0.78	1.16	1.62	2.76	4.20
18	0.51	0.82	1.23	1.71	2.92	4.45
19	0.54	0.86	1.30	1.81	3.08	4.70
20	0.57	0.91	1.37	1.90	3.24	4.94
25	0.71	1.14	1.71	2.38	4.06	6.18
30	0.86	1.36	2.06	2.85	4.87	7.41
35	1.00	1.59	2.40	3.33	5.68	8.65
40	1.14	1.82	2.74	3.80	6.49	9.88
60	1.43	2.27	3.43	4.76	8.11	12.36

**Notes:**  
1. Volumes can be added together for pipe lengths not listed.

Exhibit V-1: Pipe Volume Table (Volumes Listed in Liters)						
Pipe Length (Feet)	Pipe Diameter (Inches)					
	3/8	1/2	5/8	3/4	1	1-1/2
2. Liters can be converted to gallons by dividing by 3.785. 3. EPA recommends selecting the pipe diameter that is one size larger than the actual pipe size, since pipe material thickness can vary, affecting the interior diameter and the actual volume of water.						

## E. Can I Ever Discontinue Lead Service Line Monitoring? (40 CFR 141.84(f))

You can discontinue lead service line replacement and thus eliminate any need to conduct lead service line monitoring whenever your 90<sup>th</sup> percentile lead levels are at or below the lead action level for *two consecutive monitoring periods*.

## F. What Happens If I Have a Subsequent Lead Action Level Exceedance? (40 CFR 141.84(b)(2))

You must start lead service line replacement again if you subsequently exceed the lead action level during any monitoring period. In addition, the Short-Term Revisions require you to reconsider any lines previously determined to not require replacement (i.e., “replaced through testing”) if you exceed the action level again in the future and resume the lead service line replacement program. Specifically, you must update your inventory of lead service lines to include those that were classified as “replaced through testing.” You must divide the updated number of remaining lead service lines by the number of remaining years in your replacement program (the program is typically 15 years) to determine the number of lines that must be replaced per year (see example below). In the event that you have completed a 15-year replacement program (or completed replacement on an accelerated schedule), the State will determine a schedule for replacing or retesting lines that were previously considered replaced through testing.



### EXAMPLE: Reconsidering Lines “Replaced through Testing”

- ★ A PWS exceeded the lead action level in July – December 2005 after installing corrosion control treatment, and thus is triggered into lead service line replacement (LSLR).
- ★ It began with 60 lead service lines in its inventory and is on a 15-year replacement schedule.
- ★ During 2006 and 2007, 3 lines were physically replaced and 4 lines were replaced through testing (for a total of 7 lines over these two years).
- ★ During the monitoring period of Jan. – June and June – Dec. 2007, the system was below the lead action level and therefore, discontinued LSLR in January of 2008.
- ★ The PWS began annual monitoring in 2008.
- ★ In 2009, it exceeded the lead action level.
- ★ The PWS is triggered back into LSLR on Oct. 1, 2009 (i.e., the day after the end of the monitoring period in which the exceedance occurred).
- ★ The PWS has 57 lead service lines in its inventory to be considered (because it must include

the 4 previously considered replaced through testing).

- ★ Because the system finished 2 of its 15 years of its replacement program (during 2006 and 2007), it must replace 57 lines over the remaining 13 years or 4 to 5 lines per year.

*Note that any retested or newly tested lines that are at or below 0.015 mg/L are considered replaced.*



*It takes two consecutive monitoring periods to stop replacement, but only one monitoring period to be triggered back into lead service line replacement.*

## G. What Lead Service Line-Related Information Must I Report to the State? (40 CFR 141.90)(e))

### All Systems Subject to Lead Service Line Replacement

During the first year of lead service line replacement, you must:

- Submit a materials evaluation that identifies the initial number of lead service lines in your distribution system at the time your replacement program begins.
- Submit an overall schedule for annually replacing at least 7 percent each year of the initial number of lead service lines in your distribution system.
- Submit a letter stating for the previous year:
  - the number of lines scheduled to be replaced;
  - the number and location of lines actually replaced; and
  - if measured, the water lead concentration and location of each lead service line sampled, the sampling method, the date of sampling, and the date that the service line was partially replaced.
- Provide this information no later than 12 months *after the end of the monitoring period* in which you were first triggered into lead service line replacement. For example, a system that begins lead service line replacement on October 12, 2009, would be required to submit this information to the State by October 12, 2010.



*This letter is due every 12 months until you complete lead service line replacement or no longer exceed the lead action level during two consecutive rounds of tap monitoring.*



*If you are subsequently triggered back into lead service line replacement, you must reconsider any lines that were “replaced through testing” and provide the annual letter to the State. You do not need to resubmit your materials evaluation or overall lead service line replacement schedule.*

### Systems Conducting Partial Lead Service Line Replacement

The LCR requires you to replace the portion of the lead service line that you own. In those instances where you do not own the entire lead service line up to the building inlet, you must offer to replace the owner’s portion of the line at his/her expense unless your local or State law precludes this replacement. In addition, you are not required to replace the privately-owned portion of the line if the owner chooses not to pay the cost of replacing the privately-owned portion.


In those instances where you do not replace the privately-owned portion of the line (i.e., conduct

partial lead service line replacement), a temporary increase in lead levels may occur. Therefore, you must:

- Notify all residents served by the line you are replacing at least 45 days prior to partial replacement. The State can allow you to provide less advanced notice if the line is being replaced in conjunction with emergency repairs.
- Collect at your expense *one* representative service line sample for each replaced lead service line within 72 hours of removing the line.
- Report sample results to the building owner(s) and the resident(s) served by the partially replaced line within three business days of receiving these results. You must notify residents by mail or by other methods approved by the State. For multi-family dwellings you can post the notification in a conspicuous common-use area of the building.

***You also must provide the following information to the State.***

- The analytical results of lead service line samples collected in response to partial lead service line replacement:
  - the results are due within 10 days following the month in which you received these analytical results; and
  - the State can also eliminate the requirement to report these sample results.
- Any additional information as specified by the State, and in a time and manner prescribed by the State, to verify that all partial lead service line replacement activities have taken place.

 ***You are not subject to the partial lead service line requirements if you: 1) replace the entire length of the line up to the building inlet; or 2) only replace a gooseneck, pigtail, or other fittings and these are the only lead components in your service line.***

## **H. What If I Do Not Fulfill My Lead Service Line Replacement Requirements? (40 CFR 141.80(k))**

You are in violation if you fail to:

- Replace the required number of lead service lines by the annual deadline (i.e., at least 7 percent annually) (40 CFR 141.84(a) & (b)); *or*
- Report the required lead service line information on time that demonstrates that the replacement rate was met (40 CFR 141.90(e)).

You are also in violation if you do not meet the following partial lead service line replacement requirements (only applicable if you do not replace the entire lead service line) (40 CFR 141.84(d)):

- Provide notice and guidance to residents at least 45 days before lead service line replacement begins (unless the State allows a shorter notification period);
- Collect a tap sample within 72 hours of completing the partial lead service line replacement;
- Mail and/or post results of the analysis to the owner and residents within three business days of receipt of the results; *or*

- Report information that the State requires to assess whether you met your partial lead service line replacement monitoring and notification requirements.

If you are in violation for any of the above reasons you must:

1. Report the violation to the State within 48 hours of determining the noncompliance (40 CFR 141.31(b)).
2. Deliver public notification to your customers (refer to 40 CFR 141.201 & 141.203 - 141.206 and additional information, available at <http://www.epa.gov/safewater/publicnotification/index.html>).
3. Include a discussion of the violation in your CCR if you are a CWS, (refer to 40 CFR 141.153 and additional information, available at <http://www.epa.gov/safewater/ccr/index.html>). *Note: This CCR requirement is unrelated to the new 40 CFR 141.154 provision that requires all CWSs to provide a short informational notice about lead in their CCR (also refer back to Subsection H in Section I for more information).*

## I. What Provisions of the Short-Term Revisions Pertain to Lead Service Line Monitoring and Replacement?

Exhibit V-2 summarizes each of the revisions that impact your lead service line monitoring and replacement requirements. If you own or operate a water system on Tribal lands (other than the Navajo Nation), in Wyoming, or the District of Columbia, the Federal version of the LCR applies to you. Therefore, you were required to implement the following provisions beginning April 7, 2008. Water system owners or operators in other States should check with their Primacy Agencies to determine when these provisions will be in effect.

<b>Exhibit V-2: Revisions to Lead Service Requirements</b>		
<b>CFR Citation</b>	<b>New Requirements under the Short-Term Revisions</b>	<b>Previously Required under the 1991 Rule as Amended by LCRMR</b>
§141.84(b)(1)	Clarifies that the first year of lead service line replacement (LSLR) begins on the first day following <i>the end of the monitoring period in which</i> the action level was exceeded after installing the required treatment(s).	First year of LSLR began on the date the action level was exceeded after installing the required treatment(s).
§141.84(b)(2)	Requires water systems to update their inventory of lead service lines (LSLs) to include those that were classified as “replaced through testing.”  Requires water systems to divide the updated number of remaining LSLs by the number of remaining years in the replacement program to determine the number of lines that must be replaced per year.  Specifies that for systems that have completed a 15-year LSLR program, the State will determine a schedule for replacing or retesting lines that were previously	Systems were not required to retest lines that were considered “replaced through testing.”



**Exhibit V-2: Revisions to Lead Service Requirements**

<b>CFR Citation</b>	<b>New Requirements under the Short-Term Revisions</b>	<b>Previously Required under the 1991 Rule as Amended by LCRMR</b>
	considered replaced through testing.	
§141.90(e)(1)	<p>Clarifies that the material evaluation identifying the initial number of LSLs is due 12 months after end of monitoring period in which the system is triggered into LSLR.</p> <p>Clarifies that the initial number of LSLs to be submitted as part of the materials evaluation is the number present in the distribution system during the monitoring period that triggered the system into LSLR.</p>	<p>Information was due 12 months after the lead action level was exceeded.</p> <p>The definition of initial number of LSLs was not provided in this section of the rule; however, it was defined in 40 CFR 141.84(b).</p>
§141.90(e)(2)	Clarifies that documentation that demonstrates compliance with replacement requirements is due 12 months after the end of a monitoring period in which the action level is exceeded after initiating LSLR.	This information was due 12 months after action level was exceeded.

## J. What Key Points Should I Remember About Lead Service Line Monitoring and Reporting? (40 CFR 141.84 & 141.86(b)(3))



- ★ Lead service line replacement is not required unless:
  - You continue to exceed the lead action level in monitoring conducted after you install corrosion control treatment or source water monitoring (whichever occurs later); *or*
  - The State requires it because you have missed your deadline for installing treatment.
- ★ You are not required to replace an individual lead service line if the lead concentration of all samples from the line is less than or equal to 0.015 mg/L. This line is “replaced through testing” and counts as a replaced line.
- ★ If you are required to resume your lead service line replacement program, you must include lines that previously were considered replaced through testing back into your inventory. These lines can be retested to determine if they still meet the replaced through testing criteria.
- ★ If you conduct partial lead service line replacement, you must:
  - Provide notice and guidance to residents at least 45 days before the replacement begins (unless the State allows a shorter notification period);
  - Collect a tap sample that is representative of the water in the service line within 72 hours of the replacement and notify the individuals served by the line of the results within 3 days.
  - Report information as required by the State that demonstrates fulfillment of your monitoring and notification requirements.
- ★ There are three methods for collecting a lead service line sample: 1) Flushing a specified volume; 2) Sampling directly from the service line; and 3) Using temperature variation.
- ★ During the first year of lead service line replacement, you must submit to the State a materials evaluation that identifies your initial number of lead service lines, provide a schedule for replacing at least 7 percent of your lines each year, and submit a letter with information that demonstrates that you have met your replacement requirements.
- ★ You must provide this letter every 12 months until you have completed your lead service line replacement or qualify to discontinue lead service line replacement.
- ★ You can discontinue lead service line replacement and thus, any need to conduct lead service line monitoring or reporting, whenever your 90<sup>th</sup> percentile lead levels are at or below the lead action level for two consecutive monitoring periods.
- ★ You must recommence lead service line replacement if you subsequently exceed the lead action level during any monitoring period.



**For more information on partial lead service line replacement, refer to:** *Notification and Reporting Requirements for Partial Lead Service Line Replacement under the Lead and Copper Rule, April 2000, EPA 815-R-99-022.*

# **APPENDICES**

- Appendix A: List of LCR Outreach Materials for Water Systems
- Appendix B: Definitions
- Appendix C: Summary of Monitoring and Reporting Violation Definitions
- Appendix D: Worksheets and Instructions
- Appendix E: Lead Consumer Notice Certification Form  
(Suggested Format)

# APPENDIX A

## List of LCR Outreach Materials for Water Systems



Below is a comprehensive list of outreach materials that were developed to help you understand and implement the Lead and Copper Rule, as amended by the October 10, 2007, Short-Term Revisions. Each document can be downloaded at:

<http://www.epa.gov/safewater/lcrmr/compliancehelp.html>.

F.Y.I.

Guidance that predates the Short-Term Revisions may be superseded by the requirements of this revised rule.

### Regulatory Guidance Documents

- *How to Determine Compliance with Optimal Water Quality Parameters as Revised by the Lead and Copper Rule Minor Revisions*, February 2001, EPA 815-R-99-019.
- Appendix B: 2007 Short-Term Revisions Compared to the Lead and Copper Rule from the *Lead and Copper Rule 2007 Short-Term Revisions and Clarifications State Implementation Guidance*, June 2008, EPA 816-R-08-009.
- Appendix C: Lead and Copper Rule Fact Sheets from the *Lead and Copper Rule 2007 Short-Term Revisions and Clarifications Implementation Guidance*, June 2008, EPA 816-R-08-009.
- *Implementing the Lead Public Education Provision of the Lead and Copper Rule: A Guide for Community Water Systems*, June 2008, EPA 816-R-08-007.
- *Implementing the Lead Public Education Provision of the Lead and Copper Rule: A Guide for Non-Transient Non-Community Water Systems*, June 2008, EPA 816-R-08-008.
- *Monitoring Waivers under The Lead and Copper Rule Minor Revisions for Systems Serving 3,300 or Fewer People*, April 2000, EPA 815-R-99-021.
- *Notification and Reporting Requirements for Partial Lead Service Line Replacement under the Lead and Copper Rule*, April 2000, EPA 815-R-99-022.

### Technical Guidance Documents

- *Simultaneous Compliance Guidance Manual for the Long Term 2 and Stage 2 DBP Rules*, March 2007, EPA 815-R-07-017.
- *Final Revised Guidance Manual for Selecting Lead and Copper Control Strategies*, March 2003, EPA 816-R-03-001.
- M/DBP Simultaneous Compliance Manual (Chapter 4), August 1999, EPA-815-R-99-015.
- *Effect of pH, DIC, Orthophosphate and Sulfate on Drinking Water Cuprosolvency*, June 1995, EPA-600-R-95-085.

## APPENDIX A (Continued)

### **Fact Sheets**

- Lead and Copper Rule: A Quick Reference Guide, June 2008, EPA 816-F-08-018.
- Lead and Copper Rule: Public Education & Other Public Information Requirements for Community Water Systems, June 2008, EPA 816-F-08-019.
- Lead and Copper Rule: Public Education & Other Public Information Requirements for Non-Transient Non-Community Water Systems, June 2008, EPA 816-F-08-020.

### **Memoranda**

- Memorandum: Management of Aerators during Collection of Tap Samples to Comply with the Lead and Copper Rule, October 20, 2006.
- Memorandum: Lead and Copper Rule - Clarification of Requirements for Collecting Samples and Calculating Compliance November 23, 2004 Memorandum.\*
- Memorandum: Compliance Calculations Under the Lead and Copper Rule to Region 1 March 9, 2004.\*

*\*Note: The Short-Term Revisions supersede the guidance in these documents regarding the 90<sup>th</sup> percentile calculation when a system is allowed to collect fewer than five samples.*

### **Training**

Lead and Copper Rule: Short-Term Revisions and Clarifications, April 2008.

## APPENDIX B

### 40 CFR Definitions

Term	Definition
90 <sup>th</sup> Percentile	The highest concentration of lead or copper in tap water that is exceeded by 10 percent of the sites sampled during a monitoring period. For systems that are allowed by their States to collect fewer than five samples, this value is the highest lead or copper result. The 90 <sup>th</sup> percentile level is compared to the lead or copper action level (AL) to determine whether an AL has been exceeded.
Accelerated Reduced Lead and Copper Tap Monitoring	Allows water systems with very low levels of lead and copper in their tap water to be placed on a triennial monitor schedule after only two consecutive six-month monitoring periods. 90 <sup>th</sup> percentile lead and copper levels must be $\leq 0.005$ mg/L and $\leq 0.65$ mg/L, respectively.
Accelerated Reduced Water Quality Parameter (WQP) Monitoring	Allows water systems to proceed more quickly to a triennial WQP monitoring schedule. Systems must meet the requirement for accelerated reduced lead and copper levels and be in compliance with their optimal water quality parameter specifications for two consecutive monitoring periods (either six-month or annual periods).
Action Level (AL)	The concentration of lead or copper in tap water which determines whether a system may be required to install corrosion control treatment, collect WQP samples, collect lead and copper source water samples, replace lead service lines, and/or deliver public education about lead. The action level for lead is 0.015 mg/L (15 ppb). The action level for copper is 1.3 mg/L (1300 ppb).
Alternate Monitoring Period	A monitoring period designated by the State (other than June through September) in which water systems may conduct reduced lead and copper tap monitoring. This period cannot exceed four consecutive months in the same calendar year and must represent a time of normal operation where the highest lead levels are likely to occur. For example, a State may decide to designate an alternate monitoring period for seasonal systems that are closed during the summer months.
(b)(1) system	A small or medium system that is at or below both action levels during two consecutive six-month rounds of lead and copper tap monitoring, as allowed under 40 CFR 141.81(b)(1) of the regulation.
(b)(2) system	A system that is deemed to have optimized corrosion control after demonstrating that it has completed corrosion control treatment steps prior to December 7, 1992, which are equivalent to those described in 40 CFR 141.81(b)(2) of the regulation.
(b)(3) system	A system that is deemed to have optimized corrosion control by demonstrating that it has minimal levels of corrosion entering the distribution system based on lead and copper source and tap water samples in accordance with 40 CFR 141.81(b)(3) of the regulation.
Community Water System (CWS)	A public water system that services at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.
Compliance Period	For the purpose of lead and copper tap monitoring, the compliance period is a three-year calendar period for systems on triennial monitoring or a nine-year calendar period for systems on a monitoring waiver. EPA clarified the meaning of the compliance period in the Short-Term Revisions to emphasize that water systems on triennial monitoring must collect samples no less frequently than every three years; and those on monitoring waivers must sample no less frequently than every nine years. The compliance period is distinct from the monitoring period, which defines the specific period in which the samples must be collected (see <i>Monitoring Period</i> definition).
Corrosion Control Treatment	A treatment designed to reduce the dissolving of lead and/or copper in plumbing materials during water delivery to consumers.

Term	Definition
Cu	The chemical symbol for copper.
Daily values	The sample results of WQPs. They are calculated for each WQP at each sampling location. They are based on the sampling frequency for that WQP and sampling point.
Deemed to have optimized corrosion control	Systems that are delivering minimally corrosive water (i.e., (b)(1), (b)(2), or (b)(3) systems). These systems are subject to fewer monitoring and treatment technique requirements.
Entry Point	Refers to points of entry to the drinking water distribution system from which samples will be representative of each source after treatment.
Exceedance	Occurs when the 90 <sup>th</sup> percentile lead or copper sample is above its respective action level.
Excursion	Refers to a “daily value” for a WQP at a sampling location that is below the minimum optimal water quality parameter (OWQP) value or outside the range of values designated by the State.
First-Draw Sample	Refers to a 1-liter sample of tap water that has been standing motionless in plumbing pipes at least 6 hours and is collected without flushing the tap.
Follow-up Monitoring	Refers to the lead and copper tap water and WQP (tap and entry point) monitoring that occurs after corrosion control treatment is in place and before the State determines OWQP ranges or minimums. The samples are taken during the two consecutive six-month monitoring periods immediately following the installation of corrosion control treatment.
Full Waiver	A monitoring waiver that allows a small system to collect both lead and copper tap samples at a frequency of once every nine years at a reduced number of sites. To receive this waiver a system must meet the monitoring and materials criteria for both lead and copper.
GWUDI	An acronym for systems, which have been determined to be served by ground water under the direct influence of surface water.
Initial Tap Monitoring	For systems serving 50,000 or fewer people, refers to the first set(s) of lead and copper tap water samples that are taken at six-month intervals until which point the system either exceeds the action level, or is at or below both action levels for two consecutive, six-month monitoring periods. For systems serving more than 50,000 people, refers to tap samples collected during the first two consecutive, six-month periods of monitoring.
Large Water System	A water system that serves more than 50,000 people.
LCR	An acronym for the Lead and Copper Rule, which were originally published on June 7, 1991. Also referred to in this document as the 1991 Rule.
LCRMR	The acronym for the Lead and Copper Rule Minor Revisions, which were promulgated on January 12, 2000.
Lead Service Line (LSL)	A service line made of lead which connects the water main to the building inlet and any lead pigtail, gooseneck or other fitting which is connected to such lead line.
Long-term Treatment Change	The Short-Term Revisions require water systems to receive State approval prior to implementing treatment changes that are <i>long-term</i> in nature. Examples include changing the type of secondary disinfectants, coagulants, or corrosion inhibitor products. Other long-term treatment changes may involve processes or combinations of processes that can greatly affect the pH, oxidation-reduction potential, alkalinity, or the major composition of the ionic background of the water.



Term	Definition
Materials Survey	Refers to a system's initial evaluation of materials that are contained in its pipes and distribution system in order to identify sites with a high risk of lead and copper occurrence.
Maximum Contaminant Level Goal (MCLG)	The level of a contaminant in drinking water below which there is no known or expected risk to health.
Maximum Permissible Levels (MPLs)	The highest allowable lead and copper concentrations after treatment for source water that is entering a water system's distribution system. These levels are determined by the State after it has reviewed source water samples from before and after a system has installed source water treatment, and are set to reflect lead and copper levels from a properly operated and maintained treatment system.
Medium Water System	A water system that serves 3,301 to 50,000 people.
Method Detection Limit (MDL)	The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.
Monitoring Period	Under the Short-Term Revisions, this is the specific period in which water systems must conduct their required monitoring. For systems on standard lead and copper tap monitoring, the monitoring periods are the six-month periods of January through June or July through December. For systems on a reduced monitoring schedule (e.g., annual, triennial, or nine years), this period is the four-month period of June through September of the same calendar year, or the alternate monitoring period designated by the State.
Monitoring Waiver	This waiver allows a small system (those serving 3,300 or fewer people) to collect lead and copper tap samples at a frequency of once every nine years at a reduced number of sites. To receive this waiver a system must meet the monitoring and materials criteria for lead and copper.
Non-transient, Non-Community Water System (NTNCWSs)	A public water system that is not a community water system and regularly serves at least 25 of the same persons during a minimum of 6 months of each year.
Optimal Corrosion Control Treatment (OCCT)	The corrosion control treatment that minimizes the lead and copper concentrations at users' taps while ensuring that the treatment does not cause the water system to violate any national primary drinking water regulations.
Optimal Water Quality Parameters (OWQPs)	Specific ranges or minimums that are determined by the State for each relevant WQP. OWQPs represent the conditions under which systems must operate their corrosion control treatment to most effectively minimize the lead and copper concentrations at their users' taps.
Partial Waiver	This type of waiver may be granted if a small system meets the materials and monitoring criteria for either lead or copper, but not both. It allows the system to monitor once every nine years at a reduced number of sites for the contaminant for which it receives the waiver. The State may elect not to grant partial waivers.
Pb	The chemical symbol for lead.
Practical Quantitation Level (PQL)	The lowest concentration of an analyte that can be reliably measured within specified limits of precision and accuracy during routine laboratory operating conditions. For lead, the PQL equals 0.005 mg/L; for copper it equals 0.050 mg/L.

Term	Definition
Pre-existing Waiver	A waiver that was granted by the State prior to April 11, 2000, the effective date of the LCRM. The LCRM required systems that were not required to conduct lead and copper monitoring as a condition of their “pre-existing waiver” to collect at least one set of lead and copper samples at the tap at the standard number of sites by September 30, 2000.
Public Water System (PWS)	A system that provides piped water for human consumption, which has at least 15 service connections or regularly serves an average of at least 25 individuals daily for at least 60 days of the year. It includes: 1) the collection, treatment, storage, and distribution facilities operated and used by the system, and 2) any collection or pretreatment storage facilities not under the control of the system, but which it primarily uses.
Reduced Monitoring	Refers to the sampling frequency and number of monitoring sites from which a system must collect lead and copper tap samples or WQP distribution samples after it has met the criteria that is specified under 40 CFR 141.86(d)(4) or 40 CFR 141.97(e), respectively. After meeting any one of these criteria, systems are allowed to sample from a reduced number of monitoring sites and/or at a reduced frequency.
Replaced Through Testing	Refers to a lead service line that meets the requirements of 40 CFR 141.84(c). Under this provision, a water system may count a line as being replaced if all samples from the line are less than or equal to 0.015 mg/L. Note that the Short-Term Revisions require water systems to reconsider any lines that meet this requirement any time they must resume lead service line replacement.
Representative Site	A sampling site that is connected to plumbing materials which are similar to materials used at other sites in the water system.
Sampling Site	As clarified by the Short-Term Revisions, refers to taps that can be used for human consumption (e.g., kitchen or bathroom tap). Lead and copper tap samples must be collected at these locations.
Short-Term Revisions	Lead and Copper Rule Short-Term Regulatory Revisions and Clarifications, promulgated by EPA on October 10, 2007.
Service Line Sample	A 1-liter sample of water, collected in accordance with 40 CFR 141.86(b)(3), that has been standing for at least 6 hours in a lead service line.
Single Family Residences (SFRs)	Single family residence structures which can include for purposes of identifying targeted sampling locations: (1) Non-Residential structures; and (2) Multi-Family Residences (MFRs) if they constitute more than 20 percent of the service connections within the system’s service area.
Single Family Structure	A building constructed as a single-family residence that is currently used as either a residence or a place of business.
Small Water System	A water system that serves 25 to 3,300 people.
Solder	A metallic compound used to seal joints in plumbing. Until the lead ban took effect, most solder contained about 50 percent lead.
Source Water Sample	A sample collected at entry point(s) to the distribution system representative of each source of supply after treatment.
Source Water Treatment	Treatment designed to remove lead and/or copper from the source of the water supply.

Term	Definition
Special-Case CWS	A facility, such as a prison or a hospital, where the population served is not capable of or is prevented from making improvements to plumbing or installing point of use treatment devices; and the water system supplies water as part of the cost of services provided and does not separately charge for water consumption. For certain monitoring and public education requirements, these systems may be treated like a NTNCWS.
Standard Monitoring	Refers to the monitoring frequency and number of monitoring sites from which a system must collect samples before a system has qualified to go to a reduced monitoring schedule. Standard monitoring is conducted at six-month intervals.
Tier 1 Site	For a CWS, it is a single family structure that contains lead pipes, or copper pipes with lead solder installed after 1982, and/or is served by lead service lines. For a NTNCWS, it is a building that contains copper pipes with lead solder installed after 1982, and/or is served by lead service lines.
Tier 2 Site	For a CWS, it is a building and multiple-family residence that contains lead pipes, or copper pipes with lead solder installed after 1982, and/or is served by lead service lines. For a NTNCWS, it is a building that contains copper pipes with lead solder installed before 1983.
Tier 3 Site	Applies only to a CWS, and is a single family structures that contain copper pipes with lead solder installed before 1983.
Water Distribution System	Refers to the piping, devices, and related fittings that are used to carry a system's drinking water to its users. It includes the treatment plant, distribution system, water meter, water meter setting equipment, piping and plumbing that conveys drinking water, and individual fixtures.
Water Quality Parameters (WQPs)	Used to help systems and States determine what levels of corrosion control treatment work best for the system and whether this treatment is being properly operated and maintained over time. WQPs include: pH, temperature, conductivity, alkalinity, calcium, orthophosphate, and silica.

# APPENDIX C

## Summary of Monitoring and Reporting Violation Definitions

### All citations from the Code of Federal Regulations

*Monitoring and Reporting (M/R) violations fall into five major categories as described below.*

#### 1. Lead Consumer Notice **NEW**

You are in violation if you do not meet all of the following provisions for the consumer notice of lead tap results:

- Provide notice of lead results to individual served by taps used for lead and copper tap monitoring in accordance with 40 CFR 141.85(d)(1);
- Meet the timing requirements for providing the notice in accordance with 40 CFR 141.85(d)(2);
- Meet the content requirements in 40 CFR 141.85(d)(3);
- Meet the delivery requirements in 40 CFR 141.85(d)(4); or
- Meet the reporting requirements in 40 CFR 141.90(f)(3) that require a sample notification and certification be sent to the State within 3 month after the monitoring period end.

#### 2. Lead and Copper at Customers' Taps

You are in violation if you do not meet all of the following monitoring and reporting requirements within the time frame specified by the rule:

- Use appropriate sampling procedures in accordance with 40 CFR 141.86(a) and (b);
- Collect the required number of samples during the specified time frame in accordance with 40 CFR 141.86(c) and (d);
- Ensure samples are analyzed properly in accordance with 40 CFR 141.89(a);
- Submit all required monitoring information on time in accordance with 40 CFR 141.90(a); **or**
- Report a change in *long-term* treatment or addition of a new source within the time frame specified by the State or as soon as possible, or to receive prior State approval before implementing the change or addition, as required by 40 CFR 141.90(a)(3). Applies only to systems on reduced lead and copper tap monitoring including (b)(3) systems and those on a monitoring waiver.

Depending on whether the State adopted the following provisions that were introduced under the 2000 LCRMR, you may also be in violation if you do not meet the following requirements within the timeframe specified by the rule:

- Meet replacement sample requirements for invalidated samples as described in 40 CFR 141.86(f)(4) where these samples are needed to meet minimum sampling requirements;
- Meet the conditions of your monitoring waivers in 40 CFR 141.86(g) or provide the required information in 40 CFR 141.90(a)(4)(ii)-(iv);
- Provide sample information needed for your State to perform the 90<sup>th</sup> percentile calculation as outlined in 40 CFR 141.90(h);
- Collect non-first draw samples that did not meet the criteria in 40 CFR 141.86(b)(5); **or**
- Meet the monitoring deadline for transitioning to an alternate period (i.e., months other than June through September) for collecting reduced lead and copper tap samples, as specified in 40 CFR 141.86(d)(4)(iv)(B).

### 3. Water Quality Parameters

You are in violation if you do not meet all of the following monitoring and reporting requirements within the time frame specified by the rule:

- Use appropriate sampling procedures in accordance with 40 CFR 141.87(a)(1) and (b)-(e);
- Collect the required number and type of samples in accordance with 40 CFR 141.87(a)(2) or (e);
- Ensure samples are analyzed properly in accordance with 40 CFR 141.89(a);
- Submit all required monitoring information on time in accordance with 40 CFR 141.90(a)(vi)-(viii);
- Meet the State-approved sampling plan for collecting WQPs at representative entry point locations in accordance with 40 CFR 141.87(a)(1)(ii) and (c)(3) (*this criterion would only apply if you are a ground water system and your State's regulation allows you to limit entry point WQP monitoring to representative sites.*)

### 4. Lead and Copper in Source Water

You are in violation if you do not meet all of the following monitoring and reporting requirements within the time frame specified by the rule:

- Use appropriate sampling procedures (see 40 CFR 141.88(a)(1) and (2));
- Collect the required number of source water samples (see 40 CFR 141.88(a)(1) - (e)(3));
- Ensure samples are analyzed properly (see 40 CFR 141.89(a)); **or**
- Submit all required sampling information on time (see 40 CFR 141.90(b)).

### 5. Lead Service Lines

You are in violation if you do not all of the following monitoring and reporting requirements within the time frame specified by the rule:

- Replace the required number of lead service lines by the annual deadline (i.e., at least 7% annually) (see 40 CFR 141.84(a) & (b)); **or**
- Report the required lead service line information on time that demonstrates that you replaced the required number of lead service lines by the annual deadline (see 40 CFR 141.90(e)).

You are also in violation if you do not meet the following partial lead service line replacement requirements (*only applicable if you do not replace the entire lead service line*) (see 40 CFR 141.84(d)):

- Provide notice and guidance to residents at least 45 days before lead service line replacement begins (unless the State allows a shorter notification period);
- Collect a tap sample within 72 hours of completing the partial lead service line replacement;
- Mail and/or post results of the analysis to the owner and residents within three days of receipt of the results; **or**
- Report information that the State requires to assess whether you met your partial lead service line replacement monitoring and notification requirements.

*Note: This table does not include those violations that pertain to your treatment technique requirements.*

## **APPENDIX D**

### **Worksheet and Instructions**

#### **Worksheet 1: Materials Survey Investigation Results**

This worksheet can be used to record information about sampling sites based on your materials investigation (e.g., presence of lead service lines (LSLs), contact information).

#### **Worksheet 2: Materials Survey Results by Number of Service Connections for each Plumbing Materials Type**

This worksheet allows you to record the number of service connections by type of structure (e.g., single or multi-family residence, or public/commercial buildings) and the type of interior and distribution system plumbing materials (e.g., copper pipe with lead solder, LSL).

#### **Worksheet 3: Summary of Material Survey Results**

This worksheet allows you to tally the number of service connections by type of structure and type of plumbing material.

#### **Amended Suggested Directions for Homeowner Tap Sample Collection Procedures**

This page provides suggested language that you can use when instructing homeowners on the proper procedure for collecting lead and copper tap samples. These directions (step 3) were amended on September 2006 to instruct homeowners to not remove an aerator prior to sampling.

#### **Form 141-A: Sample Site Identification and Certification**

This form is used to identify the number of sites that meet the tiering criteria; a certification that each sample was collected using proper sampling procedures; your 90<sup>th</sup> percentile calculations and the number of samples upon which these levels are based; the number of WQPs sample collected vs. the number of required samples; and an explanation of any changes in sampling locations.

#### **Amended Form 141-A: Sample Site Identification and Certification**

This version of Form 141-A deletes those certifications which are no longer required under the 2000 LCRMR. However, you should first check with your State before using this form.

#### **Form 141-B: Request for Reduced Lead and Copper Tap Monitoring**

This form can be used to request permission from the State to collect lead and copper tap samples at a reduced number and frequency based on your continued compliance with your OWQPs. The 2000 LCRMR no longer requires you to submit a formal request for reduced monitoring; however, first check with your State to determine if this requirement still applies.

#### **Form 141-C: Optimal Corrosion Control Treatment Recommendation**

This two-page form has several applications. It can be used to: 1) document the results of monitoring used to evaluate various corrosion control treatment (CCT) options and to provide your study recommendation, 2) certify that you have properly installed CCT, or 3) request a modification to your State's decision regarding CCT and/or OWQPs.

#### **Form 141-D: Source Water Monitoring and Treatment**

This form is similar to Form 141-C. It can be used to: 1) document your initial source water monitoring and source water treatment (SOWT) recommendation; 2) certify that you have properly installed SOWT; or 3) request a modification to the State's decision regarding SOWT or MPLs.





**WORKSHEET #2**

**MATERIALS SURVEY RESULTS BY NUMBER OF SERVICE CONNECTIONS  
FOR EACH PLUMBING MATERIALS TYPE *(Suggested Format)***

**PWS ID NUMBER**

**POPULATION SERVED BY PWS**

Type of Structure	Type of Plumbing Material				
	Interior Plumbing			Distribution System Piping	
	Lead Pipe	Copper with Lead Solder > 1982 <sup>4</sup>	Copper with Lead Solder < 1983 <sup>5</sup>	LSLs	
				Entire Line	Partial Line
	Number of Service Connections			Number of Service Connections	
SFRs <sup>1</sup>					
MFRs <sup>2</sup>					
BLDGs <sup>3</sup>					
TOTAL					

<sup>1</sup> SFR - single family residence

<sup>2</sup> MFR - multi-family residence

<sup>3</sup> BLDG - public or commercial buildings

<sup>4</sup> Refers to buildings that contain copper pipes with lead solder installed after 1982.

<sup>5</sup> Refers to buildings that contain copper pipes with lead solder installed before 1983.

**WORKSHEET #3**  
**SUMMARY OF MATERIALS SURVEY RESULTS** *(Suggested Format)*

**PWS ID NUMBER**

**POPULATION SERVED BY PWS**

Plumbing Material	Type of Structure		
	SFR <sup>1</sup>	MFR <sup>2</sup>	BLDG <sup>3</sup>
	Number of Service Connections		
Interior Plumbing			
Lead Pipe			
Copper Pipe With Lead Solder >1982 <sup>4</sup>			
Copper Pipe With Lead Solder <1983 <sup>5</sup>			
Lead Service Lines			
Entire Line			
Partial Line			
<b>Total Available Sites</b>			

<sup>1</sup> SFR - single family residence

<sup>2</sup> MFR - multi-family residence

<sup>3</sup> BLDG - public or commercial buildings

<sup>4</sup> Refers to buildings that contain copper pipes with lead solder installed after 1982.

<sup>5</sup> Refers to buildings that contain copper pipes with lead solder installed before 1983.

## Suggested Directions for Homeowner Tap Sample Collection Procedures (Revised 9/2006)

These samples are being collected to determine the lead and copper levels in your tap water. This sampling effort is required by the U.S. Environmental Protection Agency and your State, and is being accomplished through the cooperation of homeowners and residents.

Collect samples from a tap that has not been used for a minimum of 6 hours. Because of this requirement, the best time to collect samples is either early in the morning or in the evening upon returning from work. Be sure to use taps that have been in general use by your household for the past few months. The collection procedure is described in more detail below.

1. Prior arrangements will be made with the customer to coordinate the sample collection event. Dates will be set for sample kit delivery and pick-up by water department staff.
2. There must be a minimum of 6 hours during which there is no water used from the tap the sample is taken from and any taps adjacent or close to that tap. The water department recommends that either early mornings or evenings upon returning home are the best sampling times to ensure that the necessary stagnant water conditions exist.
3. A kitchen or bathroom cold-water faucet is to be used for sampling. If you have water softeners on your kitchen taps, collect your sample from the bathroom tap that is not attached to a water softener, if possible. **Do not remove the aerator prior to sampling.** Place the opened sample bottle below the faucet and gently open the cold water tap. Fill the sample bottle to the line marked "1000-mL" and turn off the water.
4. Tightly cap the sample bottle and place in the sample kit provided. Please review the sample kit label at this time to ensure that all information contained on the label is correct.
5. ***IF ANY PLUMBING REPAIRS OR REPLACEMENT HAS BEEN DONE IN THE HOME SINCE THE PREVIOUS SAMPLING EVENT, NOTE THIS INFORMATION ON THE LABEL AS PROVIDED. ALSO IF YOUR SAMPLE WAS COLLECTED FROM A TAP WITH A WATER SOFTENER, NOTE THIS AS WELL.***
6. Place the sample kit outside of the residence in the location of the kit's delivery so that department staff may pick up the sample kit.
7. Results from this monitoring effort will be provided to participating customers when reports are generated for the State. However, if excessive lead and/or copper levels are found, immediate notification will be provided (usually 10 working days from the time of sample collection).

Call \_\_\_\_\_ at \_\_\_\_\_ if you have any questions regarding these instructions.

TO BE COMPLETED BY RESIDENT		
Water was last used:	Time _____	Date _____
Sample was collected:	Time _____	Date _____
I have read the above directions and have taken a tap sample in accordance with these directions.		
_____	_____	_____
Signature		Date

**SAMPLE SITE IDENTIFICATION AND CERTIFICATION**

System's Name: \_\_\_\_\_ System Type:  CWS  NTNCWS

Address: \_\_\_\_\_ Number of People Served:  
 \_\_\_\_\_  >100,000  501 to 3,300  
 \_\_\_\_\_  10,001 to 100,000  101 to 500  
 \_\_\_\_\_  3,301 to 10,000  ≤ 100

System ID #: \_\_\_\_\_

Contact Person: \_\_\_\_\_ Telephone number: \_\_\_\_\_

**CERTIFICATION OF SAMPLING SITES**

**LEAD SOLDER SITES**

# of single-family structures with copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier 1) \_\_\_\_\_

# of multi-family structures with copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier 1) \_\_\_\_\_

# of buildings containing copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier 2) \_\_\_\_\_

# of sites that contain copper pipes with lead solder installed before 1983 (Tier 3) \_\_\_\_\_

# of sites that do not meet Tier 1, 2, or 3 criteria (*to be used only if other conditions have been exhausted*) \_\_\_\_\_

**TOTAL** \_\_\_\_\_

**The following sources have been explored to determine the number of structures which have interior lead pipe or copper pipe with lead solder.**

- \_\_\_\_\_ Plumbing and/or building codes
- \_\_\_\_\_ Plumbing and/or building permits
- \_\_\_\_\_ Contacts within the building department, municipal clerk's office, or State regulatory agencies for historical documentation of the service area development
- \_\_\_\_\_ Water Quality Data

**Other Resources Which PWS May Utilize**

- \_\_\_\_\_ Interviews with building inspectors
- \_\_\_\_\_ Survey of service area plumbers about when and where lead solder was used from 1982 to present
- \_\_\_\_\_ Survey residents in sections of the service area where lead pipe and/or copper pipe with lead solder is suspected to exist
- \_\_\_\_\_ Interviews with local contractors and developers

**Explanation of Tier 2 and Tier 3 sites** (attach additional pages if necessary) \_\_\_\_\_

\_\_\_\_\_

**SAMPLE SITE IDENTIFICATION AND CERTIFICATION**

**CERTIFICATION OF SAMPLING SITES**

**LEAD SERVICE LINE SITES**

# of samples required to be drawn from lead service line sites \_\_\_\_\_  
# of samples actually drawn from lead service line sites \_\_\_\_\_  
Difference (explain differences other than zero) \_\_\_\_\_

The following sources have been explored to determine the number of lead service lines in the distribution system.

- \_\_\_\_\_ Distribution system maps and record drawings
- \_\_\_\_\_ Information collected for the presence of lead and copper as required under the Code of Federal Regulations (CFR), 40 CFR 141.42.
- \_\_\_\_\_ Capital improvement plans and/or master plans for distribution system development
- \_\_\_\_\_ Current and historical standard operating procedures and/or operation and maintenance (O&M) manuals for the type of materials used for service connections
- \_\_\_\_\_ Utility records including meter installation records, customer complaint investigations and all historical documentation which indicate and/or confirm the location of lead service connections
- \_\_\_\_\_ Existing water quality data for indications of “troubled areas”

**Other Sources Which PWS Utilized**

- \_\_\_\_\_ Interviews with senior personnel
- \_\_\_\_\_ Conduct service line sampling where lead service lines are suspected to exist but their presence is not confirmed
- \_\_\_\_\_ Review of permit files
- \_\_\_\_\_ Community survey
- \_\_\_\_\_ Review of USGS maps and records
- \_\_\_\_\_ Interviews with pipe suppliers, contractors, and/or developers

**Explanation of fewer than 50% LSL sites identified** (attach additional pages if necessary): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**CERTIFICATION OF COLLECTION METHODS**

I certify that:

- Each first draw tap sample for lead and copper is 1 liter in volume and has stood motionless in the plumbing system of each sampling site for at least 6 hours.
- Each first draw sample collected from a single-family residence has been collected from the cold water kitchen tap or bathroom sink tap.
- Each first draw sample collected from a non-residential building has been collected at an interior tap from which water is typically drawn for consumption.
- Each first-draw sample collected during an annual or triennial monitoring period has been collected in the months of June, July, August, or September or in the alternate period specified by the State.
- Each resident who volunteered to collect tap water samples from his or her home has been properly instructed by [insert water system’s name] \_\_\_\_\_ in the proper methods for collecting lead and copper samples. I do not challenge the accuracy of those sampling results. Enclosed is a copy of the material distributed to residents explaining the proper collection methods, and a list of the residents who performed sampling.

**SAMPLE SITE IDENTIFICATION AND CERTIFICATION**

**RESULTS OF MONITORING**

**THE RESULTS OF LEAD AND COPPER TAP WATER SAMPLES MUST BE ATTACHED TO THIS DOCUMENT**

# of samples required \_\_\_\_\_ # of samples submitted \_\_\_\_\_  
 90th Percentile Pb \_\_\_\_\_ 90th Percentile Cu \_\_\_\_\_

*Note: If the State has informed you that it will calculate your 90<sup>th</sup> percentile levels, you do not need to submit the 90<sup>th</sup> percentile calculations. However, you must still provide your sample results to the State by the deadline that they have specified.*

**THE RESULTS OF WATER QUALITY PARAMETER SAMPLES MUST BE ATTACHED TO THIS DOCUMENT**

# of WQP tap samples required \_\_\_\_\_ # of WQP tap samples submitted \_\_\_\_\_  
 # of entry point samples required \_\_\_\_\_ # of entry point samples submitted \_\_\_\_\_

**CHANGE IN SAMPLING SITES**

Original site address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

New site address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Distance between sites (approximately): \_\_\_\_\_

Targeting Criteria: NEW: \_\_\_\_\_ OLD: \_\_\_\_\_

Reason for change (attach additional pages if necessary) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**SIGNATURE**

**PRINTED NAME**

**TITLE**

**DATE**

**Note:** The 2000 LCRMR no longer requires you to complete the certification of sampling sites, or certification of collection methods. A modified version of Form 141-A is provided below. This revised form deletes those certifications that are no longer required under the 2000 LCRMR. Please check with your State before using the revised Form 141-A.

**SAMPLE SITE IDENTIFICATION**

System's Name: \_\_\_\_\_ System Type:  CWS  NTNCWS

Address: \_\_\_\_\_ Number of People Served:  
 \_\_\_\_\_  >100,000  501 to 3,300  
 \_\_\_\_\_  10,001 to 100,000  101 to 500  
 \_\_\_\_\_  3,301 to 10,000  ≤ 100

System ID #: \_\_\_\_\_

Contact Person: \_\_\_\_\_ Telephone number: \_\_\_\_\_

**RESULTS OF MONITORING**

**THE RESULTS OF LEAD AND COPPER TAP WATER SAMPLES MUST BE ATTACHED TO THIS DOCUMENT**

# of samples required \_\_\_\_\_ # of samples submitted \_\_\_\_\_  
 90th Percentile Pb \_\_\_\_\_ 90th Percentile Cu \_\_\_\_\_

*Note: If the State has informed you that it will calculate your 90<sup>th</sup> percentile levels, you do not need to submit the 90<sup>th</sup> percentile calculations. However, you must still provide your sample results to the State by the deadline that they have specified.*

**THE RESULTS OF WATER QUALITY PARAMETER SAMPLES MUST BE ATTACHED TO THIS DOCUMENT**

# of WQP tap samples required \_\_\_\_\_ # of WQP tap samples submitted \_\_\_\_\_  
 # of entry point samples required \_\_\_\_\_ # of entry point samples submitted \_\_\_\_\_



**SAMPLE SITE IDENTIFICATION**

**CHANGE IN SAMPLING SITES**

Original site address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

New site address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Distance between sites (approximately): \_\_\_\_\_

Targeting Criteria: NEW: \_\_\_\_\_ OLD: \_\_\_\_\_

Reason for change (attach additional pages if necessary) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**PRINTED NAME**

\_\_\_\_\_  
**TITLE**

\_\_\_\_\_  
**DATE**

**Note:** The 2000 LCRMR no longer require a system, which is in compliance with its OWQPs, to submit a written request to its State to allow it to collect lead and copper tap samples at a reduced number and frequency. Therefore, this or a similar form may no longer be required by your State. **Please note** that this form **cannot** be used to request a monitoring waiver. Monitoring waiver forms are provided in the guidance document, *Monitoring Waivers under the Lead and Copper Rule Minor Revisions for Systems Serving 3,300 or Fewer People*, April 2000, EPA 815-R-99-021.

**Form 141-B Page 1 of 1 (Suggested Format)**

**REQUEST FOR REDUCED LEAD AND COPPER TAP WATER**

**System's Name:** \_\_\_\_\_ **System Type:**  CWS  NTNCWS

**Address:** \_\_\_\_\_ **Number of People Served:** \_\_\_\_\_

\_\_\_\_\_  >100,000  501 to 3,300  
 \_\_\_\_\_  10,001 to 100,000  101 to 500  
 \_\_\_\_\_  3,301 to 10,000  ≤ 100

**System ID #:** \_\_\_\_\_

**Contact Person:** \_\_\_\_\_ **Telephone number:** \_\_\_\_\_

The \_\_\_\_\_ water system has-operated in accordance with the State-specified water quality parameters during each of the following monitoring periods. The above named water system hereby requests that the State permit the system to reduce lead and copper tap water monitoring from:

- |  |                                    |
|--|------------------------------------|
| <input type="checkbox"/> Biannual to Annual  | <input type="checkbox"/> 100 to 50 |
| <i>or</i>                                    | <input type="checkbox"/> 60 to 30  |
| <input type="checkbox"/> Annual to Triennial | <input type="checkbox"/> 40 to 20  |
|  | <input type="checkbox"/> 20 to 10  |
|  | <input type="checkbox"/> 10 to 5   |

The results of all water quality parameter samples and lead and copper tap water samples collected during each of the monitoring periods are summarized and attached.

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**PRINTED NAME**

\_\_\_\_\_  
**TITLE**

\_\_\_\_\_  
**DATE**

**OPTIMAL CORROSION CONTROL TREATMENT RECOMMENDATION**

System's Name: \_\_\_\_\_

System Type:  CWS  NTNCWS

Address: \_\_\_\_\_

Number of People Served:

\_\_\_\_\_

>100,000  501 to 3,300

\_\_\_\_\_

10,001 to 100,000  101 to 500

System ID #: \_\_\_\_\_

3,301 to 10,000  ≤ 100

Contact Person: \_\_\_\_\_

Telephone number: \_\_\_\_\_

**RESULTS OF MONITORING**

*The Results of Source Water, Tap Water, and WQP Samples Must Be Attached to This Document*

# of tap water samples required \_\_\_\_\_ # of tap water samples submitted \_\_\_\_\_

# of source water samples required \_\_\_\_\_ # of source water samples submitted \_\_\_\_\_

**RESULTS OF OPTIMAL CORROSION CONTROL TREATMENT STUDIES**

*(If the State requires you to conduct additional treatment analyses, copy this form and attach the results.)*

**Test 1 -- Alkalinity & pH Adjustment**

**Test 2 -- Calcium Hardness Treatment**

<u>Before</u>	<u>Parameters</u>	<u>After</u>	<u>Before</u>	<u>Parameters</u>	<u>After</u>
_____	Pb	_____	_____	Pb	_____
_____	Cu	_____	_____	Cu	_____
_____	pH	_____	_____	pH	_____
_____	alkalinity	_____	_____	alkalinity	_____
_____	calcium	_____	_____	calcium	_____
_____	conductivity	_____	_____	conductivity	_____
_____	orthophosphate	_____	_____	orthophosphate	_____
_____	silicate	_____	_____	silicate	_____
_____	water temperature	_____	_____	water temperature	_____

**Test 3 -- Addition of Corrosion Inhibitor**

**Test 4 -- Other (please specify) \_\_\_\_\_**

<u>Before</u>	<u>Parameters</u>	<u>After</u>	<u>Before</u>	<u>Parameters</u>	<u>After</u>
_____	Pb	_____	_____	Pb	_____
_____	Cu	_____	_____	Cu	_____
_____	pH	_____	_____	pH	_____
_____	alkalinity	_____	_____	alkalinity	_____
_____	calcium	_____	_____	calcium	_____
_____	conductivity	_____	_____	conductivity	_____
_____	orthophosphate	_____	_____	orthophosphate	_____
_____	silicate	_____	_____	silicate	_____
_____	water temperature	_____	_____	water temperature	_____

**OPTIMAL CORROSION CONTROL TREATMENT RECOMMENDATION**

1. Treatment recommendation and rationale: \_\_\_\_\_  
\_\_\_\_\_

2. Test methodologies used to evaluate each treatment (e.g., pipe rig loop tests, metal coupon tests, etc.):  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Identify any chemical or physical constraint that limits or prohibits the use of a particular corrosion control treatment (attach all data indicating that a particular treatment has adversely affected other water treatment processes or is ineffective for reducing corrosion): \_\_\_\_\_  
\_\_\_\_\_

**CERTIFICATION THAT OPTIMAL CORROSION CONTROL TREATMENT HAS BEEN INSTALLED**

The \_\_\_\_\_ water system certifies that optimal corrosion control treatment has been installed and is being properly operated as agreed to between the above named water system and the State of \_\_\_\_\_. Optimal corrosion control treatment was required to be installed by \_\_\_\_\_ (date). Optimal corrosion control treatment was installed on \_\_\_\_\_ (date).

**REQUEST FOR MODIFICATION OF CURRENT CORROSION CONTROL TREATMENT AND/OR WATER QUALITY PARAMETERS**

Reason for modification: \_\_\_\_\_  
\_\_\_\_\_

*(Attach all supporting studies, data, treatment specifications, etc., that substantiate this request for modification.)*

**SIGNATURE**

\_\_\_\_\_  
**PRINTED NAME**

\_\_\_\_\_  
**TITLE**

\_\_\_\_\_  
**DATE**

## SOURCE WATER MONITORING AND TREATMENT

System's Name: _____  Address: _____ _____ _____  System ID #: _____  Contact Person: _____	System Type: <input type="checkbox"/> CWS <input type="checkbox"/> NTNCWS  Number of People Served: _____  <input type="checkbox"/> >100,000 <input type="checkbox"/> 501 to 3,300 <input type="checkbox"/> 10,001 to 100,000 <input type="checkbox"/> 101 to 500 <input type="checkbox"/> 3,301 to 10,000 <input type="checkbox"/> ≤ 100  Telephone number: _____
---	--

### SOURCE WATER DATA

*Attach all data collected at all entry points to the distribution system. List the highest values obtained in sampling for this monitoring period and attach the results of all other samples collected at each entry point.*

Entry Point Location	Lead Values (in mg/L)	Copper Values (in mg/L)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

**SOURCE WATER MONITORING AND TREATMENT**

**SOURCE WATER TREATMENT RECOMMENDATION**

Treatment recommendation: \_\_\_\_\_  
\_\_\_\_\_

Reason for treatment/no treatment recommendation: *(Attach additional pages as needed.)*  
\_\_\_\_\_  
\_\_\_\_\_

**CERTIFICATION THAT SOURCE WATER  
TREATMENT HAS BEEN INSTALLED**

The \_\_\_\_\_ water system certifies that source water treatment has been installed and is being properly operated as agreed to between the above named water system and the State of \_\_\_\_\_. Water treatment was required to be installed by \_\_\_\_\_ (date). Source water treatment was installed on \_\_\_\_\_ (date).

**REQUEST FOR MODIFICATION OF STATE TREATMENT DECISION AND/OR MAXIMUM  
PERMISSIBLE LEAD AND COPPER LEVELS**

Reason for modification: \_\_\_\_\_  
\_\_\_\_\_

*(Attach all supporting studies, data, treatment specifications, etc., that substantiate this request for modification.)*  
\_\_\_\_\_  
\_\_\_\_\_

**SIGNATURE**

\_\_\_\_\_  
**PRINTED NAME**

\_\_\_\_\_  
**TITLE**

\_\_\_\_\_  
**DATE**

# APPENDIX E

## Lead Consumer Notice Certification Form (*Suggested Format*)

System name: \_\_\_\_\_

PWSID no: \_\_\_\_\_

Monitoring period to which the notice applies (e.g., June – Sept. 2009): \_\_\_\_\_

Date(s) results were received from laboratory: \_\_\_\_\_

Date(s) results were provided to consumers: \_\_\_\_\_

The water system named above hereby certifies that its lead consumer notice has been provided to each person it serves at the specific sampling site from which the sample was tested. The water system also certifies that these results and the following information were provided to such persons within 30 days of receiving the test results from the laboratory:

\_\_\_\_ Individual tap results from lead tap water monitoring carried out under the requirements of 40 CFR 141.86.

\_\_\_\_ An explanation of the health effects of lead.

\_\_\_\_ Steps that consumers can take to reduce exposure to lead in drinking water.

\_\_\_\_ Contact information for our water utility.

\_\_\_\_ The maximum contaminant level goals and action levels for lead, and the definitions of these two terms from 40 CFR 141.153(c).

**Certified by:**

Name \_\_\_\_\_

Title \_\_\_\_\_

Phone # \_\_\_\_\_ Date \_\_\_\_\_

\*\*\*You are not required by EPA rules to report the following information, but you may want to provide it to your State. Check all items that apply. \*\*\*

\_\_\_\_ Notice was distributed by mail or other direct delivery. Specify other direct delivery methods:

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_ electronic mail.

\_\_\_\_ posting the notice on the Internet at www.\_\_\_\_\_.

\_\_\_\_ posting the notice in public places (attach a list of locations).

\_\_\_\_ delivery of multiple copies to single bill addresses serving several persons such as: apartments, businesses, and large private employers.

\_\_\_\_ other methods.