

City of Pelham Water Department



Lead and Copper Sampling Plan

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Section 1

Governing Regulations

In 1991, EPA published a regulation to control lead and copper in drinking water. This regulation is known as the Lead and Copper Rule (also referred to as the LCR). The Rule can be found in 40 CFR Part 141 Subpart I of the Code of Federal Regulations, which has been included as Appendix A. For more information please see the following link:

<https://www.epa.gov/dwreginfo/lead-and-copper-rule>

The Alabama Department of Environmental Management (ADEM) adopted the LCR in 1992. ADEM Regulations are included as Appendix B and can be found at:

<http://www.adem.state.al.us/alEnviroReqlaws/files/Division7.pdf>

Historical Data

Historical lead and copper results are presented below. These may be used by water system personnel along with current data to identify trends that may indicate additional efforts are required.

City of Pelham Historical Sampling Data

Site	2001		2004		2007		2010		2013	
	Lead	Copper								
1	<0.003	<0.02	<0.003	0.03	<0.003	0.12	<0.003	0.13	<0.001	0.13
2	<0.003	<0.02	<0.003	0.08	<0.003	<0.02	<0.003	0.08	<0.001	0.10
3	<0.003	<0.02	<0.003	0.08	<0.003	<0.02	<0.003	0.11	<0.001	0.03
4	<0.003	<0.02	<0.003	<0.02	0.005	<0.02	<0.003	0.05	<0.001	<0.02
5	<0.003	<0.02	<0.003	0.02	<0.003	<0.02	<0.003	0.09	<0.001	0.02
6	<0.003	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	0.04	<0.001	0.03
7	<0.003	<0.02	<0.003	0.02	<0.003	<0.02	<0.003	0.08	<0.001	0.03
8	<0.003	<0.02	<0.003	0.02	<0.003	<0.02	<0.003	0.03	<0.001	<0.02
9	<0.003	<0.02	<0.003	0.05	<0.003	<0.02	<0.003	0.05	<0.001	0.07
10	<0.003	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	0.04	<0.001	<0.02
11	<0.003	<0.02	<0.003	<0.02	0.005	<0.02	0.010	0.09	0.005	0.09
12	<0.003	<0.02	<0.003	<0.02	<0.003	0.02	<0.003	0.12	0.002	0.15
13	<0.003	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	0.11	<0.001	0.13
14	0.005	<0.02	<0.003	<0.02	<0.003	<0.02	0.004	0.06	<0.001	0.05
15	0.005	0.03	<0.003	<0.02	<0.003	<0.02	<0.003	0.02	<0.001	0.09
16	0.006	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	<0.02	<0.001	<0.02
17	0.004	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	0.03	<0.001	0.04
18	0.004	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	0.02	<0.001	0.05
19	<0.003	<0.02	<0.003	<0.02	<0.003	<0.02	0.004	0.11	0.002	0.07
20	<0.003	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	0.09	<0.001	0.09
21	<0.003	<0.02	<0.003	<0.02	<0.003	0.02	<0.003	0.02	<0.001	0.05
22	<0.003	<0.02	<0.003	<0.02	<0.003	0.03	<0.003	<0.02	<0.001	<0.02
23	<0.003	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	0.03	<0.001	0.04
24	<0.003	<0.02	<0.003	0.03	<0.003	<0.02	<0.003	0.05	0.002	0.22
25	<0.003	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	0.07	<0.001	0.09
26	0.003	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	0.04	<0.001	<0.02
27	<0.003	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	0.03	<0.001	0.06
28	0.004	<0.02	<0.003	<0.02	<0.003	0.02	<0.003	0.08	<0.001	0.03
29	0.004	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	0.12	<0.001	0.09
30	0.006	<0.02	<0.003	<0.02	<0.003	<0.02	<0.003	0.06	<0.001	0.06

*Maximum contaminant level **goal** for lead is 0 mg/L and 1.3 mg/L for copper. Action level for lead is 0.015 mg/L and 1.3 mg/L for copper if 10% of the samples exceed the action level.

Corrosion Control

ADEM regulation 335-7-11-.02 (Appendix B) requires all water system to establish water treatment techniques that produce a non-aggressive water that minimizes the potential for exposure to lead and copper. ADEM regulation 335-7-11-.12 provides guidance for optimum corrosion control. This guidance shall be utilized in determining the effectiveness of the System's corrosion control program.

Material List

The Pelham Water Works' distribution system consists of the following approximate quantities:

- 1) 69 miles of Ductile Iron pipe with rubber gaskets
- 2) 20 miles of Class 160 and Class 200 PVC pipe with rubber gaskets
- 3) 5 miles of Asbestos Cement pipe with rubber gaskets
- 4) Water Service Lines comprised of copper, PVC, Pex, and galvanized piping. The majority of service lines are copper and PVC. Galvanized services on the system side of the meter are predominantly short sections of piping utilized to tee two meters from a single service line.
- 5) Brass fittings and meter bodies on service lines
- 6) Ductile Iron and Cast Iron main-line fittings and valves

There is no system inventory of service line materials and their location. However, there are no known lead service lines on the system side of the water meter.

There are no known records of the materials of construction from the meter to the point of service including service lines and interior plumbing. It is believed that the majority of these materials are PVC and copper with more recent construction utilizing Pex. Older homes and businesses may have copper piping with lead solder joints, galvanized piping and fixtures and fittings containing lead alloys.

Public Water Supply Lead and Copper Sample Site Plan Selection Criteria for Community Systems

All public water supplies must complete a materials evaluation of their system to identify their pool of sample sites. Samples must be collected from Tier 1 sites unless there are not sufficient sites, then Tier 2 sites may be used. If there are not sufficient Tier 1 and 2 sites then Tier 3 sites may be used.

Tier definitions are as follows:

- Tier 1 – includes single family structures that;
 - Contain copper pipes with lead solder which was installed after 1982 or;
 - Contain lead pipes or;
 - Is served by a lead service line

- Tier 2 – includes multi-family structures and buildings that;
 - Contain copper pipes with lead solder which was installed after 1982 or;
 - Contain lead pipes or;
 - Is served by a lead service line

- Tier 3 - includes single family structures that contain copper pipes with lead solder which were installed prior to 1983

Tier Categories - Use the following to identify the Tier and category of each site:

Tier 1

- Single family – copper pipe with lead solder constructed after 1982
- Single family – lead pipes
- Single family – lead service

Tier 2

- Building – copper pipe with lead solder constructed after 1982
- Building – lead pipes
- Building – lead service
- Multi-family – copper pipe with lead solder constructed after 1982
- Multi-family – lead pipes
- Multi-family – lead service

Tier 3

- Single family – copper pipe with lead solder constructed before 1983

If not enough Tier 1, 2 or 3 sites are available, random sites may be chosen.

- Random location

Pelham Water Works Lead and Copper Samples Sites

Community: City of Pelham

PWSID#: AL0001163 Number of Samples Required: 30

NO.	*Address	Tier Level	Lead Service line	Primary or Alt.	Year of Plumbing
01		1	N	P	1987
02		1	N	P	1987
03		1	N	P	1988
04		1	N	P	1988
05		1	N	P	1987
06		1	N	P	1988
07		1	N	P	1988
08		1	N	P	1987
09		1	N	P	1986
10		1	N	P	1987
11		1	N	P	1988
12		1	N	P	1988
13		1	N	P	1987
14		1	N	P	1986
15		1	N	P	1988
16		1	N	P	1988
17		1	N	P	1988
18		1	N	P	1988
19		1	N	P	1985
20		1	N	P	1988
21		1	N	P	1987

***Addresses are on file at the City's Water Department**

Pelham Water Works Lead and Copper Samples Sites

Community: City of Pelham

PWSID#: AL0001163 Number of Samples Required: 30

NO.	*Address	Tier Level	Lead Service line	Primary or Alt.	Year of Plumbing
22		1	N	P	1987
23		1	N	P	1987
24		1	N	P	1985
25		1	N	P	1986
26		1	N	P	1986
27		1	N	P	1985
28		1	N	P	1987
29		1	N	P	1988
30		1	N	P	1987
31		1	N	A	1985
32		3	N	A	1978
33		1	N	A	1985
34		1	N	A	1988
35		1	N	A	1987
36		1	N	A	1988
37		1	N	A	1984
38		1	N	A	1986
39		1	N	A	1987
40		1	N	A	1988
41		1	N	A	1987
42		1	N	A	1988

***Addresses are on file at the City's Water Department**

Pelham Water Works Lead and Copper Samples Sites

Community: City of Pelham

PWSID#: AL0001163 Number of Samples Required: 30

NO.	*Address	Tier Level	Lead Service line	Primary or Alt.	Year of Plumbing
43		1	N	A	1986
44		1	N	A	1985
45		1	N	A	1985
46		1	N	A	1985
47		1	N	A	1986
48		1	N	A	1986
49		1	N	A	1986
50		1	N	A	1986
51		1	N	A	1986
52		1	N	A	1986
53		1	N	A	1983
54		1	N	A	1983
55		1	N	A	1983
56		1	N	A	1982
57		1	N	A	1983
58		1	N	A	1984
59		1	N	A	1984
60		1	N	A	1983

***Addresses are on file at the City's Water Department**

Lead and Copper Sampling Procedures

All lead and copper samples must be first-draw samples and shall be 1 liter in volume. The water should have stood motionless in the plumbing system (not used) of each sample site for a minimum of six hours. While the water cannot be used for more than six hours, do not collect samples from sites which have not been used for an extended period of time; such as a site which has had no water use for several days, i.e. a weekend. Pre-stagnation flushing shall not be performed.

First-draw residential samples shall be collected from the cold water kitchen or bathroom sink only. First-draw nonresidential samples shall be collected from an interior cold water tap from which water is typically drawn for consumption. Aerators shall not be removed from taps or cleaned prior to or during the collection of samples.

Sampling sites must not include faucets which have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants. This includes such devices as filters, softeners, RO systems, etc.

First-draw samples may be collected by the system or the system may allow residents to collect samples after receiving instruction on the proper sampling procedures. Wide-mouth bottles shall be used to collect samples to allow for a higher flow rate during sample collection which is more representative of the flow that a consumer may use to fill a glass of water.

A water supply system shall collect each first-draw tap sample from the same sampling sites used in the previous round of sampling unless a change of sampling site is documented and submitted to the ADEM.

Sites and Situations to Avoid

Do not use

- A mop sink, outside faucet or a tap that is not generally used or intended for human consumption
- A site which is vacant (*don't make special arrangements to get access to site*)
- A site which has undergone recent (within the last 6 months) plumbing improvements or changes including faucets at the specific sample location
- A tap that has any type of treatment
- A site where the owner or resident is uncooperative

Suggested Directions for Homeowner Tap Sample Collection Procedures

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. Suggested Directions for Homeowner Tap Sample Collection Procedures Revised Version: February 2016

Collect samples from a tap that has not been used for at least 6 hours. To ensure the water has not been used for at least 6 hours, the best time to collect samples is either early in the morning or in the evening upon returning from work. Be sure to use a kitchen or bathroom cold water tap that has been used for drinking water consumption in the past few weeks. The collection procedure is described below.

1. Prior arrangements will be made with you, the customer, to coordinate the sample collection. Dates will be set for sample kit delivery and pick-up by water system staff.
2. There must be a minimum of 6 hours during which there is no water used from the tap where the sample will be collected and any taps adjacent or close to that tap. Either early mornings or evenings upon returning home are the best sampling times to ensure that the necessary stagnant water conditions exist. Do not intentionally flush the water line before the start of the 6-hour period.
3. Use a kitchen or bathroom cold-water faucet 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, or a point of use filter, if possible. Do not remove the aerator prior to sampling. Place the opened sample bottle below the faucet and open the cold water tap as you would do to fill a glass of water. 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 have 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 in the same location the kit was delivered to so that water system staff may pick up the sample kit.
7. Results from this monitoring effort and information about lead will be provided to you as soon as practical but no later than 30 days after the system learns of the tap monitoring results. However, if excessive lead and/or copper levels are found, immediate notification will be provided (usually 1-2 working days after the system learns of the tap monitoring results).

TO BE COMPLETED BY THE 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 instructions.		
_____		Date _____
Signature		

Thank you for your help!

Section 2

Calculating the 90th Percentile During Initial, Follow-up, Routine and Reduced Monitoring

If you collect 5 samples, calculate your 90th percentile as follows:

- Rank your samples in order of concentration (mg/L) from lowest to highest.
- Find the average of the two highest results by adding the results together and dividing by two.
- The resulting number (average) is the 90th percentile

EXAMPLE

Sample Site #	Sample Results
1	0.001
2	0.001
3	0.006
4	0.008
5	0.014

$$0.008 + 0.014 = 0.022$$

$$0.022/2 = 0.011$$

$$90^{\text{th}} \text{ percentile} = 0.011 \text{ mg/l}$$

This is the number to record on Form 141A and reported to the IDNR

If you collect 6 or more samples, calculate your 90th percentile as follows:

- Rank your samples in order of concentration (mg/L) from lowest to highest.
- Take the total number of samples collected and multiply by 0.90. The result will tell you which sample to record.
- If the number is not a whole number, round to the nearest whole number.
 - 12.7 would be rounded to 13.0 – 12.2 would be rounded to 12.0
- If the number is exactly in the middle of two whole numbers, round to the nearest even number.
 - 12.5 would be rounded to 12.0 – 13.5 would be rounded to 14.0

EXAMPLE IF YOU COLLECTED 10 SAMPLES

$$10 \times 0.9 = 9$$

Sample #9 is the 90th percentile and should be recorded on Form 141A

Sample Site #	Sample Results
1	0.001
2	0.001
3	0.001
4	0.001
5	0.001
6	0.004
7	0.005
8	0.006
9	0.008
10	0.010

The 90th percentile is 0.008 mg/l and should be recorded on Form 141A.

Please note these are examples only, you will have to insert your own results to determine your 90th percentile.

90th Percentile Summary Form

(use this format if your lab does not provide a 90th percentile summary for you)

PWSID#: _____

Public Water Supply Name: _____

Results of lead monitoring:

	Date Collected	Sample Location	Lead Result	Tier ID
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

90th percentile for lead: _____

Results of copper monitoring:

	Date Collected	Sample Location	Lead Result	Tier ID
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

90th percentile for copper: _____

Keep this form for your records.

Section 3

Making Changes to Sampling Site Locations

Make an assessment of your ability to sample a sufficient number of appropriate sites from your lead and copper plan well in advance of the monitoring period. Making contact with the resident early and determining whether their home still meets the selection criteria as a sample location will eliminate this variable. Furthermore, lead and copper samples should be collected early in the monitoring period to ensure samples arrive at the lab in a timely fashion and are analyzed well before the end of the monitoring period.

Changes to sampling sites are allowed when water systems can no longer gain access to the site or if the original site location no longer meets the Tier selection criteria. For example, if a home is vacant or demolished, if a softener is added or plumbing upgrades have been made - the structure no longer meets the Tier criteria.

Changes in locations must be submitted to the Department prior to sampling. Your lead and copper plan must be updated whenever there is an addition or deletion of a site and you are also encouraged to update the plan to identify sites that meet the requirements of proper sampling locations that can be readily substituted if needed during future monitoring events.

**Sample Site Identification & Certification
(EPA Form 141-A)**

See the following three pages.

SAMPLE SITE IDENTIFICATION AND CERTIFICATION

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

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 with 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 (to be used only if other conditions have been exhausted) (Tier 3) _____

TOTAL _____

The following sources have been explored to determine the number or 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 §141.42 of the Code of Federal Regulations
- _____ 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 Resources 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 one liter in volume and has stood motionless in the plumbing system of each sampling site for at least six 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.

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 _____

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

of samples required _____ # of tap samples submitted _____
of entry point samples required _____ # of entry point samples submitted _____

CHANGE OF 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

NAME

TITLE

DATE

Lead & Copper Rule Reduced Monitoring Site Selection

Reduced sampling sites shall be selected using the following procedure:

1. From the two most recent six-month rounds of testing, select the round of testing that had the OVERALL HIGHEST lead result.
2. Using the selected round, arrange the sampling sites in order, based on the lead test result, from highest to lowest.
3. Beginning with and including the site with the highest lead result, select and include every other site for reduced monitoring (i.e. highest result, 3rd highest, 5th highest, 7th highest, etc.).
4. After selecting every other site (see #3 above), if it is determined that a specific selected site can no longer be included in the sampling pool, replace the site with the next site on the original list (i.e. replace the 7th highest site with the 6th highest site).
5. This reduced sampling plan must be kept in your file for future reference. You must return to these same sites for each reduced sampling period.

If either the lead or copper action level IS EXCEEDED at the 90th percentile during any reduced monitoring period, you are required to conduct water quality parameter monitoring in accordance with ADEM Admin. Code r. 335-7-11-.11 during the monitoring period in which the action level was exceeded, and resume standard or base monitoring for at least two consecutive six-month monitoring periods.

Section 4

Lead and Copper Consumer Notice and Certification Forms

PWS Name: _____ PWSID#: _____ Date: _____

LEAD & COPPER CONSUMER NOTICE ANALYTICAL RESULTS FOR LEAD & COPPER TAP WATER MONITORING

Our public water supply system is required to periodically collect tap water samples to determine the lead and copper levels in our system. Your residence was selected for this monitoring as part of our system's sampling plan. This notice is provided to you with the analytical results of the tap water sample collected at your home.

Sample address: _____ Sample collection date: _____

Analytical Lead result, in mg/L (milligrams per liter): _____

Analytical Copper result, in mg/L (milligrams per liter): _____

Definitions

Action Level (AL): The action level is a concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a public water supply system must follow. The lead action level is 0.015 mg/L. The copper action level is 1.3 mg/L.

Maximum Contaminant Level Goal (MCLG): The maximum contaminant level goal is the level of a contaminant in drinking water below which there is no known or expected risk to health. The MCLG allows for a margin of safety. The lead MCLG is zero. The copper MCLG is 1.3 mg/L.

What are the health effects of lead and how can I reduce my exposure?

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 SYSTEM] is responsible for providing drinking water that meets all federal and state standards, 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 the water and using only cold water for drinking or cooking. Information on lead in drinking water and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

When replacing your bathroom or kitchen faucet, consider a "lead-free" faucet that meets NSF/ANSI Standard 61 Annex G (California), which is less than 0.25% lead by weight.

What are the health effects of copper and how can I reduce my exposure?

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short period of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor. Flushing your tap before using the water as previously described will also reduce copper levels.

Who can I contact at my water system for more information?

Phone number at our public water supply system: (205) 620-6420

E-mail address at our public water supply system: pww@pelhamalabama.gov

Consumer Notice Instructions: Community PWS

Per the Lead & Copper Rule consumer notice requirements, you must complete the lead consumer notice, distribute the notice to each home or building that was tested with its specific lead result, and submit a certification of your activities and a copy of the notice to ADEM.

Consumer Notice Content

You are required to provide the consumer notice to consumers who occupy homes or buildings that are part of your system's lead & copper monitoring program with the analytical results when their drinking water is tested for lead, including those who do not receive water bills. The Consumer Notice must include the mandatory language in the example provided with these instructions. It must be multilingual, where appropriate.

Distribution of the Consumer Notice

Within 30 days of receiving the analytical results from the laboratory, you must provide the required notice to the people served at each residence or building that was a part of the sampling plan. This can be accomplished through direct mail, including it with the water utility bill, or by hand delivery.

Multi-family dwellings: Where testing occurs in buildings with many units, such as an apartment building, the notice must be provided to each individual unit that was tested. The notice does not have to extend to the entire building.

If you wish to use an alternate method that would still meet the requirements, contact the ADEM to discuss the method, prior to conducting the notice.

Date completed: _____ (*enclose a copy of notice*)

Delivery Certification

I certify under penalty of law that I am familiar with the information submitted in this document and that it is true, accurate, and complete.

Name (print or type) _____ **Title** _____

Signature _____ **Date** _____

APPENDIX A:
EPA REGULATIONS

ELECTRONIC CODE OF FEDERAL REGULATIONS**e-CFR data is current as of March 24, 2016**[Title 40](#) → [Chapter I](#) → [Subchapter D](#) → [Part 141](#) → Subpart I

Title 40: Protection of Environment

PART 141—NATIONAL PRIMARY DRINKING WATER REGULATIONS**Subpart I—Control of Lead and Copper****Contents**

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- [§141.87](#) Monitoring requirements for water quality parameters.
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- [§141.89](#) Analytical methods.
- [§141.90](#) Reporting requirements.
- [§141.91](#) Recordkeeping requirements.

SOURCE: 56 FR 26548, June 7, 1991, unless otherwise noted.

[↑ Back to Top](#)**§141.80 General requirements.**

(a) *Applicability and effective dates.* (1) The requirements of this subpart I constitute the national primary drinking water regulations for lead and copper. Unless otherwise indicated, each of the provisions of this subpart applies to community water systems and non-transient, non-community water systems (hereinafter referred to as “water systems” or “systems”).

(2) [Reserved]

(b) *Scope.* These regulations establish a treatment technique that includes requirements for corrosion control treatment, source water treatment, lead service line replacement, and public education. These requirements are triggered, in some cases, by lead and copper action levels measured in samples collected at consumers' taps.

(c) *Lead and copper action levels.* (1) 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 conducted in accordance with §141.86 is greater than 0.015 mg/L (*i.e.*, if the “90th percentile” lead level is greater than 0.015 mg/L).

(2) 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 in accordance with §141.86 is greater than 1.3 mg/L (*i.e.*, if the “90th percentile” copper level is greater than 1.3 mg/L).

(3) The 90th percentile lead and copper levels shall be computed as follows:

(i) The results of all lead or copper samples taken during a monitoring period shall be placed in ascending order from the sample with the lowest concentration to the sample with the highest concentration. Each sampling result shall be assigned a number, ascending by single integers beginning with the number 1 for the sample with the lowest contaminant level. The number assigned to the sample with the highest contaminant level shall be equal to the total number of samples taken.

(ii) The number of samples taken during the monitoring period shall be multiplied by 0.9.

(iii) The contaminant concentration in the numbered sample yielded by the calculation in paragraph (c)(3)(ii) is the 90th percentile contaminant level.

(iv) For water systems serving fewer than 100 people that collect 5 samples per monitoring period, the 90th percentile is computed by taking the average of the highest and second highest concentrations.

(v) For a public water system that has been allowed by the State to collect fewer than five samples in accordance with §141.86(c), the sample result with the highest concentration is considered the 90th percentile value.

(d) *Corrosion control treatment requirements.* (1) All water systems shall install and operate optimal corrosion control treatment as defined in §141.2.

(2) Any water system that complies with the applicable corrosion control treatment requirements specified by the State under §§141.81 and 141.82 shall be deemed in compliance with the treatment requirement contained in paragraph (d)(1) of this section.

(e) *Source water treatment requirements.* Any system exceeding the lead or copper action level shall implement all applicable source water treatment requirements specified by the State under §141.83.

(f) *Lead service line replacement requirements.* Any system exceeding the lead action level after implementation of applicable corrosion control and source water treatment requirements shall complete the lead service line replacement requirements contained in §141.84.

(g) *Public education requirements.* Pursuant to §141.85, all water systems must provide a consumer notice of lead tap water monitoring results to persons served at the sites (taps) that are tested. Any system exceeding the lead action level shall implement the public education requirements.

(h) *Monitoring and analytical requirements.* Tap water monitoring for lead and copper, monitoring for water quality parameters, source water monitoring for lead and copper, and analyses of the monitoring results under this subpart shall be completed in compliance with §§141.86, 141.87, 141.88, and 141.89.

(i) *Reporting requirements.* Systems shall report to the State any information required by the treatment provisions of this subpart and §141.90.

(j) *Recordkeeping requirements.* Systems shall maintain records in accordance with §141.91.

(k) *Violation of national primary drinking water regulations.* Failure to comply with the applicable requirements of §§141.80-141.91, including requirements established by the State pursuant to these provisions, shall constitute a violation of the national primary drinking water regulations for lead and/or copper.

[56 FR 26548, June 7, 1991; 57 FR 28788, June 29, 1992, as amended at 72 FR 57814, Oct. 10, 2007]

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§141.81 Applicability of corrosion control treatment steps to small, medium-size and large water systems.

(a) Systems shall complete the applicable corrosion control treatment requirements described in §141.82 by the deadlines established in this section.

(1) A large system (serving >50,000 persons) shall complete the corrosion control treatment steps specified in paragraph (d) of this section, unless it is deemed to have optimized corrosion control under paragraph (b)(2) or (b)(3) of this section.

(2) A small system (serving ≤3300 persons) and a medium-size system (serving >3,300 and ≤50,000 persons) shall complete the corrosion control treatment steps specified in paragraph (e) of this section, unless it is deemed to have optimized corrosion control under paragraph (b)(1), (b)(2), or (b)(3) of this section.

(b) A system is deemed to have optimized corrosion control and is not required to complete the applicable corrosion control treatment steps identified in this section if the system satisfies one of the criteria specified in paragraphs (b)(1) through (b)(3) of this section. Any such system deemed to have optimized corrosion control under this paragraph, and which has treatment in place, shall continue to operate and maintain optimal corrosion control treatment and meet any requirements that the State determines appropriate to ensure optimal corrosion control treatment is maintained.

(1) A small or medium-size water system is deemed to have optimized corrosion control if the system meets the lead and copper action levels during each of two consecutive six-month monitoring periods conducted in accordance with §141.86.

(2) Any water system may be deemed by the State to have optimized corrosion control treatment if the system demonstrates to the satisfaction of the State that it has conducted activities equivalent to the corrosion control steps applicable to such system under this section. If the State makes this determination, it shall provide the system with written notice explaining the basis for its decision and shall specify the water quality control parameters representing optimal corrosion control in accordance with §141.82(f). Water systems deemed to have optimized corrosion control under this paragraph shall operate in compliance with the State-designated optimal water quality control parameters in accordance

with §141.82(g) and continue to conduct lead and copper tap and water quality parameter sampling in accordance with §141.86(d)(3) and §141.87(d), respectively. A system shall provide the State with the following information in order to support a determination under this paragraph:

(i) The results of all test samples collected for each of the water quality parameters in §141.82(c)(3).

(ii) A report explaining the test methods used by the water system to evaluate the corrosion control treatments listed in §141.82(c)(1), the results of all tests conducted, and the basis for the system's selection of optimal corrosion control treatment;

(iii) A report explaining how corrosion control has been installed and how it is being maintained to insure minimal lead and copper concentrations at consumers' taps; and

(iv) The results of tap water samples collected in accordance with §141.86 at least once every six months for one year after corrosion control has been installed.

(3) Any water system is deemed to have optimized corrosion control if it submits results of tap water monitoring conducted in accordance with §141.86 and source water monitoring conducted in accordance with §141.88 that demonstrates for two consecutive 6-month monitoring periods that the difference between the 90th percentile tap water lead level computed under §141.80(c)(3), and the highest source water lead concentration is less than the Practical Quantitation Level for lead specified in §141.89(a)(1)(ii).

(i) Those systems whose highest source water lead level is below the Method Detection Limit may also be deemed to have optimized corrosion control under this paragraph if the 90th percentile tap water lead level is less than or equal to the Practical Quantitation Level for lead for two consecutive 6-month monitoring periods.

(ii) Any water system deemed to have optimized corrosion control in accordance with this paragraph shall continue monitoring for lead and copper at the tap no less frequently than once every three calendar years using the reduced number of sites specified in §141.86(c) and collecting the samples at times and locations specified in §141.86(d)(4)(iv). Any such system that has not conducted a round of monitoring pursuant to §141.86(d) since September 30, 1997, shall complete a round of monitoring pursuant to this paragraph no later than September 30, 2000.

(iii) Any water system deemed to have optimized corrosion control pursuant to this paragraph shall notify the State in writing pursuant to §141.90(a)(3) of any upcoming long-term change in treatment or addition of a new source as described in that section. The State must review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system. The State may require any such system to conduct additional monitoring or to take other action the State deems appropriate to ensure that such systems maintain minimal levels of corrosion in the distribution system.

(iv) As of July 12, 2001, a system is not deemed to have optimized corrosion control under this paragraph, and shall implement corrosion control treatment pursuant to paragraph (b)(3)(v) of this section unless it meets the copper action level.

(v) Any system triggered into corrosion control because it is no longer deemed to have optimized corrosion control under this paragraph shall implement corrosion control treatment in accordance with the deadlines in paragraph (e) of this section. Any such large system shall adhere to the schedule specified in that paragraph for medium-size systems, with the time periods for completing each step being triggered by the date the system is no longer deemed to have optimized corrosion control under this paragraph.

(c) Any small or medium-size water system that is required to complete the corrosion control steps due to its exceedance of the lead or copper action level may cease completing the treatment steps whenever the system meets both action levels during each of two consecutive monitoring periods conducted pursuant to §141.86 and submits the results to the State. If any such water system thereafter exceeds the lead or copper action level during any monitoring period, the system (or the State, as the case may be) shall recommence completion of the applicable treatment steps, beginning with the first treatment step which was not previously completed in its entirety. The State may require a system to repeat treatment steps previously completed by the system where the State determines that this is necessary to implement properly the treatment requirements of this section. The State shall notify the system in writing of such a determination and explain the basis for its decision. The requirement for any small- or medium-size system to implement corrosion control treatment steps in accordance with paragraph (e) of this section (including systems deemed to have optimized corrosion control under paragraph (b)(1) of this section) is triggered whenever any small- or medium-size system exceeds the lead or copper action level.

(d) *Treatment steps and deadlines for large systems.* Except as provided in paragraph (b) (2) and (3) of this section, large systems shall complete the following corrosion control treatment steps (described in the referenced portions of §§141.82, 141.86, and 141.87) by the indicated dates.

(1) *Step 1:* The system shall conduct initial monitoring (§141.86(d)(1) and §141.87(b)) during two consecutive six-month monitoring periods by January 1, 1993.

(2) *Step 2:* The system shall complete corrosion control studies (§141.82(c)) by July 1, 1994.

(3) *Step 3*: The State shall designate optimal corrosion control treatment (§141.82(d)) by January 1, 1995.

(4) *Step 4*: The system shall install optimal corrosion control treatment (§141.82(e)) by January 1, 1997.

(5) *Step 5*: The system shall complete follow-up sampling (§141.86(d)(2) and §141.87(c)) by January 1, 1998.

(6) *Step 6*: The State shall review installation of treatment and designate optimal water quality control parameters (§141.82(f)) by July 1, 1998.

(7) *Step 7*: The system shall operate in compliance with the State-specified optimal water quality control parameters (§141.82(g)) and continue to conduct tap sampling (§141.86(d)(3) and §141.87(d)).

(e) *Treatment Steps and deadlines for small and medium-size systems*. Except as provided in paragraph (b) of this section, small and medium-size systems shall complete the following corrosion control treatment steps (described in the referenced portions of §§141.82, 141.86 and 141.87) by the indicated time periods.

(1) *Step 1*: The system shall conduct initial tap sampling (§141.86(d)(1) and §141.87(b)) until the system either exceeds the lead or copper action level or becomes eligible for reduced monitoring under §141.86(d)(4). A system exceeding the lead or copper action level shall recommend optimal corrosion control treatment (§141.82(a)) within six months after the end of the monitoring period during which it exceeds one of the action levels.

(2) *Step 2*: Within 12 months after the end of the monitoring period during which a system exceeds the lead or copper action level, the State may require the system to perform corrosion control studies (§141.82(b)). If the State does not require the system to perform such studies, the State shall specify optimal corrosion control treatment (§141.82(d)) within the following timeframes:

(i) For medium-size systems, within 18 months after the end of the monitoring period during which such system exceeds the lead or copper action level.

(ii) For small systems, within 24 months after the end of the monitoring period during which such system exceeds the lead or copper action level.

(3) *Step 3*: If the State requires a system to perform corrosion control studies under step 2, the system shall complete the studies (§141.82(c)) within 18 months after the State requires that such studies be conducted.

(4) *Step 4*: If the system has performed corrosion control studies under step 2, the State shall designate optimal corrosion control treatment (§141.82(d)) within 6 months after completion of step 3.

(5) *Step 5*: The system shall install optimal corrosion control treatment (§141.82(e)) within 24 months after the State designates such treatment.

(6) *Step 6*: The system shall complete follow-up sampling (§141.86(d)(2) and §141.87(c)) within 36 months after the State designates optimal corrosion control treatment.

(7) *Step 7*: The State shall review the system's installation of treatment and designate optimal water quality control parameters (§141.82(f)) within 6 months after completion of step 6.

(8) *Step 8*: The system shall operate in compliance with the State-designated optimal water quality control parameters (§141.82(g)) and continue to conduct tap sampling (§141.86(d)(3) and §141.87(d)).

[56 FR 26548, June 7, 1991, as amended at 59 FR 33862, June 30, 1994; 65 FR 2004, Jan. 12, 2000; 72 FR 57814, Oct. 10, 2007]

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§141.82 Description of corrosion control treatment requirements.

Each system shall complete the corrosion control treatment requirements described below which are applicable to such system under §141.81.

(a) *System recommendation regarding corrosion control treatment*. Based upon the results of lead and copper tap monitoring and water quality parameter monitoring, small and medium-size water systems exceeding the lead or copper action level shall recommend installation of one or more of the corrosion control treatments listed in paragraph (c)(1) of this section which the system believes constitutes optimal corrosion control for that system. The State may require the system to conduct additional water quality parameter monitoring in accordance with §141.87(b) to assist the State in reviewing the system's recommendation.

(b) *State decision to require studies of corrosion control treatment (applicable to small and medium-size systems)*. The State may require any small or medium-size system that exceeds the lead or copper action level to perform corrosion control studies under paragraph (c) of this section to identify optimal corrosion control treatment for the system.

(c) *Performance of corrosion control studies.* (1) Any public water system performing corrosion control studies shall evaluate the effectiveness of each of the following treatments, and, if appropriate, combinations of the following treatments to identify the optimal corrosion control treatment for that system:

(i) Alkalinity and pH adjustment;

(ii) Calcium hardness adjustment; and

(iii) The addition of a phosphate or silicate based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

(2) The water system shall evaluate each of the corrosion control treatments using either pipe rig/loop tests, metal coupon tests, partial-system tests, or analyses based on documented analogous treatments with other systems of similar size, water chemistry and distribution system configuration.

(3) The water system shall measure the following water quality parameters in any tests conducted under this paragraph before and after evaluating the corrosion control treatments listed above:

(i) Lead;

(ii) Copper;

(iii) pH;

(iv) Alkalinity;

(v) Calcium;

(vi) Conductivity;

(vii) Orthophosphate (when an inhibitor containing a phosphate compound is used);

(viii) Silicate (when an inhibitor containing a silicate compound is used);

(ix) Water temperature.

(4) The water system shall identify all chemical or physical constraints that limit or prohibit the use of a particular corrosion control treatment and document such constraints with at least one of the following:

(i) Data and documentation showing that a particular corrosion control treatment has adversely affected other water treatment processes when used by another water system with comparable water quality characteristics; and/or

(ii) Data and documentation demonstrating that the water system has previously attempted to evaluate a particular corrosion control treatment and has found that the treatment is ineffective or adversely affects other water quality treatment processes.

(5) The water system shall evaluate the effect of the chemicals used for corrosion control treatment on other water quality treatment processes.

(6) On the basis of an analysis of the data generated during each evaluation, the water system shall recommend to the State in writing the treatment option that the corrosion control studies indicate constitutes optimal corrosion control treatment for that system. The water system shall provide a rationale for its recommendation along with all supporting documentation specified in paragraphs (c) (1) through (5) of this section.

(d) *State designation of optimal corrosion control treatment.* (1) Based upon consideration of available information including, where applicable, studies performed under paragraph (c) of this section and a system's recommended treatment alternative, the State shall either approve the corrosion control treatment option recommended by the system, or designate alternative corrosion control treatment(s) from among those listed in paragraph (c)(1) of this section. When designating optimal treatment the State shall consider the effects that additional corrosion control treatment will have on water quality parameters and on other water quality treatment processes.

(2) The State shall notify the system of its decision on optimal corrosion control treatment in writing and explain the basis for this determination. If the State requests additional information to aid its review, the water system shall provide the information.

(e) *Installation of optimal corrosion control.* Each system shall properly install and operate throughout its distribution system the optimal corrosion control treatment designated by the State under paragraph (d) of this section.

(f) *State review of treatment and specification of optimal water quality control parameters.* The State shall evaluate the results of all lead and copper tap samples and water quality parameter samples submitted by the water system and determine whether the system has properly installed and operated the optimal corrosion control treatment designated by

the State in paragraph (d) of this section. Upon reviewing the results of tap water and water quality parameter monitoring by the system, both before and after the system installs optimal corrosion control treatment, the State shall designate:

- (1) A minimum value or a range of values for pH measured at each entry point to the distribution system;
- (2) A minimum pH value, measured in all tap samples. Such value shall be equal to or greater than 7.0, unless the State determines that meeting a pH level of 7.0 is not technologically feasible or is not necessary for the system to optimize corrosion control;
- (3) If a corrosion inhibitor is used, a minimum concentration or a range of concentrations for the inhibitor, measured at each entry point to the distribution system and in all tap samples, that the State determines is necessary to form a passivating film on the interior walls of the pipes of the distribution system;
- (4) If alkalinity is adjusted as part of optimal corrosion control treatment, a minimum concentration or a range of concentrations for alkalinity, measured at each entry point to the distribution system and in all tap samples;
- (5) If calcium carbonate stabilization is used as part of corrosion control, a minimum concentration or a range of concentrations for calcium, measured in all tap samples.

The values for the applicable water quality control parameters listed above shall be those that the State determines to reflect optimal corrosion control treatment for the system. The State may designate values for additional water quality control parameters determined by the State to reflect optimal corrosion control for the system. The State shall notify the system in writing of these determinations and explain the basis for its decisions.

(g) *Continued operation and monitoring.* All systems optimizing corrosion control shall continue to operate and maintain optimal corrosion control treatment, including maintaining water quality parameters at or above minimum values or within ranges designated by the State under paragraph (f) of this section, in accordance with this paragraph for all samples collected under §141.87(d) through (f). Compliance with the requirements of this paragraph shall be determined every six months, as specified under §141.87(d). A water system is out of compliance with the requirements of this paragraph for a six-month period if it has excursions for any State-specified parameter on more than nine days during the period. An excursion occurs whenever the daily value for one or more of the water quality parameters measured at a sampling location is below the minimum value or outside the range designated by the State. Daily values are calculated as follows. States have discretion to delete results of obvious sampling errors from this calculation.

(1) On days when more than one measurement for the water quality parameter is collected at the sampling location, the daily value shall be the average of all results collected during the day regardless of whether they are collected through continuous monitoring, grab sampling, or a combination of both. If EPA has approved an alternative formula under §142.16 of this chapter in the State's application for a program revision submitted pursuant to §142.12 of this chapter, the State's formula shall be used to aggregate multiple measurements taken at a sampling point for the water quality parameter in lieu of the formula in this paragraph.

(2) On days when only one measurement for the water quality parameter is collected at the sampling location, the daily value shall be the result of that measurement.

(3) On days when no measurement is collected for the water quality parameter at the sampling location, the daily value shall be the daily value calculated on the most recent day on which the water quality parameter was measured at the sample site.

(h) *Modification of State treatment decisions.* Upon its own initiative or in response to a request by a water system or other interested party, a State may modify its determination of the optimal corrosion control treatment under paragraph (d) of this section or optimal water quality control parameters under paragraph (f) of this section. A request for modification by a system or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The State may modify its determination where it concludes that such change is necessary to ensure that the system continues to optimize corrosion control treatment. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the State's decision, and provide an implementation schedule for completing the treatment modifications.

(i) *Treatment decisions by EPA in lieu of the State.* Pursuant to the procedures in §142.19, the EPA Regional Administrator may review treatment determinations made by a State under paragraphs (d), (f), or (h) of this section and issue federal treatment determinations consistent with the requirements of those paragraphs where the Regional Administrator finds that:

- (1) A State has failed to issue a treatment determination by the applicable deadlines contained in §141.81,
- (2) A State has abused its discretion in a substantial number of cases or in cases affecting a substantial population, or
- (3) The technical aspects of a State's determination would be indefensible in an expected Federal enforcement action taken against a system.

[56 FR 26548, June 7, 1991, as amended at 65 FR 2004, Jan. 12, 2000]

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§141.83 Source water treatment requirements.

Systems shall complete the applicable source water monitoring and treatment requirements (described in the referenced portions of paragraph (b) of this section, and in §§141.86, and 141.88) by the following deadlines.

(a) *Deadlines for completing source water treatment steps*—(1) *Step 1*: A system exceeding the lead or copper action level shall complete lead and copper source water monitoring (§141.88(b)) and make a treatment recommendation to the State (§141.83(b)(1)) no later than 180 days after the end of the monitoring period during which the lead or copper action level was exceeded.

(2) *Step 2*: The State shall make a determination regarding source water treatment (§141.83(b)(2)) within 6 months after submission of monitoring results under step 1.

(3) *Step 3*: If the State requires installation of source water treatment, the system shall install the treatment (§141.83(b)(3)) within 24 months after completion of step 2.

(4) *Step 4*: The system shall complete follow-up tap water monitoring (§141.86(d)(2)) and source water monitoring (§141.88(c)) within 36 months after completion of step 2.

(5) *Step 5*: The State shall review the system's installation and operation of source water treatment and specify maximum permissible source water levels (§141.83(b)(4)) within 6 months after completion of step 4.

(6) *Step 6*: The system shall operate in compliance with the State-specified maximum permissible lead and copper source water levels (§141.83(b)(4)) and continue source water monitoring (§141.88(d)).

(b) *Description of source water treatment requirements*—(1) *System treatment recommendation*. Any system which exceeds the lead or copper action level shall recommend in writing to the State the installation and operation of one of the source water treatments listed in paragraph (b)(2) of this section. A system may recommend that no treatment be installed based upon a demonstration that source water treatment is not necessary to minimize lead and copper levels at users' taps.

(2) *State determination regarding source water treatment*. The State shall complete an evaluation of the results of all source water samples submitted by the water system to determine whether source water treatment is necessary to minimize lead or copper levels in water delivered to users' taps. If the State determines that treatment is needed, the State shall either require installation and operation of the source water treatment recommended by the system (if any) or require the installation and operation of another source water treatment from among the following: Ion exchange, reverse osmosis, lime softening or coagulation/filtration. If the State requests additional information to aid in its review, the water system shall provide the information by the date specified by the State in its request. The State shall notify the system in writing of its determination and set forth the basis for its decision.

(3) *Installation of source water treatment*. Each system shall properly install and operate the source water treatment designated by the State under paragraph (b)(2) of this section.

(4) *State review of source water treatment and specification of maximum permissible source water levels*. The State shall review the source water samples taken by the water system both before and after the system installs source water treatment, and determine whether the system has properly installed and operated the source water treatment designated by the State. Based upon its review, the State shall designate the maximum permissible lead and copper concentrations for finished water entering the distribution system. Such levels shall reflect the contaminant removal capability of the treatment properly operated and maintained. The State shall notify the system in writing and explain the basis for its decision.

(5) *Continued operation and maintenance*. Each water system shall maintain lead and copper levels below the maximum permissible concentrations designated by the State at each sampling point monitored in accordance with §141.88. The system is out of compliance with this paragraph if the level of lead or copper at any sampling point is greater than the maximum permissible concentration designated by the State.

(6) *Modification of State treatment decisions*. Upon its own initiative or in response to a request by a water system or other interested party, a State may modify its determination of the source water treatment under paragraph (b)(2) of this section, or maximum permissible lead and copper concentrations for finished water entering the distribution system under paragraph (b)(4) of this section. A request for modification by a system or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The State may modify its determination where it concludes that such change is necessary to ensure that the system continues to minimize lead and copper concentrations in source water. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the State's decision, and provide an implementation schedule for completing the treatment modifications.

(7) *Treatment decisions by EPA in lieu of the State*. Pursuant to the procedures in §142.19, the EPA Regional Administrator may review treatment determinations made by a State under paragraphs (b) (2), (4), or (6) of this section

and issue Federal treatment determinations consistent with the requirements of those paragraphs where the Administrator finds that:

- (i) A State has failed to issue a treatment determination by the applicable deadlines contained in §141.83(a),
- (ii) A state has abused its discretion in a substantial number of cases or in cases affecting a substantial population, or
- (iii) The technical aspects of a State's determination would be indefensible in an expected Federal enforcement action taken against a system.

[56 FR 26548, June 7, 1991, as amended at 72 FR 57815, Oct. 10, 2007]

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§141.84 Lead service line replacement requirements.

(a) Systems that fail to meet the lead action level in tap samples taken pursuant to §141.86(d)(2), after installing corrosion control and/or source water treatment (whichever sampling occurs later), shall replace lead service lines in accordance with the requirements of this section. If a system is in violation of §141.81 or §141.83 for failure to install source water or corrosion control treatment, the State may require the system to commence lead service line replacement under this section after the date by which the system was required to conduct monitoring under §141.86(d)(2) has passed.

(b)(1) A water system shall replace annually at least 7 percent of the initial number of lead service lines in its distribution system. The initial number of lead service lines is the number of lead lines in place at the time the replacement program begins. The system shall identify the initial number of lead service lines in its distribution system, including an identification of the portion(s) owned by the system, based on a materials evaluation, including the evaluation required under §141.86(a) and relevant legal authorities (e.g., contracts, local ordinances) regarding the portion owned by the system. The first year of lead service line replacement shall begin on the first day following the end of the monitoring period in which the action level was exceeded under paragraph (a) of this section. If monitoring is required annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs. If the State has established an alternate monitoring period, then the end of the monitoring period will be the last day of that period.

(2) Any water system resuming a lead service line replacement program after the cessation of its lead service line replacement program as allowed by paragraph (f) of this section shall update its inventory of lead service lines to include those sites that were previously determined not to require replacement through the sampling provision under paragraph (c) of this section. The system will then divide the updated number of remaining lead service lines by the number of remaining years in the program to determine the number of lines that must be replaced per year (7 percent lead service line replacement is based on a 15-year replacement program, so, for example, systems resuming lead service line replacement after previously conducting two years of replacement would divide the updated inventory by 13). For those systems that have completed a 15-year lead service line replacement program, the State will determine a schedule for replacing or retesting lines that were previously tested out under the replacement program when the system re-exceeds the action level.

(c) A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line, taken pursuant to §141.86(b)(3), is less than or equal to 0.015 mg/L.

(d) A water system shall replace that portion of the lead service line that it owns. In cases where the system does not own the entire lead service line, the system shall notify the owner of the line, or the owner's authorized agent, that the system will replace the portion of the service line that it owns and shall offer to replace the owner's portion of the line. A system is not required to bear the cost of replacing the privately-owned portion of the line, nor is it required to replace the privately-owned portion where the owner chooses not to pay the cost of replacing the privately-owned portion of the line, or where replacing the privately-owned portion would be precluded by State, local or common law. A water system that does not replace the entire length of the service line also shall complete the following tasks.

(1) At least 45 days prior to commencing with the partial replacement of a lead service line, the water system shall provide notice to the resident(s) of all buildings served by the line explaining that they may experience a temporary increase of lead levels in their drinking water, along with guidance on measures consumers can take to minimize their exposure to lead. The State may allow the water system to provide notice under the previous sentence less than 45 days prior to commencing partial lead service line replacement where such replacement is in conjunction with emergency repairs. In addition, the water system shall inform the resident(s) served by the line that the system will, at the system's expense, collect a sample from each partially-replaced lead service line that is representative of the water in the service line for analysis of lead content, as prescribed under §141.86(b)(3), within 72 hours after the completion of the partial replacement of the service line. The system shall collect the sample and report the results of the analysis to the owner and the resident(s) served by the line within three business days of receiving the results. Mailed notices post-marked within three business days of receiving the results shall be considered "on time."

(2) The water system shall provide the information required by paragraph (d)(1) of this section to the residents of individual dwellings by mail or by other methods approved by the State. In instances where multi-family dwellings are served by the line, the water system shall have the option to post the information at a conspicuous location.

(e) The State shall require a system to replace lead service lines on a shorter schedule than that required by this section, taking into account the number of lead service lines in the system, where such a shorter replacement schedule is feasible. The State shall make this determination in writing and notify the system of its finding within 6 months after the system is triggered into lead service line replacement based on monitoring referenced in paragraph (a) of this section.

(f) Any system may cease replacing lead service lines whenever first draw samples collected pursuant to §141.86(b)(2) meet the lead action level during each of two consecutive monitoring periods and the system submits the results to the State. If first draw tap samples collected in any such system thereafter exceeds the lead action level, the system shall recommence replacing lead service lines pursuant to paragraph (b)(2) of this section.

(g) To demonstrate compliance with paragraphs (a) through (d) of this section, a system shall report to the State the information specified in §141.90(e).

[56 FR 26548, June 7, 1991; 57 FR 28788, June 29, 1992, as amended at 65 FR 2005, Jan. 12, 2000; 72 FR 57815, Oct. 10, 2007]

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§141.85 Public education and supplemental monitoring requirements.

All water systems must deliver a consumer notice of lead tap water monitoring results to persons served by the water system at sites that are tested, as specified in paragraph (d) of this section. A water system that exceeds the lead action level based on tap water samples collected in accordance with §141.86 shall deliver the public education materials contained in paragraph (a) of this section in accordance with the requirements in paragraph (b) of this section. Water systems that exceed the lead action level must sample the tap water of any customer who requests it in accordance with paragraph (c) of this section.

(a) *Content of written public education materials*—(1) *Community water systems and non-transient non-community water systems.* Water systems must include the following elements in printed materials (e.g., brochures and pamphlets) in the same order as listed below. In addition, language in paragraphs (a)(1)(i) through (ii) and (a)(1)(vi) of this section must be included in the materials, exactly as written, except for the text in brackets in these paragraphs for which the water system must include system-specific information. Any additional information presented by a water system must be consistent with the information below and be in plain language that can be understood by the general public. Water systems must submit all written public education materials to the State prior to delivery. The State may require the system to obtain approval of the content of written public materials prior to delivery.

(i) **IMPORTANT INFORMATION ABOUT LEAD IN YOUR DRINKING WATER.** [INSERT NAME OF WATER SYSTEM] found elevated levels of lead in drinking water in some homes/buildings. Lead can cause serious health problems, especially for pregnant women and young children. Please read this information closely to see what you can do to reduce lead in your drinking water.

(ii) *Health effects of lead.* Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children, and pregnant women. Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development.

(iii) *Sources of lead.* (A) Explain what lead is.

(B) Explain possible sources of lead in drinking water and how lead enters drinking water. Include information on home/building plumbing materials and service lines that may contain lead.

(C) Discuss other important sources of lead exposure in addition to drinking water (e.g., paint).

(iv) Discuss the steps the consumer can take to reduce their exposure to lead in drinking water.

(A) Encourage running the water to flush out the lead.

(B) Explain concerns with using hot water from the tap and specifically caution against the use of hot water for preparing baby formula.

(C) Explain that boiling water does not reduce lead levels.

(D) Discuss other options consumers can take to reduce exposure to lead in drinking water, such as alternative sources or treatment of water.

(E) Suggest that parents have their child's blood tested for lead.

(v) Explain why there are elevated levels of lead in the system's drinking water (if known) and what the water system is doing to reduce the lead levels in homes/buildings in this area.

(vi) For more information, call us at [INSERT YOUR NUMBER] [(IF APPLICABLE), or visit our Web site at [INSERT YOUR WEB SITE HERE]]. For more information on reducing lead exposure around your home/building and the health effects of lead, visit EPA's Web site at <http://www.epa.gov/lead> or contact your health care provider.

(2) *Community water systems.* In addition to including the elements specified in paragraph (a)(1) of this section, community water systems must:

(i) Tell consumers how to get their water tested.

(ii) Discuss lead in plumbing components and the difference between low lead and lead free.

(b) *Delivery of public education materials.* (1) For public water systems serving a large proportion of non-English speaking consumers, as determined by the State, the public education materials must contain information in the appropriate language(s) regarding the importance of the notice or contain a telephone number or address where persons served may contact the water system to obtain a translated copy of the public education materials or to request assistance in the appropriate language.

(2) A community water system that exceeds the lead action level on the basis of tap water samples collected in accordance with §141.86, and that is not already conducting public education tasks under this section, must conduct the public education tasks under this section within 60 days after the end of the monitoring period in which the exceedance occurred:

(i) Deliver printed materials meeting the content requirements of paragraph (a) of this section to all bill paying customers.

(ii)(A) Contact customers who are most at risk by delivering education materials that meet the content requirements of paragraph (a) of this section to local public health agencies even if they are not located within the water system's service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users. The water system must contact the local public health agencies directly by phone or in person. The local public health agencies may provide a specific list of additional community based organizations serving target populations, which may include organizations outside the service area of the water system. If such lists are provided, systems must deliver education materials that meet the content requirements of paragraph (a) of this section to all organizations on the provided lists.

(B) Contact customers who are most at risk by delivering materials that meet the content requirements of paragraph (a) of this section to the following organizations listed in 1 through 6 that are located within the water system's service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users:

(1) Public and private schools or school boards.

(2) Women, Infants and Children (WIC) and Head Start programs.

(3) Public and private hospitals and medical clinics.

(4) Pediatricians.

(5) Family planning clinics.

(6) Local welfare agencies.

(C) Make a good faith effort to locate the following organizations within the service area and deliver materials that meet the content requirements of paragraph (a) of this section to them, along with an informational notice that encourages distribution to all potentially affected customers or users. The good faith effort to contact at-risk customers may include requesting a specific contact list of these organizations from the local public health agencies, even if the agencies are not located within the water system's service area:

(1) Licensed childcare centers

(2) Public and private preschools.

(3) Obstetricians-Gynecologists and Midwives.

(iii) No less often than quarterly, provide information on or in each water bill as long as the system exceeds the action level for lead. The message on the water bill must include the following statement exactly as written except for the text in brackets for which the water system must include system-specific information: [INSERT NAME OF WATER SYSTEM] found high levels of lead in drinking water in some homes. Lead can cause serious health problems. For more information

please call [INSERT NAME OF WATER SYSTEM] [or visit (INSERT YOUR WEB SITE HERE)]. The message or delivery mechanism can be modified in consultation with the State; specifically, the State may allow a separate mailing of public education materials to customers if the water system cannot place the information on water bills.

(iv) Post material meeting the content requirements of paragraph (a) of this section on the water system's Web site if the system serves a population greater than 100,000.

(v) Submit a press release to newspaper, television and radio stations.

(vi) In addition to paragraphs (b)(2)(i) through (v) of this section, systems must implement at least three activities from one or more categories listed below. The educational content and selection of these activities must be determined in consultation with the State.

(A) Public Service Announcements.

(B) Paid advertisements.

(C) Public Area Information Displays.

(D) E-mails to customers.

(E) Public Meetings.

(F) Household Deliveries.

(G) Targeted Individual Customer Contact.

(H) Direct material distribution to all multi-family homes and institutions.

(I) Other methods approved by the State.

(vii) For systems that are required to conduct monitoring annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or, if the State has established an alternate monitoring period, the last day of that period.

(3) As long as a community water system exceeds the action level, it must repeat the activities pursuant to paragraph (b)(2) of this section as described in paragraphs (b)(3)(i) through (iv) of this section.

(i) A community water system shall repeat the tasks contained in paragraphs (b)(2)(i), (ii) and (vi) of this section every 12 months.

(ii) A community water system shall repeat tasks contained in paragraph (b)(2)(iii) of this section with each billing cycle.

(iii) A community water system serving a population greater than 100,000 shall post and retain material on a publicly accessible Web site pursuant to paragraph (b)(2)(iv) of this section.

(iv) The community water system shall repeat the task in paragraph (b)(2)(v) of this section twice every 12 months on a schedule agreed upon with the State. The State can allow activities in paragraph (b)(2) of this section to extend beyond the 60-day requirement if needed for implementation purposes on a case-by-case basis; however, this extension must be approved in writing by the State in advance of the 60-day deadline.

(4) Within 60 days after the end of the monitoring period in which the exceedance occurred (unless it already is repeating public education tasks pursuant to paragraph (b)(5) of this section), a non-transient non-community water system shall deliver the public education materials specified by paragraph (a) of this section as follows:

(i) Post informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system; and

(ii) Distribute informational pamphlets and/or brochures on lead in drinking water to each person served by the non-transient non-community water system. The State may allow the system to utilize electronic transmission in lieu of or combined with printed materials as long as it achieves at least the same coverage.

(iii) For systems that are required to conduct monitoring annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or, if the State has established an alternate monitoring period, the last day of that period.

(5) A non-transient non-community water system shall repeat the tasks contained in paragraph (b)(4) of this section at least once during each calendar year in which the system exceeds the lead action level. The State can allow activities in (b)(4) of this section to extend beyond the 60-day requirement if needed for implementation purposes on a case-by-case basis; however, this extension must be approved in writing by the State in advance of the 60-day deadline.

(6) A water system may discontinue delivery of public education materials if the system has met the lead action level during the most recent six-month monitoring period conducted pursuant to §141.86. Such a system shall recommence public education in accordance with this section if it subsequently exceeds the lead action level during any monitoring period.

(7) A community water system may apply to the State, in writing (unless the State has waived the requirement for prior State approval), to use only the text specified in paragraph (a)(1) of this section in lieu of the text in paragraphs (a)(1) and (a)(2) of this section and to perform the tasks listed in paragraphs (b)(4) and (b)(5) of this section in lieu of the tasks in paragraphs (b)(2) and (b)(3) of this section if:

(i) The system is 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

(ii) The system provides water as part of the cost of services provided and does not separately charge for water consumption.

(8) A community water system serving 3,300 or fewer people may limit certain aspects of their public education programs as follows:

(i) With respect to the requirements of paragraph (b)(2)(vi) of this section, a system serving 3,300 or fewer must implement at least one of the activities listed in that paragraph.

(ii) With respect to the requirements of paragraph (b)(2)(ii) of this section, a system serving 3,300 or fewer people may limit the distribution of the public education materials required under that paragraph to facilities and organizations served by the system that are most likely to be visited regularly by pregnant women and children.

(iii) With respect to the requirements of paragraph (b)(2)(v) of this section, the State may waive this requirement for systems serving 3,300 or fewer persons as long as system distributes notices to every household served by the system.

(c) *Supplemental monitoring and notification of results.* A water system that fails to meet the lead action level on the basis of tap samples collected in accordance with §141.86 shall offer to sample the tap water of any customer who requests it. The system is not required to pay for collecting or analyzing the sample, nor is the system required to collect and analyze the sample itself.

(d) *Notification of results—(1) Reporting requirement.* All water systems must provide a notice of the individual tap results from lead tap water monitoring carried out under the requirements of §141.86 to the persons served by the water system at the specific sampling site from which the sample was taken (e.g., the occupants of the residence where the tap was tested).

(2) *Timing of notification.* A water system must provide the consumer notice as soon as practical, but no later than 30 days after the system learns of the tap monitoring results.

(3) *Content.* The consumer notice must include the results of lead tap water monitoring for the tap that was tested, an explanation of the health effects of lead, list steps consumers can take to reduce exposure to lead in drinking water and contact information for the water utility. The notice must also provide the maximum contaminant level goal and the action level for lead and the definitions for these two terms from §141.153(c).

(4) *Delivery.* The consumer notice must be provided to persons served at the tap that was tested, either by mail or by another method approved by the State. For example, upon approval by the State, a non-transient non-community water system could post the results on a bulletin board in the facility to allow users to review the information. The system must provide the notice to customers at sample taps tested, including consumers who do not receive water bills.

[72 FR 57815, Oct. 10, 2007]

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§141.86 Monitoring requirements for lead and copper in tap water.

(a) *Sample site location.* (1) By the applicable date for commencement of monitoring under paragraph (d)(1) of this section, each water system shall complete a materials evaluation of its distribution system in order to identify a pool of targeted sampling sites that meets the requirements of this section, and which is sufficiently large to ensure that the water system can collect the number of lead and copper tap samples required in paragraph (c) of this section. All sites from which first draw samples are collected shall be selected from this pool of targeted sampling sites. Sampling sites may not include faucets that have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants.

(2) A water system shall use the information on lead, copper, and galvanized steel that it is required to collect under §141.42(d) of this part [special monitoring for corrosivity characteristics] when conducting a materials evaluation. When an evaluation of the information collected pursuant to §141.42(d) is insufficient to locate the requisite number of lead and copper sampling sites that meet the targeting criteria in paragraph (a) of this section, the water system shall review the sources of information listed below in order to identify a sufficient number of sampling sites. In addition, the system shall

seek to collect such information where possible in the course of its normal operations (e.g., checking service line materials when reading water meters or performing maintenance activities):

(i) All plumbing codes, permits, and records in the files of the building department(s) which indicate the plumbing materials that are installed within publicly and privately owned structures connected to the distribution system;

(ii) All inspections and records of the distribution system that indicate the material composition of the service connections that connect a structure to the distribution system; and

(iii) All existing water quality information, which includes the results of all prior analyses of the system or individual structures connected to the system, indicating locations that may be particularly susceptible to high lead or copper concentrations.

(3) The sampling sites selected for a community water system's sampling pool ("tier 1 sampling sites") shall consist of single family structures that:

(i) Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

(ii) Are served by a lead service line. When multiple-family residences comprise at least 20 percent of the structures served by a water system, the system may include these types of structures in its sampling pool.

(4) Any community water system with insufficient tier 1 sampling sites shall complete its sampling pool with "tier 2 sampling sites", consisting of buildings, including multiple-family residences that:

(i) Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

(ii) Are served by a lead service line.

(5) Any community water system with insufficient tier 1 and tier 2 sampling sites shall complete its sampling pool with "tier 3 sampling sites", consisting of single family structures that contain copper pipes with lead solder installed before 1983. A community water system with insufficient tier 1, tier 2, and tier 3 sampling sites shall complete its sampling pool with representative sites throughout the distribution system. For the purpose of this paragraph, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

(6) The sampling sites selected for a non-transient noncommunity water system ("tier 1 sampling sites") shall consist of buildings that:

(i) Contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or

(ii) Are served by a lead service line.

(7) A non-transient non-community water system with insufficient tier 1 sites that meet the targeting criteria in paragraph (a)(6) of this section shall complete its sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983. If additional sites are needed to complete the sampling pool, the non-transient non-community water system shall use representative sites throughout the distribution system. For the purpose of this paragraph, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

(8) Any water system whose distribution system contains lead service lines shall draw 50 percent of the samples it collects during each monitoring period from sites that contain lead pipes, or copper pipes with lead solder, and 50 percent of the samples from sites served by a lead service line. A water system that cannot identify a sufficient number of sampling sites served by a lead service line shall collect first-draw samples from all of the sites identified as being served by such lines.

(b) *Sample collection methods.* (1) All tap samples for lead and copper collected in accordance with this subpart, with the exception of lead service line samples collected under §141.84(c) and samples collected under paragraph (b)(5) of this section, shall be first-draw samples.

(2) Each first-draw tap sample for lead and copper shall be one liter in volume and have stood motionless in the plumbing system of each sampling site for at least six hours. First-draw samples from residential housing shall be collected from the cold water kitchen tap or bathroom sink tap. First-draw samples from a nonresidential building shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. Non-first-draw samples collected in lieu of first-draw samples pursuant to paragraph (b)(5) of this section shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. First-draw samples may be collected by the system or the system may allow residents to collect first-draw samples after instructing the residents of the sampling procedures specified in this paragraph. To avoid problems of residents handling nitric acid, acidification of first-draw samples may be done up to 14 days after the sample is collected. After acidification to resolubilize the metals, the sample must stand in the original container for the time specified in the approved EPA method before the sample can be analyzed. If a system allows residents to perform sampling, the system may not challenge, based on alleged errors in sample collection, the accuracy of sampling results.

(3) Each service line sample shall be one liter in volume and have stood motionless in the lead service line for at least six hours. Lead service line samples shall be collected in one of the following three ways:

(i) At the tap after flushing the volume of water between the tap and the lead service line. The volume of water shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line;

(ii) Tapping directly into the lead service line; or

(iii) If the sampling site is a building constructed as a single-family residence, allowing the water to run until there is a significant change in temperature which would be indicative of water that has been standing in the lead service line.

(4) A water system shall collect each first draw tap sample from the same sampling site from which it collected a previous sample. If, for any reason, the water system cannot gain entry to a sampling site in order to collect a follow-up tap sample, the system may collect the follow-up tap sample from another sampling site in its sampling pool as long as the new site meets the same targeting criteria, and is within reasonable proximity of the original site.

(5) A non-transient non-community water system, or a community water system that meets the criteria of §141.85(b)(7), that does not have enough taps that can supply first-draw samples, as defined in §141.2, may apply to the State in writing to substitute non-first-draw samples. Such systems must collect as many first-draw samples from appropriate taps as possible and identify sampling times and locations that would likely result in the longest standing time for the remaining sites. The State has the discretion to waive the requirement for prior State approval of non-first-draw sample sites selected by the system, either through State regulation or written notification to the system.

(c) *Number of samples.* Water systems shall collect at least one sample during each monitoring period specified in paragraph (d) of this section from the number of sites listed in the first column (“standard monitoring”) of the table in this paragraph. A system conducting reduced monitoring under paragraph (d)(4) of this section shall collect at least one sample from the number of sites specified in the second column (“reduced monitoring”) of the table in this paragraph during each monitoring period specified in paragraph (d)(4) of this section. Such reduced monitoring sites shall be representative of the sites required for standard monitoring. A public water system that has fewer than five drinking water taps, that can be used for human consumption meeting the sample site criteria of paragraph (a) of this section to reach the required number of sample sites listed in paragraph (c) of this section, must collect at least one sample from each tap and then must collect additional samples from those taps on different days during the monitoring period to meet the required number of sites. Alternatively the State may allow these public water systems to collect a number of samples less than the number of sites specified in paragraph (c) of this section, provided that 100 percent of all taps that can be used for human consumption are sampled. The State must approve this reduction of the minimum number of samples in writing based on a request from the system or onsite verification by the State. States may specify sampling locations when a system is conducting reduced monitoring. The table is as follows:

System size (number of people served)	Number of sites (standard monitoring)	Number of sites (reduced monitoring)
>100,000	100	50
10,001 to 100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
≤100	5	5

(d) *Timing of monitoring—(1) Initial tap sampling.* The first six-month monitoring period for small, medium-size and large systems shall begin on the following dates:

System size (No. people served)	First six-month monitoring period begins on
>50,000	January 1, 1992.
3,301 to 50,000	July 1, 1992.
≤3,300	July 1, 1993.

(i) All large systems shall monitor during two consecutive six-month periods.

(ii) All small and medium-size systems shall monitor during each six-month monitoring period until:

(A) The system exceeds the lead or copper action level and is therefore required to implement the corrosion control treatment requirements under §141.81, in which case the system shall continue monitoring in accordance with paragraph (d)(2) of this section, or

(B) The system meets the lead and copper action levels during two consecutive six-month monitoring periods, in which case the system may reduce monitoring in accordance with paragraph (d)(4) of this section.

(2) *Monitoring after installation of corrosion control and source water treatment.* (i) Any large system which installs optimal corrosion control treatment pursuant to §141.81(d)(4) shall monitor during two consecutive six-month monitoring periods by the date specified in §141.81(d)(5).

(ii) Any small or medium-size system which installs optimal corrosion control treatment pursuant to §141.81(e)(5) shall monitor during two consecutive six-month monitoring periods by the date specified in §141.81(e)(6).

(iii) Any system which installs source water treatment pursuant to §141.83(a)(3) shall monitor during two consecutive six-month monitoring periods by the date specified in §141.83(a)(4).

(3) *Monitoring after State specifies water quality parameter values for optimal corrosion control.* After the State specifies the values for water quality control parameters under §141.82(f), the system shall monitor during each subsequent six-month monitoring period, with the first monitoring period to begin on the date the State specifies the optimal values under §141.82(f).

(4) *Reduced monitoring.* (i) A small or medium-size water system that meets the lead and copper action levels during each of two consecutive six-month monitoring periods may reduce the number of samples in accordance with paragraph (c) of this section, and reduce the frequency of sampling to once per year. A small or medium water system collecting fewer than five samples as specified in paragraph (c) of this section, that meets the lead and copper action levels during each of two consecutive six-month monitoring periods may reduce the frequency of sampling to once per year. In no case can the system reduce the number of samples required below the minimum of one sample per available tap. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

(ii) Any water system that meets the lead action level and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f) during each of two consecutive six-month monitoring periods may reduce the frequency of monitoring to once per year and reduce the number of lead and copper samples in accordance with paragraph (c) of this section if it receives written approval from the State. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period. The State shall review monitoring, treatment, and other relevant information submitted by the water system in accordance with §141.90, and shall notify the system in writing when it determines the system is eligible to commence reduced monitoring pursuant to this paragraph. The State shall review, and where appropriate, revise its determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

(iii) A small or medium-size water system that meets the lead and copper action levels during three consecutive years of monitoring may reduce the frequency of monitoring for lead and copper from annually to once every three years. Any water system that meets the lead action level and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f) during three consecutive years of monitoring may reduce the frequency of monitoring from annually to once every three years if it receives written approval from the State. Samples collected once every three years shall be collected no later than every third calendar year. The State shall review monitoring, treatment, and other relevant information submitted by the water system in accordance with §141.90, and shall notify the system in writing when it determines the system is eligible to reduce the frequency of monitoring to once every three years. The State shall review, and where appropriate, revise its determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

(iv) A water system that reduces the number and frequency of sampling shall collect these samples from representative sites included in the pool of targeted sampling sites identified in paragraph (a) of this section. Systems sampling annually or less frequently shall conduct the lead and copper tap sampling during the months of June, July, August, or September unless the State has approved a different sampling period in accordance with paragraph (d)(4)(iv)(A) of this section.

(A) The State, at its discretion, may approve a different period for conducting the lead and copper tap sampling for systems collecting a reduced number of samples. Such a period shall be no longer than four consecutive months and must represent a time of normal operation where the highest levels of lead are most likely to occur. For a non-transient non-community water system that does not operate during the months of June through September, and for which the period of normal operation where the highest levels of lead are most likely to occur is not known, the State shall designate a period that represents a time of normal operation for the system. This sampling shall begin during the period approved or designated by the State in the calendar year immediately following the end of the second consecutive six-month monitoring period for systems initiating annual monitoring and during the three-year period following the end of the third consecutive calendar year of annual monitoring for systems initiating triennial monitoring.

(B) Systems monitoring annually, that have been collecting samples during the months of June through September and that receive State approval to alter their sample collection period under paragraph (d)(4)(iv)(A) of this section, must collect their next round of samples during a time period that ends no later than 21 months after the previous round of sampling. Systems monitoring triennially that have been collecting samples during the months of June through September, and receive State approval to alter the sampling collection period as per paragraph (d)(4)(iv)(A) of this section, must collect their next round of samples during a time period that ends no later than 45 months after the previous round of sampling. Subsequent rounds of sampling must be collected annually or triennially, as required by this section. Small systems with waivers, granted pursuant to paragraph (g) of this section, that have been collecting samples during the months of June through September and receive State approval to alter their sample collection period under paragraph (d)(4)(iv)(A) of this section must collect their next round of samples before the end of the 9-year period.

(v) Any water system that demonstrates for two consecutive 6-month monitoring periods that the tap water lead level computed under §141.80(c)(3) is less than or equal to 0.005 mg/L and the tap water copper level computed under §141.80(c)(3) is less than or equal to 0.65 mg/L may reduce the number of samples in accordance with paragraph (c) of this section and reduce the frequency of sampling to once every three calendar years.

(vi)(A) A small or medium-size water system subject to reduced monitoring that exceeds the lead or copper action level shall resume sampling in accordance with paragraph (d)(3) of this section and collect the number of samples specified for standard monitoring under paragraph (c) of this section. Such a system shall also conduct water quality parameter monitoring in accordance with §141.87(b), (c) or (d) (as appropriate) during the monitoring period in which it exceeded the action level. Any such system may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in paragraph (c) of this section after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of paragraph (d)(4)(i) of this section and/or may resume triennial monitoring for lead and copper at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (d)(4)(iii) or (d)(4)(v) of this section.

(B) Any water system subject to the reduced monitoring frequency that fails to meet the lead action level during any four-month monitoring period or that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the State under §141.82(f) for more than nine days in any six-month period specified in §141.87(d) shall conduct tap water sampling for lead and copper at the frequency specified in paragraph (d)(3) of this section, collect the number of samples specified for standard monitoring under paragraph (c) of this section, and shall resume monitoring for water quality parameters within the distribution system in accordance with §141.87(d). This standard tap water sampling shall begin no later than the six-month period beginning January 1 of the calendar year following the lead action level exceedance or water quality parameter excursion. Such a system may resume reduced monitoring for lead and copper at the tap and for water quality parameters within the distribution system under the following conditions:

(1) The system may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in paragraph (c) of this section after it has completed two subsequent six-month rounds of monitoring that meet the criteria of paragraph (d)(4)(ii) of this section and the system has received written approval from the State that it is appropriate to resume reduced monitoring on an annual frequency. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

(2) The system may resume triennial monitoring for lead and copper at the tap at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (d)(4)(iii) or (d)(4)(v) of this section and the system has received written approval from the State that it is appropriate to resume triennial monitoring.

(3) The system may reduce the number of water quality parameter tap water samples required in accordance with §141.87(e)(1) and the frequency with which it collects such samples in accordance with §141.87(e)(2). Such a system may not resume triennial monitoring for water quality parameters at the tap until it demonstrates, in accordance with the requirements of §141.87(e)(2), that it has re-qualified for triennial monitoring.

(vii) Any water system subject to a reduced monitoring frequency under paragraph (d)(4) of this section shall notify the State in writing in accordance with §141.90(a)(3) of any upcoming long-term change in treatment or addition of a new source as described in that section. The State must review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system. The State may require the system to resume sampling in accordance with paragraph (d)(3) of this section and collect the number of samples specified for standard monitoring under paragraph (c) of this section or take other appropriate steps such as increased water quality parameter monitoring or re-evaluation of its corrosion control treatment given the potentially different water quality considerations.

(e) *Additional monitoring by systems.* The results of any monitoring conducted in addition to the minimum requirements of this section shall be considered by the system and the State in making any determinations (*i.e.*, calculating the 90th percentile lead or copper level) under this subpart.

(f) *Invalidation of lead or copper tap water samples.* A sample invalidated under this paragraph does not count toward determining lead or copper 90th percentile levels under §141.80(c)(3) or toward meeting the minimum monitoring requirements of paragraph (c) of this section.

(1) The State may invalidate a lead or copper tap water sample at least if one of the following conditions is met.

(i) The laboratory establishes that improper sample analysis caused erroneous results.

(ii) The State determines that the sample was taken from a site that did not meet the site selection criteria of this section.

(iii) The sample container was damaged in transit.

(iv) There is substantial reason to believe that the sample was subject to tampering.

(2) The system must report the results of all samples to the State and all supporting documentation for samples the system believes should be invalidated.

(3) To invalidate a sample under paragraph (f)(1) of this section, the decision and the rationale for the decision must be documented in writing. States may not invalidate a sample solely on the grounds that a follow-up sample result is higher or lower than that of the original sample.

(4) The water system must collect replacement samples for any samples invalidated under this section if, after the invalidation of one or more samples, the system has too few samples to meet the minimum requirements of paragraph (c) of this section. Any such replacement samples must be taken as soon as possible, but no later than 20 days after the date the State invalidates the sample or by the end of the applicable monitoring period, whichever occurs later. Replacement samples taken after the end of the applicable monitoring period shall not also be used to meet the monitoring requirements of a subsequent monitoring period. The replacement samples shall be taken at the same locations as the invalidated samples or, if that is not possible, at locations other than those already used for sampling during the monitoring period.

(g) *Monitoring waivers for small systems.* Any small system that meets the criteria of this paragraph may apply to the State to reduce the frequency of monitoring for lead and copper under this section to once every nine years (*i.e.*, a “full waiver”) if it meets all of the materials criteria specified in paragraph (g)(1) of this section and all of the monitoring criteria specified in paragraph (g)(2) of this section. If State regulations permit, any small system that meets the criteria in paragraphs (g)(1) and (2) of this section only for lead, or only for copper, may apply to the State for a waiver to reduce the frequency of tap water monitoring to once every nine years for that contaminant only (*i.e.*, a “partial waiver”).

(1) *Materials criteria.* The system must demonstrate that its distribution system and service lines and all drinking water supply plumbing, including plumbing conveying drinking water within all residences and buildings connected to the system, are free of lead-containing materials and/or copper-containing materials, as those terms are defined in this paragraph, as follows:

(i) *Lead.* To qualify for a full waiver, or a waiver of the tap water monitoring requirements for lead (*i.e.*, a “lead waiver”), the water system must provide certification and supporting documentation to the State that the system is free of all lead-containing materials, as follows:

(A) It contains no plastic pipes which contain lead plasticizers, or plastic service lines which contain lead plasticizers; and

(B) It is free of lead service lines, lead pipes, lead soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless such fittings and fixtures meet the specifications of any standard established pursuant to 42 U.S.C. 300g-6 (e) (SDWA section 1417(e)).

(ii) *Copper.* To qualify for a full waiver, or a waiver of the tap water monitoring requirements for copper (*i.e.*, a “copper waiver”), the water system must provide certification and supporting documentation to the State that the system contains no copper pipes or copper service lines.

(2) *Monitoring criteria for waiver issuance.* The system must have completed at least one 6-month round of standard tap water monitoring for lead and copper at sites approved by the State and from the number of sites required by paragraph (c) of this section and demonstrate that the 90th percentile levels for any and all rounds of monitoring conducted since the system became free of all lead-containing and/or copper-containing materials, as appropriate, meet the following criteria.

(i) *Lead levels.* To qualify for a full waiver, or a lead waiver, the system must demonstrate that the 90th percentile lead level does not exceed 0.005 mg/L.

(ii) *Copper levels.* To qualify for a full waiver, or a copper waiver, the system must demonstrate that the 90th percentile copper level does not exceed 0.65 mg/L.

(3) *State approval of waiver application.* The State shall notify the system of its waiver determination, in writing, setting forth the basis of its decision and any condition of the waiver. As a condition of the waiver, the State may require the system to perform specific activities (e.g., limited monitoring, periodic outreach to customers to remind them to avoid installation of materials that might void the waiver) to avoid the risk of lead or copper concentration of concern in tap water. The small system must continue monitoring for lead and copper at the tap as required by paragraphs (d)(1) through (d)(4) of this section, as appropriate, until it receives written notification from the State that the waiver has been approved.

(4) *Monitoring frequency for systems with waivers.* (i) A system with a full waiver must conduct tap water monitoring for lead and copper in accordance with paragraph (d)(4)(iv) of this section at the reduced number of sampling sites identified in paragraph (c) of this section at least once every nine years and provide the materials certification specified in paragraph (g)(1) of this section for both lead and copper to the State along with the monitoring results. Samples collected every nine years shall be collected no later than every ninth calendar year.

(ii) A system with a partial waiver must conduct tap water monitoring for the waived contaminant in accordance with paragraph (d)(4)(iv) of this section at the reduced number of sampling sites specified in paragraph (c) of this section at

least once every nine years and provide the materials certification specified in paragraph (g)(1) of this section pertaining to the waived contaminant along with the monitoring results. Such a system also must continue to monitor for the non-waived contaminant in accordance with requirements of paragraph (d)(1) through (d)(4) of this section, as appropriate.

(iii) Any water system with a full or partial waiver shall notify the State in writing in accordance with §141.90(a)(3) of any upcoming long-term change in treatment or addition of a new source, as described in that section. The State must review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system. The State has the authority to require the system to add or modify waiver conditions (e.g., require recertification that the system is free of lead-containing and/or copper-containing materials, require additional round(s) of monitoring), if it deems such modifications are necessary to address treatment or source water changes at the system.

(iv) If a system with a full or partial waiver becomes aware that it is no longer free of lead-containing or copper-containing materials, as appropriate, (e.g., as a result of new construction or repairs), the system shall notify the State in writing no later than 60 days after becoming aware of such a change.

(5) *Continued eligibility.* If the system continues to satisfy the requirements of paragraph (g)(4) of this section, the waiver will be renewed automatically, unless any of the conditions listed in paragraph (g)(5)(i) through (g)(5)(iii) of this section occurs. A system whose waiver has been revoked may re-apply for a waiver at such time as it again meets the appropriate materials and monitoring criteria of paragraphs (g)(1) and (g)(2) of this section.

(i) A system with a full waiver or a lead waiver no longer satisfies the materials criteria of paragraph (g)(1)(i) of this section or has a 90th percentile lead level greater than 0.005 mg/L.

(ii) A system with a full waiver or a copper waiver no longer satisfies the materials criteria of paragraph (g)(1)(ii) of this section or has a 90th percentile copper level greater than 0.65 mg/L.

(iii) The State notifies the system, in writing, that the waiver has been revoked, setting forth the basis of its decision.

(6) *Requirements following waiver revocation.* A system whose full or partial waiver has been revoked by the State is subject to the corrosion control treatment and lead and copper tap water monitoring requirements, as follows:

(i) If the system exceeds the lead and/or copper action level, the system must implement corrosion control treatment in accordance with the deadlines specified in §141.81(e), and any other applicable requirements of this subpart.

(ii) If the system meets both the lead and the copper action level, the system must monitor for lead and copper at the tap no less frequently than once every three years using the reduced number of sample sites specified in paragraph (c) of this section.

(7) *Pre-existing waivers.* Small system waivers approved by the State in writing prior to April 11, 2000 shall remain in effect under the following conditions:

(i) If the system has demonstrated that it is both free of lead-containing and copper-containing materials, as required by paragraph (g)(1) of this section and that its 90th percentile lead levels and 90th percentile copper levels meet the criteria of paragraph (g)(2) of this section, the waiver remains in effect so long as the system continues to meet the waiver eligibility criteria of paragraph (g)(5) of this section. The first round of tap water monitoring conducted pursuant to paragraph (g)(4) of this section shall be completed no later than nine years after the last time the system has monitored for lead and copper at the tap.

(ii) If the system has met the materials criteria of paragraph (g)(1) of this section but has not met the monitoring criteria of paragraph (g)(2) of this section, the system shall conduct a round of monitoring for lead and copper at the tap demonstrating that it meets the criteria of paragraph (g)(2) of this section no later than September 30, 2000. Thereafter, the waiver shall remain in effect as long as the system meets the continued eligibility criteria of paragraph (g)(5) of this section. The first round of tap water monitoring conducted pursuant to paragraph (g)(4) of this section shall be completed no later than nine years after the round of monitoring conducted pursuant to paragraph (g)(2) of this section.

[56 FR 26548, June 7, 1991; 56 FR 32113, July 15, 1991; 57 FR 28788, June 29, 1992; as amended at 65 FR 2007, Jan. 12, 2000; 72 FR 57817, Oct. 10, 2007]

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§141.87 Monitoring requirements for water quality parameters.

All large water systems, and all small- and medium-size systems that exceed the lead or copper action level shall monitor water quality parameters in addition to lead and copper in accordance with this section. The requirements of this section are summarized in the table at the end of this section.

(a) *General requirements—(1) Sample collection methods.* (i) Tap samples shall be representative of water quality throughout the distribution system taking into account the number of persons served, the different sources of water, the different treatment methods employed by the system, and seasonal variability. Tap sampling under this section is not required to be conducted at taps targeted for lead and copper sampling under §141.86(a). [Note: Systems may find it

convenient to conduct tap sampling for water quality parameters at sites used for coliform sampling under 40 CFR 141.21.]

(ii) Samples collected at the entry point(s) to the distribution system shall be from locations representative of each source after treatment. If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (*i.e.*, when water is representative of all sources being used).

(2) *Number of samples.* (i) Systems shall collect two tap samples for applicable water quality parameters during each monitoring period specified under paragraphs (b) through (e) of this section from the following number of sites.

System size (No. people served)	No. of sites for water quality parameters
>100,000	25
10,001-100,000	10
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
≤100	1

(ii) Except as provided in paragraph (c)(3) of this section, systems shall collect two samples for each applicable water quality parameter at each entry point to the distribution system during each monitoring period specified in paragraph (b) of this section. During each monitoring period specified in paragraphs (c)-(e) of this section, systems shall collect one sample for each applicable water quality parameter at each entry point to the distribution system.

(b) *Initial sampling* All large water systems shall measure the applicable water quality parameters as specified below at taps and at each entry point to the distribution system during each six-month monitoring period specified in §141.86(d)(1). All small and medium-size systems shall measure the applicable water quality parameters at the locations specified below during each six-month monitoring period specified in §141.86(d)(1) during which the system exceeds the lead or copper action level.

(1) At taps:

(i) pH;

(ii) Alkalinity;

(iii) Orthophosphate, when an inhibitor containing a phosphate compound is used;

(iv) Silica, when an inhibitor containing a silicate compound is used;

(v) Calcium;

(vi) Conductivity; and

(vii) Water temperature.

(2) At each entry point to the distribution system: all of the applicable parameters listed in paragraph (b)(1) of this section.

(c) *Monitoring after installation of corrosion control.* Any large system which installs optimal corrosion control treatment pursuant to §141.81(d)(4) shall measure the water quality parameters at the locations and frequencies specified below during each six-month monitoring period specified in §141.86(d)(2)(i). Any small or medium-size system which installs optimal corrosion control treatment shall conduct such monitoring during each six-month monitoring period specified in §141.86(d)(2)(ii) in which the system exceeds the lead or copper action level.

(1) At taps, two samples for:

(i) pH;

(ii) Alkalinity;

(iii) Orthophosphate, when an inhibitor containing a phosphate compound is used;

(iv) Silica, when an inhibitor containing a silicate compound is used;

(v) Calcium, when calcium carbonate stabilization is used as part of corrosion control.

(2) Except as provided in paragraph (c)(3) of this section, at each entry point to the distribution system, at least one sample no less frequently than every two weeks (biweekly) for:

(i) pH;

(ii) When alkalinity is adjusted as part of optimal corrosion control, a reading of the dosage rate of the chemical used to adjust alkalinity, and the alkalinity concentration; and

(iii) When a corrosion inhibitor is used as part of optimal corrosion control, a reading of the dosage rate of the inhibitor used, and the concentration of orthophosphate or silica (whichever is applicable).

(3) Any ground water system can limit entry point sampling described in paragraph (c)(2) of this section to those entry points that are representative of water quality and treatment conditions throughout the system. If water from untreated ground water sources mixes with water from treated ground water sources, the system must monitor for water quality parameters both at representative entry points receiving treatment and representative entry points receiving no treatment. Prior to the start of any monitoring under this paragraph, the system shall provide to the State written information identifying the selected entry points and documentation, including information on seasonal variability, sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

(d) *Monitoring after State specifies water quality parameter values for optimal corrosion control.* After the State specifies the values for applicable water quality control parameters reflecting optimal corrosion control treatment under §141.82(f), all large systems shall measure the applicable water quality parameters in accordance with paragraph (c) of this section and determine compliance with the requirements of §141.82(g) every six months with the first six-month period to begin on either January 1 or July 1, whichever comes first, after the State specifies the optimal values under §141.82(f). Any small or medium-size system shall conduct such monitoring during each six-month period specified in this paragraph in which the system exceeds the lead or copper action level. For any such small and medium-size system that is subject to a reduced monitoring frequency pursuant to §141.86(d)(4) at the time of the action level exceedance, the start of the applicable six-month monitoring period under this paragraph shall coincide with the start of the applicable monitoring period under §141.86(d)(4). Compliance with State-designated optimal water quality parameter values shall be determined as specified under §141.82(g).

(e) *Reduced monitoring.* (1) Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment during each of two consecutive six-month monitoring periods under paragraph (d) of this section shall continue monitoring at the entry point(s) to the distribution system as specified in paragraph (c)(2) of this section. Such system may collect two tap samples for applicable water quality parameters from the following reduced number of sites during each six-month monitoring period.

System size (No. of people served)	Reduced No. of sites for water quality parameters
>100,000	10
10,001 to 100,000	7
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
≤100	1

(2)(i) Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f) during three consecutive years of monitoring may reduce the frequency with which it collects the number of tap samples for applicable water quality parameters specified in this paragraph (e)(1) of this section from every six months to annually. This sampling begins during the calendar year immediately following the end of the monitoring period in which the third consecutive year of six-month monitoring occurs. Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f), during three consecutive years of annual monitoring under this paragraph may reduce the frequency with which it collects the number of tap samples for applicable water quality parameters specified in paragraph (e)(1) of this section from annually to every three years. This sampling begins no later than the third calendar year following the end of the monitoring period in which the third consecutive year of monitoring occurs.

(ii) A water system may reduce the frequency with which it collects tap samples for applicable water quality parameters specified in paragraph (e)(1) of this section to every three years if it demonstrates during two consecutive monitoring periods that its tap water lead level at the 90th percentile is less than or equal to the PQL for lead specified in §141.89 (a)(1)(ii), that its tap water copper level at the 90th percentile is less than or equal to 0.65 mg/L for copper in §141.80(c)(2), and that it also has maintained the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f). Monitoring conducted every three years shall be done no later than every third calendar year.

(3) A water system that conducts sampling annually shall collect these samples evenly throughout the year so as to reflect seasonal variability.

(4) Any water system subject to the reduced monitoring frequency that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the State in §141.82(f) for more than nine days in any six-month period specified in §141.82(g) shall resume distribution system tap water sampling in accordance with the number and frequency requirements in paragraph (d) of this section. Such a system may resume annual monitoring for water quality parameters at the tap at the reduced number of sites specified in paragraph (e)(1) of this section after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of that paragraph and/or may

resume triennial monitoring for water quality parameters at the tap at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (e)(2)(i) or (e)(2)(ii) of this section.

(f) *Additional monitoring by systems.* The results of any monitoring conducted in addition to the minimum requirements of this section shall be considered by the system and the State in making any determinations (*i.e.*, determining concentrations of water quality parameters) under this section or §141.82.

SUMMARY OF MONITORING REQUIREMENTS FOR WATER QUALITY PARAMETERS¹

Monitoring period	Parameters ²	Location	Frequency
Initial monitoring	pH, alkalinity, orthophosphate or silica ³ , calcium, conductivity, temperature	Taps and at entry point (s) to distribution system	Every 6 months.
After installation of corrosion control	pH, alkalinity, orthophosphate or silica ³ , calcium ⁴	Taps	Every 6 months.
	pH, alkalinity, dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual ⁵	Entry point(s) to distribution system ⁶	No less frequently than every two weeks.
After State specifies parameter values for optimal corrosion control	pH, alkalinity, orthophosphate or silica ³ , calcium ⁴	Taps	Every 6 months.
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual ⁵	Entry point(s) to distribution system ⁶	No less frequently than every two weeks.
Reduced monitoring	pH, alkalinity, orthophosphate or silica ³ , calcium ⁴	Taps	Every 6 months, annually ⁷ or every 3 years ⁸ ; reduced number of sites.
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate and inhibitor residual ⁵	Entry point(s) to distribution system ⁶	No less frequently than every two weeks.

¹Table is for illustrative purposes; consult the text of this section for precise regulatory requirements.

²Small and medium-size systems have to monitor for water quality parameters only during monitoring periods in which the system exceeds the lead or copper action level.

³Orthophosphate must be measured only when an inhibitor containing a phosphate compound is used. Silica must be measured only when an inhibitor containing silicate compound is used.

⁴Calcium must be measured only when calcium carbonate stabilization is used as part of corrosion control.

⁵Inhibitor dosage rates and inhibitor residual concentrations (orthophosphate or silica) must be measured only when an inhibitor is used.

⁶Ground water systems may limit monitoring to representative locations throughout the system.

⁷Water systems may reduce frequency of monitoring for water quality parameters at the tap from every six months to annually if they have maintained the range of values for water quality parameters reflecting optimal corrosion control during 3 consecutive years of monitoring.

⁸Water systems may further reduce the frequency of monitoring for water quality parameters at the tap from annually to once every 3 years if they have maintained the range of values for water quality parameters reflecting optimal corrosion control during 3 consecutive years of annual monitoring. Water systems may accelerate to triennial monitoring for water quality parameters at the tap if they have maintained 90th percentile lead levels less than or equal to 0.005 mg/L, 90th percentile copper levels less than or equal to 0.65 mg/L, and the range of water quality parameters designated by the State under §141.82(f) as representing optimal corrosion control during two consecutive six-month monitoring periods.

[56 FR 26548, June 7, 1991; 57 FR 28788, June 29, 1992, as amended at 59 FR 33862, June 30, 1994; 65 FR 2010, Jan. 12, 2000; 72 FR 57818, Oct. 10, 2007]

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§141.88 Monitoring requirements for lead and copper in source water.

(a) *Sample location, collection methods, and number of samples.* (1) A water system that fails to meet the lead or copper action level on the basis of tap samples collected in accordance with §141.86 shall collect lead and copper source water samples in accordance with the following requirements regarding sample location, number of samples, and collection methods:

(i) Groundwater systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point). The system shall take one sample at the

same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(ii) Surface water systems shall take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment (hereafter called a sampling point). The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

NOTE TO PARAGRAPH (a)(1)(ii): For the purposes of this paragraph, surface water systems include systems with a combination of surface and ground sources.

(iii) If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (*i.e.*, when water is representative of all sources being used).

(iv) The State may reduce the total number of samples which must be analyzed by allowing the use of compositing. Compositing of samples must be done by certified laboratory personnel. Composite samples from a maximum of five samples are allowed, provided that if the lead concentration in the composite sample is greater than or equal to 0.001 mg/L or the copper concentration is greater than or equal to 0.160 mg/L, then either:

(A) A follow-up sample shall be taken and analyzed within 14 days at each sampling point included in the composite; or

(B) If duplicates of or sufficient quantities from the original samples from each sampling point used in the composite are available, the system may use these instead of resampling.

(2) Where the results of sampling indicate an exceedance of maximum permissible source water levels established under §141.83(b)(4), the State may require that one additional sample be collected as soon as possible after the initial sample was taken (but not to exceed two weeks) at the same sampling point. If a State-required confirmation sample is taken for lead or copper, then the results of the initial and confirmation sample shall be averaged in determining compliance with the State-specified maximum permissible levels. Any sample value below the detection limit shall be considered to be zero. Any value above the detection limit but below the PQL shall either be considered as the measured value or be considered one-half the PQL.

(b) *Monitoring frequency after system exceeds tap water action level.* Any system which exceeds the lead or copper action level at the tap shall collect one source water sample from each entry point to the distribution system no later than six months after the end of the monitoring period during which the lead or copper action level was exceeded. For monitoring periods that are annual or less frequent, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or if the State has established an alternate monitoring period, the last day of that period.

(c) *Monitoring frequency after installation of source water treatment.* Any system which installs source water treatment pursuant to §141.83(a)(3) shall collect an additional source water sample from each entry point to the distribution system during two consecutive six-month monitoring periods by the deadline specified in §141.83(a)(4).

(d) *Monitoring frequency after State specifies maximum permissible source water levels or determines that source water treatment is not needed.* (1) A system shall monitor at the frequency specified below in cases where the State specifies maximum permissible source water levels under §141.83(b)(4) or determines that the system is not required to install source water treatment under §141.83(b)(2).

(i) A water system using only groundwater shall collect samples once during the three-year compliance period (as that term is defined in §141.2) in effect when the applicable State determination under paragraph (d)(1) of this section is made. Such systems shall collect samples once during each subsequent compliance period. Triennial samples shall be collected every third calendar year.

(ii) A water system using surface water (or a combination of surface and ground water) shall collect samples once during each calendar year, the first annual monitoring period to begin during the year in which the applicable State determination is made under paragraph (d)(1) of this section.

(2) A system is not required to conduct source water sampling for lead and/or copper if the system meets the action level for the specific contaminant in tap water samples during the entire source water sampling period applicable to the system under paragraph (d)(1) (i) or (ii) of this section.

(e) *Reduced monitoring frequency.* (1) A water system using only ground water may reduce the monitoring frequency for lead and copper in source water to once during each nine-year compliance cycle (as that term is defined in §141.2) provided that the samples are collected no later than every ninth calendar year and if the system meets one of the following criteria:

(i) The system demonstrates that finished drinking water entering the distribution system has been maintained below the maximum permissible lead and copper concentrations specified by the State in §141.83(b)(4) during at least three consecutive compliance periods under paragraph (d)(1) of this section; or

(ii) The State has determined that source water treatment is not needed and the system demonstrates that, during at least three consecutive compliance periods in which sampling was conducted under paragraph (d)(1) of this section, the concentration of lead in source water was less than or equal to 0.005 mg/L and the concentration of copper in source water was less than or equal to 0.65 mg/L.

(2) A water system using surface water (or a combination of surface water and ground water) may reduce the monitoring frequency in paragraph (d)(1) of this section to once during each nine-year compliance cycle (as that term is defined in §141.2) provided that the samples are collected no later than every ninth calendar year and if the system meets one of the following criteria:

(i) The system demonstrates that finished drinking water entering the distribution system has been maintained below the maximum permissible lead and copper concentrations specified by the State in §141.83(b)(4) for at least three consecutive years; or

(ii) The State has determined that source water treatment is not needed and the system demonstrates that, during at least three consecutive years, the concentration of lead in source water was less than or equal to 0.005 mg/L and the concentration of copper in source water was less than or equal to 0.65 mg/L.

(3) A water system that uses a new source of water is not eligible for reduced monitoring for lead and/or copper until concentrations in samples collected from the new source during three consecutive monitoring periods are below the maximum permissible lead and copper concentrations specified by the State in §141.83(a)(5).

[56 FR 26548, June 7, 1991; 57 FR 28788 and 28789, June 29, 1992, as amended at 65 FR 2012, Jan. 12, 2000; 72 FR 57819, Oct. 10, 2007]

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§141.89 Analytical methods.

(a) Analyses for lead, copper, pH, conductivity, calcium, alkalinity, orthophosphate, silica, and temperature shall be conducted with the methods in §141.23(k)(1).

(1) Analyses for alkalinity, calcium, conductivity, orthophosphate, pH, silica, and temperature may be performed by any person acceptable to the State. Analyses under this section for lead and copper shall only be conducted by laboratories that have been certified by EPA or the State. To obtain certification to conduct analyses for lead and copper, laboratories must:

(i) Analyze Performance Evaluation samples, which include lead and copper, provided by or acceptable to EPA or the State at least once a year by each method for which the laboratory desires certification; and

(ii) Achieve quantitative acceptance limits as follows:

(A) For lead: ± 30 percent of the actual amount in the Performance Evaluation sample when the actual amount is greater than or equal to 0.005 mg/L. The Practical Quantitation Level, or PQL for lead is 0.005 mg/L.

(B) For Copper: ± 10 percent of the actual amount in the Performance Evaluation sample when the actual amount is greater than or equal to 0.050 mg/L. The Practical Quantitation Level, or PQL for copper is 0.050 mg/L.

(iii) Achieve the method detection limit for lead of 0.001 mg/L according to the procedures in appendix B of part 136 of this title. This need only be accomplished if the laboratory will be processing source water composite samples under §141.88(a)(1)(iv).

(iv) Be currently certified by EPA or the State to perform analyses to the specifications described in paragraph (a)(1) of this section.

(2) States have the authority to allow the use of previously collected monitoring data for purposes of monitoring, if the data were collected and analyzed in accordance with the requirements of this subpart.

(3) All lead and copper levels measured between the PQL and MDL must be either reported as measured or they can be reported as one-half the PQL specified for lead and copper in paragraph (a)(1)(ii) of this section. All levels below the lead and copper MDLs must be reported as zero.

(4) All copper levels measured between the PQL and the MDL must be either reported as measured or they can be reported as one-half the PQL (0.025 mg/L). All levels below the copper MDL must be reported as zero.

(b) [Reserved]

[56 FR 26548, June 7, 1991, as amended at 57 FR 28789, June 29, 1992; 57 FR 31847, July 17, 1992; 59 FR 33863, June 30, 1994; 59 FR 62470, Dec. 5, 1994; 64 FR 67466, Dec. 1, 1999; 65 FR 2012, Jan. 12, 2000; 72 FR 57819, Oct. 10, 2007]

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§141.90 Reporting requirements.

All water systems shall report all of the following information to the State in accordance with this section.

(a) *Reporting requirements for tap water monitoring for lead and copper and for water quality parameter monitoring.*

(1) Except as provided in paragraph (a)(1)(viii) of this section, a water system shall report the information specified below for all tap water samples specified in §141.86 and for all water quality parameter samples specified in §141.87 within the first 10 days following the end of each applicable monitoring period specified in §141.86 and §141.87 (*i.e.*, every six months, annually, every 3 years, or every 9 years). For monitoring periods with a duration less than six months, the end of the monitoring period is the last date samples can be collected during that period as specified in §§141.86 and 141.87.

(i) The results of all tap samples for lead and copper including the location of each site and the criteria under §141.86 (a) (3), (4), (5), (6), and/or (7) under which the site was selected for the system's sampling pool;

(ii) Documentation for each tap water lead or copper sample for which the water system requests invalidation pursuant to §141.86(f)(2);

(iii) [Reserved]

(iv) The 90th percentile lead and copper concentrations measured from among all lead and copper tap water samples collected during each monitoring period (calculated in accordance with §141.80(c)(3)), unless the State calculates the system's 90th percentile lead and copper levels under paragraph (h) of this section;

(v) With the exception of initial tap sampling conducted pursuant to §141.86(d)(1), the system shall designate any site which was not sampled during previous monitoring periods, and include an explanation of why sampling sites have changed;

(vi) The results of all tap samples for pH, and where applicable, alkalinity, calcium, conductivity, temperature, and orthophosphate or silica collected under §141.87 (b)-(e);

(vii) The results of all samples collected at the entry point(s) to the distribution system for applicable water quality parameters under §141.87 (b)-(e);

(viii) A water system shall report the results of all water quality parameter samples collected under §141.87(c) through (f) during each six-month monitoring period specified in §141.87(d) within the first 10 days following the end of the monitoring period unless the State has specified a more frequent reporting requirement.

(2) For a non-transient non-community water system, or a community water system meeting the criteria of §141.85(b) (7), that does not have enough taps that can provide first-draw samples, the system must either:

(i) Provide written documentation to the State identifying standing times and locations for enough non-first-draw samples to make up its sampling pool under §141.86(b)(5) by the start of the first applicable monitoring period under §141.86(d) that commences after April 11, 2000, unless the State has waived prior State approval of non-first-draw sample sites selected by the system pursuant to §141.86(b)(5); or

(ii) If the State has waived prior approval of non-first-draw sample sites selected by the system, identify, in writing, each site that did not meet the six-hour minimum standing time and the length of standing time for that particular substitute sample collected pursuant to §141.86(b)(5) and include this information with the lead and copper tap sample results required to be submitted pursuant to paragraph (a)(1)(i) of this section.

(3) At a time specified by the State, or if no specific time is designated by the State, then as early as possible prior to the addition of a new source or any long-term change in water treatment, a water system deemed to have optimized corrosion control under §141.81(b)(3), a water system subject to reduced monitoring pursuant to §141.86(d)(4), or a water system subject to a monitoring waiver pursuant to §141.86(g), shall submit written documentation to the State describing the change or addition. The State must review and approve the addition of a new source or long-term change in treatment before it is implemented by the water system. Examples of long-term treatment changes include the addition of a new treatment process or modification of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants (e.g., alum to ferric chloride), and switching corrosion inhibitor products (e.g., orthophosphate to blended phosphate). Long-term changes can include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes.

(4) Any small system applying for a monitoring waiver under §141.86(g), or subject to a waiver granted pursuant to §141.86(g)(3), shall provide the following information to the State in writing by the specified deadline:

(i) By the start of the first applicable monitoring period in §141.86(d), any small water system applying for a monitoring waiver shall provide the documentation required to demonstrate that it meets the waiver criteria of §§141.86(g)(1) and (2).

(ii) No later than nine years after the monitoring previously conducted pursuant to §141.86(g)(2) or §141.86(g)(4)(i), each small system desiring to maintain its monitoring waiver shall provide the information required by §§141.86(g)(4)(i) and (ii).

(iii) No later than 60 days after it becomes aware that it is no longer free of lead-containing and/or copper-containing material, as appropriate, each small system with a monitoring waiver shall provide written notification to the State, setting forth the circumstances resulting in the lead-containing and/or copper-containing materials being introduced into the system and what corrective action, if any, the system plans to remove these materials.

(iv) By October 10, 2000, any small system with a waiver granted prior to April 11, 2000 and that has not previously met the requirements of §141.86(g)(2) shall provide the information required by that paragraph.

(5) Each ground water system that limits water quality parameter monitoring to a subset of entry points under §141.87(c)(3) shall provide, by the commencement of such monitoring, written correspondence to the State that identifies the selected entry points and includes information sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

(b) *Source water monitoring reporting requirements.* (1) A water system shall report the sampling results for all source water samples collected in accordance with §141.88 within the first 10 days following the end of each source water monitoring period (*i.e.*, annually, per compliance period, per compliance cycle) specified in §141.88.

(2) With the exception of the first round of source water sampling conducted pursuant to §141.88(b), the system shall specify any site which was not sampled during previous monitoring periods, and include an explanation of why the sampling point has changed.

(c) *Corrosion control treatment reporting requirements.* By the applicable dates under §141.81, systems shall report the following information:

(1) For systems demonstrating that they have already optimized corrosion control, information required in §141.81(b)(2) or (3).

(2) For systems required to optimize corrosion control, their recommendation regarding optimal corrosion control treatment under §141.82(a).

(3) For systems required to evaluate the effectiveness of corrosion control treatments under §141.82(c), the information required by that paragraph.

(4) For systems required to install optimal corrosion control designated by the State under §141.82(d), a letter certifying that the system has completed installing that treatment.

(d) *Source water treatment reporting requirements.* By the applicable dates in §141.83, systems shall provide the following information to the State:

(1) If required under §141.83(b)(1), their recommendation regarding source water treatment;

(2) For systems required to install source water treatment under §141.83(b)(2), a letter certifying that the system has completed installing the treatment designated by the State within 24 months after the State designated the treatment.

(e) *Lead service line replacement reporting requirements.* Systems shall report the following information to the State to demonstrate compliance with the requirements of §141.84:

(1) No later than 12 months after the end of a monitoring period in which a system exceeds the lead action level in sampling referred to in §141.84(a), the system must submit written documentation to the State of the material evaluation conducted as required in §141.86(a), identify the initial number of lead service lines in its distribution system at the time the system exceeds the lead action level, and provide the system's schedule for annually replacing at least 7 percent of the initial number of lead service lines in its distribution system.

(2) No later than 12 months after the end of a monitoring period in which a system exceeds the lead action level in sampling referred to in §141.84(a), and every 12 months thereafter, the system shall demonstrate to the State in writing that the system has either:

(i) Replaced in the previous 12 months at least 7 percent of the initial lead service lines (or a greater number of lines specified by the State under §141.84(e)) in its distribution system, or

(ii) Conducted sampling which demonstrates that the lead concentration in all service line samples from an individual line(s), taken pursuant to §141.86(b)(3), is less than or equal to 0.015 mg/L. In such cases, the total number of lines replaced and/or which meet the criteria in §141.84(c) shall equal at least 7 percent of the initial number of lead lines identified under paragraph (e)(1) of this section (or the percentage specified by the State under §141.84(e)).

(3) The annual letter submitted to the State under paragraph (e)(2) of this section shall contain the following information:

(i) The number of lead service lines scheduled to be replaced during the previous year of the system's replacement schedule;

(ii) The number and location of each lead service line replaced during the previous year of the system's replacement schedule;

(iii) If measured, the water lead concentration and location of each lead service line sampled, the sampling method, and the date of sampling.

(4) Any system which collects lead service line samples following partial lead service line replacement required by §141.84 shall report the results to the State within the first ten days of the month following the month in which the system receives the laboratory results, or as specified by the State. States, at their discretion may eliminate this requirement to report these monitoring results. Systems shall also report 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.

(f) *Public education program reporting requirements.* (1) Any water system that is subject to the public education requirements in §141.85 shall, within ten days after the end of each period in which the system is required to perform public education in accordance with §141.85(b), send written documentation to the State that contains:

(i) A demonstration that the system has delivered the public education materials that meet the content requirements in §141.85(a) and the delivery requirements in §141.85(b); and

(ii) A list of all the newspapers, radio stations, television stations, and facilities and organizations to which the system delivered public education materials during the period in which the system was required to perform public education tasks.

(2) Unless required by the State, a system that previously has submitted the information required by paragraph (f)(1)(ii) of this section need not resubmit the information required by paragraph (f)(1)(ii) of this section, as long as there have been no changes in the distribution list and the system certifies that the public education materials were distributed to the same list submitted previously.

(3) No later than 3 months following the end of the monitoring period, each system must mail a sample copy of the consumer notification of tap results to the State along with a certification that the notification has been distributed in a manner consistent with the requirements of §141.85(d).

(g) *Reporting of additional monitoring data.* Any system which collects sampling data in addition to that required by this subpart shall report the results to the State within the first ten days following the end of the applicable monitoring period under §§141.86, 141.87 and 141.88 during which the samples are collected.

(h) *Reporting of 90th percentile lead and copper concentrations where the State calculates a system's 90th percentile concentrations.* A water system is not required to report the 90th percentile lead and copper concentrations measured from among all lead and copper tap water samples collected during each monitoring period, as required by paragraph (a)(1)(iv) of this section if:

(1) The State has previously notified the water system that it will calculate the water system's 90th percentile lead and copper concentrations, based on the lead and copper tap results submitted pursuant to paragraph (h)(2)(i) of this section, and has specified a date before the end of the applicable monitoring period by which the system must provide the results of lead and copper tap water samples;

(2) The system has provided the following information to the State by the date specified in paragraph (h)(1) of this section:

(i) The results of all tap samples for lead and copper including the location of each site and the criteria under §141.86 (a)(3), (4), (5), (6), and/or (7) under which the site was selected for the system's sampling pool, pursuant to paragraph (a)(1)(i) of this section; and

(ii) An identification of sampling sites utilized during the current monitoring period that were not sampled during previous monitoring periods, and an explanation why sampling sites have changed; and

(3) The State has provided the results of the 90th percentile lead and copper calculations, in writing, to the water system before the end of the monitoring period.

[56 FR 26548, June 7, 1991; 57 FR 28789, June 29, 1992, as amended at 59 FR 33864, June 30, 1994; 65 FR 2012, Jan. 12, 2000; 72 FR 57819, Oct. 10, 2007]

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§141.91 Recordkeeping requirements.

Any system subject to the requirements of this subpart shall retain on its premises original records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, State determinations, and any other information required by §§141.81 through 141.88. Each water system shall retain the records required by this section for no fewer than 12 years.

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APPENDIX B:
ADEM REGULATIONS

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
WATER DIVISION - WATER SUPPLY PROGRAM**

**CHAPTER 335-7-11
CONTROL OF LEAD AND COPPER**

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335-7-11-.01 Definitions. When used in this chapter, the following words and terms shall have the meaning assigned to them as shown.

(a) Action Level--The concentration of lead or copper in water which is used to determine compliance with these regulations. This action level value is the 90th percentile level determined from monitoring water at specific sites in the distribution system.

(b) Corrosion inhibitor--A substance capable of reducing the corrosivity of water towards metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials.

(c) Compliance Limit--the level of 0.015 mg/l of lead and 1.3 mg/l of copper in drinking water. To determine compliance, a system shall compare its lead/copper action levels with these values.

(d) Effective Corrosion Inhibitor Residual--A concentration of corrosion inhibitor sufficient to form a passivating film on the interior walls of a pipe.

(e) First draw sample--A one liter sample of tap water which has been standing in plumbing piping for at least six hours prior to collection and is collected without flushing the tap. Samples shall be taken from residential housing from a cold water kitchen or bathroom tap or from a non-residential building collected at a tap used for water consumption.

(f) Large water system--A public water system serving 50,000 or more persons.

(g) Lead Service line--A water service line made of lead connecting the water main to a building inlet. This service line includes all fittings attached or connected to it.

(h) Medium size water system--A public water system that serves greater than 3,300 population and less than 50,000 population.

(i) Optimal corrosion control treatment--Treatment of the water that minimizes the lead and copper concentrations at users taps while ensuring that the treatment does not cause non-compliance with other established drinking water standards.

(j) Service line sample--A one liter sample of water which has been standing in a lead service line for at least six hours.

(k) Single family structure--A building constructed as a single family residence that is currently used as either a residence or a place of business.

(l) Small water system--A public water system that serves 3,300 population or less.

Author: Joe Alan Power.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992. Effective: November 9, 1992.

335-7-11-.02 Applicability. The regulations established by this chapter apply to all community and NTNC water systems. All water systems shall establish water treatment techniques to produce a non-aggressive water to minimize the exposure to its consumers of lead and copper which may be present in the materials of construction, both in the water system and in customer plumbing. Additional steps may be necessary to minimize exposure to lead and copper by replacing water distribution piping and appurtenances.

Author: Joe Alan Power.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992. Effective: November 9, 1992.

335-7-11-.03 Compliance with Lead and Copper Levels. All water systems shall determine a lead and copper action level based on the monitoring requirements established in this chapter. A system is considered in compliance if the lead action level is equal to or less than the lead compliance limit (0.015 mg/l) and the copper level is equal to or less than the copper compliance limit (1.3 mg/l.) This action level shall be determined using all monitoring at the selected sites, not just the minimum shown in Table 11-1.

Author: Joe Alan Power.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992. Effective: November 9, 1992.

335-7-11-.04 Initial Monitoring to Establish Action Levels.

(1) All new community and NTNC water systems shall monitor for lead and copper at the number of established monitoring sites for two consecutive six-month monitoring periods starting the first six-month period the system is in operation.

(2) Any community and NTNC water system that exceeds a lead or copper action level shall monitor for lead and copper at the number of established monitoring sites during at least two consecutive six-month compliance periods.

(3) Any water system which has demonstrated satisfactory action levels and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the Department during two consecutive six-month monitoring periods may reduce monitoring sites and frequency of monitoring to once per year if it receives written approval from the Department. The number of initial and reduced monitoring sites is shown in Table 11-1. The reduced monitoring shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

(4) A community or NTNC water system that significantly changes the source of its drinking water, its treatment to control the corrosivity of the water or if the source water quality significantly changes, may be required by the Department to conduct initial monitoring under this rule.

Author: Joe Alan Power, Dennis D. Harrison.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; Amended: September 19, 1995 (ER); November 28, 1995. Effective: January 2, 1996.

Amended: March 12, 2002; January 22, 2008; May 26, 2009; November 25, 2014.

335-7-11-.05 Repeat Monitoring Requirements.

(1) Systems monitoring on a yearly basis shall use the number of reduced monitoring sites shown in Table 11-1. All monitoring must be taken from previous sites and must be collected during June, July, August, or September of that year unless the water system receives written approval from the Department for an alternative monitoring period.

(2) After three consecutive years of demonstrating satisfactory action levels, a small or medium water system may reduce monitoring to once every three years.

(3) After three consecutive years of demonstrating satisfactory action levels and maintaining the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the Department, any water system may reduce monitoring sites and frequency of monitoring to once every three years with written approval from the Department.

(4) A system with a 90th percentile level less than or equal to .005 mg/L for lead and 0.65 mg/L for copper for two consecutive six-month periods may reduce monitoring to once every three years.

(5) Any system exceeding a lead or copper compliance limit shall increase monitoring consistent with the initial monitoring compliance requirements. Monitoring must be collected from the initial sites and monitoring must take place during six-month compliance cycles (January – June or July – December) until compliance is achieved. Monitoring shall begin with the next available compliance cycle after the exceedance occurred. If optimum corrosion control treatment or source water treatment is initiated by the system, monitoring during six-month compliance cycles must continue for two six-month periods after the treatment has been installed demonstrating compliance with the compliance limits.

(6) Any system that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the Department for more than nine days in any six-month period shall increase monitoring consistent with the initial monitoring compliance requirements. Monitoring must be conducted utilizing the initial monitoring sites and monitoring must take place during six-month compliance cycles January – June or July – December) until compliance is achieved. Monitoring shall begin with the next available compliance cycle after the exceedance occurred.

(7) A system may be allowed to monitor during months other than June, July, August and September. The alternate monitoring period shall be no longer than four months in duration when the highest lead levels are likely to occur. Systems monitoring annually must conduct their next round of monitoring during a time period that ends no later than 21 months after the previous round of monitoring. Systems monitoring every three years must

conduct their next round of monitoring during a time period that ends no later than 45 months after the previous round of monitoring.

Author: Joe Alan Power.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; Amended: September 19, 1995 (ER); November 28, 1995. Effective: January 2, 1996.

Amended: March 12, 2002; May 26, 2009; November 25, 2014.

335-7-11-.06 Number of Lead-Copper Monitoring Sites. Water systems shall collect at least one sample during each monitoring period from the number of sites established by Table 11-1. A system conducting reduced monitoring under this rule shall collect at least one sample from the number of sites specified in the Reduced Monitoring Sites column below. Such reduced monitoring sites shall be representative of the sites required for standard monitoring. A public water system that has fewer than five drinking water taps that can be used for human consumption shall collect at least one sample from each tap and then shall collect additional samples from those taps on different days during the monitoring period to meet the required minimum number of sample sites list in Table 11-1. Under no circumstance can a water system reduce the minimum number of samples below 5 per monitoring period.

TABLE 11-1 LEAD/COPPER MONITORING SITES		
Population	Initial Monitoring Sites	Reduced Monitoring Sites
> 100,000	100	50
10,001-100,000	60	30
3,301-10,000	40	20
501-3,300	20	10
101-500	10	5
≤ 100	5	5

Author: Joe Alan Power.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992. Effective: November 9, 1992.

Amended: March 12, 2002; May 26, 2009; November 25, 2014.

335-7-11-.07 Monitoring Site Selection. Only monitoring conducted utilizing acceptable sites can be used to determine compliance with this chapter. Water systems shall complete a materials evaluation of its distribution system to identify targeted sample sites. Sufficient sample sites shall be selected to allow an availability of acceptable sites and thus allow monitoring based on the number of samples required in Table 11-1.

(a) Monitoring sites for Community systems--Community water systems must conduct all lead and copper monitoring utilizing tier one sites or

document the lack of sufficient sites and conduct the remaining monitoring from tier two sites. Water systems with insufficient tier one and two sites may utilize tier three sites. A community water system with insufficient tier one, two or three sites shall monitor utilizing replacement sites throughout the distribution system. A replacement site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system but not conforming to tier one, two or three requirements.

1. Any water system whose distribution system contains lead service lines shall conduct at least 50% of the monitoring from these sites during each monitoring period. Monitoring shall be conducted from the lead service line. Should a sufficient number of sites be unavailable to provide 50% of the required monitoring, written documentation is necessary to demonstrate why the system was unable to locate a sufficient number of such sites.

2. Tier one sites--These sites include single family structures containing lead pipe or plumbing, are served by a lead service line, or contain copper pipes with lead solder and were constructed after 1982.

3. Tier two sites--These sites include buildings and multiple family residences containing lead pipe or plumbing, are served by a lead service line, or contain copper pipes with lead solder and were constructed after 1982.

4. Tier three sites--These sites include single family structures containing copper pipes with lead solder which were constructed prior to 1983.

(b) Monitoring sites for NTNC water systems--NTNC systems shall conduct all lead and copper monitoring from tier one sites. Systems with insufficient tier one sites may use tier two sites and those systems consisting of fewer structures than required sites may collect more than one sample at a structure, but from different spigots which consist of building containing copper pipes with lead solder installed before 1983. A NTNC water system with insufficient tier one or two sites shall conduct the remaining monitoring from replacement sites throughout the distribution system. A replacement site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system but not conforming to tier one or two requirements.

1. Tier One Sites--These sites include buildings with lead pipes or plumbing, are served by a lead service line or contain copper pipes with lead solder constructed after 1982.

2. Tier Two Sites--These sites include buildings with copper pipes and lead solder constructed before 1983.

(c) Lead service line samples--Any water system whose distribution system contains lead service lines shall conduct 50% of the monitoring from sites served by a lead service line each monitoring period. If a sufficient number of sites served by a lead service line cannot be identified, all identified sites shall be monitored.

Author: Joe Alan Power.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992. Effective: November 9, 1992.

Amended: March 12, 2002.

335-7-11-.08 Lead/Copper Monitoring Collection Procedures. Tap and service line monitoring shall be collected in accordance with the following:

(a) Tap monitoring for lead and copper shall be first draw and one liter in volume. The water shall stand motionless in the plumbing system for at least six hours prior to collection. Collection shall be from the cold water kitchen tap or bathroom sink tap from tier 1 sites or from an interior tap typically used for obtaining water for consumption from tier 2 and tier 3 sites. Monitoring may be conducted by the resident after proper instructions and procedures have been provided by the water system. Follow up tap monitoring shall be conducted from the same sites. Should a site no longer be available, an alternate acceptable site may be selected which is in reasonable proximity of the original site. Taps used for monitoring may not include faucets that have point of use or treatment devices installed.

(b) Service line monitoring shall be one liter in volume and have remained in the lead service line for at least six hours prior to collection. Service line monitoring may be collected directly by tapping into the lead service line, or by flushing the volume of water between the tap and the lead service line until either the calculated amount of water between the tap and the service line has been discharged or for single family residences until there is a significant change in temperature which would indicate the water available was standing in the lead service line.

(c) Water systems with insufficient taps that can supply first draw samples may apply to the state in writing to substitute non-first-draw samples. These systems must collect as many of the samples as possible from first-draw taps and identify the monitoring times and locations that would likely result in the longest standing times for the remaining samples. Non-first-draw samples shall be one liter in volume and collected from an interior tap from which water is typically drawn for consumption.

Author: Joe Alan Power.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992. Effective: November 9, 1992.

Amended: March 12, 2002.

335-7-11-.09 Invalidation of Lead or Copper Tap Water Samples. A sample invalidated under this rule does not count toward 90th percentile levels or toward meeting minimum monitoring requirements.

(a) A sample may be invalidated for one of the following reasons.

1. The laboratory establishes that improper sample analysis caused erroneous results.

2. The State determines that the sample was taken from a site that did not meet the site selection criteria of this rule.

3. The sample container was damaged in transit.

4. There is substantial reason to believe that the sample was subject to tampering.

(b) The system must report the results of all samples to the State and all supporting documentation for samples the system believes should be invalidated.

(c) The water system must collect replacement samples for any samples invalidated under this rule if, after the invalidation of one or more samples, the system has not collected the minimum number of samples. Any such replacement samples must be taken as soon as possible, but no later than 20 days after the date the State invalidates the sample or by the end of the applicable monitoring period, whichever occurs later. Replacement samples taken after the end of the applicable monitoring period shall not also be used to meet the monitoring requirements of a subsequent monitoring period. The replacement samples shall be taken at the same locations as the invalidated samples or, if that is not possible, at locations other than those already used for monitoring during the monitoring period.

Author: Thomas S. Deloach.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: March 12, 2002.

Amended: January 22, 2008.

335-7-11-.10 Monitoring Waivers. A small system that meets the requirements of this rule may apply to the state to reduce the frequency of monitoring for lead and copper to once every nine years.

(a) The system must submit a materials survey showing the system is free of lead and copper containing materials as detailed below.

1. It contains no plastic pipes which contain lead plasticizers, or plastic service lines which contain lead plasticizers; and

2. It is free of lead service lines, lead pipes, lead soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless such fittings and fixtures meet the NSF Standard 61 Section 9.

3. The system contains no copper pipes or copper service lines.

(b) The system must have completed at least one six-month round of standard tap water monitoring for lead and copper demonstrating that the 90th percentile levels for all rounds of monitoring conducted since the system became free of all lead-containing and copper-containing materials were less than or equal to .005 mg/L for lead and 0.65 mg/L for copper.

(c) A system that has been granted a waiver must monitor for lead and copper at the reduced number of monitoring sites specified in Table 11-1 every nine years. The system must also submit a materials survey along with the monitoring results.

(d) A system must return to monitoring for lead and copper at least every three years if the system no longer meets the materials criteria, has a 90th percentile level for lead greater than .005 mg/L or a 90th percentile level for copper greater than .065 mg/L.

(e) The system shall notify the Department within 60 days after determining the system is no longer free of materials that contain lead or copper.

(4) Any water system with a waiver shall notify the Department of any upcoming long-term change in treatment or addition of a new source.

Author: Thomas S. DeLoach.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: March 12, 2002.

Amended: May 30, 2003; January 22, 2008; May 26, 2009.

335-7-11-.11 Action Level Non-Compliance. Any water system with an action level exceeding the compliance limit for lead or copper shall complete the following requirements in the manner and by the deadline established by these regulations:

(a) Water systems must install and maintain adequate corrosion control treatment equipment to ensure that the lead/copper compliance limit can be met. The Department may require that an in-depth study be completed to determine the optimum corrosion control process for the system.

(b) Systems installing corrosion control treatment requirements shall monitor the parameters at the frequency established by these regulations. All parameters established must be reported on the monthly operation data reports by the 10th of the following month. Exceedance of the established values which indicate optimum corrosion control is considered a treatment technique violation.

(c) The lead and copper level in the source water serving the areas exceeding the compliance limit must be monitored to determine compliance with the primary drinking water standards in chapter 335-7-2. The source

must be taken out of service and provided with satisfactory treatment, approved by the Department, to reduce the lead or copper level to meet these drinking water standards.

(d) A system that fails to meet the lead/copper compliance limit after the installation of corrosion control shall develop a program to replace lead service lines. All lead service lines in the system shall be identified and at least 7% replaced on an annual basis. More rapid replacement may be required by the Department.

(e) Systems which exceed the lead compliance limit shall deliver public educational materials according to the methods specified in the regulations. The language used in this public education notice must include specific language contained in the Appendix C.

Author: Joe Alan Power, Dennis D. Harrison.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; Amended: September 19, 1995 (ER); November 28, 1995. Effective: January 2, 1996.

Amended: March 12, 2002; January 22, 2008; September 25, 2012.

335-7-11-.12 Corrosion Control Treatment Requirement. Any water system which has been deemed to have optimized corrosion control and has corrosion control treatment in place shall continue to operate and maintain treatment to ensure that optimal corrosion control is maintained.

(a) All water systems with an action level which exceeds a lead or copper compliance limit and any new drinking water source proposed for use after the effective date of these regulations shall install and properly operate optimum corrosion control processes continuously to reduce the potential for lead or copper exposure by the consumers. Within six months of exceeding the compliance limit a system shall provide a detailed report indicating the process and equipment to be used to provide corrosion control treatment. Installation and start up of the equipment must be completed within 24 months of approval of the Department. A corrosion control treatment study may be required by the Department to determine the optimum process to be installed. Those systems practicing corrosion control in their treatment process prior to the effective date of these regulations and acceptable to the Department may have the treatment study requirements waived. Systems required to perform a corrosion control treatment study shall complete the study and submit its results along with a proposal for the process to be used to the Department within 12 months of exceeding a compliance limit. This report must include a proposed construction schedule for installation of the equipment. This project must be completed no more than 24 months after the study submittal. All systems installing corrosion control treatment processes shall monitor initial site during the next two consecutive six-month compliance periods.

(b) The water in a water system is considered to meet optimum corrosion control when the distribution system:

1. Water quality parameters reflected on the Baylis Curve indicates no incrusting or corrosion will occur, or
2. The Langelier Index of the water is between -1.0 to +2,
3. The Ryznar Index is between 7 and 11,
4. A phosphate or silicate corrosion inhibitor is continuously applied at the manufacturer/supplier recommended level resulting in minimum complaints, or
5. The Calcium Carbonate Precipitation Potential (CCPP) is maintained between 4-10 mg/l, and
6. The water continuously meets the lead and copper compliance limits.

(c) Any water system may be considered to optimize corrosion control treatment if it demonstrates that it has conducted activities equivalent to the corrosion control steps outlined in this rule. Water systems deemed to have optimized corrosion control under this subparagraph shall operate in compliance with the State-designated optimal water quality control parameters and continue to conduct lead and copper tap and water quality parameter monitoring as required by these regulations. The system shall provide to the Department:

1. The results of all monitoring for each of the water quality parameters listed in 335-7-11-.13(c);
2. A report explaining the test methods used by the water system to evaluate the corrosion control treatments listed in 335-7-11-13(a), the results of all tests conducted and the basis for the system's selection of optimal corrosion control treatment;
3. A report explaining how corrosion control has been installed and how it is being maintained to ensure minimal lead and copper concentrations at consumer's taps; and
4. The information from tap water monitoring conducted in accordance with 335-7-11-.07 above the compliance limit.

(d) Any water system is deemed to have optimized corrosion control if it submits results of tap water monitoring conducted in accordance with 335-7-11-.08 and source water monitoring in accordance with 335-7-11-.15 that demonstrates for two consecutive six-month monitoring periods that the difference between the 90th percentile tap water level computed under 335-7-11-.03 and the highest source water lead concentration is less than 0.005 mg/l.

1. Those systems whose highest source water lead level is below the Method Detection Limit may also be deemed to have optimized corrosion control under this subparagraph if the 90th percentile tap water lead level is less than or equal to 0.005 mg/l for two consecutive 6-month monitoring periods.

2. Any water system deemed to have optimized corrosion control in accordance with this subparagraph shall continue to monitor for lead and copper at the tap no less frequently than once every three calendar years using the reduced number of monitoring sites and conducting the monitoring at times and locations specified in these regulations.

3. Any water system deemed to have optimized corrosion control shall notify the Department in writing pursuant of any change in treatment or the addition of a new source. Any new source or long-term change in water treatment shall have written approval from the Department before being placed into service or implemented. The system may be required to conduct additional monitoring or to take other action to ensure that the system maintains minimal levels of corrosion in the distribution system.

4. Any system triggered into corrosion control because it is no longer deemed to have optimized corrosion control under this subparagraph shall implement corrosion control treatment in accordance with the deadlines in the regulations. Large systems shall adhere to the schedule specified in the paragraph for medium size systems; with the time periods for completing each step being triggered by the date the system is no longer deemed to have optimized corrosion control under this paragraph.

Author: Joe Alan Power, Dennis D. Harrison.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; Amended: September 19, 1995 (ER); November 28, 1995. Effective: January 2, 1996.

Amended: March 12, 2002; January 22, 2008; May 26, 2009; January 18, 2011; September 25, 2012.

335-7-11-.13 Corrosion Control Study. Systems proposing to use a new source or exceeding the lead and copper compliance limit may be required to conduct and submit a corrosion control study to determine the optimum corrosion control process to minimize exposure of lead and copper to the consumers.

(a) Any water system performing a corrosion control study shall evaluate the effectiveness of each of the following treatment processes and if appropriate, any combination of these processes:

1. Alkalinity and pH adjustment,
2. Calcium hardness adjustment, and

3. The addition of a phosphate or silicate based corrosion inhibitor at a concentration to maintain an effective residual in the distribution system.

(b) The study shall use either a pipe-loop test, metal coupon test, partial system test, or analysis based on documented treatment activities from other water systems with similar water chemistry, similar system size, and same distribution system configuration.

(c) The following water quality parameters shall be measured during the test conducted to allow proper evaluation of the processes:

1. Lead
2. Copper
3. pH
4. Total alkalinity
5. Calcium
6. Conductivity
7. Orthophosphate (when a phosphate inhibitor is evaluated)
8. Silicate (when a silicate compound is evaluated)
9. Water temperature

(d) The study shall identify all chemical or physical constraints that may limit or prohibit the use of a particular corrosion treatment method, identify any previously used corrosion control treatment that was found ineffective, or adversely affected any treatment processes, shall evaluate the effect of the proposed chemicals to be used on the water quality treatment processes demonstrating adequate corrosion control, and shall provide a recommendation of the proposed process to be installed.

(e) Information to be included with the recommended process shall include cost of the proposed installation, equipment to be used including model number and brand, chemical to be added including proposed concentration rate, NSF approval document, and availability information on the chemical and a construction schedule demonstrating the equipment can be operational within 24 months of the study submittal. After review of the recommended process, the Department will determine the optimum corrosion control process and the water quality parameter values. Lead and copper monitoring shall continue each six-month compliance period from the date the parameter values are set.

Author: Joe Alan Power.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; Amended: September 19, 1995 (ER); November 28, 1995. Effective: January 2, 1996.

Amended: March 12, 2002; September 25, 2012.

335-7-11-.14 Corrosion Control Parameter Monitoring Requirements.

(1) All large water systems and water systems utilizing a corrosion control process to meet the requirements established under rule 335-7-11-.12 shall begin monitoring within ten days of process activation.

(2) Monitoring parameters will be determined for each specific water system and may include requirements for monitoring pH, alkalinity, orthophosphate, silica, calcium, conductivity, water temperature, and other parameters designated by the Department. Compliance may be demonstrated by monitoring the treated water from each individual source for designated parameters on a daily and weekly basis or by establishing distribution system locations and monitoring during six-month monitoring periods (January – June or July – December). Compliance monitoring shall begin with the next full six-month period.

(a) Systems using the Baylis Curve may demonstrate proper corrosion control by monitoring the treated water from each water source on a daily basis for pH and total alkalinity. Should the system utilize the Langelier Index or Ryznar Index for evaluating the corrosive level of the water, the treated water from each source must be monitored for pH and alkalinity daily and calcium, water temperature, and hardness on a weekly basis. Should an orthophosphate or silicate inhibitor be used, the system shall monitor pH on a daily basis and the phosphate or silicate level on a weekly basis for each treatment facility.

(b) With the approval of the Department, a system may select representative sites throughout the distribution system, taking into consideration the number of different sources of water, different treatment methods, seasonal variability, and density of service. The number of sites must be no less than those designated in Table 11-2.

Population	Number of sites
> 100,000	25
10,001-100,000	10
3301-10,000	3
501-3300	2
<500	1

(c) Two samples shall be obtained from each of the designated sites and two samples shall be obtained from each entry point from a treatment facility

operating under normal conditions and analyzed for pH, alkalinity, Orthophosphate, (when a phosphate compound is used), silica (when a silicate compound is used), calcium, conductivity, and water temperature. These samples shall be collected each six-month monitoring period and reported by the 10th of the following month after samples are collected.

(d) All systems optimizing corrosion control shall continue to operate and maintain optimal corrosion control treatment, including maintaining water quality parameters at or above minimum values or within ranges designated by the State for all monitoring conducted. Compliance with the requirements of this subparagraph shall be determined every six months. A water system is out of compliance for a six-month period if it has excursions for any State-specified parameter on more than nine days during the period. An excursion occurs whenever the daily value for one or more of the water quality parameters measured at a monitoring location is below the minimum value or outside the range designated by the State. Daily values are calculated as follows:

1. On days when more than one measurement for the water quality parameter is collected at the monitoring location, the daily value shall be the average of all results collected during the day regardless of whether they are collected through continuous monitoring, grab monitoring, or a combination of both.

2. On days when only one measurement for the water quality parameter is collected at the monitoring location, the daily value shall be the result of that measurement.

3. On days when no measurement is collected for the water quality parameter at the monitoring location, the daily value shall be the daily value calculated on the most recent day on which the water quality parameter was measured at the site.

(3) The water system shall maintain water quality parameter values within the ranges established by the Department to demonstrate production of satisfactory water. Should an analysis indicate a value outside the established level, immediate steps shall be taken to adjust the treatment process and conduct additional monitoring within 24 hours to verify compliance with acceptable value(s). Analysis of corrosion control parameters shall be conducted using analytical methods established by EPA.

(4) Any small or medium-sized systems shall conduct water quality parameter monitoring according to the requirements of this rule when the water system exceeds the lead or copper action level.

(5) Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment during three consecutive years of monitoring may reduce the frequency of monitoring to once per year if it receives written approval from the Department. The reduced monitoring shall begin during the calendar year immediately following the end of the monitoring period in which the third consecutive year of six-month

monitoring occurs. Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment during three consecutive years of annual monitoring may reduce the frequency of monitoring to every three years if it receives written approval from the Department. The sampling begins no later than the third calendar year following the end of the monitoring period in which the third consecutive year of monitoring occurs.

Author: Joe Alan Power, Dennis D. Harrison.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; Amended September 19, 1995 (ER); November 28, 1995. Effective: January 2, 1996.

Amended: March 12, 2002; January 22, 2008; May 26, 2009; November 25, 2014.

335-7-11-.15 Source Water Monitoring and Treatment. Any system which exceeds the lead or copper compliance limit must analyze the treated water for the contaminant using the same methodology and location as required for inorganic contaminants in each source used by the system. This analysis must be completed within 180 days after the exceedance. Should these levels exceed 0.015 mg/l lead or 1 mg/l copper, confirmation monitoring must be collected within 7 days. The value of the initial and all confirmation monitoring will be averaged. Treatment modifications must be installed which will result in the finished water meeting the drinking water standard. Unless written approval by the Department is given, the source will be taken out of service within 60 days and remain out of service until these additional treatment requirements are provided. Prior to reactivation of this source, monitoring of the treated water shall demonstrate compliance with drinking water standards and a second set of lead and copper monitoring conducted in six months. All initial sites for lead and copper shall be monitored for the next two six-month compliance periods. Modifications to the treatment process must be approved and permitted by the Department.

Author: Joe Alan Power.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: **Adopted:** September 23, 1992; Amended: September 19, 1995 (ER); November 28, 1995. Effective: January 2, 1996.

Amended: March 12, 2002; May 26, 2009.

335-7-11-.16 Lead Service Line Replacement.

(1) Systems which exceed the compliance limit for lead after installation or modification of corrosion control processes or source water treatment and which contain lead service lines shall identify the number and location of lead service lines and develop and implement a removal action plan.

(a) This plan shall identify the number of lines, including an identification of the portion owned by the system, general distribution locations, cost of replacement, proposed disposal site for removed lines, and a time schedule for removal.

(b) This plan shall be provided within six months of exceeding the compliance limit and shall be implemented within twelve months of the end of the monitoring period in which the exceedance occurred. If the monitoring frequency is annual or less, the end of the monitoring period is September 30 of the year in which the sampling occurred.

(c) The plan shall provide for full replacement of all services lines, except those excluded in the following subparagraphs, within 15 years.

1. At least 7% of the initial number of lead service lines shall be replaced annually. Lead service lines which have demonstrated to meet the compliance limit for lead through service line monitoring can be excluded from the process. The state may require a water system to replace more than 7% of the lead service lines annually.

2. The plan shall demonstrate the legal ownership of service lines and if the water system does not control or own the entire lead service line up to the building, it shall include provisions to notify the customer of its existence and offer to replace that service line for a fair and equitable cost.

3. The process of replacing service lines may cease when the system can demonstrate through two consecutive monitoring periods that first draw samples collected from lead service lines are meeting the compliance limit due to enhanced corrosion control activity.

4. A water system that does not replace the entire length of the service line shall comply with the following:

(i) At least 45 days prior to commencing with the partial replacement of a lead service line, the water system shall provide notice to the residents of all buildings served by the line explaining that they may experience a temporary increase of lead levels in their drinking water, along with guidance on measures consumers can take to minimize their exposure to lead. The Department may allow the water system to provide this notice less than 45 days prior to commencing partial lead service line replacement where such replacement is done in conjunction with emergency repairs. In addition, the water system shall inform the residents served by the line that the system will, at the system's expense, collect a sample for a lead analysis from each partially-replaced lead service line within 72 hours after the completion of the partial replacement of the service line. The system shall collect the sample and report the results of the analysis to the owner and the residents served by the line within three business days of receiving the results. Mailed notices post-marked within three business days of receiving the results shall be considered "on time."

(ii) The water system shall provide the information required by this rule to the residents of individual dwellings by mail or by other methods approved by the Department. In instances where multi-family dwellings are served by the line, the water system shall have the option to post the information at a conspicuous location.

(2) The process of replacing service lines may cease when the system can demonstrate through two consecutive monitoring periods that first tap draw monitoring conducted from lead service lines are meeting the compliance limit due to enhanced corrosion control activity. If first draw tap monitoring in any such system thereafter exceeds the lead action level, the system shall recommence replacing lead service lines as required by this rule.

(3) A water system resuming a lead service line replacement program after the cessation of its lead service line replacement program shall update its inventory of lead service lines to include those sites that were previously determined not to require replacement under subparagraph (1)(c)1.

(a) The lead service line replacement program shall be completed within 15 years. The 15 years shall include any previous time allowed under this rule.

(b) If a system has completed a 15 year replacement program, any exceedance of the action level will require the system to consult with the Department to determine a retesting or replacement schedule for the remaining lead service lines in the system.

Author: Joe Alan Power, Thomas S. DeLoach, Dennis D. Harrison.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; Amended: September 19, 1995 (ER); November 28, 1995. Effective: January 2, 1996.

Amended: March 12, 2002; January 28, 2004; January 22, 2008; May 26, 2009.

335-7-11-.17 Public Education Requirement.

(1) Water systems shall provide each customer with the results of any lead and copper monitoring conducted at the customer's tap. These results shall be provided to the customers within 30 days of receipt of the results by the water system.

(a) In addition to the results, the water system shall provide an explanation of the health effects of lead, steps consumers can take to reduce exposure to lead, the water system's contact information, maximum contaminate level goal (MCLG), the action level (AL) for lead and the definition of MCLG and AL.

(b) The notice to the consumer shall be mailed or provided by an alternate method approved by the Department. Non-transient non-community

water systems may post the results on a bulletin board in the facility that is readily accessible by all employees.

(c) Notice shall be provided to customers who do not receive a water bill.

(2) Any water system with a lead action level that exceeds the compliance limit shall provide public education materials containing the required language located in paragraph (3) below to the consumers within sixty days of the end of the monitoring period unless the system is being required to meet the repeat public education requirements of this rule. In communities where a significant proportion of the population speaks a language other than English, this material shall be in the appropriate language. This information shall include specific guidance as presented and use the language in subparagraph (c) above. Systems may delete information pertaining to lead service lines, upon approval of the Department, if no lead service lines exist anywhere in the water system service area. Public education language may be modified regarding building permit record availability and consumer access to these records, if approved by the Department. Systems may also continue to utilize pre-printed materials that meet the public education language requirements.

(3) A water system that exceeds the lead action level shall deliver the following public education materials in accordance with paragraph (4) of this rule.

(a) Content of written public education materials.

1. Community and non-transient non-community water systems shall include the following elements in printed materials (brochures and pamphlets) in the same order as listed below. The information in paragraphs (i) and (ii) below shall be included exactly as written except for the text in brackets, where the information shall be water system specific.

(i) IMPORTANT INFORMATION ABOUT LEAD IN YOUR DRINKING WATER. [INSERT NAME OF WATER SYSTEM] found elevated levels of lead in drinking water in some homes/buildings. Lead can cause serious health problems, especially for pregnant women and young children. Please read this information closely to see what you can do to reduce lead in your drinking water.

(ii) Health effects of lead. Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children and pregnant women. Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development.

(iii) Sources of lead.

(I) Explain what lead is.

(II) Explain possible sources of lead in drinking water and how lead enters drinking water. Include information on home/building plumbing materials and service lines that may contain lead.

(III) Discuss other important sources of lead exposure in addition to drinking water (e.g. paints).

(iv) Discuss the steps the consumer can take to reduce their exposure to lead in drinking water.

(I) Encourage running the water to flush out the lead.

(II) Explain concerns with using hot water from the tap and specifically caution against the use of hot water for preparing baby formula.

(III) Explain that boiling water does not reduce lead levels.

(IV) Discuss other options consumers can take to reduce exposure to lead in drinking water, such as alternative sources or treatment of water.

(V) Suggest that parents have their child's blood tested for lead.

(v) Explain why there are elevated levels of lead in the system's drinking water (if known) and what the water system is doing to reduce the lead levels in homes/buildings in this area.

(vi) Include information on where additional assistance may be obtained. The language which follows is suggested: For more information, call us at [INSERT PHONE NUMBER] or visit our website at [INSERT WEBSITE ADDRESS HERE] if applicable. For more information on reducing lead exposure around your home/building and the health effects of lead, visit EPA's website at <http://www.epa.gov/lead> or contact your health care provider.

2. Any additional information presented by a water system shall be consistent with the information above and be in plain language that can be understood by the general public.

3. Any information provided to the public under this rule shall have prior written approval by the Department.

(b) Community water systems shall also discuss lead in plumbing components, the difference between low lead and lead free, and how the consumers can get their water tested.

(4) Delivery of public education materials.

(a) Public water systems servicing a large proportion of non-English speaking consumers shall include information in the educational material in the appropriate languages(s) regarding the importance of the notice or contain a telephone number or address where persons served may contact the water system to obtain a translated copy of the public education materials or to request assistance in the appropriate language.

(b) Community water systems that exceed the lead action level that is not already conducting public education shall conduct public education within 60 days of the end of the monitoring period in which the exceedance occurred. The end of the monitoring period for systems that are monitoring no greater than annually shall be September 30 of the year in which the exceedance

occurred or if the Department has established an alternative monitoring schedule, the last day of that period.

1. Printed materials meeting the content requirements of this rule shall be provided to all bill paying customers and all other organizations and entities as required by this rule.

2. The water system shall contact consumers who are most at risk by delivering educational materials that meet the content of this rule to local public health agencies even if they are not located within the water system's service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users.

(i) The water system shall contact the local public health agencies by phone or in person.

(ii) The water system shall provide the required public educational materials to all organizations provided by the local public health agencies that target the affected populations. This list may include organizations inside or outside of the water system's service area.

(iii) The water system shall request the following list of organizations from public health agencies, including ones not in the water system's service area, and provide these organizations with the educational materials required under this rule along with an informational notice that encourages distribution to all potentially affected customers or users.

(I) Licensed childcare centers.

(II) Public and private preschools.

(III) Obstetricians-Gynecologists and Midwives.

3. The water system shall contact customers who are most at risk by delivering materials to the following organizations that are located in the water system's service area along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users:

(i) Public and private schools or school boards;

(ii) Women, Infants and Children (WIC) and Head Start Programs;

(iii) Public and private hospitals and medical clinics;

(iv) Pediatricians;

(v) Family planning clinics; and,

(vi) Local welfare agencies.

(c) Each quarter that the water system has exceeded the lead action level, the water system shall give public notice to each customer. The water system shall include the following information in subparagraph (c)1. below (exactly as written) on at least one water bill each quarter.

1. [INSERT NAME OF WATER SYSTEM HERE] found high levels of lead in drinking water in some homes. Lead can cause serious health problems.

For more information please call [INSERT NAME OF WATER SYSTEM HERE] [or visit (INSERT NAME OF WEBSITE HERE)].

2. Systems unable to include the statement in paragraph (i) above on its water bill shall consult with the Department for other approved methods of delivery.

(d) Systems with a population greater than 100,000 shall post all required on the water system's publicly accessible website and provide the address to the Department.

(e) Water systems shall submit a press release to all newspapers, television and radio stations that service the water system's service area.

(f) In addition to the public notification and educational materials required above, the water system shall select and implement at least three activities from one or more of the categories below. The selection of activities and educational content shall be approved by the Department prior to implementation.

1. Public Service Announcements.
2. Paid advertisements.
3. Public Area Information Displays.

4. E-mails to customers.

5. Public Meetings.

6. Household Deliveries.

7. Targeted Individual Customer Contact.

8. Direct material distribution to all multi-family homes and institutions.

9. Other methods as approved by the Department.

(5) A community water system that continues to exceed the action level shall repeat the activities in paragraph (4) above as follows:

(a) A community water system shall repeat the tasks contained in subparagraphs (4)(b) and (4)(f) every 12 months.

(b) A community water system shall repeat the tasks contained in subparagraph (4)(c) with each billing cycle.

(c) A community water system serving a population greater than 100,000 shall maintain on a publically accessible website a copy of all public educational material required under paragraph (3) until the water system no longer exceeds the action level.

(d) A community water system shall repeat the tasks contained in subparagraph (4)(e) twice every 12 months on a schedule approved by the Department.

(6) A non-transient non-community water system shall deliver the public education materials specified in paragraph (3) of this rule within 60 days after the end of the monitoring period unless it is already providing public education

as required under this rule. The end of the monitoring period for a system that is monitoring no greater than annually shall be September 30 of the year in which the sampling occurred or the last day of an alternative monitoring schedule. The distribution of public educational materials shall be as follows:

(a) Post informational posters on lead in drinking water in a public place or common area in of the buildings served by the system.

(b) Informational pamphlets and/or brochures on lead in drinking water shall be distributed to each person served by the water system.

(c) The public educational materials shall be distributed as required in this rule at least once each year in which the system exceeds the lead action level.

(7) A community water system serving a population less than 3,301 people may limit certain aspects of its public education program as follows:

(a) At least one of the activities under subparagraph (4)(f) shall be implemented instead of the three required in subparagraph (4)(f).

(b) The water system may limit the distribution of public education materials required under subparagraph (4)(b)2. to facilities and organizations served by the system that are most likely to be visited regularly by pregnant women and children.

(c) The water system may request to have the requirements of subparagraph (4)(e) waived provided the system distributes notices to every household served by the system.

(8) A community water system which is a facility such as a prison or hospital where the population is not capable of or is prevented from making improvements to plumbing or installing point of use treatment devices or is a system that provides water as part of the cost of services and does not charge separately for water consumption may request in writing to only use the text specified in paragraph (3) of this rule and provide notification according to paragraph (6) of this rule.

(9) A water system may discontinue delivery of public educational materials if the system has met the lead action level during the most recent six-month monitoring period conducted in accordance with this section. Public education shall resume, in accordance with this section, if the water system exceeds the lead action level during any monitoring period.

(10) A water system that fails to meet the lead action level on the basis of tap samples collected under this rule shall offer to sample the tap water of any customer who requests it. The water system is not required to pay for collecting or analyzing the sample, nor is the system required to collect and analyze the sample itself.

Author: Joe Alan Power, Dennis D. Harrison.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

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335-7-11-.18 Reporting Requirements.

(1) Tap Water Monitoring. All water systems shall provide the results of all tap water monitoring for lead and copper and for all water quality parameter samples by the 10th of the month following the end of the compliance period. The end of the compliance period is the last date that samples can be collected during the monitoring period.

(a) Included shall be information regarding the tap, the tier level of the site, identification as a non first draw sample and length of standing time, documentation for all tap water lead and copper monitoring that the system requests invalidation, and an explanation for any site which was not monitored during the previous monitoring period or why sites may have changed.

1. Systems with lead service lines not providing 50% of the monitoring from these sites will provide a letter demonstrating why it was unable to locate a sufficient number of each site. Values shall be placed in ascending order with the highest value first and the 90th percentile value either circled or labeled.

2. All systems utilizing non first draw samples shall provide the Department prior to the first monitoring period after these regulations become effective the locations and standing times of all such monitoring. Systems applying for or systems that have been granted a waiver shall provide a certification that the system's distribution and plumbing materials are lead and copper free. A water system that has been granted a waiver and later determines the system's materials are no longer lead or copper free shall provide the basis of that determination and a corrective action plan to remove those materials within 60 days of the determination.

(b) Source Water Monitoring. The lead/copper results from source water required to be monitored shall be provided by the 10th of the month following the analysis.

(c) Corrosion Control Treatment. Systems with an approved corrosion control treatment system on the effective date of these regulations will continue to provide monthly monitoring reports providing the required information. These reports must be received by the 10th of the following month. For systems required to establish optimized corrosion control, daily and weekly analysis may be provided on the monthly operation reports which must be submitted by the 10th of the following month. For systems monitoring during a

six-month compliance cycle, the analysis must be provided by the 10th of the month following the analysis.

(d) Lead Service Line Replacement. Systems required to replace service lines shall provide yearly information by December 31 regarding the number and location of service lines replaced, the number remaining, the location and lead concentration of any lead service line monitoring, and any proposed modification to the lead service line removal plan.

(2) Record Keeping of Reporting Requirements. All systems shall retain in its office or on its premises original records of all monitoring data, analysis, reports, surveys, letters, evaluations, schedules, state determinations and other information reflecting activities to demonstrate compliance with the lead and copper requirements of this Department. These records shall be retained for no less than 12 years.

(3) Any water system proposing the addition of a new source or any long-term change in water treatment shall submit a written report to the Department on how the change or source addition will affect the system's ability to comply with the lead and copper action levels and water quality parameter monitoring before implementing changes in treatment (or treatment processes) or using a new source.

(a) Examples of long-term water treatment changes include the addition of a new treatment process or modification of an existing treatment process.

(b) Examples of modifications include switching secondary disinfectants, switching coagulants and switching corrosion inhibitor products.

(c) Long term changes can include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes.

(4) Within 12 months after the end of the monitoring period in which the water system exceeded the lead action level, the water system shall submit the following written documentation to the Department.

(a) Material evaluation conducted as required in rule 335-7-11-.07.

(b) A list of all lead service line locations in the distribution system at the time the exceedance occurred.

(c) Schedule for replacing at least 7 percent of the initial lead service lines annually.

(5) Within 12 months after the end of the monitoring period in which the water system exceeded the lead action level and every 12 months thereafter, the water system shall demonstrate in writing either:

(a) The water system has replaced in the previous 12 months at least 7 percent (or as required by the Department) of the initial lead service lines or

(b) The water system has replaced at least 7 percent (or as required by the Department) of the initial lead service lines and/or demonstrated through monitoring that that at least 7 percent (or as required by the Department) of the initial lead service lines no longer exceeds the lead action level.

(6) The annual report submitted to the Department under this rule shall contain at a minimum the following information:

(a) Number of lead service lines scheduled to be replaced during the previous year of the system's lead service line replacement program.

(b) The location of each full or partial lead service line replaced with an indicator if the replacement was a full or partial replacement.

(c) If measured, the lead concentration of any lead service line. The water system shall also report the analytical method used and the date of the sample.

(d) The schedule of lead service lines to be replaced in the upcoming year along with the latest monitoring results for these locations.

(7) Any water system that collects lead service line samples following a partial lead service line replacement shall report the results to the Department within the first ten days of the month in which the water system receives the laboratory results.

(8) Public Education Program Reporting Requirements.

(a) Any water system that is subject to the public education requirements of this chapter shall, within ten days after the end of each period in which the system was required to perform public education send written documentation to the Department that contains:

1. A demonstration that the water system has delivered the public education materials that met the content and delivery requirements of this chapter.

2. A list of all the newspapers, radio stations, television stations, and facilities and organizations to which the system delivered public education materials during the period in which the water system was required to perform public education tasks.

(b) Each water system shall mail a sample copy of the consumer notification of tap results to the Department along with a certification that the notification has been distributed in a manner consistent with this chapter. The sample copy and certification shall be submitted to the Department within 3 months following the end of the monitoring period.

Author: Joe Alan Power.

Statutory Authority: Code of Alabama 1975, §§ 22-23-33, 22-22A-5, 22-22A-6.

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