



# Economic and Supporting Analyses: Short-Term Regulatory Changes to the Lead and Copper Rule

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## **Economic and Supporting Analyses**

### **Short Term Regulatory Changes to the Lead and Copper Rule**

#### **Executive Summary**

The Environmental Protection Agency (EPA) is making seven targeted regulatory changes to the national primary drinking water regulations (NPDWR) for lead and copper. The intended effect of these regulatory changes is to strengthen the implementation of the Lead and Copper Rule (LCR) in the areas of monitoring, customer awareness, and lead service line replacement. Some of these changes clarify the intent of the LCR for provisions that have generated questions. Other provisions reconsider LCR requirements in light of recent experiences regarding implementation of the rule. These changes are expected to ensure and enhance more effective protection of public health through the reduction of lead exposure. The changes included in today's action do not affect the lead or copper maximum contaminant level goals, the Action Levels, or the basic regulatory requirements.

This Economic Analysis describes the estimates of annual costs for the seven regulatory changes to utilities and States, including costs associated with administrative, monitoring, sampling, reporting, and public notification activities. One-time, upfront costs of rule review and rule implementation are also estimated. There are two types of annual costs that may result from the rule changes – direct and indirect. Direct costs are from those activities that are specified by the rule change, such as costs for additional monitoring or distribution of consumer notices. A second type of cost may also result when systems and States use the information generated by directly-related rule activities to modify or enhance practices to reduce lead levels. These indirect costs, and related health risk reductions, are not quantified for the purposes of this analysis, but are described qualitatively in Section 5. Exhibit ES-1 summarizes the expected direct and indirect cost impacts for the seven regulatory changes.

**Exhibit ES-1: Summary of Direct and Indirect Implications of the LCR Short Term Rule Changes**

Rule Change #	Rule Change Description	Direct Cost Implications	Indirect Cost and Health Risk Implications
III.A	Number of samples	Yes	Yes
III.B	Monitoring period	Unquantified	None
III.C	Reduced monitoring criteria	Yes	Yes
III.D	Advanced notification and approval	Yes	Yes
III.E	Consumer notice of Lead results	Yes	Yes
III.F	Public Education	Yes	Yes
III.G	Reconsideration of lead service lines	Yes	Yes

Six rule changes are expected to result in direct costs: Regulatory Changes III.A, III.C, III.D, III.E, III.F, and III.G. For these potential rule changes, costs could be incurred in the areas of system reporting, tap water monitoring and public education for systems, and State review and public education for States/Primacy Agencies. Exhibit ES-2 summarizes the annual direct costs estimated for each rule change. Exhibit ES-3 summarizes the one-time direct costs associated with implementing the rule changes.

**Exhibit ES-2: Summary of Annual Direct Costs to Systems and States from Regulatory Changes**  
(4<sup>th</sup> Qtr 2006\$)

Regulatory Change	Annual Direct Costs to Systems				Annual Direct Costs to States	Total Annual Direct Costs
	Reporting	Monitoring	Customer Notification	Total		
III.A	-	-	-	-	-	-
III.B	-	-	-	-	-	-
III.C	\$61,000	\$2,635,000	-	<b>\$2,696,000</b>	\$82,000	<b>\$2,778,000</b>
III.D Low	\$506,000	-	-	<b>\$506,000</b>	\$163,000	<b>\$669,000</b>
III.D High	\$765,000	-	-	<b>\$765,000</b>	\$348,000	<b>\$1,113,000</b>
III.E	\$136,000	-	\$1,112,000	<b>\$1,248,000</b>	\$163,000	<b>\$1,411,000</b>
III.F	\$34,000	-	\$825,000	<b>\$859,000</b>	\$63,000	<b>\$922,000</b>
III.G	-	\$110,000	-	<b>\$110,000</b>	-	<b>\$110,000</b>
<b>TOTAL Low</b>	<b>\$736,000</b>	<b>\$2,745,000</b>	<b>\$1,938,000</b>	<b>\$5,418,000</b>	<b>\$471,000</b>	<b>\$5,890,000</b>
<b>TOTAL High</b>	<b>\$995,000</b>	<b>\$2,745,000</b>	<b>\$1,938,000</b>	<b>\$5,677,000</b>	<b>\$657,000</b>	<b>\$6,335,000</b>

Note: Totals may not add due to rounding.

**Exhibit ES-3: Summary of One-Time Direct Costs**  
(4th Qtr 2006\$)

<b>One Time Costs</b>	
<b>Costs to Systems</b>	
Review & Communication	\$10,971,000
III.A	\$104,000
<b>Total System Costs</b>	<b>\$11,075,000</b>
<b>Costs to State/Primacy Agencies</b>	
Regulation Adoption	\$1,488,000
III.A	\$162,000
<b>Total State Costs</b>	<b>\$1,650,000</b>

Note: Totals may not add due to rounding.

With regards to potential benefits resulting from the changes, the intent of this rulemaking is to improve implementation of the lead and copper regulations by clarifying monitoring, reporting, and notification requirements, and modifying the lead service line test-out procedure. The revisions do not affect the action levels, treatment techniques such as corrosion control requirements, or other provisions in the existing rule that directly determine the degree to which the rule reduces risks from lead and copper.

However, the increase in administrative activities that will result from the revisions will result in the generation of new information (e.g., more monitoring data, some of which may show exceedances), and may prompt some systems or individuals to respond to this new information by taking measures to abate lead and copper exposures and thus reduce the associated risk. Also, the requirement that treatment changes be approved by the primacy agency prior to implementation will provide an additional opportunity to identify possible adverse impacts due to treatment changes, which may lower the risk to consumers. Because the precise impact of these revisions on the behavior of individuals and systems is not known, EPA has not quantified the changes in health benefits associated with these revisions. EPA does expect that overall benefits from the LCR will increase, as a result of the indirect effect of the revisions on the actions of individual consumers and systems.

# 1 Introduction

This document presents an analysis of the costs and potential impacts of the Short Term Regulatory Changes to the Lead and Copper Rule.

This section provides a summary of the regulatory changes in Section 1.1. Section 1.2 outlines the organization of this document.

## 1.1 Summary of Changes

The seven targeted regulatory changes to the Lead and Copper Rule (LCR) that are the focus this document are summarized below.

### Summary of Short Term Targeted Regulatory Changes

#	Revision	Purpose of Revision
<b>Monitoring</b>		
III.A	Minimum number of samples required	To address confusion about sample collection
III.B	Definitions for compliance and monitoring periods	To clarify when compliance and monitoring periods begin and end
III.C	Reduced monitoring criteria	To prohibit systems that exceed the lead Action Level from initiating or remaining on reduced monitoring based solely on results of water quality parameter monitoring
<b>Treatment Processes</b>		
III.D	Advanced notification and approval requirement for water systems that intend to make any change in water treatment or add a new source of water that could affect the system's optimal corrosion control	To require systems to obtain state approval to add a new source of water or change a treatment process prior to implementation
<b>Customer Awareness</b>		
III.E	Notification of sampling results	To require utilities to provide sampling results to consumers who are occupants of homes or buildings that are tested for lead and copper, as part of the utility's monitoring program
III.F	Public Education Requirements	To modify public education requirements by changing the content of the message to be provided to consumers, how the materials are delivered to consumers, and the timeframe for delivery
<b>Lead Service Line Replacement</b>		
III.G	Reconsideration of lead service lines deemed replaced through testing	To require that systems reevaluate lead service lines classified as "replaced" through testing if the system resumes a lead service line replacement program

## ***1.2 Summary of Differences With the EA for the Proposed Rule***

This EA reflects the final version of the Short Term Changes to the Lead and Copper Rule. In comparison with the EA that accompanied the proposed Rule, the costs in the EA for the Final Rule have been updated to reflect a 4<sup>th</sup> Quarter 2006 price level. In addition, some burden and cost estimates have been revised based on feedback received in comments on the proposed Rule. Finally, the burden and cost estimates for some of the regulatory changes have been modified to reflect specific changes to the requirements. The differences between the Final Rule and the proposed Rule are summarized in the Appendix L.

## ***1.3 Document Organization***

The rest of this document is organized into the following sections:

- Section 2 identifies public health concerns addressed by the rule and provides a summary of the regulatory history of lead in drinking water, including the recent review of national implementation of the LCR. It also explains the statutory authority for promulgating the rule changes and economic rationale for choosing a regulatory approach.
- Section 3 describes the changes in greater detail and reviews alternative approaches considered.
- Section 4 presents an estimate of the direct costs of implementing the rule changes to utilities and State/Primacy Agencies.
- Section 5 discusses the potential indirect cost and health risk impacts that may result from the rule changes.
- Section 6 discusses analyses performed to evaluate the effects of the rule as specified by various administrative requirements.



## **2 Need for the Rule**

The purpose of the Lead and Copper Rule (LCR) is to protect populations from exposure to lead in drinking water to reduce potential health risks associated with lead. Recent highly publicized incidences of elevated drinking water lead levels prompted EPA to review and evaluate the implementation and effectiveness of the LCR on a national basis. As a result of this multi-part review EPA identified the targeted rule changes that are the subject of this Economic Analysis. These targeted changes are intended to strengthen the implementation of the LCR in the areas of monitoring, customer awareness, and lead service line replacement. Some of the changes clarify the intent of the LCR for provisions that have generated questions. Other provisions reconsider LCR requirements in light of recent experience. These changes are expected to ensure and enhance more effective protection of public health through the reduction in lead exposure.

The following section more fully discusses the need for the targeted rule changes by first summarizing the health effects associated with exposure from lead to emphasize the on-going need for reducing that exposure. Next, context on the regulatory history of the LCR is provided. EPA's recent review of the LCR that resulted in the identification of the targeted rule changes (among other actions) is described. The section concludes with a description of the regulatory authority and economic rationale for the regulation.

### ***2.1 Public Health Concerns Related to Lead and Copper Exposure***

Although lead is a naturally occurring metal, the highest concentrations of lead are a result of human activities (ATSDR, 1999). For example, sources of lead include lead-based paint, contaminated soil, contaminated water, lead crystal or lead-glazed pottery or porcelain, and industrial processes burning lead-based materials. Lead exposure can cause many serious health effects, especially for children. For this reason, EPA places a high priority on reducing lead blood levels (Grumbles, 2004).

Lead can enter the body if it swallowed or inhaled. If contaminated food, drink, soil, lead-based paint chips, or other objects covered in lead dust are ingested, lead will be delivered to the stomach. After reaching the stomach, a small portion of lead will enter the bloodstream, while the other portion will be excreted in urine or feces. In general, a higher portion of lead will enter the bloodstream for children than for adults (ATSDR, 1999). Once in the blood stream, lead can be deposited in soft tissues, bones, and/or teeth. If lead particles or dust are inhaled, lead will first enter the lungs and then be delivered to the bloodstream.

Lead exposure can result in the following health effects: lead can damage the brain and kidneys, cause infertility in both men and woman, increase blood pressure in adults, and harm the nervous system causing nerve disorders and muscle and joint pain. Life long exposure to lead above the Maximum Contaminant Level (MCL) may lead to strokes and kidney disease.

Certain populations are at higher risk because they are exposed to lead more often and/or

because they are more sensitive to the same exposure than an average individual. Children are more vulnerable to lead exposure because they are both typically exposed to lead more often and because they are more sensitive to lead. Children are more likely to be exposed to lead since they often place their hands on many objects, such as toys, which might be covered in lead dust, and then place their hands in their mouths. Infants can also be exposed through an exposed mother's breast milk. Children are more sensitive to lead because children's bodies absorb more of the ingested lead than adults (ATSDR, 1999). In addition, lead exposure can result in greater health risks in children as their nervous system is still developing. Health effects in children may include delayed mental and physical development, decreased IQ, and slight deficits in attention span, hearing, and learning (Grumbles, 2004). During 1999-2000, approximately 2 percent of children between the ages of 1 and 5 have blood levels that exceeded CDC's level of concern, 10 mg/dL (CDC, 2003).

Reducing lead exposure for pregnant women is another primary concern for EPA (Grumbles, 2004). If a mother is exposed to lead, that lead can be passed on to the developing fetus. Because their nervous systems are just beginning to develop, fetuses are especially vulnerable to lead exposure.

The Maximum Contaminant Level Goal (MCLG) describes the lowest level of exposure to a contaminant that does not cause any potential health problems. EPA determined that the MCLG for lead should be zero, since there is no known safe level of lead in blood (EPA, 2005). Thus, any exposure to lead, at any concentration, is considered harmful, especially for young children and pregnant women.

The rule changes are needed to continue the health protection afforded by the LCR though more timely and useful information regarding lead exposure. These changes will also promote effective implementation of the LCR provisions that protect citizens from lead in drinking water.

## **2.2 *Regulatory History***

The following section provides a chronology and overview of regulatory actions affecting the permissible level of lead and copper in drinking water.

### *Drinking Water Regulations Enacted Prior to 1991*

As required by the Safe Drinking Water Act (SDWA), EPA set the National Interim Primary Drinking Water Regulation for lead in drinking water to 50 parts per billion (ppb) in 1975. This standard was not enforceable and did not require utilities to sample at taps to determine if they were in compliance.

To limit the amount of lead reaching customer's taps, Amendments to SDWA in 1986 banned the installation or repair of lead pipes, fixtures, solders, and fluxes in any facility that provides water for human consumption. As defined in section 1417 (d), "lead free" solders and

fluxes may not contain more than 0.2 percent lead and “lead free” pipes, pipe fittings, and well pumps may not contain more than 8.0 percent lead. In addition, the 1986 SDWA Amendments directed EPA to revise the regulations for lead and copper in drinking water. In response to this directive, the Agency proposed revisions in 1988, and issued the Lead and Copper Rule in 1991.

To limit lead exposure to one of the most sensitive populations, children, the Lead Contamination Control Act (LCCA) in 1988 required schools to test drinking water and recall drinking water coolers that leached lead. Furthermore, the LCCA banned new drinking water coolers with lead parts.

#### *Lead and Copper Rule 1991*

On June 7, 1991, EPA promulgated the Lead and Copper Rule (56 FR 26460; LCR), which set the maximum contaminant level goals (MCLGs) and national primary drinking water regulations (NPDWRs) for lead and copper. The rule aimed to maximize human health protection by reducing lead and copper levels at consumers’ taps as close to the MCLG, 0 for lead and 1.3 ppm for copper, as is technologically possible. Since limited technology and resources made the MCLG unfeasible, EPA set Action Levels at 0.015 mg/L for lead and 1.3 mg/L for copper. Compliance is based on the 90<sup>th</sup> percentile of tap water samples.

To reduce lead and copper concentrations below the Action Level, the LCR specified that community water systems (CWSs) and non-transient non-community water systems (NTNCWSs) must conduct periodic monitoring at the tap and reduce water corrosivity, since corrosive water can increase the amount of lead and copper that is leached from service lines and plumbing materials made of lead and/or copper. The rule also required the following.

- Public notification when lead in treated drinking water exceed the lead Action Level
- Treatment of source water if it significantly contributed to high levels of lead or copper
- Replacement of lead service lines in the distribution system if lead levels continued to exceed the Action Level

Implementation of this rule was phased in based on system size, whereby the largest systems began monitoring in 1992, and the smallest systems began monitoring in 1993.

#### *Proposed Changes to the Lead and Copper Rule 1996*

On April 12, 1996, EPA published a set of proposed minor revisions to improve implementation of the Lead and Copper Rule. Many of the changes were based upon recommendations made by a work group composed of Headquarters and Regional EPA staff, and State drinking water officials. Other changes were a result of legal challenges to the 1991 Lead and Copper Rule brought on by the American Water Works Association (AWWA) and the Natural Resources Defense Council (NRDC).

The goal of the proposed changes was to promote consistent, national implementation of the LCR, and streamline and reduce reporting burden. Proposed changes included optimizing corrosion control, streamlining monitoring processes, guidance for site selection, requirements for public education, guidance for analytical processes, and clarification of reporting requirements. In addition, EPA requested comments on paperwork burden reductions, many of which were previously suggested, but EPA did not have sufficient time to consider for LCR 1991.

The minor revisions to the LCR that were ultimately adopted are discussed below under “Lead and Copper Rule Minor Revisions 2000.”

#### *Safe Drinking Water Act 1996*

The 1996 Amendments to SDWA added that “lead free” plumbing fittings and fixtures must meet standards established under section 1417(e) (42 U.S.C. 300g-6(e)). Section 1417(e) of the SDWA says that either a voluntary standard must be accepted within a year or EPA must issue a regulation within two years. Furthermore, if a voluntary standard is to be accepted, the Administrator must provide technical assistance to a qualified third-party in the development of the voluntary standard and associated testing protocols for examining lead leaching from new plumbing fittings and fixtures.

In response, EPA published in the Federal Register (FR Vol. 62, No. 163, 44684, Aug. 22, 1997) their view that NSF 61, Section 9 satisfies the requirement of Section 1417(e). Specifically, EPA felt that NSF 61, Section 9 is an established voluntary standard and therefore, the obligation to issue a new regulation was not triggered. As a result, any new plumbing fitting and fixtures must be NSF certified.

#### *Lead and Copper Rule Minor Revisions 2000*

On January 12, 2000, EPA published final minor revisions to the Lead and Copper Rule (LCRMR) based on the comments and discussions of the proposed revisions in 1996. The minor revisions streamline requirements, promote consistent national implementation, and in many cases, reduce the burden for CWSs and NTNCWSs water systems. The changes fall into the following categories: demonstration of optimal corrosion control, lead service line replacement requirements, public education requirements, monitoring requirements, analytical methods, reporting and record keeping requirements, and special primacy considerations.

EPA also accepted the definition of “lead free” as defined in the SDWA.

The LCRMR did not change the Action Levels, MCLGs, or the rule’s basic treatment requirements.

### 2.3 *Comprehensive Review of the LCR*

The minor changes to the Lead and Copper Rule described in this document were identified through a comprehensive national review of compliance and implementation of the Lead and Copper Rule. The review was initiated in response to high profile Action Level exceedances experienced by the District of Columbia Water and Sewer Authority (DC WASA). The purpose of the review was to answer three questions with regards to lead in drinking water:

1. Is this a national problem? Does a large percent of the population receive water that exceeds the lead Action Level? Do a large number of systems fail to meet the lead Action Level?
2. How well has the rule worked to reduce lead levels in systems over the past 12 years, particularly in systems that had demonstrated high lead levels in the initial rounds of sampling?
3. Is the rule being effectively implemented today, particularly with respect to monitoring and public education requirements?

The comprehensive review consisted of several elements, including a series of workshops designed to elicit issues, comments, and suggestions from stakeholders on particular topics, a review of data to evaluate the effectiveness of the rule, and a review of LCR implementation by States and utilities. The following section summarizes the DC WASA situation that prompted the comprehensive review, describes in greater detail the elements of the review, and presents EPA's findings and next steps resulting from the review.

#### *DC WASA's Experience with Elevated Lead Levels in Drinking Water*

DC WASA is a utility that distributes drinking water to over 500,000 residential, commercial, and governmental customers in the District of Columbia. The water that DC WASA distributes is purchased from and treated by the Washington Aqueduct, a division of the US Army Corps of Engineers.<sup>1</sup>

From 1994 through 1999, DCWASA met the Action Level for lead under the LCR and went on reduced monitoring. In August 2002, DCWASA reported to EPA that the 90<sup>th</sup> percentile of 53 tap water samples for the compliance period of July 1, 2001- June 30, 2002 exceeded the Action Level of 15 ppb, at a value of 75 ppb. Subsequent tap sampling also indicated Action Level exceedances for the period of January - June of 2003 (40 ppb 90<sup>th</sup> percentile from 104 samples) and July - December of 2003 (63 ppb 90<sup>th</sup> percentile from 108 samples). As per the LCR, the Action Level exceedances triggered DC WASA to undertake tap monitoring on a

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<sup>1</sup> [http://www.dcwasa.com/about/gen\\_overview.cfm](http://www.dcwasa.com/about/gen_overview.cfm)

regular (i.e., not reduced) schedule, public education, and lead service line replacement.<sup>2</sup>

Local media coverage of the exceedances and the results of lead service line testing elevated the visibility of DC WASA's lead levels. Multiple hearings were conducted before House and Senate committees in 2004 and 2005. EPA conducted a compliance audit that resulted in an Administrative Order that detailed alleged weaknesses in DC WASA's implementation of the LCR including the following.

- Failure to take samples within the monitoring period
- Failure to conduct follow-up monitoring of partially replaced lead service lines
- Failure to comply with requirements for public service announcements
- Not using required language in written materials provided to customers
- Failure to report samples and Action Level exceedance
- Failure to perform required activities following exceedance of the Lead Action Level in the July 2000 - June 2001 monitoring period
- Failure to report noncompliance<sup>3</sup>

DC WASA, in coordination with EPA, the Corps of Engineers, and other groups, implemented numerous measures to address the high lead levels, including adding orthophosphate as a corrosion control treatment, replacing lead service lines, and conducting sampling and research. Early results seem to indicate the effectiveness of orthophosphate in reducing lead levels.<sup>4</sup> Preliminary analyses from an ongoing technical review suggest potential causes of the elevated lead levels including the following.

- Conversion from free chlorine to chloramines for final disinfection
- Detachment of lead particles from piping systems
- Galvanic corrosion of lead service lines
- Grounding currents that affect corrosion of lead bearing components
- City-Wide meter replacement program

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<sup>2</sup> ADMINISTRATIVE ORDER FOR COMPLIANCE ON CONSENT Docket No. SDWA-03-2004-0259DS

<sup>3</sup> ADMINISTRATIVE ORDER FOR COMPLIANCE ON CONSENT Docket No. SDWA-03-2004-0259DS

<sup>4</sup> DC WASA, 2004 DRINKING WATER QUALITY REPORT

- Distribution system pH variations
- Drought conditions and resulting effects on corrosivity of DCWASA water<sup>5</sup>

With regards to the implementation of the LCR, the DC WASA experience highlights several areas in which the LCR could be improved, including monitoring after lead service line replacement, defining compliance and monitoring periods, and the impact of treatment changes.

*Workshops on Lead in Drinking Water*

EPA held five workshops in 2004-2005 to elicit issues and suggestions from stakeholders on various topics related to lead in drinking water.

- Simultaneous Compliance, May 2004, St. Louis, MO: Expert participants from utilities, academia, state governments, and other stakeholder groups identified issues, proposed solutions, and identified information gaps with respect to simultaneous compliance with the LCR and other rules such as the Total Coliform Rule, the Surface Water Treatment Rules, and the Disinfection Byproducts Rules. Issues and suggestions were developed for four topic areas: coagulation impacts on corrosion control; impacts of disinfectant changes on corrosion control; corrosion inhibitor; and distribution system management. Among the issues identified by the group were information gaps on impacts of treatment changes under various water quality conditions/chemistries and the need for additional guidance on a variety of topics.
- Sampling Protocols, May 2004, St. Louis, MO: Expert participants from utilities, academia, state governments, and other stakeholder groups identified issues, proposed solutions, and identified information gaps with respect monitoring and sampling under the LCR. Topic areas included sampling frequency and triggers; sampling site selection/location; sampling protocol; and sampling of water quality parameters. The issues included sampling after treatment changes and Action Level exceedances and the re-examination of flushing instructions.
- Public Education, September 2004, Philadelphia, PA: Expert participants from utilities, governments, consumer and environmental groups, and other stakeholder groups discussed the public education requirements under the lead and copper rule, drinking water risk communication, and effective communication with the public. Participants suggested ways to improve risk communication to the public through establishing partnerships with health departments and other groups, refining the message content, improving delivery of the message, and spending more time planning and evaluating the effectiveness of the risk communication.
- Lead Service Line Replacement, October 2004, Atlanta, GA: Expert participants from

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<sup>5</sup> Forensic Analysis of Elevated Lead Levels in District of Columbia Water and Sewer Authority Drinking Water: Task 5 Data Summary (Draft), Prepared by HDR/EES, June 1, 2005

utilities, academia, state governments, and other stakeholder groups discussed the challenges and problems encountered by the participants in implementing lead service line replacement, as well as strategies and solutions for overcoming those difficulties. Specific topic areas addressed included monitoring, customer communications, replacement technologies, and managing inventory. Continued sampling after lead service line replacement and the need to notify customers of testing results were mentioned during the discussions.

- Lead in Plumbing, July 2005, Washington, DC: Expert participants from utilities, academia, state governments, and other stakeholder groups discussed lead in plumbing fittings and fixtures. Topic areas included NSF standards and testing protocols, alternative materials, national/state/local/industry/consumer practices, and miscellaneous issues.

*Review of Data to Evaluate Effectiveness of Rule*

EPA undertook a review of the lead levels in drinking water systems serving more than 3,300 as reported in the Safe Drinking Water Information System/Federal Version (SDWIS/FED). Since 2002, States have been required to report to SDWIS the 90<sup>th</sup> percentile lead concentrations for systems serving more than 3,300. At the start of the review, SDWIS/FED had data for only 23 percent of these systems. EPA worked with States to expedite entry of the 90<sup>th</sup> percentile lead data. The effort was successful, with data available for 97 percent of large systems and 91 percent of medium systems as of June 1, 2004.

The following exhibits summarize the data on medium and large public water systems exceeding the Action Level from SDWIS/FED as of January 27, 2005.

**Exhibit 1: Systems Exceeding the Lead Action Level Since 2003**

	<b>Small</b>	<b>Medium</b>	<b>Large</b>	<b>Total</b>
Number of systems above Action Level	884	97	14	995
All systems with data <sup>6</sup>	64,382	7,388	819	72,589
% all systems with results above the Action Level	1.4%	1.3%	1.7%	1.4%

Source: For medium and large systems, January 2005 Summary of Lead Action Level, [http://www.epa.gov/safewater/lcrmr/lead\\_data.html](http://www.epa.gov/safewater/lcrmr/lead_data.html); for small systems, Summary, Lead Action Level exceedances for public water systems subject to the Lead and Copper Rule (For data through September 13, 2004).

<sup>6</sup> Based on system inventory from 2<sup>nd</sup> Quarter 2005 SDWIS data pull.



## Exhibit 2: Systems Exceeding the Lead Action Level Since 2000

	Small	Medium	Large	Total
Number of systems above Action Level	2,663	305	37	3,005
Systems with monitoring results since 2000	N/A	7,388	819	8,207
% of Systems with monitoring results since 2000 over AL	N/A	4.1%	4.5%	4.2%

Source: For medium and large systems, January 2005 Summary of Lead Action Level, [http://www.epa.gov/safewater/lcrmr/lead\\_data.html](http://www.epa.gov/safewater/lcrmr/lead_data.html); for small systems, Summary, Lead Action Level exceedances for public water systems subject to the Lead and Copper Rule (For data through September 13, 2004).

Based on the data, 95.8 percent of medium and large systems reporting data since 2000 have 90<sup>th</sup> percentile values below the Action Level. Since 2003, it appears that number is slightly higher, with 96.9 percent of medium and large systems under the Action Level. EPA concluded from this data: “There does not appear to be a widespread problem with elevated lead levels across the country comparable to that currently being observed in the District of Columbia.”<sup>7</sup>

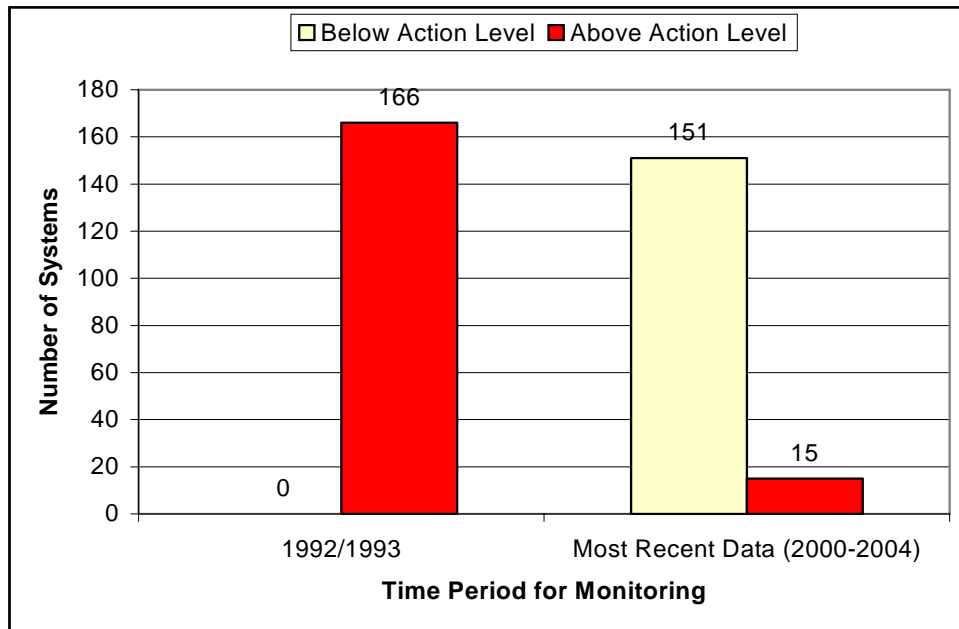
EPA also compared Action Level exceedances for 166 large systems serving over 50,000 from immediately after the adoption of the LCR (1992/1993) to the current monitoring results (2000-2004), summarized in Exhibit 3. In 1992/1993, all 166 of these systems exceeded the Action Level. In 2000-2004, only 15 of these systems had 90<sup>th</sup> percentiles that exceeded the Action Level, “...demonstrating that corrosion control efforts taken by the utilities have largely been effective in controlling lead levels.”<sup>8</sup>

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<sup>7</sup> [http://www.epa.gov/safewater/lcrmr/lead\\_data.html](http://www.epa.gov/safewater/lcrmr/lead_data.html) and Summary Lead Action Level exceedances for medium (3,300-50,000) and large (>50,000) public water systems (Updated as of June 1, 2004)

<sup>8</sup> [http://www.epa.gov/safewater/lcrmr/reductionplan\\_comparison.html](http://www.epa.gov/safewater/lcrmr/reductionplan_comparison.html)

### Exhibit 3: Lead 90<sup>th</sup> Percentile Levels for 166 Large Water Utilities - Then and Now



Source: [http://www.epa.gov/safewater/lcrr/reductionplan\\_comparison.html](http://www.epa.gov/safewater/lcrr/reductionplan_comparison.html)

In 2004, EPA carried out a review of the implementation of LCR requirements by States. EPA asked State programs, who have primary oversight responsibility, a number of questions about how they implement different aspects of the LCR. The questions were centered on the following general categories: sampling issues, calculation of the 90<sup>th</sup> percentile value, treatment issues, lead service line replacement, public education and enforcement.<sup>9</sup>

Generally, the State responses to the survey indicate that the States are following the minimum state requirements of the LCR. However, the information provided to EPA indicates that many States may not be taking full advantage of the opportunities to oversee implementation of the rule. Also, the States' responses did highlight a few areas in which there is some confusion about the requirements of the rule as well as areas in which some States are going above and beyond the minimum obligations.

#### *Drinking Water Lead Reduction Plan*

As a result of the previous activities, EPA determined that the current approach of the LCR has been effective in reducing drinking water lead levels in the nation's public water systems and that there does not appear to be a widespread problem associated with high lead levels in drinking water. However, EPA identified opportunities to improve and clarify specific

<sup>9</sup> Source: USEPA, *State Responses to EPA Survey on State Implementation*, November 2005.

areas of the LCR and guidance materials. The seven targeted rule changes that are the subject of this document are key elements of the Drinking Water Lead Reduction Plan.<sup>10</sup>

It should be noted that EPA has also identified a number of issues that require longer-term consideration that will continue to be reviewed as part of potential, more comprehensive revisions to the rule or guidance. In many cases, these issues require additional data collection, research, and analysis to fill critical data gaps. Also, some issues require full stakeholder involvement to support decisions. Issues that are the subject of longer-term consideration include the following.

- Requirements for consecutive systems
- Broader revisions to monitoring and lead service line replacement requirements
- Revision to lead content in plumbing fittings and fixture requirements

*Short-term Regulatory Revisions and Clarifications to the Lead and Copper Rule Workgroup*

In May 2005, EPA formed a work group to consider issues related to the regulatory changes, called the Short-term Regulatory Revisions and Clarifications to The Lead & Copper Rule Workgroup (LCRSTR Workgroup). The LCRSTR Workgroup included EPA staff from a variety of Headquarters and Regional offices, as well as representatives from State drinking water lead programs. The LCRSTR Workgroup identified alternatives, drafted regulatory language, and discussed issues related to the changes.

*National Drinking Water Advisory Committee Working Group on Public Education Requirements of the Lead and Copper Rule*

As part of the review of the LCR, EPA identified a number of issues relating to the public education requirements of the LCR. In order to address these concerns, the National Drinking Water Advisory Council (NDWAC), EPA's advisory body on the Safe Drinking Water Act, formed a working group to consider possible revisions to the public education requirements. The charge for the NDWAC Working Group was to 1) review the current public education requirements for lead in drinking water to make recommendations for improvements; 2) develop recommended revised language for communicating to the public the risk of lead in drinking water and how affected persons should respond; and 3) review and make recommendations for changes to the means of delivery of lead information to the public.<sup>11</sup>

The NDWAC Working Group met in person four times between October 2005 and April 2006. The Working Group was comprised of 16 individuals representing an array of backgrounds and perspectives. Collectively, these individuals brought into the discussion the

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<sup>10</sup> Source: *Drinking Water Lead Reduction Plan*, EPA 810-F-05-001, March 2005, [http://www.epa.gov/safewater/lcrmr/reductionplan\\_fs.html](http://www.epa.gov/safewater/lcrmr/reductionplan_fs.html).

<sup>11</sup> 70 FR 54375, US EPA, 2005.

perspectives of State drinking water agencies, environmental and consumer groups, drinking water utilities, small system advocates, State health officials, and risk communication experts. The recommendations from the NDWAC Working Group form the basis of the regulatory changes on public education (III.F).

#### ***2.4 Rationale for the Regulation***

This section discusses the statutory authority of EPA to regulate lead in drinking water and the economic rationale for choosing a regulatory approach.

EPA derives its statutory authority to regulate contaminants in drinking water through the Safe Drinking Water Act. Section 1412(b) (1) (A) of the SDWA requires EPA to establish National Primary Drinking Water Regulations for contaminants that may have an adverse public health effect; that are known to occur or that present a substantial likelihood of occurring once in public water systems (PWSs), at a frequency and level of public concern; and that present a meaningful opportunity for health risk reduction for persons served by PWSs.

This section addresses the economic rationale for choosing a regulatory approach as described in Executive Order Number 12866, Regulatory Planning and Review (USEPA 1993). OMB circular A-4 notes that the rationale for regulation is to correct market failure or other social purposes: “The major types of market failure include: externality, market power, and inadequate or asymmetric information. Correcting market failures is a reason for regulation, but it is not the only reason. Other possible justifications include improving the functioning of government, removing distributional unfairness, or promoting privacy and personal freedom.”

Several of the rule changes correct inadequate or asymmetric information. For example, regulatory change III.E requires that tap monitoring results be provided to consumers, correcting asymmetric information. Regulatory change III.D changes the timing of information provision to States, again correcting asymmetric information. Additional information is gathered under regulatory changes III.D and III.G, correcting inadequate information. Regulatory change III.F provides for the development of better information and the more effective distribution of information, thereby also correcting a situation of inadequate information.

The other regulatory changes clarify the intent of the LCR, leading to more effective implementation of the rule thereby improving the functioning of government.

### **3 Regulatory Changes and Alternatives Considered**

#### **3.1 Regulatory change III.A - Minimum number of samples required**

##### *Description of Regulatory Change*

EPA is clarifying the minimum sampling requirement for small water systems that have fewer than five taps by making revisions to § 141.86 (c). These revisions include a clarification that the term “taps” means “taps that can be used for human consumption”, as opposed to taps not used for human consumption such as hose bibs or at utility sinks. In addition, the revisions clarify what a system must do to meet the minimum number of samples requirement (five), when there are fewer than five taps available for sampling. In this situation, those water systems must sample all taps at least once and take repeat samples on different days until five samples are obtained.

EPA is adding a provision to § 141.86 (c) that gives States the discretion to allow public water systems with fewer than five taps to collect one sample per tap that can be used for human consumption. The requirement is not mandatory and NTNCWSs and CWSs that qualify must make a request to the State in writing and must be approved by the State in writing or by onsite verification. Under this alternate sampling schedule, the sample with the highest test result will be compared to the Action Level to determine compliance. If any sample result is above the Action Level, it will serve as the system’s 90th percentile value. EPA is adding regulatory text to §141.80 to describe this new compliance determination. The new sampling schedule is also applicable for NTNCWSs and CWSs that are on reduced monitoring and EPA is adding a provision to §141.86 (d)(4)(i) for those systems. The provision allows the water system to reduce sampling frequency to once per year, but in no case can the number of samples required be reduced below the minimum of one sample per tap that can be used for human consumption.

##### *Rationale for Regulatory Change*

In the original Lead and Copper Rule of 1991, the term “site” is used to refer to the number of samples collected, and there has been confusion as to whether “site” refers to taps or physical locations. EPA is clarifying that sampling “sites” refer to “taps that can be used for human consumption”. The phrase “that can be used for human consumption” is being added to the regulations to ensure that samples are taken from taps which would pose the highest risk for exposure to lead, rather than from taps that are not frequently used for human consumption.

EPA is making clarifications for NTNCWSs and CWSs with fewer than five taps that can be used for human consumption. In the proposal for this rule, EPA maintained that systems must take a minimum of five samples in order to adequately capture the variability of lead levels and that it was more cost effective for small systems to take more samples than install corrosion control or source treatment based on a small pool of samples taken. EPA is maintaining that systems must take a minimum of five samples as part of today’s rule, however, EPA is also giving States the discretion to offer the alternative sampling requirement of sampling 100 percent of taps that can be used for human consumption to water systems with fewer than five taps. This

alternative sampling schedule alleviates any cost burden for systems associated with taking repeat samples and is also health protective because it does not allow water systems to ignore a potential problem by taking repeat samples at taps that have low lead results when they get a high sample result. Under the alternative sampling provision, systems would compare the sample with the highest result to the Action Level to determine if compliance actions, such as public education, corrosion control treatment installation, and/or lead service line replacement, are required.

### *Alternatives Considered*

Several alternative approaches were discussed by the Short-term Regulatory Revisions and Clarifications to The Lead & Copper Rule Workgroup (LCRSTR Workgroup). These approaches included retaining the 5 sample minimum requirement for systems, but allowing States the option to reduce the number of samples to one per tap if the history of data collected at the system demonstrates that levels have always been below the Action Level with little to no variability.

### **3.2 Regulatory change III.B - Definitions for compliance and monitoring periods**

#### *Description of Regulatory Change*

EPA is proposing to clarify the terms “compliance period” and “monitoring period” for purposes of the LCR. The term “compliance period” shall be as defined in Section 141.2 as a three-year calendar year period within a nine-year compliance cycle. The term “monitoring period” will refer to the specific period within the compliance period in which a water system must perform the requirement (e.g., June-September).

#### *Rationale for Regulatory Change*

This change is intended to clarify when systems are required to conduct routine monitoring under reduced schedules and when they must begin actions (i.e., corrosion control, public education, lead service line replacement) to remedy a lead Action Level exceedance.

For systems on reduced monitoring, they must monitor either once during each calendar year or once during each three-year compliance period. The monitoring period is from June to September or some other four-month period during normal operation where the highest lead levels are most likely to occur. This change would clarify that a system that exceeds the Action Level would be determined to be doing so as of the date on which the monitoring period ended (e.g., on September 30).

This change would also require, for systems on triennial monitoring, samples be taken during four consecutive months within the compliance period, not over multiple years. These systems must also conduct their monitoring every three years.

#### *Alternatives Considered*

The Short-term Regulatory Revisions and Clarifications to The Lead & Copper Rule Workgroup considered alternatives for defining the term compliance period.

### **3.3 Regulatory change III.C - Reduced monitoring criteria**

#### *Description of Regulatory Change*

Under the current rule language, systems are eligible for reduced monitoring based on certain criteria. For small systems, these criteria include having lead and copper levels below both Action Levels for two consecutive monitoring periods. For all systems, the criteria include meeting the State-designated water quality parameters with State approval, but without meeting either the lead or copper Action Level. The rule change specifies that if a system on reduced monitoring exceeds the lead Action Level, the system must revert to the regular monitoring schedule for lead tap sampling.

#### *Rationale for Regulatory Change*

Monitoring lead levels at the tap is particularly critical for systems that are exceeding the Action Level. These systems need frequent data on the levels of lead corrosion so that they can evaluate the effectiveness of any modifications to corrosion control treatment they may be attempting, and to better inform their consumers of the effectiveness of the system's efforts to reduce lead levels.

#### *Alternatives Considered*

The LCRSTR Workgroup and EPA considered including meeting the copper Action Level for reduced monitoring under all circumstances (i.e., systems meeting water quality parameter requirements) as part of this rule change. However, since the current rule does not contain additional requirements if a copper Action Level is exceeded (such as public education), EPA determined that copper issues will be considered as part of longer term revisions to the rule.



### **3.4 Regulatory change III.D - Advanced notification and approval requirement**

#### *Description of Regulatory Change*

Under the current rule, Section 141.90(a) (3) requires that systems deemed to have optimized corrosion control under §141.81(b) (3), systems subject to reduced monitoring pursuant to §141.86(d) (4), or systems subject to a monitoring waiver pursuant to §141.86(g) must notify States no later than 60 days after of a treatment change or the addition of a new source. The rule modification requires that these systems notify States of any long-term change to be made in water treatment process or additions of new sources in advance and the States determine when and if these changes may be made through a formal review and approval process. This gives systems the opportunity to consult with their States as much as they want and to take other measures necessary to avoid problems with corrosion. It also allows States to design monitoring programs upfront or require additional actions for the systems under those situations when it is necessary to ensure that corrosion control is being maintained adequately after the change has been made.

#### *Rationale for Regulatory Change*

EPA proposed that systems be required to provide advanced notification of any change in treatment or addition of a new source and receive approval from the State prior to making the change instead of the existing requirement that the system had to notify the State within 60 days of making a change. The final rule requires systems to provide advanced notification of any change in treatment that has long term impacts or addition of a new source and receive approval from the State before implementing the change. When water systems make changes to their treatment process with long term impacts or add a new source of water, there can be unintentional effects on the system's optimal corrosion control. EPA believes that State review and approval of changes in long-term treatment or addition of a new source will provide an opportunity to minimize any potential impacts on optimal corrosion control. EPA has narrowed the scope of this provision in the final rule to only long-term changes in treatment. Long-term treatment changes include the addition of a new treatment process or modification of an existing treatment process. 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.

#### *Alternatives Considered*

The LCRSTR Workgroup considered various lengths for the time period before a change that notification had to take place, such as at least 60 days. However, limiting notification to 60 days prior to a treatment change could be too short for some major changes. Leaving the States flexibility to decide on a timeframe through a review and approval process would alleviate such potentially unnecessary burdens.

In addition, some Workgroup members believe that source changes should be considered in addition to new sources for review and approval. This may cause additional burden if some States and systems do not consider source adjustments as new sources.

### **3.5 Regulatory change III.E - Requirement to provide sampling results to consumers**

#### *Description of Regulatory Change*

Systems take tap samples to test for lead for several purposes, most notably to calculate compliance with the Action Level. The purpose of this change in rule language is to add the requirement systems provide consumers (owners and occupants) with the tap monitoring results for samples taken for routine lead monitoring. The change modifies Sections 141.80(g) and 141.85, and adds a new Section 41.85(e) on the notification of results. This new section specifies the timing (within 30 days of learning of the results), the content of the notification, and the method of delivery for the notification. EPA is also adding a reporting requirement to §141.90(f) for systems to certify they have completed this new consumer notification requirement.

#### *Rationale for Regulatory Change*

Community water systems must collect samples from between 5 and 100 households to calculate the 90<sup>th</sup> percentile for comparison to the LCR Action Levels. Non community water systems (including some schools that operate their own water system) must also collect samples. Currently, systems are not required to notify the occupants of the lead levels measured in samples taken from their specific taps. This rule change would require systems to provide written notification to occupants of the households within a specified period and to post or otherwise notify occupants of non- residential buildings of the results of the lead testing. This would include staff and parents of students for schools that are tested as non-transient non-community water systems. While these tap samples are primarily collected to evaluate the effectiveness of corrosion control or to evaluate the corrosivity of the systems water, the results of the lead monitoring can provide useful information to the occupants of the location from which the samples were taken. In addition to the sample results, the notifications will include an explanation of potential health risks associated with lead in drinking water, methods for reducing risks, contact information for the utility, and the 90<sup>th</sup> percentile lead level for the most recently completed compliance monitoring period reported to the State. Occupants may use this information to inform any decisions they might make regarding taking actions to reduce their lead exposure.

#### *Alternatives Considered*

The Workgroup considered alternative time frames and including the results of any testing the utility performs in homes and buildings other than routine monitoring requirements.

### 3.6 *Regulatory change III.F – Public education requirements*

#### *Description of Regulatory Change*

The purpose of this regulatory change is to modify the public education requirements of the Lead and Copper Rule (LCR) in the Code of Federal Regulations §141.85. Water systems would still be required to deliver public education materials after a lead Action Level exceedance. However, the content of the message to be provided to consumers, how the materials are delivered, and the timeframe for delivery will be modified. The changes to the delivery requirements include additional organizations that systems must partner with to disseminate the message to at-risk populations as well as changes to the media used to disseminate information to ensure water systems reach consumers when there is an Action Level exceedance. EPA has also added a requirement for systems to prepare and submit to States and letter certifying that the public education activities after an Action Level exceedance have taken place. Specific changes include the following.

a) Changes to the mandatory text to written materials

The regulatory change requires systems that have a lead Action Level exceedance to continue to deliver written materials to all customers as well as a number of key organizations. However, the content of the required written materials is modified to be much shorter and easier to understand. The mandatory language addresses essential topics such as the opening statement and health effects language. Community Water Systems and Non- Transient Non-Community Water Systems are still required to provide information on other topics, but the system may either use EPA’s suggested language or their own words to explain these topics.

b) Changes to better reach at-risk populations

This regulatory change adds organizations to the list of recipients of the public education materials in order to increase the likelihood that the most vulnerable populations or their caregivers will receive the information they need to reduce their exposure to lead in drinking water. This includes requiring the system to send information to licensed childcare centers, preschools and Obstetricians-Gynecologists and Midwives. In addition, systems are required to include an informational notice with the printed materials that they send to these organizations to explain the importance of sharing this information with their customers/patients. Also, systems are required to directly contact (e.g., phone, in person, etc.) the local health agency rather than simply delivering brochures to this organization. By directly contacting the local health agency, utilities can request the health agency’s support in disseminating information on lead in drinking water and the steps that vulnerable populations can take to reduce their exposure.

Systems are also required to complete additional activities from a list of options. The list of additional activities that systems can choose from includes the following.

- Public Service Announcements
- Paid advertisements such as newspaper or transit ads

- Information displays in public areas such as grocery stores
- Using the internet or email to disseminate information
- Public meetings
- Delivery to every household (not just bill paying customers)
- Individual contact with customers such as door hangers
- Provide materials directly to multi-family homes and institutions
- Other methods approved by the primacy agency

Systems serving more than 3,300 people must implement three additional public education activities from the list and systems serving 3,300 or fewer individuals must implement one additional activity. The system must work in consultation with the State to ensure that the content of each of these additional activities is appropriate. A system can choose three items from one, two, or three of these general categories. For instance, a system can do a series of paid advertisements if that is the most effective way to reach the target populations in their community.

- c) Changes to help systems maintain communication with consumers throughout the exceedance

Under this change, systems include information in or on the water bill no less than quarterly as long as there is an exceedance of the lead Action Level, with a provision to allow systems to work with their primacy agency to deliver this information in a different way if necessary. In addition, systems with a population greater than 100,000 are required to put the public education information on their Web site until the system tests below the lead Action Level.

Currently, systems that exceed the lead Action Level must issue a press release. The regulatory change requires that systems distribute two press releases per year in order to ensure systems are maintaining communication with their customers. The systems must send the press releases to the major newspapers and TV and radio stations which cover the population served by the water system. States can waive the press release requirement if there are no media outlets that cover the population served by the system. In addition, the requirement for medium and large systems to provide two Public Service Announcements (PSAs) per year is removed.

- d) Changes to the required timing of completion of public education requirements

While the revision requires systems to complete public education activities within 60 days of the end of the monitoring period in which the exceedance occurred, there is flexibility for the State to allow longer for completion of these activities. However, systems must request and gain State approval on a case-by-case basis for extending this deadline within the 60-day window. This ensures that the system and the State begin public education actions to reduce exposure as soon as possible, but allows these actions to continue past the 60-day timeframe as needed for effective implementation.

e) Changes to Consumer Confidence Reports

The regulatory change will require all community water systems include information about the risks of lead in drinking water in their Consumer Confidence Reports on a regular basis.

*Rationale for Regulatory Change*

The intention of changing the public education requirements of the LCR is to improve compliance and ensure that consumers receive the information they need to limit their exposure to lead in drinking water. Because the sources of lead are frequently within the home and reduction of lead in drinking water is the responsibility of both the public water systems and the consumer, EPA wants to ensure that information is delivered and that it is meaningful and useful to the consumer.

As part of the review of LCR compliance issues, it was determined that many water utilities did not conduct the required public education, therefore the at-risk population did not get information they needed to reduce their exposure from lead in drinking water.<sup>12</sup> EPA believes these changes better ensure at-risk populations receive information quickly and are able to act to reduce their exposure. EPA also believes water systems will be better able to comply with today's requirements.

During EPA's national review of the LCR, many stakeholders stated that the public education requirements needed improvement. In September 2004, EPA held an expert workshop to discuss the public education requirements of the rule. A number of concerns were raised at this workshop about the effectiveness of the existing public education language and requirements. Workshop participants stated that the mandatory language in the rule is too long, cumbersome, and complex to convey to the general public an understanding of the risk posed by lead in drinking water and an appropriate course of action. Public education must put the risk in context and convey to the public the appropriate sense of urgency for consumers to act to reduce exposure. In addition, workshop members called for public education messages to be tailored to those who are at highest risk for lead exposure. Many participants stated that the mandatory language and delivery requirements in the current rule were ineffective in providing useful and timely information to the public.<sup>13</sup>

In order to address these concerns, the National Drinking Water Advisory Council (NDWAC), EPA's advisory body on the Safe Drinking Water Act, formed a working group to consider possible revisions to the public education requirements. The NDWAC Working Group raised a number of concerns with the public education requirements of the LCR that are consistent with the concerns expressed at the 2004 workshop. The NDWAC Working Group recommended that the rule be modified to better ensure that information reaches the most vulnerable populations (e.g., pregnant women, infants and young children) or their caregivers. They also recommended changes to ensure that these consumers received information in a more

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<sup>12</sup> Lead and Copper Rule State File Review: National Report, EPA, March 2006

<sup>13</sup> Summary from Public Education Workshop, US EPA, 2004.

timely manner and continued to receive information throughout any exceedance. They also recommended changes to ensure that the information is easy to understand and effective in informing affected consumers and encouraging parents or other caregivers to take actions to reduce exposure of infants and children to lead. In addition, the NDWAC Working Group recommended changes to make sure critical information reaches not only bill paying customers, but those consumers who live in apartments and other housing where residents do not receive bills.

Finally, the NDWAC Working group was also concerned about the amount of time it may take to test water, get back the results, calculate the 90<sup>th</sup> percentile, and finally send out public education materials. They were concerned that an individual could be drinking water with high lead levels for months before knowing of the problem. As a result, they recommended changes to increase the timeliness of public education on lead in drinking water.

The NDWAC recommendations are, in part, modeled after the public education information under two existing EPA rules, the CCR and the Public Notification Rule (40 CFR 141, Subpart Q). The NDWAC recommendations form the basis for the changes to § 141.85 in this rulemaking.

#### *Alternatives Considered*

The NDWAC Working Group considered many alternatives during their deliberations in the areas of mandatory language, delivery requirements to make the public education program more effective, consultation between systems and States, the timing of notification, and means for targeting vulnerable populations.

### **3.7 Regulatory change III.G - Reevaluation of Lead Service Lines deemed replaced.**

#### *Description of Regulatory Change*

Under the existing rule, systems that are replacing lead service lines in response to an Action Level exceedance may sample lead levels from lead lines. If the sampled lead levels from an individual service lines is below the Action Level (15 ppb), that line would not have to be physically replaced, but could be considered replaced towards meeting the goal of 7 percent replacement. Since these “tested-out” lines are considered replaced, they do not have to be re-evaluated if water quality conditions or treatments change.

The rule language requires that these “tested-out” lines be re-evaluated if a system subsequently exceeds the Action Level and is triggered back into further lead service line replacements. The tested-out lines are put back into the inventory of lead service lines and are then treated as any other line in the inventory, to be either re-tested and “tested-out” or re-tested and replaced if the lead levels for the line exceed the Action Level.

#### *Rationale for Regulatory Change*

This “test-out” provision was intended for service lines that are not leaching high levels of lead. However, if a system has again exceeded the Action Level, the previous service line sample may no longer be representative of the lead concentrations being contributed by the service line under the new conditions causing the Action Level exceedance. For example, in the recent case of elevated lead levels in the DC WASA system, the switch from chlorine to chloramines may have changed the corrosiveness of the water in the distribution system, potentially elevating lead levels, especially those from the service lines. Service line samples collected under chlorination may not be representative of service line samples under chloramination. Re-testing is necessary to determine whether these lines are still contributing low levels of lead under the new conditions. If not, then the line should be considered for replacement along with the rest of the inventory of lead service lines.

#### *Alternatives Considered*

The workgroup did not consider any alternatives to this rule change.



## 4 Costs of Regulatory Changes

This chapter describes the estimates of costs for the regulatory changes to systems and State Primacy Agencies (States), including costs associated with administrative, monitoring, sampling, reporting, and public notification activities. There are two types of costs that may result from the regulatory changes – direct and indirect. Direct costs are costs for activities that are specified by the regulatory change, such as costs for additional monitoring or distribution of consumer notices. Indirect costs may also result when systems and States use the information generated by the directly-related rule activities to modify or enhance practices to reduce lead levels. These indirect costs, and related health risk reductions, are not quantified for the purposes of this analysis, but are described qualitatively in greater detail in Section 5 of this document. The remainder of Section 4 focuses solely on the estimation of direct costs. Exhibit 4 summarizes the expected direct and indirect cost impacts for the seven regulatory changes.

**Exhibit 4: Summary of Direct and Indirect Implications of the LCR Short Term Regulatory Changes**

Rule Change #	Rule Change Description	Direct Cost Implications	Indirect Cost and Health Risk Implications
III.A	Number of samples	Yes	Yes
III.B	Monitoring period	Unquantified	None
III.C	Reduced monitoring criteria	Yes	Yes
III.D	Advanced notification and approval	Yes	Yes
III.E	Consumer notice of Lead results	Yes	Yes
III.F	Public Education	Yes	Yes
III.G	Reconsideration of lead service lines	Yes	Yes

The costs associated with the Lead and Copper Rule have been estimated previously in several documents. Direct costs due to the 1991 Lead and Copper Rule are presented in the *Final Regulatory Impact Analysis of National Primary Drinking Water Regulations for Lead and Copper*, April 1991. This RIA estimates costs for monitoring, coping with source water contamination, coping with lead leached from solder, coping with lead leached from lead service lines (including public education, corrosion control, and lead service line replacement), and State implementation costs.

EPA proposed and adopted minor changes to the LCR. The direct costs for these minor changes are described in *Regulatory Impact Analysis Addendum: Proposed Changes to National Primary Drinking Water Regulations for Lead and Copper*, January 1996. This addendum estimates changes to costs with respect to the April 1991 RIA, under the same cost categories.

An Information Collection Request was also prepared for the minor rule changes, *Information Collection Request: National Primary Drinking Water Regulations For Lead and Copper*, June 1999.

The most recent cost estimates can be found in the 2004 *Information Collection Request for Disinfectants/Disinfection Byproducts, Chemical, and Radionuclides Rules*, OMB Control Number: 2040-0204, EPA Tracking Number: 1896.05. The 2004 ICR estimates administrative burden and costs associated with the LCR for systems and States. Direct system costs are estimated for community water systems and non-transient non-community water systems to perform the following activities:

- Conduct monitoring for water quality parameters
- Conduct tap sampling of lead levels for Action Level compliance
- Review sample data, including the calculation of lead and copper 90<sup>th</sup> percentile levels
- Submit monitoring data and any other documents or reports to the State
- Record and maintain information

The 2004 ICR also estimates burden and costs for systems that must submit corrosion control studies, recommend and submit information regarding the completion of corrosion control or source water treatment installation, conduct public education, or conduct LSL monitoring, notification, and replacement.

In the 2004 ICR, for the LCR requirements to CWSs and NTNCWSs, the average annual respondent burden is estimated at 1.72 million hours and \$57.9 million for reporting (including lead service line replacement reporting), recordkeeping, and public education activities of the LCR. For States, the annual burden incurred by primacy agencies for activities associated with the lead and copper regulation is approximately 0.21 million hours and \$6.8 million. This estimate includes costs for employing a corrosion control expert and costs to review various letters and results submitted by water systems in accordance with the LCR.

#### **4.1 Overall Cost Methodologies and Assumptions**

As part of its comprehensive review of the Lead and Copper Rule, EPA collected and analyzed new data on various aspects of LCR implementation. When available, this new information is the first choice source for use in estimating costs. Sources of the new information include the following.

- *Medium and Large Public Water Systems Exceeding the Action Level Summary from SDWIS/FED data as of January 27, 2005* provides up-to-date counts of the number of medium and large systems that have exceeded the Action Level since 2000 and 2003.

- *Summary, Lead Action Level exceedances for public water systems subject to the Lead and Copper Rule (For data through September 13, 2004)* provides up-to-date counts of the number of small systems that have exceeded the Action Level since 2000 and 2003.
- *State responses to EPA's "Survey of States Questions on State Implementation of the Lead and Copper Rule" (July 2004)* provides information on the number of systems that are conducting lead service line replacement under the LCR, the fraction of systems on reduced LCR monitoring, and system practices with regard to notification of customers of sampling results.

If new information was not available about a cost item or assumption, previous analyses of LCR requirements were reviewed to determine if a suitable estimate was available. The 1991 RIA, the 1996 RIA Addendum, and the various Information Collection Requests were all used as sources of information and assumptions.

In a limited number of instances, appropriate estimates were not available either from new analyses or existing documents. For those cost items, the best professional judgment used to derive estimates.

For the regulatory changes that clarify rule language (III.B), the costs associated with those activities may have already been included in the original LCR cost estimates as presented in the 1991 RIA. In these cases, costs for performing these activities are not included in this analysis.

### *Inventory of Systems*

The primary inventory of systems that will be impacted by the direct costs of the regulatory changes was derived from a pull of data from the SDWIS/FED system in the 4<sup>th</sup> quarter of 2004, available at <http://www.epa.gov/safewater/data/pivottables.html> and summarized in *FACTOIDS: Drinking Water and Ground Water Statistics for 2004*.<sup>14</sup> The number of systems covered by the LCR that result from the SDWIS/FED pull for 2004 are summarized in Exhibit 5.<sup>15</sup>

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<sup>14</sup> [http://www.epa.gov/safewater/data/pdfs/data\\_factoids\\_2004.pdf](http://www.epa.gov/safewater/data/pdfs/data_factoids_2004.pdf)

<sup>15</sup> System inventory data from the 4<sup>th</sup> Quarter SDWIS/FED data pull is used throughout the analysis to maintain consistency with data on the number of systems exceeding the Lead Action Level collected during that time period.

**Exhibit 5: Number of Systems by Size Category and Type Subject to the LCR  
SDWIS/FED 2004 Data<sup>16</sup>**

	CWS	NTNCWS	TOTAL LCR
<=100	13,766	9,548	23,314
101-500	16,240	6,997	23,237
501-1,000	5,914	1,925	7,839
1,001-3,300	8,298	795	9,093
3,301-10,000	4,707	96	4,803
10,001-25,000	2,107	7	2,114
25,001-50,000	950	6	956
50,001-75,000	343	1	344
75,001-100,000	141	0	141
100,001-500,000	322	0	322
500,001-1,000,000	32	0	32
>1,000,000	18	0	18
Grand Total	52,838	19,375	72,213

*Wage Rates*

Wage rates for systems were taken from the report *Labor Costs for National Drinking Water Rules* prepared by Science Applications International Corporation (SAIC) in October 2003 for EPA's Office of Ground Water and Drinking Water. Exhibits 20 and 21 of that report summarize recommended average technical and managerial wage rates by system size for EPA to use in cost analyses. These rates are updated to 4<sup>th</sup> quarter 2006 levels using the Employment Cost Index. To represent the composition of staff at PWSs of smaller sizes (e.g., systems serving fewer than 3,300 people), EPA uses only the updated technical rate. For systems serving 3,300 or more people, EPA uses a ratio of 80 percent technical labor to 20 percent managerial labor to arrive at a weighted labor rate. Appendix B presents the wage rates for systems used in the cost analyses.

Wage rates for States are based on information provided by the Association of State Drinking Water Administrators (ASDWA) as presented in the *Information Collection Request for Contaminant Occurrence Data in Support of EPA's Second Six Year Review of National Primary Drinking Water Regulations* (August 2006). Please refer to Appendix A for further detail.

*Incremental Direct Costs Quantified*

As discussed earlier, Regulatory Changes III.A, III.C, III.D, III.E, III.F, and III.G are expected to result in direct costs to States and systems. For these potential regulatory changes, direct costs could be incurred in the areas of system reporting, tap water monitoring and public

<sup>16</sup> System inventory data from the 4<sup>th</sup> Quarter SDWIS/FED data pull is used throughout the analysis to maintain consistency with data on the number of systems exceeding the Lead Action Level collected during that time period.

education for systems, and review and consultation for States/Primacy Agencies. Exhibit 6 summarizes the direct cost categories to be estimated for each regulatory change. The following sections present either the rationale for why direct costs are not incurred, or estimate of direct costs for each rule provision.

**Exhibit 6: Direct Costs Associated with Regulatory Changes**

Regulatory Change	System Costs			State Costs
	System Reporting	Tap Water Monitoring	Customer Notification	Review and Consultation
Regulatory Change III.A	X			X
Regulatory Change III.B	None – Clarifications of definitions with no direct cost impact			
Regulatory Change III.C	X	X		X
Regulatory Change III.D	X			X
Regulatory Change III.E	X		X	X
Regulatory Change III.F	X		X	X
Regulatory Change III.G		X		

## 4.2 *Direct Costs Associated with Regulatory Change III.A*

### *Activities resulting from regulatory change*

Regulatory change III.A clarifies EPA's intent that a minimum of 5 tap samples must be taken when conducting LCR compliance monitoring. If a system has fewer than the minimum number of sites required for sampling, then those systems will have to collect multiple samples on different days from the same site so that the total number of samples per monitoring period is 5. However, III.A gives States the discretion to allow certain systems with fewer than 5 taps on a case by case basis to take 1 sample per tap. Under this alternate sampling schedule, the sample with the highest test result will be compared to the action level to determine compliance.

Public water systems with fewer than 5 taps that are in States that allow 1 sample per tap will undertake a one time activity to document the number of appropriate taps and communicate this information with the State. States that will allow 1 sample per tap will engage in a one time effort to review, track, and respond to submittals from the systems with fewer than 5 taps on the number of appropriate taps for future sampling.

### *Costs to systems*

The systems that will incur costs under this regulatory change are NTNCWSs and CWSs with fewer than 5 taps in States that allow 1 sample per tap. The following data are used to estimate the number of systems impacted by the regulatory change and related direct costs.

- The number of NTNCWSs in States that will allow 1 sample per tap: This analysis assumes that the 11 States that commented favorably on the option of allowing 1 sample per tap for NTNCWSs with fewer than 5 taps will exercise their discretion under III.A and permit 1 sample per tap. Note that two States commented unfavorably on the option and it is assumed States that did not comment at all would not allow the alternative since the default requirement maintains a minimum of five samples. Exhibit 7 contains estimates of the number of NTNCWSs in these 11 States.
- The number of CWSs with fewer than five taps in States that will allow 1 sample per tap: This analysis assumes that the 11 States that commented favorably on the option of NTNCWSs will also allow permit 1 sample per tap for applicable CWSs. In addition, the analysis assumes that Alaska will exercise its discretion to allow 1 sample per tap for small CWSs due to the presence of washeterias in the State. This analysis assumes that all CWSs with fewer than five taps are a portion of those that serve 100 or fewer people since EPA believes that CWSs with fewer than 5 taps, even in the smallest system size category, are relatively unique situations and do not occur frequently. Exhibit 7 contains estimates of the number of CWSs serving 100 or fewer people in the 11 States plus Alaska.

**Exhibit 7: Number of NTNCWSs and CWSs in 11 States that Favored 1 Sample Per Tap in Comments on Proposed Rule plus Alaska**

11 States that Favored 1 Sample Per Tap In Comments to Proposed Rule, & Alaska	Number of NTNCWSs By State	Number of CWSs serving <101 by State
AK	N/A	341
IN	686	317
MI	1631	744
WI	907	592
IL	405	670
TX	785	2105
VT	234	319
UT	63	241
WA	315	1748
MD	573	327
MN	563	484
TN	46	151
<b>Total</b>	<b>6208</b>	<b>8039</b>

Source: SDWIS/FED data pull from the 4th quarter of 2004.

- The fraction of NTNCWSs that have fewer than 5 taps: No nationally available data source provides information on the fraction of NTNCWSs with fewer than 5 taps. However, in their comments submitted on the Draft LCRSTR, MI provided information that 53% of the NTNCWSs in MI had fewer than 5 taps. In the absence of other data, this analysis assumes that 53% of the NTNCWSs in the 11 States have fewer than 5 taps. Exhibit 8 displays the calculation of the number of NTNCWSs with fewer than 5 taps in the 11 States.
- The fraction of CWSs serving <101 people that have fewer than 5 taps: As stated above, EPA believes that CWSs with fewer than 5 taps, even in the smallest system size category, are relatively unique situations and do not occur frequently. In the absence of any other data source, this analysis assumes that 5% of CWSs serving <101 have fewer than 5 taps, as displayed in Exhibit 8.

**Exhibit 8: Number of Public Water Systems with Fewer Than 5 Taps in 11 States**

11 States that Favored 1 Sample Per Tap In Comments to Proposed Rule	Number of NTNCWSs By State	Fraction of NTNCWSs with <5 Taps	Number of NTNCWSs with <5 Taps	CWSs Serving <100 By State [1]	Percent of CWSs <100 With <5 taps [6]	Number of CWSs <100 With <5 taps
AK	N/A	N/A	N/A	341	5%	17
IN	686	53%	364	317	5%	16
MI	1631	53%	864	744	5%	37
WI	907	53%	481	592	5%	30
IL	405	53%	215	670	5%	34
TX	785	53%	416	2105	5%	105
VT	234	53%	124	319	5%	16
UT	63	53%	33	241	5%	12
WA	315	53%	167	1748	5%	87
MD	573	53%	304	327	5%	16
MN	563	53%	298	484	5%	24
TN	46	53%	24	151	5%	8
<b>Total</b>	<b>6208</b>		<b>3290</b>	<b>8039</b>		<b>402</b>

- The labor and cost estimates per applicable system with <5 Taps: Based on similar activities, it is estimated that systems will take 1 hour to prepare a letter to States verifying the number of applicable taps for lead and copper sampling, with a materials cost of \$0.43 for postage and supplies. This analysis assumes that all systems that are eligible for taking 1 sample per tap will request this option from States.

The one-time direct costs to systems, summarized in Exhibit 9, are estimated to be \$104,000 including \$102,500 in labor costs and \$1,600 in materials costs. Detailed estimates are provided in Appendix J.

*Costs to States*

Regulatory Change III.A will require State/Primacy agencies that exercise their discretion and allow 1 sample per tap for applicable systems with fewer than 5 taps to verify the appropriate number of taps per system by reviewing the letters submitted by systems and responding to systems.

Estimates of state review burden are based on similar activities (such as reviewing a letter reviewing tap monitoring events). States are estimated to take 1 hour to review and respond to the letter from systems verifying the applicable number of taps for sampling.



The one-time direct costs to State/Primacy agencies is estimated to be \$162,000 (\$160,700 in labor costs and \$1,600 costs for postage and supplies to mail the response letter to systems), as summarized in Exhibit 9. Detailed estimates are included in Appendix J.

**Exhibit 9: Summary of Estimated Direct Costs to Systems and State/Primacy Agencies  
Associated with Regulatory Change III.A**  
(4<sup>th</sup> Qtr 2006\$)

	One-Time Labor	One-Time Materials	Total One- Time Costs
<b>Costs to Systems</b>			
Reporting	\$102,500	\$1,600	<b>\$104,000</b>
<b>Total System Costs</b>	<b>\$102,500</b>	<b>\$1,600</b>	<b>\$104,000</b>
<b>Costs to State/Primacy Agencies</b>			
Review Costs	\$160,700	\$1,600	<b>\$162,000</b>
<b>Total State Costs</b>	<b>\$160,700</b>	<b>\$1,600</b>	<b>\$162,000</b>

Note: Totals may not add due to rounding.

#### ***4.3 Direct Costs Associated with Regulatory Change III.B***

Regulatory Change III.B clarifies the terms “monitoring period” and “compliance period.” Based on the regulatory change, if a system exceeds the lead or copper Action Level during a monitoring period, the compliance calendar for required actions starts at the end of the monitoring period, which for most systems would occur on September 30. Under the previous regulatory language, systems were confused as to whether compliance actions began at the end of that calendar year (December 31) rather than the monitoring period (September 30).

As a result of the regulatory change, activities triggered by a lead or copper Action Level exceedance could begin three months earlier (i.e., at the end of September instead of the end of December), but it is not clear if activities would last any longer. The net result is a change in the timing of activities, with a difference of three months having an unclear impact on costs, although there may be health risk implications.

#### 4.4 Direct Costs Associated with Regulatory Change III.C

##### *Activities resulting from regulatory change*

As a result of Regulatory Change III.C, utilities that are conducting LCR compliance monitoring on a reduced monitoring schedule and that have 90<sup>th</sup> percentile LCR monitoring samples that exceed the lead Action Level will be required to resume standard monitoring schedules for monitoring lead at taps. In addition to monitoring activities, utilities will have to meet reporting requirements to the State/Primacy agency. State/Primacy agencies will be involved in review of utility monitoring reports. Supporting calculations and information are included in Appendix C.

##### *Costs to systems*

The systems that will incur direct costs under this regulatory change are those systems that exceed the lead Action Level and that had been on a reduced monitoring schedule. The following data are used to estimate the number of systems impacted by the regulatory change and related direct costs.

- Number of systems exceeding the lead Action Level: This analysis uses the number of systems that have exceeded the lead Action Level since 2003 as an estimate of the number of systems that will exceed the lead Action Level each year in the near future. Exhibit 10 contains estimates of the number of systems exceeding the lead Action Level annually by size category.

**Exhibit 10: Number of Systems Exceeding Annually<sup>17</sup>**

System Size Category	# Systems that Exceed Lead AL Since 2003 <sup>1,2</sup>
<3.3K	884
3.3K-10K	55
10K-50K	41
50K-100K	7
>100K	7
Total	994

1. Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004.

2. Data Source: [www.epa.gov/safewater/lcrmr/lead-data.html](http://www.epa.gov/safewater/lcrmr/lead-data.html), 8/30/05.

- Percent of systems on reduced monitoring: In their responses to the EPA survey on LCR implementation,<sup>18</sup> States provided estimates of the percent of systems on reduced LCR

<sup>17</sup> Updated data on the number of systems that have exceeded the Lead AL are not available for use in the EA supporting the Final Rule. Thus we assume that this data reflects the current annual number of systems exceeding the Lead AL and use 4<sup>th</sup> quarter 2004 SDWIS inventory data to maintain consistency.

<sup>18</sup> USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004.

monitoring (summarized in Appendix C-1). Based on this data, 91 percent of systems are on a reduced schedule for LCR lead and copper monitoring. In the absence of additional data, this analysis assumes that systems that will exceed the lead Action Level are on a reduced monitoring schedule at the same rate as all systems. Therefore, we assume that 91 percent of the systems that exceed the lead Action Level were on reduced monitoring and will therefore incur direct costs due to regulatory change III.C. This assumption may be conservative, because systems that are likely to have exceedances are less likely to be on reduced monitoring.

- **Additional monitoring events:** The frequency for monitoring on a standard schedule under the LCR is once every 6 months. Reduced monitoring could refer to either monitoring once every year or once every three years. From the state responses to the survey, it is impossible to distinguish the number of systems on a reduced monitoring schedule of once every year from those monitoring once every three years. This analysis assumes that all systems on reduced monitoring are on the triennial schedule, a conservative assumption that might slightly over-estimate costs. Thus, a system that was on reduced monitoring but is placed on a standard monitoring schedule after a lead Action Level exceedance under regulatory change III.C will incur an additional 5 monitoring events over a 3 year period (6 monitoring events in three years under standard monitoring instead of 1 monitoring event in three years under reduced monitoring).
- **Tap samples per monitoring event:** The number of samples collected in each monitoring period will also change when the utility switches from reduced monitoring to standard monitoring. The required number of samples varies by system size, with the smallest systems (serving less than or equal to 100 people) required to take 5 samples per monitoring event under both standard and reduced monitoring, and the largest systems (serving > 100,000 people) required to take 100 samples per monitoring event under standard monitoring, and 50 samples per monitoring event under reduced monitoring.
- **Labor and cost estimates per sample:** Based on previous EPA documents, the labor required to collect each lead and copper compliance tap sample is estimated at 2.5 hours. The labor to analyze the sample for lead and copper is estimated at 1 hour, with a material cost of \$8.16 per sample (also referred to as the materials cost). In addition, systems must calculate their 90<sup>th</sup> percentile value to assess compliance and report the monitoring and compliance results to the State. These activities are estimated to require 1.5 to 2 hours per system, varying by system size, with a materials cost of \$0.39 for postage and \$0.04 in materials. The derivation of the labor and cost estimates relating to compliance monitoring is detailed in Appendix C-2.

The direct Costs to systems, summarized in Exhibit 11, are estimated to be \$2,696,000 annually including \$2,502,000 in labor costs and \$194,000 in materials costs. Detailed estimates are provided in Appendices C-4 and C-5.

*Costs to States*

Regulatory Change III.C will require State/Primacy agencies to review utility monitoring reports as a result of resuming standard monitoring schedules.

Estimates of state review burden are based on the 2004 ICR page H-12, which estimates that a State takes 1 hour to review the letter describing a tap monitoring event for each system. Additionally, States will spend an additional 10 minutes to 1 hour checking the compliance (90<sup>th</sup> percentile) calculations for each monitoring event. The materials cost is limited to postage for letters sent to utilities regarding review findings.

The direct costs to State/Primacy agencies is estimated to be \$82,000 annually including \$81,000 in labor costs and \$1,000 in materials costs, as summarized in Exhibit 11. Detailed estimates are included in Appendix C-7.

**Exhibit 11: Summary of Estimated Direct Costs to Systems and State/Primacy Agencies Associated with Regulatory Change III.C**  
(4<sup>th</sup> Qtr 2006\$)

	Annual Labor	Annual Materials	Total Annual
<b>Costs to Systems</b>			
Reporting	\$60,000	\$1,000	<b>\$61,000</b>
Tap Monitoring	\$2,442,000	\$193,000	<b>\$2,635,000</b>
<b>Total System Costs</b>	<b>\$2,502,000</b>	<b>\$194,000</b>	<b>\$2,696,000</b>
<b>Costs to State/Primacy Agencies</b>			
Review Costs	\$81,000	\$1,000	<b>\$82,000</b>
<b>Total State Costs</b>	<b>\$81,000</b>	<b>\$1,000</b>	<b>\$82,000</b>

#### 4.5 *Direct Costs Associated with Regulatory Change III.D*

##### *Activities resulting from regulatory change*

Regulatory Change III.D revises the current 60-day notification requirement, under which systems notify States about long-term changes in treatment or additions of new sources that could cause problems with optimal corrosion control. Rather than requiring systems to notify States up to 60 days after treatment changes or source additions have been made, systems now must notify the states in advance and the changes must undergo a formal review and approval process by the State prior to implementation. All States currently review treatment or source changes within 60 days after the change. However, some States are already reviewing and issuing approval before such changes are made. The activities associated with the formal review and approval process are a new requirement for those States that do not currently have such a review and approval process. System activities will include preparation of a submittal to the State and coordination with the State/Primacy agency during the review. State/Primacy agency activities will include review of system data/reports and coordination with systems.

##### *Costs to systems*

In order to estimate the cost of this provision to utilities, information is needed on the number of systems that will change a treatment or add a source annually, as well as the number of systems that are located in States that already have a review and approval requirement. Systems located in these States will not incur additional costs under this provision.

- States with review and approval process: Many States already have a review and approval process for treatment or source changes. As part of the survey on LCR implementation<sup>19</sup>, EPA asked States to respond to the following question: “How do systems notify the State of treatment changes? Does the State require that systems provide information about potential effects of treatment changes on corrosion control?” A summary of State responses is provided in Appendix D-1. Based on the State responses, 14 States explicitly replied that they currently have a review and approval process for treatment changes. It should be noted that another nine States mention a process that requires a permit for treatment changes and eight States refer to submittal and review of engineering plans for a change. Although not a review and approval process focused specifically on the impact of a change on corrosion control, the permitting and plan review processes may be comprehensive enough that they consider corrosion issues. For the purposes of this analysis, however, we base our estimates by excluding only the 14 States that specifically consider corrosion issues, recognizing that other States may also include corrosion issues in their review processes.
- Number of systems in States without an existing review and approval process: Based on the characterization of the process for each State and the number of systems in each State, the number of systems that are not covered by an existing process and

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<sup>19</sup> USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004.

may therefore incur costs under this regulatory change is estimated in Appendix D-1. Under the alternative in which only the 14 States with explicit review and approval are excluded from the count, 53,372 systems (of 72,213 CWSs and NTNCWSs) may incur costs for the regulatory change.

- Fraction of systems that change treatment or add a source each year: Treatment changes over the next several years are likely, as systems will be faced with new regulatory requirements, including changes to comply with the already promulgated Arsenic Rule and the upcoming Long Term 2 Surface Water Treatment Rule and Stage 2 Disinfectants/Disinfection Byproducts Rule. Together, these regulatory requirements are estimated to cause 9,243 systems to institute a treatment change, although not all of these treatment changes will affect corrosion control. Also the compliance periods for these regulations varies. To account for these expected treatment changes, and to account for treatment changes and source additions unrelated to the Arsenic, LT2, and Stage 2 rules, EPA assumed (based on the projected rule-related treatment changes and expert judgment) that approximately 20% of the systems affected by the LCR will institute a treatment change in the next ten years. It is assumed that these changes occur uniformly over that 10-year period, so that approximately one-tenth of these systems (or 2 percent of the total) institute a treatment change or source addition each year. Appendix D-2 provides additional detail.
- Based on the 2 percent assumption, the analysis estimates that 1,067 ( $53,372 \times .02$ ) systems each year would report a treatment change or source addition and incur costs in States currently not covered by an explicit review and approval program.
- System burden and activities: EPA anticipates that systems will incur additional costs under this rule change as systems and States more carefully review and consider possible corrosion impacts of treatment changes or source additions. The activities and burden associated with the review and approval process are expected to vary based on the size and complexity of a system, and the nature of the change or source addition. In the absence of information on the current prevalence of these activities, EPA has used the best professional judgment to estimate the range of potential activities and associated costs resulting from the review and approval process. All systems, regardless of size or complexity, are assumed to undertake additional activities related to data collection and evaluation, preparation of a submittal to the State, and coordination with the State. For small systems or systems making relatively simple changes, considering the corrosion impacts of the change may be a rather basic process of reviewing water quality data and previous lead monitoring results. For these systems, additional effort will be incurred by system staff in coordination with State personnel to assemble water quality parameter and lead data and evaluate the potential impacts. EPA estimates the burden for this additional effort at 7.5 hours per system, at an average cost of \$231 per system. For larger or more complex systems making major treatment changes, activities would be more extensive, including conducting engineering studies to evaluate impacts on corrosion control. To

some extent, systems may already be conducting these studies, resulting in no net cost due to the regulatory change.

- The current LCR regulatory requirements on notification of treatment changes cause a system burden of 0.5 hours per treatment change. Therefore, the new system burden is expected to be 8 minus 0.5 hours or 7.5 hours per treatment change.<sup>20</sup>
- Additional burden for engineering studies: Based on best professional judgment, EPA estimates that between 10 percent and 20 percent of medium and large systems may incur the additional cost of \$20,000 to conduct an engineering study on corrosion impacts. The \$20,000 estimate is based on recent similar studies for medium-sized systems.

The direct costs to systems are estimated to range from \$506,000 to \$765,000 annually. These direct costs are strictly labor costs; material costs are expected to be negligible. Detailed estimates are provided in Appendix D-3.

#### *Costs to States*

Those States that do not already have a review and approval process will also incur additional costs due to regulatory change III.D.

- Activities that States will undertake include review of system data, preparation of conclusions and letter to systems, and coordination with utilities. The level of effort associated with these activities is expected to vary based on the complexity of the change and the type of submittal (amount and type of information). Based on best professional judgment, State review could range from 4 hours to 8 hours.
- The current LCR regulatory requirements on State review of treatment changes entail a burden of 0.5 hours per review. Therefore, the new State burden is expected to range from 3.5 to 7.5 hours per treatment change.<sup>21</sup>
- Based on the State responses on existing review and approval processes<sup>22</sup>, the analysis assumes that 14 States have existing processes (explicit review and approval). The remaining States will incur costs under this regulatory change.

The direct costs to State/Primacy agencies are estimated to range from \$163,000 to \$348,000 annually. These direct costs are strictly labor costs; material costs are expected to be negligible. Estimates are summarized in Exhibit 9 and detailed in Appendix D-4.

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<sup>20</sup> Source: *Information Collection Request: Disinfectants/Disinfection Byproducts, Chemical, and Radionuclides Rules*, USEPA, Office of Water, September 2004, page H-27.

<sup>21</sup> Source: *Information Collection Request: Disinfectants/Disinfection Byproducts, Chemical, and Radionuclides Rules*, USEPA, Office of Water, September 2004, page H-12.

<sup>22</sup> USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004.



**Exhibit 12: Estimated Direct Costs to Systems and State/Primacy Agencies Associated with  
Regulatory Change III.D**

(4<sup>th</sup> Qtr 2006\$)

	Annual Costs Low End of Range (1)	Annual Costs– High End of Range (2)
<b>Costs to Systems</b>		
Reporting	\$506,000	\$765,000
<b>Total System Costs</b>	<b>\$506,000</b>	<b>\$765,000</b>
<b>Costs to State/Primacy Agencies</b>		
Review Costs	\$163,000	\$348,000
<b>Total State Costs</b>	<b>\$163,000</b>	<b>\$348,000</b>

(1) 10 percent medium and large systems conduct engineering study and 4 hours for State review

(2) 20 percent medium and large systems conduct engineering study and 8 hours for State review

#### 4.6 *Direct Costs Associated with Regulatory Change III.E*

##### *Activities resulting from regulatory change*

Regulatory Change III.E will require systems to provide written notification to each owner/occupant of the lead level found in the tap sample collected for LCR compliance monitoring. Both CWSs and NTNCWSs are required to provide notification on tap sampling results, but the activities are expected to differ between the two types of systems. In addition, systems are required to certify to States in a letter that the notification activity has taken place. Supporting calculations and information regarding Costs to systems associated with this regulatory change are included in Appendix E.

##### *Costs to systems*

In order to estimate the additional direct costs associated with regulatory change III.E, information is needed on the number of systems that already notify customers of tap monitoring results and the burden associated with notification activities.

- Number of systems that already notify customers: Based on feedback from participants in workshops and interactions with States, some systems already notify customers of monitoring results for their particular establishments. These systems would not incur costs under the regulatory change. This analysis uses information from the State survey<sup>23</sup> to develop an estimate of the number of systems that currently notify customers of tap sampling results, as detailed in Appendix E-1. Of 72,213 CWS and NTNCWSs (per 2004 SDWIS/Fed data) subject to the LCR, approximately 11 percent of these systems are estimated to already notify owner/occupants as derived from USEPA's Survey of States (July 2004). Therefore, this regulatory change will apply to the remaining 89 percent of systems or 64,273 systems.
- Activities associated with notification: CWSs will prepare a customer notification letter and mail letters to all owner/occupants for residences where tap samples were collected. For NTNCWSs, the notification burden will be different, and may consist of posting a notice on community bulletin boards or web sites.
- Activities associated with reporting to States: CWSs and NTNCWSs will prepare a letter to the State certifying that they have completed the required notification activities.
- Burden and costs for CWSs: Labor costs are based on the labor required to prepare a sample customer notification letter and mail letters to customers. The system burden is estimated to be 1 hour per monitoring event for systems serving <3,300 people and 1 hour per 20 sample letters for systems serving more than 3,300 people. For example, systems serving less than 3,300 people will prepare either 5 or 10 customer

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<sup>23</sup> USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004.

letters for each monitoring event at an estimated time burden of 1 hour. Material costs include paper, envelopes and postage, estimated at \$0.43 per customer letter.

- Burden and costs for NTNCWSs: Costs for NTNCWSs include the labor required to prepare a consumer notice and post the notice. It is estimated that all systems will spend 1 hour per monitoring event. It is assumed that material costs are negligible for NTNCWSs.
- Burden and costs for reporting: Both CWSs and NTNCWSs will incur labor to prepare a self-certification letter and submit the letter to the State. Based on a similar activity under the CCR, the labor to prepare the self-certification letter is estimated at .12 hours per system (PWSS ICR, 2040-0090, page B-5), with materials cost of \$0.43 for postage and supplies.
- Frequency of monitoring and number of samples: Of the 64,273 systems affected by this Regulatory Change, it is assumed that 91 percent of systems are currently on a reduced monitoring schedule, and 9 percent follow a standard monitoring schedule as documented in USEPA's Survey of States (July 2004). Although reduced monitoring can imply a 1 year, 3 year or 9 year monitoring frequency, a 3 year frequency is assumed for all systems for use in this economic analysis. The number of samples collected by each system is estimated based on sampling schedules established in 40 CFR 141.86c for standard and reduced monitoring according to population served. In addition, the number of increased monitoring events that would result from Regulatory Change #III.C (1,692 additional monitoring events per year) are added to the total.

The direct costs to systems for compliance with Regulatory Change #III.E are summarized in Exhibit 13 and estimated to be \$1,248,000 annually including \$1,098,000 in labor costs and \$150,000 in material costs. Detailed estimates are provided in Appendix E.

#### *Costs to States*

States will incur costs to review and track the self-certification letters from systems. Based on a similar activity for the CCR, this analysis estimates that States will require 0.10 hours per system letter (PWSS ICR, 2040-0090, page B-7). The direct costs to States for review under Regulatory Change #III.E are summarized in Exhibit 13 and estimated to be \$163,000 annually (all labor costs). Detailed estimates are provided in Appendix E.

**Exhibit 13: Summary of Direct Costs Associated with Regulatory Change III.E**  
 (4<sup>th</sup> Qtr 2006\$)

	Annual Labor	Annual Material	Total Annual
<b>Costs to Systems</b>			
Customer Notice of Lead Results Costs	\$979,000	\$134,000	\$1,112,000
Self-certification Letter to States	\$120,000	\$16,000	\$136,000
<b>Total System Costs</b>	<b>\$1,098,000</b>	<b>\$150,000</b>	<b>\$1,248,000</b>
<b>Costs to States</b>			
Review Costs	\$163,000	\$0	\$163,000
<b>Total State Costs</b>	<b>\$163,000</b>	<b>\$0</b>	<b>\$163,000</b>

Totals may not add due to rounding.

**4.7 Direct Costs Associated with Regulatory Change III.F**

**(a) Changes to the mandatory text of the written materials**

**(a)(1) Customer Notification**

*Activities resulting from regulatory change*

Regulatory change III.F(a)(1) substantially reduces the mandatory language required for delivery to all bill paying customers after a lead Action Level exceedance and gives systems more flexibility in developing the notification. Systems are required to address several topics in the notification, namely: “sources of lead”, “steps to reduce exposure”, “what happened”, and “what is being done”. This analysis assumed that template language will be provided for the sources of lead and steps to reduce exposure sections. However, by their nature, the “what happened” and “what is being done” sections will need to be customized by each system to reflect their specific conditions. Therefore, the additional activity under this change is the effort required to develop the sections specific to the system.

*Costs to systems*

In order to estimate the additional direct costs associated with regulatory change III.F(a)(1), information is needed on the number of community water systems that exceed the lead Action Level and the burden associated with language development activities.

- Number of systems exceeding the lead Action Level: This analysis uses the number of water systems that have exceeded the lead Action Level since 2003 as an estimate of the number of systems that will exceed the lead Action Level each year in the near future. Exhibit 14 contains estimates of the number of community and non-community systems exceeding the lead Action Level annually by size category.

**Exhibit 14: Number of Systems Exceeding Annually**

System Size Category	CWSs that Exceed Lead AL <sup>1,2</sup>	NTNCWSs that Exceed Lead AL <sup>1,2</sup>	All Systems that Exceed Lead AL <sup>1,2</sup>
<3.3K	473	411	884
3.3K-10K	54	1	55
10K-50K	40	1	41
50K-100K	7	0	7
>100K	7	0	7
Total	581	413	994

1. Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004.

2. Data Source: [www.epa.gov/safewater/lcrr/lead-data.html](http://www.epa.gov/safewater/lcrr/lead-data.html), 8/30/05.

- Burden to prepare system specific notification language: Because the current notification after an Action Level exceedance relies solely on mandatory language, the 2004 ICR does not provide a burden effort for a similar activity. However, the ICR for the Public Notification Rule (PNR) includes a burden estimate associated with a Tier 2 notification (notice as soon as possible of an exceedance that does not pose an immediate health threat). The 3.5 hours of labor per system will be used to estimate the additional burden associated with developing the new language after an Action Level exceedance.<sup>24</sup>

The direct costs to systems for compliance with Regulatory Change #III.F(a)(1) are summarized in Exhibit 15 and estimated to be \$91,400 annually, all in labor costs. Detailed estimates are provided in Appendix H-2.

**Exhibit 15: Summary of Direct Costs Associated with Regulatory Change III.F(a)(1)**  
(4<sup>th</sup> Qtr 2006\$)

	Annual Labor	Annual Material	Total Annual
<b>Costs to Systems</b>			
Customer Notification Costs	\$91,400	\$0	<b>\$91,400</b>
<b>Total System Costs</b>	<b>\$91,400</b>	<b>\$0</b>	<b>\$91,400</b>

*(b) Changes to better reach at-risk populations*

*(b)(1) Delivery of brochures to organizations*

*Activities resulting from regulatory change*

Regulatory change III.F(b)(1) requires that CWSs exceeding the lead Action Level distribute brochures to three additional types of organizations – obstetric/gynecologist offices, licensed child care facilities, and pre-schools. Also, an informational notice must now be included with the brochures and the public health agency must be directly contacted by phone, rather than through a mailed brochure.

*Costs to systems*

In order to estimate the additional direct costs associated with regulatory change III.F(b)(1), information is needed on the number of community water systems that exceed the lead Action Level, the number of additional organizations to be contacted, and the burden associated with distributing brochures to the additional organizations, the development of an informational notice, and the direct contact with the public health agency.

- Number of community systems exceeding the lead Action Level: The number of CWSs that exceed the lead Action Level can be found in Exhibit 11.

<sup>24</sup> EPA, Public Water System Supervision Information Collection Request, July 2004, Exhibit E.16, page E-15.

- Number of additional organizations to be contacted: The number of additional establishments to be contacted is estimated at 193 per 100,000 population served. This value includes 178 per 100,000 licensed child day care facilities based on the number of licensed child day care facilities (500,143)<sup>25</sup> spread over the national population (281,422,000)<sup>26</sup>. The total also includes 15 ob/gyns per 100,000 population (41,900<sup>27</sup> ob/gyns per 281,422,000).
- Burden to contact additional organizations: Systems serving greater than 3,300 will incur an additional 1 hour in burden to generate and update lists of additional facilities. These systems will also incur production costs of 0.25 hours for every 100 additional brochures and applicable mailing and materials costs.
- Burden to develop informational notice: Based on similar activities, this analysis assumes that developing an informational notice for distribution with the brochures will take a system 1 hour.
- Burden to directly contact public health agency: Based on similar activities, this analysis assumes that directly contacting the public health agency through a telephone call will require an additional 0.5 hours.

The direct costs to systems for compliance with Regulatory Change #III.F(b)(1) are summarized in Exhibit 16 and estimated to be \$43,300 annually, in labor costs and material costs. Detailed estimates are provided in Appendices H-3 through H-5.

**Exhibit 16: Summary of Direct Costs Associated with Regulatory Change III.F(b)(1)**  
(4<sup>th</sup> Qtr 2006\$)

	Annual Labor	Annual Material	Total Annual
<b>Costs to Systems</b>			
Contacting Additional Orgs	\$21,900	\$21,400	<b>\$43,300</b>
<b>Total System Costs</b>	<b>\$21,900</b>	<b>\$21,400</b>	<b>\$43,300</b>

*(b)(2) Additional activities*

*Activities resulting from regulatory change*

Regulatory change III.F(b)(2) requires systems to perform additional public notification activities. Systems are given a choice of 8 activities. Systems serving fewer than 3,300 must implement 1 activity from the list while other systems must implement 3 activities.

<sup>25</sup> M. Cubed for the National Child Care Association, *The National Economic Impacts of the Child Care Sector*, Fall 2002, page 4.

<sup>26</sup> U.S. Census Bureau, *U.S. Summary: 2000 (Census 2000 Profile)*, July 2002, <http://www.census.gov/prod/2002pubs/c2kprof00-us.pdf>.

<sup>27</sup> U.S. Census Bureau, *Statistical Abstract of the United States: 2006*, Table 152, page 113. <http://www.census.gov/prod/2005pubs/06statab/health.pdf>

### *Costs to systems*

In order to estimate the direct costs for regulatory change III.F(b)(2), the cost for each of the activities per system needs to be estimated. Exhibit 17 contains a summary of the assumptions used to derive the cost per system for the eight activities. Detailed calculations can be found in Appendices H-6 through H-20. Exhibit 18 summarizes the resulting costs per system.



### **Exhibit 17: Assumptions Used to Derive System Costs for III.F(b)(2)**

<p><b>III.F(b)(2)(i) Public Service Announcements</b></p> <ul style="list-style-type: none"> <li>• Production of a radio PSA involves developing a script for the spot and then producing an audio of the spot.</li> <li>• For small systems (serving fewer than 10,000) assume produce 1 radio PSA using freelance voice talent and in-house staff to prepare the content of the PSA. Assume \$50 for the voice-over, based on internet quotes from freelance talent and 2 hours for the system to develop the contents. Total cost per radio PSA: \$95.</li> <li>• For systems serving greater than 10,000, assume produce 1 radio PSA and 1 TV PSA.</li> <li>• For a large system to produce a radio PSA, assume they use union talent at a studio. Based on internet quotes, union talent is about \$280 per hour plus \$80 per hour for studio time. Also assume that a large system uses a freelance writer to develop the script at \$200 for 2-3 hours of effort. Total cost for radio PSA: \$560.</li> <li>• For a large system to produce a TV PSA, assume on-camera talent at about \$560 per hour, plus studio time (based on internet quotes) and script development. Total cost for TV PSA: \$840.</li> </ul>
<p><b>III.F(b)(2)(ii) Paid Advertisements</b></p> <ul style="list-style-type: none"> <li>• Assume 1 newspaper advertisement, 10 column inches (about 1/8 of a page), rates derived from internet research.</li> <li>• Rate per 10 column inch advertisement for system &gt;1,000,000: \$5,000</li> <li>• Rate per 10 column inch advertisement for system 50k to 1 mil: \$850</li> <li>• Rate per 10 column inch advertisement for system 3.3k to 50k: \$180</li> <li>• Rate per 10 column inch advertisement for system &lt;3.3k: \$105</li> </ul>
<p><b>III.F(b)(2)(iii) Display Information in Public Areas</b></p> <ul style="list-style-type: none"> <li>• Assumed to involve posting a notice at local grocery stores or other locations. Posting would be free, but costs incurred to travel to identify and travel to establishments, plus materials cost.</li> <li>• Assume 1 hour to do 5 postings. Number of postings varies by system size.</li> </ul>
<p><b>III.F(b)(2)(iv) Internet Notification</b></p> <ul style="list-style-type: none"> <li>• Assumed to entail email contact with all customers.</li> <li>• Requires time to develop email and review contact list. Time varies by system size.</li> <li>• Assume small systems have an email list. Large and medium systems must purchase list.</li> </ul>
<p><b>III.F(b)(2)(v) Public Meetings</b></p> <ul style="list-style-type: none"> <li>• For systems serving fewer than 3,300, assume that system reps would bring up the issue for discussion at an existing town meeting. Assume 2 hours preparation and meeting time.</li> <li>• For systems serving over 3,300, assume conduct of separate public meeting of 2.5 hours. Effort includes making logistical arrangements, preparing 30 – 45 minute presentation, attending the meeting, and follow-up activities.</li> </ul>
<p><b>III.F(b)(2)(vi) Delivery to Every Household</b></p> <ul style="list-style-type: none"> <li>• Delivery to every postal address, either through mail or distribution of flyers. Based on internet quotes for distribution of flyers: \$.12 to \$.25 per piece, based on volume. Assume delivery of a flyer to all households in a system: \$.25 per household for systems serving fewer than 10k, \$.17 for systems serving 10-50k, \$.12 for systems serving &gt;50k, \$.04 for systems serving &gt;100k (assumes insert into existing mailing).</li> <li>• Reduce population by 23% to take out the population that lives in multi-family housing, who may not be adequately reached by flyers). [64 million pop in multifamily/281 million total population = 23%]</li> </ul>
<p><b>III.F(b)(2)(vii) Targeted Contact</b></p> <ul style="list-style-type: none"> <li>• Assume system purchases list of targeted populations, such as pregnant women and children.</li> <li>• Based on Portland experience and internet quotes, assume \$250 for purchase of targeted list. Assume that list is purchased once. This up-front cost is pro-rated over 3 activities and 3 years.</li> <li>• Assume 1 targeted communication for every 250 population served (approximately 2000 homes for a population served of 482,500 for Portland).</li> <li>• Assume \$0.44 for materials and postage. Assume 15 minutes for 100 copies production labor.</li> </ul>
<p><b>III.F(b)(2)(viii) Provide Materials Directly to Multi-family and Institutions</b></p> <ul style="list-style-type: none"> <li>• Assume an effort to identify multi-family homes and institutions. Assume 165 multi-family units per 100,000 population (in buildings with 10 or more units) from Census.</li> <li>• Assume 5 minute per establishment to identify multi-family homes and institutions. Assume that identification is done once. This up-front cost is pro-rated over 3 activities and 3 years</li> <li>• Assume \$0.44 for materials and postage. Assume 15 minutes for 100 copies production labor.</li> </ul>

**Exhibit 18: Summary of Cost Per System for Activities III.F(b)(2)(i)-(viii)**  
(4<sup>th</sup> Qtr 2006\$)

System Size Category	(i) Public Service Announcements	(ii) Paid Advertisements	(iii) Display in Public Areas	(iv) Internet Notification	(v) Public Meetings	(vi) Delivery to Every Household	(vii) Targeted Contact	(viii) Materials Directly to Multi-Family & Institutions
25-100	\$98	\$105	\$24	\$24	\$48	\$7	\$34	\$12
101-500	\$101	\$105	\$26	\$26	\$51	\$30	\$35	\$15
501-3,300	\$105	\$180	\$111	\$28	\$55	\$166	\$37	\$27
3.3K-10K	\$118	\$180	\$137	\$420	\$900	\$435	\$44	\$81
10K-50K	\$1,400	\$850	\$696	\$596	\$2,400	\$1,114	\$66	\$303
50K-100K	\$1,400	\$5,000	\$1,392	\$596	\$3,000	\$2,448	\$138	\$945
>100K	\$1,400	\$5,000	\$3,943	\$1,035	\$5,000	\$3,874	\$563	\$5,035

Determining which activity or combination of activities systems will regularly choose is subject to considerable uncertainty. Systems will consider many factors in choosing activities. Certainly cost will be an important factor, but effectiveness and ability to reach a variety of audiences may also be considered. In the absence of information on the selection of activities, this analysis conservatively assumes that all activities are equally likely to be chosen. The average cost per system for each size category is calculated and assumed to represent the typical cost for this regulatory change. Because of the uncertainty entailed in this assumption, Appendix I contains results of sensitivity analyses that calculate per system costs based on alternative scenarios for choosing activities.

The direct costs to systems for compliance with Regulatory Change #III.F(b)(2) are summarized in Exhibit 19 and estimated to be \$292,700 annually, in labor costs. Detailed estimates are provided in Appendices H-6 through H-20.

**Exhibit 19: Summary of Direct Costs Associated with Regulatory Change III.F(b)(2)**  
(4<sup>th</sup> Qtr 2006\$)

	Annual Labor	Annual Material	Total Annual
<b>Costs to Systems</b>			
Additional Activities	\$292,700	\$0	<b>\$292,700</b>
<b>Total System Costs</b>	<b>\$292,700</b>	<b>\$0</b>	<b>\$292,700</b>

***(c) Changes to help systems maintain communication with consumers throughout the exceedance***

***(c)(1) Adding Note to Customer Bills for CWSs that Exceed the Lead Action Level***

*Activities resulting from regulatory change*

Regulatory change III.F(c)(1) requires that CWSs exceeding the lead Action Level include a specific message on every water bill during the period of exceedance no less than quarterly, instead of on just one bill per year.

*Costs to systems*

In order to estimate the additional direct costs associated with regulatory change III.F(c)(1), information is needed on the number of community water systems that exceed the lead Action Level, the frequency of billing for water systems, and the burden associated with adding a message to a water bill.

- Number of community systems exceeding the lead Action Level: The number of CWSs that exceed the lead Action Level can be found in Exhibit 11.
- Frequency of billing for water systems: This analysis assumes that water systems bill their customers 4 times per year. Therefore, a water system will need to include the message on 3 (4-1=3) additional water bills per year.
- Burden to include a message of water bills: The burden to include the message on a water bill is assumed to be 1 hour per billing cycle. The additional burden for all 3 cycles is 3 hours, with no material costs.

The direct costs to systems for compliance with Regulatory Change #III.F(c)(1) are summarized in Exhibit 20 and estimated to be \$47,400 annually, in labor costs. Detailed estimates are provided in Appendix H-21.

**Exhibit 20: Summary of Direct Costs Associated with Regulatory Change III.F(c)(1)**  
(4<sup>th</sup> Qtr 2006\$)

	Annual Labor	Annual Material	Total Annual
<b>Costs to Systems</b>			
Adding note to customer bills	\$47,400	\$0	<b>\$47,400</b>
<b>Total System Costs</b>	<b>\$47,400</b>	<b>\$0</b>	<b>\$47,400</b>

***(c)(2) Posting notice on website***

*Activities resulting from regulatory change*

Regulatory change III.F(c)(2) requires that CWSs serving greater than 100,000 and exceeding the lead Action Level post a notice of the exceedance on their website.

*Costs to systems*

In order to estimate the additional direct costs associated with regulatory change III.F(c)(2), information is needed on the number of community water systems that exceed the lead Action Level and serve more than 100,000, and the burden associated with posting a notice on a website.

- Number of community systems serving more than 100,000 and exceeding the lead Action Level: The number of CWSs serving more than 100,000 that exceed the lead Action Level can be found in Exhibit 11.
- Burden to post a notice on a website: The PWSS ICR estimates that the burden for a similar activity (posting the Consumer Confidence Report to a public internet site) is 0.5 hours per system.<sup>28</sup> This analysis assumes that there are no material costs associated with this activity.

The direct costs to systems for compliance with Regulatory Change #III.F(c)(2) are summarized in Exhibit 21 and estimated to be \$100 annually, in labor costs. Detailed estimates are provided in Appendix H-22.

**Exhibit 21: Summary of Direct Costs Associated with Regulatory Change III.F(c)(2)**  
(4<sup>th</sup> Qtr 2006\$)

	Annual Labor	Annual Material	Total Annual
<b>Costs to Systems</b>			
Posting to website	\$100	\$0	<b>\$100</b>
<b>Total System Costs</b>	<b>\$100</b>	<b>\$0</b>	<b>\$100</b>

***(c)(3) Public Service Announcements and Press Releases***

*Activities resulting from regulatory change*

Regulatory change III.F(c)(3) eliminates the need for systems to submit public service announcements (PSAs) to radio and TV stations once every 6 months and add the requirement to submit a press release to these entities once per year while under an Action Level exceedance. The 2004 ICR assumes that, for a PSA, a system will submit the text of a notice to a radio or TV

<sup>28</sup> USEPA, *Public Water System Supervision Information Collection Request*, July 2004, page B-6.

outlet, not produce a tape or video. Thus, the level of effort required to submit a PSA is equivalent to the level of effort required to submit a press release in the 2004 ICR. The substitution of a press release for a PSA does not result in any change in burden. However, the reduction in frequency from once every 6 months to once every year results in reduced effort of 1 notification per year.

*Costs to systems*

In order to estimate the additional direct costs associated with regulatory change III.F(c)(3), information is needed on the number of community water systems that exceed the lead Action Level serving more than 3,300 and the reduced burden associated with 1 less notification per year.

- Number of community systems exceeding the lead Action Level serving more than 3,300: Under the current regulation, only community water systems serving more than 3,300 are subject to the PSA and press release notifications. The number of CWSs that serve more than 3,300 and exceed the lead Action Level can be found in Exhibit 11.
- Reduction in Burden for PSA's: The 2004 ICR estimates that it takes a system 1 hour to prepare a press release/PSA that is supplied to 5 radio and 5 television stations. Since systems will prepare one fewer notifications per year, the annual reduction in burden is 1 hour per system, plus materials and postage.

The direct costs to systems for compliance with Regulatory Change #III.F(c)(3) are summarized in Exhibit 22 and estimated to be \$-4,200 annually, in labor costs and material costs. Detailed estimates are provided in Appendix H-23.

**Exhibit 22: Summary of Direct Costs Associated with Regulatory Change III.F(c)(3)**  
(4<sup>th</sup> Qtr 2006\$)

	Annual Labor	Annual Material	Total Annual
<b>Costs to Systems</b>			
PSA/Press releases	\$-3,700	\$-500	<b>\$-4,200</b>
<b>Total System Costs</b>	<b>\$-3,700</b>	<b>\$-500</b>	<b>\$-4,200</b>

*d. Changes to the required timing*

There are no cost implications associated with changing the timing of notifications.

*e. Changes to the Consumer Confidence Report*

*(e)(1) Adding an informational statement on lead to Consumer Confidence Report*

*Activities resulting from regulatory change*

Regulatory change III.F(e)(1) requires that all CWSs include an informational statement on lead in their Consumer Confidence Report.

*Costs to systems*

In order to estimate the additional direct costs associated with regulatory change III.F(e)(1), information is needed on the number of community water systems that already include a lead informational statement in their CCR and the burden associated with including the lead statement.

- Number of community systems that already include the statement: The number of CWSs is displayed in Exhibit 5. Some systems are already required to include an informational statement about lead in their CCRs: systems with the 95<sup>th</sup> percentile lead level above 15 ppb. There is no method for estimating the number of systems whose 95<sup>th</sup> percentile exceeds 15 ppb. There is an estimate of the number of systems with a 90<sup>th</sup> percentile exceeding 15 ppb; these are the systems exceeding the Action Level. However, there is no estimate of the additional number of systems with 90.1<sup>th</sup> to 95<sup>th</sup> percentile values above 15 ppb. As there is no way to account for the systems between the 90<sup>th</sup> and 95<sup>th</sup> percentiles, only systems with an Action Level exceedance are assumed to already include the statement, resulting in an over-estimate of the cost impacts.
- Burden to include the informational statement in the CCR: This analysis assumes that it will take systems of all sizes an additional 15 minutes (0.25 hours) to include the informational statement in their CCR. There are no material costs associated with this activity.

The direct costs to systems for compliance with Regulatory Change #III.F(e)(1) are summarized in Exhibit 23 and estimated to be \$354,600 annually, in labor costs. Detailed estimates are provided in Appendix H-24.

**Exhibit 23: Summary of Direct Costs Associated with Regulatory Change III.F(e)(1)**  
(4<sup>th</sup> Qtr 2006\$)

	Annual Labor	Annual Material	Total Annual
<b>Costs to Systems</b>			
Adding statement to CCR	\$354,600	\$0	<b>\$354,600</b>
<b>Total System Costs</b>	<b>\$354,600</b>	<b>\$0</b>	<b>\$354,600</b>

**Costs to Consult with State and Prepare Self-Certification Letter**

There may be several opportunities for systems to consult with States related to these public education activities. For example, systems are expected to consult with States on the choice of PE content and activities, on the use of alternative delivery mechanisms besides bill inserts, and on any needed schedule extensions. The labor associated with consultation with States on activities is assumed to be 2 hours. In addition, systems will prepare a letter certifying to the State that the required public notifications and activities have taken place. The labor associated with the self-certification letter is estimated at .12 hours per system (PWSS ICR, 2040-0090, page B-5), with postage and supply costs of \$0.43. Detailed estimates are available in Appendix H-7.

The costs for systems associated with the changes in public education requirements are summarized in Exhibit 24.

**Exhibit 24: Summary of Direct Costs to Systems Associated with Regulatory Change III.F**  
(4<sup>th</sup> Qtr 2006\$)

Activity	Requirement	Annual System Labor Cost	Annual System Material Cost	Total System Cost
<b>a. Changes to the Mandatory Text of the Written Materials</b>				
III.F(a)(1)	Customer Notification	\$91,400	\$0	\$91,40000
<b>b. Changes to Better Reach At-Risk Populations</b>				
III.F(b)(1)	Notify Additional Organizations	\$21,900	\$21,400	\$43,300
III.F(b)(2)	Additional Activities i-viii	\$292,700	\$0	\$292,700
<b>c. Changes to Help Systems Maintain Communication with Consumers Throughout the Exceedance</b>				
III.F(c)(1)	Customer Bills	\$47,400	\$0	\$47,400
III.F(c)(2)	Post on Website	\$100	\$0	\$100
III.F(c)(3)	PSAs and Press Releases	-\$3,700	-\$500	-\$4,200
<b>d. Changes to the Required Timing</b>				
No cost impact				
<b>e. Changes to Consumer Confidence Report</b>				
III.F(e)(1)	CCR Statement	\$354,600	\$0	\$354,600
<b>Costs to Consult with State and Self-Certify</b>				
	Consultations with State	\$31,600	\$0	\$31,600
	Self-certification letter	\$1,900	\$300	\$2,100
<b>Total Costs to Systems for PE Requirements (III.F)</b>				
TOTAL		<b>\$838,000</b>	<b>\$21,000</b>	<b>\$859,000</b>

Note: Totals may not add due to rounding.

*Costs to States (for III.F)*

Under Regulatory Change, States will incur costs to review the language of public notifications after Action Level exceedances and to consult with systems on their additional activities. States will no longer have to approve changes to the communication activities for systems serving between 501-3,300, resulting in a slight decrease in burden.

- Burden for review and consultation: The decrease in burden for States to approve a waiver for systems serving 500-3,301 is assumed to be 0.5 (based on comparable waiver activities in the 2004 ICR). States will require 2 hours for review and consultation on PE activities, including message content, choice of activities, alternative mechanisms, and any necessary schedule extensions. States will also review the self-certification letters at 0.10 hours per letter ((PWSS ICR, 2040-0090, page B-7).

The direct costs to States for compliance with Regulatory Change #III.F are summarized in Exhibit 25 and estimated to be \$63,000 annually, in labor costs. Detailed estimates are provided in Appendix H-25.



**Exhibit 25: Summary of Direct Costs to States Associated with Regulatory Change III.F(7)**  
(4<sup>th</sup> Qtr 2006\$)

	<b>Annual Labor</b>	<b>Annual Material</b>	<b>Total Annual</b>
<b>Costs to States</b>			
Review and consultation	\$63,000	\$0	<b>\$63,000</b>
<b>Total State Costs</b>	<b>\$63,000</b>	<b>\$0</b>	<b>\$63,000</b>

#### 4.8 *Direct Costs Associated with Regulatory Change III.G*

##### *Activities resulting from regulatory change*

Under this regulatory change, systems would be required to reevaluate lead service lines classified as “replaced” through testing if they resume lead service line replacement programs. This would only apply to a system that had (1) initiated a lead service line replacement program, then (2) discontinued the program, and then subsequently (3) resumed the program. When resuming the program, this system would have to reconsider for replacement any lead service lines previously deemed replaced through testing during the initial program. If a LSL was previously determined to be replaced through testing, this means that the sample previously collected from the LSL had a lead level less than the lead Action Level so the utility was not required to physically replace it. Utilities affected by Regulatory Change #III.G will need to put these “tested-out” LSLs back into their inventory of lead service lines that could be considered for replacement. Once these LSLs are back in the inventory, we assume that they will be either retested or replaced, with the cost of the additional testing a direct cost of the regulatory change. The primary activities as a result of this regulatory change include collecting samples from these LSLs and analyzing them for lead. Replacement of lines that were previously tested-out may also occur as a result of this change.

##### *Costs to systems*

Under this regulatory change, a specific subset of systems would be required to sample previously “tested-out” lead service lines. Estimating the cost and burden associated with these activities requires information on several elements.

- Number of systems required to perform lead service line replacement under the LCR: In the survey of States on LCR implementation<sup>29</sup>, States were asked “Does the state have any systems that have been required to initiate lead service line replacement?” Eleven States responded “Yes” to this question. However, the survey did not ask exactly how many systems were required to initiate lead service line replacement programs. Six States provided sufficient information to derive a number of systems within that State required to perform lead service line replacement – a total of 28 systems. We assume that the remaining 5 States have 5 systems each (the average number of systems per State for those States that did specify), plus 1 system for DC (which did not respond to the survey) for a total of 54 systems required to perform lead service line replacement. (See Appendix F-3 for details.)
- Fraction of systems that performed required lead service line replacement that subsequently exceed the lead Action Level: The regulatory change applies only to those systems that had performed required lead service line replacement (although not necessarily total replacement); brought compliance lead levels below the Action Level and suspended lead service replacement; and then subsequently re-exceeded the lead Action Level. There is no information on this small subset of systems, although at least

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<sup>29</sup> USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004.

one system has met these criteria (DC WASA). This analysis assumes that systems that had performed required lead service line replacement (although not necessarily total replacement), brought compliance lead levels below the Action Level and suspended lead service replacement will exceed the Action Level at the same rate as the universe of systems subject to the LCR. Thus, we assume that 1.4 percent of the 54 systems or 1 system will exceed the Action Level and be triggered back into lead service line replacement each year.

- The number of lead service lines per system: Recent information on the average number of lead service lines in drinking water systems was presented in EPA's workshop on lead service line replacement. According to the preliminary findings of a survey being conducted by Black & Veatch for AWWA, 26 respondent utilities had an inventory of 558,135 lead service lines in 1992. Based on this data, the average number of lead service lines per system is 21,467. In the absence of specific information on the number of lead service lines in the subset of systems that have been required to do replacement, this analysis uses the average value from the Black & Veatch study.<sup>30</sup>
- The fraction of lead service lines that had been "tested-out" rather than physically replaced: Costs for this regulatory change apply only to those lead service lines that have been deemed replaced through "testing-out" in a lead service line replacement program. Information was available for the lead service line replacement program for one system (DC WASA) that indicated that for one year (2003), 76 percent of the lead service lines were deemed replaced through sampling, while 24 percent were physically replaced. Because this was early in the replacement program, the percent of lines tested out might be high in comparison with replacement over an entire program. In the absence of additional data, this analysis assumes that 76 percent of lead service lines are "tested-out" and would then be put back into the inventory upon re-exceedance.<sup>31</sup>
- Cost and labor to test lead service lines: The cost and labor to test the lead level of a lead service line is similar to the tap sampling cost and labor for lead and copper compliance monitoring. Estimates from previous EPA documents assume 2 hours to collect each lead service line sample. This estimate is slightly lower than the estimate for collecting compliance monitoring tap samples, possibly to account for differences in the need to identify and recruit participants. The labor and material costs to analyze the sample is assumed to be the same as for compliance monitoring: 1 hour of labor and \$9.07 material costs. Appendix F-1 provides details on the derivation of the labor and costs for lead service line replacement monitoring.

EPA does not have information on the number of systems using the test-out provisions rather than physically replacing lines, so this approach is conservative because it assumes that all systems in a lead service line replacement program are using the test-out provisions. Systems

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<sup>30</sup> Source: *Notes from the EPA Lead Service Line Replacement Workshop*, December 10, 2004, [http://www.epa.gov/safewater/lcrmr/pdfs/summary\\_lcmr\\_review\\_lead\\_line\\_replacement\\_workshop\\_10-26-04.pdf](http://www.epa.gov/safewater/lcrmr/pdfs/summary_lcmr_review_lead_line_replacement_workshop_10-26-04.pdf)

<sup>31</sup> Source: Lead Service Line Replacement Program Annual Report for 2003, District of Columbia Water and Sewer Authority, September 2003.

removing lead service lines are not impacted by this change. While the rate at which systems are triggered back into lead service line replacement might be higher than the initial rate, it is offset by the conservative assumptions regarding systems using the test-out provisions and the universe of systems that would stop their lead service line replacement program and later resume it because of this change.

Replacement of lines that were previously tested-out may also occur as a result of this change. EPA cannot quantify the costs associated with this change for a number of reasons. As noted above, EPA does not have information on the number of systems and the number of lines that have been previously tested-out and could be impacted by this change. This difficulty is further compounded by the fact that some lines may have been replaced as part of the ongoing utility replacement programs. In the 1991 final regulatory impact analysis, EPA cited an AWWA survey that produced an estimate of 1% of lead service lines being replaced per year as part of ongoing utility replacement programs. After promulgation of the rule, many systems modified their ongoing utility replacement programs to replace lead lines at a higher rate.

Where lines would have to be replaced, the unit cost of replacement is measured in \$ per foot of line being replaced. The 1991 final regulatory impact analysis provided a range of \$26 to \$51 per foot, depending upon system size, as the unit cost for lead service line replacement. Using the Engineering News Record Construction Cost Index, updated estimates would range from \$41 per foot for small systems to \$80 per foot for large systems. The length of the lead service line owned by systems will also vary, which will affect costs.

The direct Costs to systems as a result of Regulatory Change III.G are therefore estimated to be \$109,000 annually, which includes \$101,000 in labor costs and \$9,000 in material costs. Estimates of Costs to systems are summarized in Exhibit 26 and detailed in Appendix F-2.

*Costs to States*

No direct costs are expected for State/Primacy agencies as a result of Regulatory Change III.G. The State/Primacy Agencies will review utility Lead Service Line replacement program annual reports but these costs were captured previously in the *Final Regulatory Impact Analysis of National Primary Drinking Water Regulations for Lead and Copper*, April 1991.

**Exhibit 26: Summary of Direct Costs Associated with Regulatory Change III.G**  
(4<sup>th</sup> Qtr 2006\$)

	Annual Labor	Annual Material	Total Annual
<b>Costs to Systems</b>			
LSL Tap Monitoring Costs	\$101,000	\$9,000	\$110,000
<b>Total System Costs</b>	<b>\$101,000</b>	<b>\$9,000</b>	<b>\$110,000</b>

Note: Totals may not add due to rounding.

#### 4.9 Summary of Average Annual Costs

The estimates of direct annual costs for the regulatory changes are presented in Exhibit 27.

#### Exhibit 27: Summary of Annual Direct Costs to Systems and States from Regulatory Changes (4<sup>th</sup> Qtr 2006\$)

Regulatory Change	Annual Direct Costs to Systems			Annual Direct Costs to States	Total Annual Direct Costs	
	Reporting	Monitoring	Customer Notification			Total
III.A	-	-	-	-	-	
III.B	-	-	-	-	-	
III.C	\$61,000	\$2,635,000	-	<b>\$2,696,000</b>	\$82,000	<b>\$2,778,000</b>
III.D Low	\$506,000	-	-	<b>\$506,000</b>	\$163,000	<b>\$669,000</b>
III.D High	\$765,000	-	-	<b>\$765,000</b>	\$348,000	<b>\$1,113,000</b>
III.E	\$136,000	-	\$1,112,000	<b>\$1,248,000</b>	\$163,000	<b>\$1,411,000</b>
III.F	\$34,000	-	\$825,000	<b>\$859,000</b>	\$63,000	<b>\$922,000</b>
III.G	-	\$110,000	-	<b>\$110,000</b>	-	<b>\$110,000</b>
<b>TOTAL Low</b>	<b>\$736,000</b>	<b>\$2,745,000</b>	<b>\$1,938,000</b>	<b>\$5,418,000</b>	<b>\$471,000</b>	<b>\$5,890,000</b>
<b>TOTAL High</b>	<b>\$995,000</b>	<b>\$2,745,000</b>	<b>\$1,938,000</b>	<b>\$5,677,000</b>	<b>\$657,000</b>	<b>\$6,335,000</b>

Note: Totals may not add due to rounding.

\* One-time costs associated with III.A are summarized in Exhibit 28 with other one-time costs.

#### 4.10 *Costs to Review and Implement Regulatory Changes*

##### *Activities resulting from regulatory change*

Systems and State/Primacy Agencies will incur one-time upfront costs associated with reviewing and implementing the overall LCR regulatory changes. For systems, activities include reviewing the rule changes and communicating with staff and management. For States/Primacy Agencies, activities include regulation adoption, program development, and miscellaneous training.

##### *Costs to systems*

Systems covered by the Lead and Copper Rule will incur initial costs to read the rule and communicate requirements to other staff, either informally or through training.

- All systems covered by the LCR will incur costs for the initial activities (72,213).
- The labor associated with one-time rule implementation activities varies based on system size. For small systems serving fewer than 3,300, it is assumed that systems take 5 hours to read the rule and communicate relevant information to management and staff. For medium systems (3,300-100k), it is assumed that systems take 8 hours to read the rule and communicate relevant information to system staff. For the largest systems (>100k), it is assumed that systems take 40 hours to read the rule and communicate relevant information to system managers and staff.

The total costs to systems associated with the initial activities are estimated at \$10,971,000 as summarized in Exhibit 28.

##### *Costs to States*

Similar to one-time costs for utilities, States will also incur costs to review the regulatory changes and implement the provisions through regulatory adoption.

- All 57 State or Primacy Agencies will incur initial costs associated with regulatory review and adoption.
- The labor associated with these initial activities was derived from past experience for similar drinking water rules. For the Minor Revisions to the LCR, EPA assumed that regulatory adoption activities would require 0.25 FTE.<sup>32</sup> For another recent rule of similar scope, the Filter Backwash Rule, EPA estimated that regulatory review and

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<sup>32</sup> Source: *Information Collection Request: National Primary Drinking Water Regulations For Lead and Copper*, USEPA, Office of Water, June 1999, page A-B-1.

adoption activities would require 0.125 FTE.<sup>33</sup> The analysis assumed the level of effort for this rule would be slightly higher than these other two rules because of the interactive nature of some of the rule provisions: .33 FTE or 600 hours to review and adopt the regulatory changes.

The total direct costs for initial implementation activities for States is summarized in Exhibit 28 and detailed in Appendix G-2.

**Exhibit 28: Summary of Direct Costs Associated with One-Time Costs**  
(4<sup>th</sup> Qtr 2006\$)

	One Time Labor Costs
<b>Costs to Systems</b>	
Review Rule & Communication	\$10,971,000
III.A	\$104,000
<b>Total System Costs</b>	<b>\$11,075,000</b>
<b>Costs to State/Primacy Agencies</b>	
Regulation Adoption	\$1,488,000
III.A	\$162,000
<b>Total State Costs</b>	<b>\$1,650,000</b>
<b>TOTAL Rule Implementation Costs</b>	<b>\$12,725,000</b>

Note: Totals may not add due to rounding.

<sup>33</sup> Source: *Economic Analysis for the Filter Backwash Recycling Rule*, USEPA, Office of Water, EPA 816-R-01-20, July 2001, Appendix E-4.

## **5 Indirect Cost and Health Risk Reduction Implications of Rule Changes**

The revisions will result directly in increased administrative costs for systems and States – costs to conduct the increased required monitoring, notification, and testing and to meet the more tightly specified requirements for these activities. The revisions do not affect the Action Levels, corrosion control requirements, line replacement requirements, or other provisions in the existing rule that directly determine the degree to which the rule abates risks from lead and copper. However, the increase and change in administrative activities that will result from the revisions will result in the generation of new information (e.g., more monitoring data, some of which may show exceedances), and some systems or individuals will likely respond to this new information by taking measures to abate lead and copper exposures. We thus believe the revisions will have an indirect impact on the degree to which lead and copper control measures may be implemented, and on the overall benefits and costs from the LCR.

The potential impacts of these revisions on lead and copper abatement measures are quite speculative. The revisions will require some systems to generate new information which in some cases may be provided to States and customers. The information that is generated may turn out to suggest lead and copper threats that would not otherwise have been discovered (or such threats might be discovered sooner than they otherwise would have). Upon obtaining this information, a system itself, the State, or some of the system's customers might take actions to address these threats. The revisions, however, require only the generation of the information. They do not specifically require adoption of any practices or measures to reduce the levels of lead and copper in drinking water. It is difficult to project now what the content will be of the information generated pursuant to the regulation, and it is even further uncertain how systems and individuals might act in response to the new information when it is developed. For these two reasons – the lack of any direct requirement in the revisions for systems or individuals to implement exposure reduction measures, and the uncertainty in tracing the linkages from the regulation to new information to exposure prevention measures to changes in risks and costs – EPA is unable to quantify the eventual indirect impacts on risks, benefits, and costs that might ensue from these regulatory changes. EPA does expect that overall benefits from the LCR will increase, as a result of the indirect effect of the revisions on the actions of individual consumers and systems. In this section, we provide a qualitative picture of what some of these indirect impacts might be.

Exhibit 29 summarizes the manner in which each revision might perhaps induce actions that reduce lead and copper exposures, resulting indirectly in both costs and health risk reduction benefits. The Exhibit shows only the indirect costs and benefits that might result from the provisions; the Exhibit does not repeat the direct cost impacts that were estimated in Section 4.



## Exhibit 29: Summary of Preliminary Cost and Health Risk Reduction Implications of the LCR Short Term Rule Changes

Administrative Impact	Potential Response	Implication for Indirect Costs	Implication for Health Risk Reductions
<b>Regulatory change III.A – Minimum number of samples required</b>			
<ul style="list-style-type: none"> <li>• NTNCWSs that have fewer than 5 taps in States that exercise their discretion to allow 1 sample per tap may take fewer samples.</li> </ul>	<ul style="list-style-type: none"> <li>• Some NTNCWSs may take fewer samples, but could be more easily triggered into an Action Level exceedance with greater frequency because of the calculation of the 90<sup>th</sup> percentile (highest sample).</li> </ul>	<ul style="list-style-type: none"> <li>• Additional systems that exceed the Action Level may incur costs for: 1) compliance measures (e.g., corrosion control, LSL replacement); and 2) increased monitoring when they revert to standard monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>• To the extent there are actions taken to reduce lead due to additional exceedances, there will be resulting health risk reductions.</li> </ul>
<b>Regulatory change III.B - Definitions for monitoring and compliance periods</b>			
<ul style="list-style-type: none"> <li>• Clarifies that the time limits within which various items must be completed following an Action Level exceedance begin with the end of the monitoring period when the exceedance was found (typically September) rather than beginning with the end of the calendar year.</li> </ul>	<ul style="list-style-type: none"> <li>• May accelerate by several months the deadlines for initiation and completion of all actions following an exceedance.</li> </ul>	<ul style="list-style-type: none"> <li>• May accelerate by several months the time when costs for public education and compliance efforts are incurred following an Action Level exceedance.</li> </ul>	<ul style="list-style-type: none"> <li>• Corresponding possible several month acceleration of health risk reduction benefits.</li> </ul>
<b>Regulatory change III.C – Reduced monitoring criteria</b>			
<ul style="list-style-type: none"> <li>• A system that is conducting reduced monitoring will have to revert to standard monitoring if it exceeds the lead Action Level. Under existing regulations, a system could remain on reduced monitoring despite an Action Level exceedance if treated water quality parameters are within specified limits.</li> </ul>	<ul style="list-style-type: none"> <li>• Such systems will have to monitor more sites during each monitoring period (sampling the larger, “standard”, number of sites rather than the “reduced” number of sites) Additional monitoring costs will result, but these are direct costs, considered in Section 4.</li> <li>• Monitoring more sites will improve the statistical accuracy of the judgment on whether the system really does or does not exceed the lead Action Level. Both Type 1 and Type 2 errors will be reduced (see Note 1). Monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Greater statistical accuracy and better decisions on whether a system really does exceed the Action Level means that compliance efforts, public education, etc. will be better targeted at systems where they are warranted.</li> <li>• It is possible that monitoring and sampling sooner after an Action Level exceedance could reduce costs if the re-sampling shows values under the Action Level. For example, public notification and other measures (flushing,</li> </ul>	<ul style="list-style-type: none"> <li>• Potential impacts on benefits will be like those on costs – varying from system to system. Standard monitoring will cause some systems to implement compliance measures and reduce risks sooner and for longer.</li> <li>• Overall improved statistical accuracy with standard monitoring will tend to mean that compliance efforts and risk reduction will focus on systems where there are larger risks.</li> <li>• Sampling sooner or more intensively with regular monitoring</li> </ul>

Administrative Impact	Potential Response	Implication for Indirect Costs	Implication for Health Risk Reductions
	<p>more sites is not expected systematically to either increase or decrease a system's likelihood of being found to exceed the Action Level.</p> <ul style="list-style-type: none"> <li>Monitoring more sites could either hasten or delay the time at which a system will draw a conclusion from its monitoring as to whether the Action Level is exceeded.</li> </ul>	<p>pitchers) might last for only 6 months rather than a year if re-sampling after 6 months is below the Action Level.</p>	<p>after an Action Level exceedance could result in health risk reductions. If sampling demonstrates continued exceedance, a system would have quicker feedback on effectiveness of actions and could proceed more quickly to other measures to reduce lead. In the case of sampling 6 months vs. 12 months after an exceedance, further actions that would reduce lead could begin 6 months earlier.</p>
<b>Regulatory change III.D – Advanced notification and approval requirement for treatment change or source addition</b>			
<ul style="list-style-type: none"> <li>System notifies State of long-term treatment change or source water addition prior to implementation for State approval.</li> <li>Some States already require review and approval, so the provision has no or little impact in these States.</li> </ul>	<ul style="list-style-type: none"> <li>The State may request that the system provide additional information or require the system to conduct sampling or pilot studies prior to the treatment change becoming effective. This could delay implementation of the treatment change. It could also result in modification of a change that could have had negative impacts.</li> </ul>	<ul style="list-style-type: none"> <li>A net decrease in treatment costs may actually occur. Early State review may avoid potentially costly mistakes. If a State has concerns or suggestions about the impact of a treatment change, it will be less expensive to modify treatment before the changes are made, rather than after the fact.</li> </ul>	<ul style="list-style-type: none"> <li>Health risk reductions could result if pre-emptive modifications are made to proposed treatment changes that reduce the possibility of lead leaching.</li> </ul>
<b>Regulatory change III.E – Notification of sampling results</b>			
<ul style="list-style-type: none"> <li>Systems notify customers of tap monitoring results.</li> </ul>	<ul style="list-style-type: none"> <li>For dwellings with a tap where the monitored concentration exceeds the Action Level, some fraction of owners/occupants will decide to act to reduce the concentration, perhaps replacing lead lateral or fixtures, installing filters, using bottled water, adopting flushing practices or contacting the utility for further information or request for additional sampling.</li> </ul>	<ul style="list-style-type: none"> <li>Owner and/or occupants will bear the costs of whatever exposure reduction measures they decide to implement.</li> </ul>	<ul style="list-style-type: none"> <li>Reduced lead/copper levels will reduce health risks for the occupants of any dwelling where exposure-reduction measures are implemented.</li> <li>System letters to all homeowners may improve overall awareness of sources of lead, and strategies to reduce exposure to lead.</li> </ul>

Administrative Impact	Potential Response	Implication for Indirect Costs	Implication for Health Risk Reductions
<b>Regulatory change III.F – Revisions to public education requirements</b>			
<ul style="list-style-type: none"> <li>Systems use a variety of methods to more effectively communicate with customers about potential risks due to lead.</li> </ul>	<ul style="list-style-type: none"> <li>For a system with a lead Action Level exceedance or a lead detect, a greater fraction of customers will be made aware of potential risks due to lead levels and may act to reduce lead levels.</li> </ul>	<ul style="list-style-type: none"> <li>Owner and/or occupants will bear the costs of whatever exposure reduction measures they decide to implement.</li> </ul>	<ul style="list-style-type: none"> <li>Inclusion of statement in the CCR may improve overall awareness of sources of lead, and strategies to reduce exposure to lead. Reduced lead levels will reduce health risks for the occupants of any dwelling where exposure-reduction measures are implemented.</li> </ul>
<b>Regulatory change III.G – Reevaluation of Lead Service Lines deemed replaced through testing</b>			
<ul style="list-style-type: none"> <li>The system that exceeds the lead Action Level following a treatment change will need to identify all lead service lines that had previously been determined to be replaced via sampling. The utility will need to develop a testing schedule and contact all affected homeowners regarding the testing program.</li> </ul>	<ul style="list-style-type: none"> <li>It is expected that most homeowners that utilize a lead service line will be supportive of the testing program.</li> <li>Homeowners may be interested in physical replacement of the LSL or additional sampling, particularly if the sample's lead level exceeds the lead Action Level.</li> <li>The cost of retesting a previously "tested-out" line is a direct cost of the rule.</li> </ul>	<ul style="list-style-type: none"> <li>If a previously "tested-out" line is retested and is over the Action Level, this line will eventually be replaced, an indirect cost that is attributable to the rule. However, it could take many years before this cost is incurred.</li> <li>There may be short term implications associated with increasing the number of lead service lines in the baseline. If the number of lines that need to be replaced or tested out is calculated based on the size of the inventory, a slightly larger inventory will mean a slight increase in the number of lines needed to reach the 7 percent replacement goal.</li> </ul>	<ul style="list-style-type: none"> <li>If a previously "tested-out" line is retested and is over the Action Level, health risk reductions will occur when the line is replaced.</li> </ul>

Note 1 (see Regulatory Change III.C): In statistical terms, type 1 and type 2 errors are errors that can occur while testing a statistical hypothesis. In this case, the hypothesis may be that 90 percent of samples will have a lead level < 15 ppb. When a utility collects a limited number of samples thus generating limited lead data points, it is possible that the hypothesis could be rejected (found to be not true) even when it is true (a Type 1 error) or that the hypothesis is not rejected (found to be true) when it is in fact false (a Type 2 error). These errors occur because of sampling variability and the occurrence of unrepresentative samples. These errors can be minimized by collecting more samples.

As shown in the Exhibit, four regulatory revisions seem more likely than the others to potentially influence systems or individuals to undertake exposure prevention measures. These include provisions III.C, III.E, III.F, and III.G. Although it is not feasible to quantify the monetary value of these possible exposure reductions, the relationship of benefits to costs for reductions in lead in drinking water exposure in general suggests that benefits would exceed costs if quantified. For example, in the 1991 RIA for the Lead and Copper Rule, the ratio of quantified benefits to costs is 6.7 to 1, meaning that there were 6.7 times more benefits than costs.<sup>34</sup> If this relationship continues to hold true, it's likely that any direct and indirect costs for the regulatory changes that result in exposure reductions would be offset by health risk reduction benefits.

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<sup>34</sup> Source: *Final Regulatory Impact Analysis of National Primary Drinking Water Regulations for Lead and Copper*, USEPA, Office of Drinking Water, April 1991, page 1-4.

## **6 Administrative Requirements**

### ***6.1 Executive Order 12866: Regulatory Planning and Review***

Under Executive Order 12866, [58 Federal Register 51735 (October 4, 1993)] this action is a "significant regulatory action". Accordingly, EPA submitted this action to the Office of Management and Budget (OMB) for review under EO 12866 and any changes made in response to OMB recommendations have been documented in the docket for this action.

This document represents an analysis of the potential costs and benefits associated with this action. A copy of this analysis is available in the docket for this action and the analysis is briefly summarized in Section IV of the preamble for the final rule.

### ***6.2 Paperwork Reduction Act***

The information collection requirements in this rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. The information collection requirements are not enforceable until OMB approves them.

#### *Need for the Information Collection*

EPA requires current information on lead and copper contamination to be provided to consumers and states. Recent highly publicized incidences of elevated drinking water lead levels prompted EPA to review and evaluate the implementation and effectiveness of the LCR on a national basis. As a result of this multi-part review, EPA identified seven targeted rule changes that clarify the intent of the LCR and enhance protection of public health through additional information gathering and public education. Consumers and states will use the information collected as a result of the short-term revisions to the LCR to determine the appropriate action they should undertake. The rule revisions described in Section 3 of this document are intended to improve the implementation of the LCR, and do not alter the original maximum contaminant level goals or the fundamental approach to controlling lead and copper in drinking water.

Section 1401(1)(D) of the SDWA requires that regulations contain "criteria and procedures to assure a supply of drinking water which dependably complies with such maximum contaminant levels, including accepted methods for quality control and testing procedures to insure compliance with such levels and to insure proper operation and maintenance of the system..." Furthermore, Section 1445(a)(1) of the SDWA requires that every person who is a supplier of water "shall establish and maintain such records, make such reports, conduct such monitoring, and provide such information as the Administrator may reasonably require by regulation to assist the Administrator in establishing regulations...,in determining whether such person has acted or is acting in compliance..." In addition, Section 1413(a)(3) of the SDWA requires States to "keep such records and make such reports...as the Administrator may require by regulation."

Section 1412(b) of the SDWA, as amended in 1996, requires the Agency to publish maximum contaminant level goals and promulgate NPDWRs for contaminants that may have an adverse effect on the health of persons, are known to or anticipated to occur in PWSs, or, in the opinion of the Administrator, present an opportunity for health risk reduction. The NPDWRs specify maximum contaminant levels or treatment techniques for drinking water contaminants (42 USC 300g-1). Section 1412 (b)(9) requires that EPA no less than every 6 years review, and if appropriate, revise existing drinking water standards. Promulgation of the LCR implements these statutory requirements

*Burden Estimate*

The universe of respondents for this ICR is comprised of the 52,838 CWSs and 19,375 NTNCWSs, for a total of 72,213 systems, and 57 State primacy agencies. Exhibit 30 presents a summary of average annual burden and costs for the ICR period of late September 2007 through late September 2010 for a lower bound and upper bound estimate (depending on assumptions about the timing of rule implementation).

The average annual system burden is estimated at 189,369 - 271,997 hours. The average annual system costs are projected at \$5.6 to \$8.4 million.

The average annual State burden is estimated at 17,628 – 25,125 hours. The average annual State costs are projected at \$0.8 - \$1.1 million.

These annual costs reflect the costs to systems and States for the first three years after rule promulgation and consist of the one-time direct costs for rule review and implementation, as well as activities related to the seven regulatory changes.

*Bottom Line Burden Hours and Costs*

The average annual burden and costs for the initial three year period is summarized in Exhibit 30. The total burden and costs for each regulatory change is explained in Appendices B and C of the ICR document for the final rule.

**Exhibit 30: Summary of the Total Burden and Costs from September 2007 through September 2010 for the Regulatory Changes**  
(4<sup>th</sup> Qtr 2006\$)

Respondent	Number of Respondents	Burden (hours)		Cost (in \$millions)	
		Lower Bound	Upper Bound	Lower Bound	Upper Bound
PWSs	72,213	189,369	271,997	\$5.6	\$8.4
State	57	17,628	25,125	\$0.8	\$1.1
<b>Total</b>	<b>72,270</b>	<b>206,997</b>	<b>297,122</b>	<b>\$6.4</b>	<b>\$9.5</b>

The estimates of the burden and costs by year are summarized in Exhibit 31 for the lower bound estimate and Exhibit 32 for the upper bound estimate.

**Exhibit 31: A Summary of the Burden and Costs by Year for the Regulatory Changes – Lower Bound Estimate**  
(4<sup>th</sup> Qtr 2006\$)

Respondent	Year 1		Year 2		Year 3	
	Burden (hours)	Cost (in \$millions)	Burden (hours)	Cost (in \$millions)	Burden (hours)	Cost (in \$millions)
PWSs	179,622	\$4.9	219,537	\$6.0	168,948	\$5.8
State	15,390	\$0.7	18,810	\$0.8	18,685	\$0.8
Total	195,012	\$5.6	238,347	\$6.9	187,633	\$6.6

Note: Totals may not add due to rounding.

**Exhibit 32: A Summary of the Burden and Costs by Year for the Regulatory Changes – Upper Bound Estimate**  
(4<sup>th</sup> Qtr 2006\$)

Respondent	Year 1		Year 2		Year 3	
	Burden (hours)	Cost (in \$millions)	Burden (hours)	Cost (in \$millions)	Burden (hours)	Cost (in \$millions)
PWSs	485,479	\$13.9	165,256	\$5.7	165,256	\$5.7
State	45,389	\$2.0	14,993	\$0.7	14,993	\$0.7
Total	530,868	\$15.9	180,249	\$6.3	180,249	\$6.3

Note: Totals may not add due to rounding.

*Burden Statement*

For the ICR period of September 2007 through September 2010 associated with the short-term revisions to the LCR, the average burden for systems to implement the requirements of the short-term LCR revisions is estimated to be 2.6 – 3.8 hours per system per year. The average annual cost to systems is expected to be \$77 - \$117 per system per year. System burden includes time required read and understand the rule requirements and communicate those requirements to system personnel and management, as well as activities related to the regulatory changes. The average burden for State agencies is estimated to be 309 - 441 hours per State per year. This burden includes the time to inform systems of the requirements and perform primacy-related activities, as well as activities related to the regulatory changes. The estimated annual State cost is estimated to be \$13,500 - \$19,300 per State per year.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to

comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9. When this ICR is approved by OMB, the Agency will publish a technical amendment to 40 CFR part 9 in the Federal Register to display the OMB control number for the approved information collection requirements contained in the final rule.

### **6.3 Regulatory Flexibility Act**

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

The RFA provides default definitions for each type of small entity. Small entities are defined as: (1) a small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any "not-for-profit enterprise which is independently owned and operated and is not dominant in its field." However, the RFA also authorizes an agency to use alternative definitions for each category of small entity, "which are appropriate to the activities of the agency" after proposing the alternative definition(s) in the *Federal Register* and taking comment. 5 USC 601(3) - (5). In addition, to establish an alternative small business definition, agencies must consult with SBA's Chief Counsel for Advocacy.

For purposes of assessing the impacts of today's final rule on small entities, EPA considered small entities to be public water systems serving 10,000 or fewer persons. As required by the RFA, EPA proposed using this alternative definition in the *Federal Register* (63 FR 7620, February 13, 1998), requested public comment, consulted with the Small Business Administration (SBA), and finalized the alternative definition in the Consumer Confidence Reports regulation (63 FR 44511, August 19, 1998). EPA stated in that Final Rule that it would apply the alternative definition to future drinking water regulations (including this one) as well.

After considering the economic impacts of today's final rule on small entities, EPA certifies that this action will not have a significant economic impact on a substantial number of small entities. The small entities directly regulated by this final rule are small public water systems serving 10,000 or fewer people on an annual basis. EPA has determined that 68,286 small systems may be affected by the changes to the LCR. Exhibit 33 provides a summary of these small systems, by size category and system type.



**Exhibit 33: The Number of Small Systems Affected by the Final Rule Changes**

Size	CWS	NTNCWS	TOTAL Small
<=100	13,766	9,548	23,314
101-500	16,240	6,997	23,237
501-1,000	5,914	1,925	7,839
1,001-3,300	8,298	795	9,093
3,301-10,000	4,707	96	4,803
<b>Total</b>	<b>48,925</b>	<b>19,361</b>	<b>68,286</b>

However, not all of these small entities will incur direct costs for all of the final regulatory changes. In many cases, only a relatively small subset of these systems will have to change practices to comply with the regulatory changes. Exhibit 34 provides an estimate of the number of small systems that will incur direct costs for each of the final regulatory changes.

**Exhibit 34: The Number of Small Systems Affected by Each Regulatory Change**

Regulatory Change	Small Systems Impacted Per Year
Regulatory Change #III.A	3,692
Regulatory Change #III.B	None – Clarifications of definitions with no direct cost impact
Regulatory Change #III.C	854
Regulatory Change# III.D	1,009
Regulatory Change #III.E	60,735
Regulatory Change #III.F	49,337
Regulatory Change #III.G	1

**Activities and Costs Associated With Rule Changes for Small Systems**

EPA has estimated the burden and costs associated with the regulatory changes, as described in section 4 of this document. The basis for many of these input values and assumptions are described in detail in the Economic Analysis, Section 4. The following summarizes the costs estimated for small systems.

*One-Time Activities*

All small systems subject to the Lead and Copper Rule will be expected to incur some costs to read the rule changes and communicate requirements as necessary. The level of effort associated with these activities could range from 5 - 8 hours for each small system. The average cost per system for these activities is estimated at \$138, for a total cost of \$9,404,000 for all 68,286 small systems. This assumes an hourly fully loaded labor cost for small system

employees ranging from \$23.86 to \$33.96 (see Appendix B for derivation). One-time costs range from \$124 for systems serving 25-500 to \$270 for systems serving 3,301 to 10,000 people.

#### *Activities for Regulatory Change III.A*

Under Regulatory Change III.A, small systems with fewer than 5 taps in States that allow 1 sample per tap will prepare and submit to the State a one-time letter verifying the applicable number of taps and requesting the use of the alternative sampling. Eleven States supported the alternative sampling in their comments on the proposed rule. EPA estimates that there are 3,692 small systems with fewer than 5 taps in the 11 States (plus Alaska for small CWSs). Preparing the one-time request letter results in a one time cost of \$28 per system across all small subcategories. Total costs for all small systems likely to be affected by Regulatory Change III.A are estimated at \$104,000 per year.

#### *Activities for Regulatory Change III.C*

Under Regulatory Change III.C, all systems that exceed the lead Action Level are triggered into regularly scheduled lead tap monitoring. Additional costs are associated with taking lead samples more frequently and reporting the results to States. EPA estimates that 854 small systems exceed the lead Action Level each year. Changing from reduced tap monitoring to regularly scheduled tap monitoring would result in an average cost increase of \$2,258 per year per system. Average annual costs for this regulatory change range from \$1,300 for the smallest size subcategory (25-500) to \$9,400 for systems serving 3,301 to 10,000. Total costs for all small systems likely to be affected by Regulatory Change III.C are estimated at \$1,929,000 per year.

#### *Activities for Regulatory Change III.D*

Small systems that are changing treatment or adding a source would incur additional costs under Regulatory Change III.D to prepare data in support of treatment changes or source addition, to submit the data to the State for review, and to coordinate with the State during the review. These activities are estimated to take an additional 7.5 hours per system for each treatment change or source addition. The cost for each small system that is changing treatment or adding a source is estimated at \$196. Average annual costs range from \$186 for systems serving 25-500 to \$255 for systems serving 3,301 to 10,000 people. The total cost for all small systems likely to be affected by Regulatory Change III.D is estimated at \$198,000 per year.

#### *Activities for Regulatory Change III.E*

Most small systems are expected to incur additional costs under Regulatory Change III.E when they are required to notify consumers of tap monitoring results. The activities associated with notifying customers vary based on the type and size of the system and include the effort to prepare a self-certification letter for the State. The average cost for small systems to notify customers is estimated at approximately \$17 annually. This estimate assumes one labor hour to prepare a customer notification letter per system, 0.12 hours to prepare the self-certification

letter, and \$0.43 in material costs per sample for CWSs. EPA assumed one labor hour plus 0.12 hours for NTNCWSs, with negligible material costs. It is important to note that the majority of small systems are assumed to meet the lead action level and are assumed to be on triennial monitoring. Therefore, this requirement will only affect them once every three years. Average annual costs range from \$15 for the smallest size subcategory (25-500) to \$32 for systems serving 3,301 to 10,000 people. The total cost to all small systems likely to be affected by Regulatory Change III.E is estimated at \$1,060,000.

#### *Activities for Regulatory Change III.F*

Different provisions of Regulatory Change III.F apply to different subsets of systems. All small community water systems will incur costs to include a statement on lead in the Consumer Confidence Report (CCR), at an average cost of \$7 per system, based on the assumption of 0.25 hours to add an informational statement on lead to the CCR. Small community water systems that exceed the Lead Action Level will incur costs from a variety of public education activities, at an average cost per system of \$265. Average annual costs for systems in the small size subcategories that do not exceed the Lead Action Level range from \$6 for systems serving 25-500 to \$8 for systems serving 3,301 to 10,000 people. For those systems that do exceed the Lead Action Level, average annual costs range from \$180 to \$1,200. The total cost for all small systems likely to be affected by Regulatory Change III.F is estimated at \$569,000.

#### *Activities for Regulatory Change III.G*

Regulatory Change III.G applies to systems that had “tested out” lead service lines as part of a lead service line replacement program and then re-exceeded the Action Level. For the purposes of subsequent lead service line replacement efforts, the previously “tested-out” lines would go back into the inventory for possible re-testing and/or replacement. Only a handful of systems are expected to be in this situation, estimated at 1 system per year. This analysis assumes that the 1 system is not a small system. There is no evidence that small systems would be triggered into this regulatory change cost any more frequently than other systems.

#### *Small System Costs*

Exhibit 35 summarizes the estimated annual costs per system for three subcategories of small systems associated with all final regulatory changes. Exhibit 36 summarizes the one-time costs to small systems for three system size subcategories. Total average annual costs to all small systems less than 10,000 are estimated at \$3.8 million, and total one-time costs to all small systems less than 10,000 are estimated at \$9.5 million.

**Exhibit 35: Average Annual Small System Costs by System Size Category**  
(4<sup>th</sup> Qtr 2006\$)

	25-500	501-3,300*	3,301-10K*	Average Costs For All Systems Less than 10K*
Regulatory Change #III.A	\$30	\$30	\$30	\$30
Regulatory Change #III.B	\$0	\$0	\$0	\$0
Regulatory Change #III.C	\$1,300	\$3,900	\$9,400	\$2,300
Regulatory Change# III.D	\$186	\$207	\$255	\$200
Regulatory Change #III.E	\$15	\$18	\$32	\$17
Regulatory Change #III.F	\$6 (\$180)	\$7 (\$290)	\$8 (\$1,200)	\$7 (\$270)
Regulatory Change #III.G	\$0	\$0	\$0	\$0
<b>Average Cost per System</b>	<b>\$41</b>	<b>\$67</b>	<b>\$153</b>	<b>\$55</b>

Notes: Totals may not add due to rounding.

\*Values in parentheses represent costs when there is an AL exceedance

**Exhibit 36: One-Time Small System Costs by System Size Category**  
(4<sup>th</sup> Qtr 2006\$)

	25-500	501-3,300	3,301-10K	Aggregate: 25-10K
III.A	\$30	\$30	\$30	\$30
Implementation	\$124	\$138	\$270	\$138
<b>Average One-Time Cost per System</b>	<b>\$126</b>	<b>\$140</b>	<b>\$272</b>	<b>\$140</b>

Note: Totals may not add due to rounding.

*Average Costs Per Small System*

The average compliance cost for all small systems serving fewer than 10,000 people is minimal: \$55 per system in annual costs. However, there is a fairly wide range in the costs that a system could face. All systems will incur the \$138 one-time implementation cost, but the additional annual costs could be as low as \$0 for small NTNCWSs that already notify customers of tap monitoring results. Systems that do not already notify customers of results will incur \$17 per year. Small CWSs will incur \$7 per year to include a statement on the CCR. The roughly 2 percent of systems that are making a treatment change or source addition would incur an additional \$196 in the year they make the change.

At the high end, if a system incurred all annual costs, the total would be \$2,743 per year. As EPA estimates that only 854 small systems will exceed the lead action level, at most only 854 small systems, or 1.3 percent of all small systems, could potentially incur all estimated annual costs. Those systems that do not exceed the lead action level face a maximum potential annual cost of \$220.

### *Measuring Significant Economic Impact of Rule Costs*

The costs to small systems are compared against average revenues for small systems from all revenue sources. Small systems can be one of three types of small entities – small businesses, small governments, or small non-profits. The revenue estimate used for assessing impacts to small systems in this rule is derived from two sources: (1) EPA’s 2000 Community Water System Survey (CWSS) and (2) the 2002 Census of Governments. Data from these two sources are used to calculate average total revenue and water revenue for all small systems serving less than 10,000 customers and for each of 3 small system subcategories: those serving 25-500 customers, those serving 501-3300 customers, and those serving 3301-10,000 customers. Analyzing impacts separately for these 3 categories of small systems allows EPA to better identify potential impacts to the smallest systems, which tend to have the lowest revenues. These estimates are shown in Exhibit 37. A detailed description of the revenue estimates, and their associated limitations, is shown in Appendix K of this document.

For this analysis, EPA assumed that estimates of revenue for NTNCWSs are the same as those for CWSs of similar size. In the 1998 report, *An Assessment of the Vulnerability of Non-Community Water Systems to SDWA Cost Increases*, EPA evaluated the affordability of water service to 20 categories of non-community water systems and their ability to absorb future cost increases relative to residential users of community water systems. This report found that all of the non-community water system categories reviewed were less vulnerable to SDWA-related cost increases than a typical household served by a community water system. In each non-community category, expenditures on water were found to be a relatively small percentage of total revenues and in nearly all cases, water expenditures totaled less than 1 percent of total revenue. Based on this analysis, EPA believes it is reasonable to use CWS-based revenue data as a proxy for NTNCWS revenues. Because these systems may have larger revenue streams, they are less vulnerable, financially, than CWSs and can more readily absorb cost increases associated with new drinking water regulatory requirements.

**Exhibit 37: Revenue Estimates for Small System Size Categories:  
Total Revenue and Water Revenue (\$2006)**

<b>System Size</b>	<b>Total Revenue</b>	<b>Water Revenue</b>
25-500*	\$550,000	\$30,000
501-3,300	\$1,448,000	\$220,000
3,301-10K	\$12,643,000	\$925,000
<b>Aggregate: 25-10K</b>	<b>\$2,167,000</b>	<b>\$219,000</b>

Source: 2000 CWSS and 2002 Census of Governments

\*Note that total revenue for systems serving 25-100 is \$220,000 and water revenue is \$12,000.

Total revenue shown in Exhibit 37 is comprised of data on water sales, water-related revenue, and non-water revenue. Water sales consist of the revenue generated by the sale of water to customers and is generally based on a rate charged per unit of water sold. Water-related revenue consists of fees, penalties, or other charges related to the provision of water. Water sales and water-related revenue collectively represent estimates of Water Revenue as shown in Exhibit 37.

Non-water revenue is another source of funds available to many small systems. Examples of non-water revenue are revenues from small privately owned systems that provide water as an essential part of another business. These systems will have revenue from their primary business and not from the provision of water. Municipal governments may also rely on general revenue in addition to or in lieu of water revenue to finance system operations. In many cases, non-water revenues are available to systems to support all or part of system operations; therefore it is important to include estimates of non-water revenue to fully account for the resources available to water systems to finance their operations.

Exhibit 38 compares the average costs of the regulatory changes to the average revenues on a per system basis. As shown below, economic impacts to small systems from the LCR regulatory revisions are all less than one percent of revenue for each of the small system size subcategories. However, as discussed in Appendix K of this document and in Section V.C.1 of the final rule, substantial data limitations exist in our revenue data which may limit our ability to accurately describe the revenues available to small water systems.

**Exhibit 38: Average Costs per System and Percentage of Revenue**  
**ALL REVENUE SOURCES**  
 (2006\$)

<b>System Size</b>	<b>Number of Systems</b>	<b>Average Annual Cost per System</b>	<b>Revenues per System</b>	<b>Average Annual Cost as Percentage of Revenue</b>
25-500	46,551	\$41	\$550,000	0.007%
501-3,300	16,932	\$67	\$1,448,000	0.005%
3,301-10K	4,803	\$153	\$12,643,000	0.001%
<b>Aggregate: 25-10K</b>	<b>68,286</b>	<b>\$55</b>	<b>\$2,167,000</b>	<b>0.003%</b>

In summary, the costs for each of the small size subcategories below 10,000 represent less than 1 percent of revenue from all sources. To provide additional information on the potential economic impacts of the LCR on small entities, EPA also examined the relationship between costs and revenues for the smallest system size (those serving 25-500 people). Average total annual revenue for this system size is estimated to be \$550,000. As stated above, the maximum number of small systems (serving less than 10,000 people) that could possibly incur all annual total costs of \$2,743 is 854, those that exceed the lead action level. This maximum cost represents approximately 0.5 percent of average revenues from all sources for systems in the smallest size subcategory. However, because of our limited data on small system revenues, we do not have the ability to develop a distribution of revenues in this subcategory for comparison. For those systems that do not exceed the lead action level, the maximum potential cost that could be incurred by systems in the smallest size category is \$220, or 0.04 percent of revenue from all sources. This analysis further supports our conclusion that this final rule will not have a significant economic impact on a substantial number of small entities.

## **6.4 *Unfunded Mandates Reform Act***

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law No. 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and Tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures to State, local, and Tribal governments, in the aggregate, or to the private sector, of \$100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including Tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that this rule does not contain a Federal mandate that may result in expenditures of \$100 million or more for State, local, and Tribal governments, in the aggregate, or the private sector in any one year. The total upfront costs of this action to States and public water systems are estimated at \$12.725 million, with estimated annual costs to States and public water systems ranging from \$5.9 to \$6.3 million. Systems and State/Primacy agencies will incur one-time upfront costs associated with reviewing and implementing the overall LCR regulatory changes. For systems, activities include reviewing the rule changes and communicating requirements to staff. For States/Primacy agencies, activities include regulation adoption, program development, and miscellaneous communication with systems. Systems and States will also incur annual costs consisting of the costs to implement the regulation. Annual costs to systems include the costs of reporting, monitoring, and public education. Annual costs to States consist of the costs of reviewing water system information. Thus, today's rule is not subject to the requirements of sections 202 and 205 of the UMRA.

EPA has determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments. The regulation applies to all owners/operators of public water systems, not uniquely to those owners/operators that are small entities, and, for most systems, requires minimal expenditure of resources. Since these regulatory revisions affect all system sizes and the impact on the average small system will be 0.11 percent of revenues, the regulatory revisions to the LCR are not subject to the requirements of section 203 of UMRA.

Nevertheless, in developing this rule, EPA consulted with State and local officials (including small entity representatives) early in the process of developing the proposed regulation to permit them to have meaningful and timely input into its development. EPA held five workshops in 2004-2005 to elicit concerns and suggestions from stakeholders on various issues related to lead in drinking water. These workshops covered the topic areas of simultaneous compliance, sampling protocols, public education, lead service line replacement, and lead in plumbing. Expert participants from utilities, academia, state governments, consumer and environmental groups, and other stakeholder groups participated in these workshops to identify issues, propose solutions, and offer suggestions for modifications and improvements to the LCR. These workshops are described in greater detail in previous sections of this document.

#### **6.5 *Executive Order 13132: Federalism***

Executive Order 13132, entitled “Federalism” (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure “meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.” “Policies that have federalism implications” is defined in the Executive Order to include regulations that have “substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.”

The final rule does not have federalism implications. It does not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. The rule is consistent with, and only makes revisions to, the requirements under the current national primary drinking water regulations for lead and copper. The existing rule imposes requirements on public water systems to ensure that water delivered to users is minimally corrosive, to treat source water, remove lead service lines and provide public education where necessary to ensure public health protection. This rule does not make any significant changes to these requirements, but, as explained elsewhere in this document, makes revisions and clarifications to the rule’s requirements to enhance the efficiency and effectiveness of current requirements.

Nevertheless, EPA did consult with State and local officials early in the process of developing the proposed regulation as described in section on the Unfunded Mandates Reform Act.

#### **6.6 *Executive Order 13175: Consultation and Coordination With Indian Tribal Governments***

Executive Order 13175, entitled “Consultation and Coordination with Indian Tribal Governments” (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure “meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.”



The final rule does not have tribal implications as specified in Executive Order 13175. This rule does not significantly or uniquely affect the communities of Indian Tribal governments, nor does it impose substantial direct compliance costs on those communities. The provisions of this rule apply to all community and non-transient non-community water systems. Tribal governments may be the owners or operators of such systems, however, nothing in today's provisions uniquely affects them. EPA therefore concludes that this rule does not significantly or uniquely affect the communities of Indian tribal governments. Thus, Executive Order 13175 does not apply to this rule.

#### ***6.7 Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks***

Executive Order 13045: "Protection of Children from Environmental Health Risks and Safety Risks" (62 FR 19885, April 23, 1997) applies to any rule that: (1) is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This final rule is not subject to the Executive Order because it is not economically significant as defined in Executive Order 12866. The rule does not change the core LCR requirements in place to assure the protection of children from the effects of lead in drinking water, rather the changes will improve the implementation of these provisions. Moreover, EPA believes that this action is consistent with Executive Order 13045 because it further strengthens the protection to children from exposure to lead and copper via drinking water, as this rule enhances the implementation of the LCR in the areas of monitoring, customer awareness, and lead service line replacement. This rule also clarifies the intent of some unclear provisions in the LCR. These changes ensure and enhance more effective protection of public health through the reduction in lead exposure.

#### ***6.8 Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use***

The final rule is not a "significant energy action" as defined in Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" (66 FR 28355 (May 22, 2001)) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. The rule provides clarifications and modifications to the existing LCR rule language only.

The final rule does not affect the supply of energy as it does not regulate power generation. The public and private utilities that are affected by this regulation do not, as a rule, generate power. The revisions to the LCR do not regulate any aspect of energy distribution as the utilities that are regulated by the LCR already have electrical service. Finally, these regulatory

revisions do not adversely affect the use of energy as EPA does not anticipate that a significant number of drinking water utilities will add treatment technologies that use electrical power to comply with these regulatory revisions. As such, EPA does not anticipate that this rule will adversely affect the use of energy.

## **6.9 *National Technology Transfer and Advancement Act***

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (“NTTAA”), Public Law No. 104-113, 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

The final rule may involve voluntary consensus standards in that it requires additional monitoring for lead and copper in certain situations, and monitoring and sample analysis methodologies are often based on voluntary consensus standards. However, the final rule does not change any methodological requirements for monitoring or sample analysis, only, in some cases, the required frequency and number of samples. Also, EPA’s approved monitoring and sampling protocols generally include voluntary consensus standards developed by agencies such as the American National Standards Institute (ANSI) and other such bodies wherever EPA deems these methodologies appropriate for compliance monitoring.

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## **Appendix A**

### **Derivation of State Labor Rates**

## Appendix A-1: State Labor Rate for Economic Analysis

2007 Salaries and Overhead Costs from ASDWA State Resource Model  
From Exhibit A02, Draft Six-Year 2 ICR, August 2006

State Size (a)	Professional Staff	Support Staff	Hourly Average: 80% Prof and 20% Support	Hourly Rate (adjusted for overhead at 23%)	Number of States/ Territories	Weighted Average State Labor Rate (2007)
	<i>(adjusted for Fringe benefits at 22% of base salary)</i>					
Very Small (applies to 9 States, including VI, GU, AS, NM)	\$62,720	\$41,960	\$32.54	\$40.02	9	\$360.18
Small applies to 12 States, including DC and PR)	\$62,917	\$36,470	\$32.02	\$39.38	12	\$472.56
Medium (applies to 23 total)	\$67,274	\$41,297	\$34.49	\$42.42	23	\$975.66
Large (applies to 10 total)	\$75,950	\$54,897	\$39.86	\$49.02	10	\$490.20
Very Large (applies to 2 total)	\$111,800	\$59,908	\$56.35	\$69.30	2	\$138.60
					56	\$2,437.20
<b>Weighted Average -- All States and Territories</b>						<b>\$43.52</b>

(a) State labor costs are from the "2001 ASDWA Drinking Water Program Resource Needs Self Assessment". In 2000, the United States General Accounting Office used a previous version of this model to estimate nationwide drinking water program needs for Congress. The tool was later updated and improved based on comments from 27 States. To make the model easier to use, ASDWA established suggested salary and benefit ranges (i.e., default values), resource needs for the various NPDWRs, and other key variables. These hourly estimates are based on the default annual rates for 2007 that are provided in the model. The model assumes 1,800 work hours per full-time equivalent employee. Hourly rate labor costs are adjusted to account for fringe benefits (i.e., holidays, sick days, vacation, pension, health, dental, and life insurance); and overhead (i.e., office space, furniture, utilities, copiers, fax machines, postage, basic computing needs, etc.).

## **Appendix B**

### **Derivation of System Labor Rates**



## Appendix B-1: Derivation of System Labor Rates

Labor costs for systems were taken from the report *Labor Costs for National Drinking Water Rules* prepared by SAIC in October 2003 for EPA's Office of Ground Water and Drinking Water. Exhibits 20 and 21 of that report summarized recommended average technical wage rates and average managerial wage rates by system size for EPA to use in cost analyses. These rates are summarized below.

### Wage Rates from SAIC Study: From Exhibits 20 and 21

System Size	Loaded Wage Rate (2003 \$)		Loaded Wage Rate (2006 4th Qtr \$)		Combined Wage Rate (2006 4th Qtr \$)
	Technical	Managerial	Technical	Managerial	Combined
<b>25-100</b>	\$21.44	\$44.36	\$23.86	\$49.37	\$23.86
<b>101-500</b>	\$23.09	\$47.78	\$25.70	\$53.18	\$25.70
<b>500-3.3k</b>	\$24.74	\$51.20	\$27.54	\$56.99	\$27.54
<b>3.3k-10k</b>	\$25.34	\$51.20	\$28.20	\$56.99	\$33.96
<b>10k-100k</b>	\$26.05	\$51.20	\$28.99	\$56.99	\$34.59
<b>&gt;100k</b>	\$31.26	\$51.20	\$34.79	\$56.99	\$39.23
<b>Average:</b>			\$28.18		\$30.81
<b>Average Small (&lt;10k):</b>					\$27.76

Source: Labor Costs for National Drinking Water Rules, SAIC, October 24, 2003.

These loaded wage rates are updated to a fourth quarter 2006 level using the Employment Cost Index for wages and salaries in utilities (based on the NAICS classification system)<sup>35</sup>. The index value is 93.0 for the first quarter of 2003 and 103.5 for the fourth quarter of 2006, resulting in a factor of 1.113. To represent the composition of staff at PWSs of smaller sizes (e.g., systems serving fewer than 3,300 people), EPA uses only the technical rate. For systems serving 3,300 or more people, EPA uses a ratio of 80 percent technical labor to 20 percent managerial labor to arrive at a weighted labor rate of \$33.96 for systems serving 3,301-10,000 people, \$34.59 for systems serving 10,001-100,000 people, and \$39.23 for systems serving greater than 100,000 people.

<sup>35</sup> The Bureau of Labor Statistics has discontinued calculating the Employment Cost Index by SIC code classifications (electric, gas and sanitary services). The comparable NAICS classification is for utilities. Also, BLS changed the base year for calculating the index (Dec 2005 = 1.00). The change in series classification and index year does not result in an appreciable difference in the updating. For example, the update factor from 2001 to 2003 used in the exhibit is 1.07 either using SIC or NAICS for the time period.

## **Appendix C**

### **Derivation of Direct Costs for Regulatory Change III.C**

## Appendix C-1: Percent of Systems on Reduced Monitoring

State	# CWS and NTCWS (1)	% Systems on Reduced Monitoring	# CWS and NTCWS on Reduced Monitoring
AK	656	51%	335
AL	650	99%	644
AR	768	95%	730
AS	22	0%	0
AZ	986	95%	937
CA	4541	100%	4,541
CO	993	88%	874
CT	1244	85%	1,057
DC	6	100%	6
DE	331	75%	248
FL	2890	97%	2,803
GA	1931	93%	1,796
GU	12	100%	12
HI	128	99%	127
IA	1286	90%	1,160
ID	996	90%	896
IL	2197	100%	2,197
IN	1526	87%	1,328
KS	963	98%	944
KY	467	98%	458
LA	1290	100%	1,290
MA	773	78%	603
MD	1075	76%	820
ME	768	90%	691
MI	3069	100%	3,069
MN	1528	90%	1,375
MO	1704	98%	1,670
MS	1265	85%	1,075
MT	903	80%	722
Navajo	157	38%	60
NC	2740	92%	2,507
ND	349	100%	349
NE	794	97%	770
NH	1142	95%	1,085
NJ	1477	97%	1,433
NM	792	100%	792
Nmar	111	100%	111
NV	359	90%	323
NY	3573	90%	3,216
OH	2288	75%	1,716
OK	1255	70%	879
OR	1211	90%	1,090
PA	3348	89%	2,980
PR	523	100%	523
RI	161	70%	113
SC	830	92%	764
SD	495	95%	470
TN	727	98%	712
TX	5274	90%	4,747
UT	514	88%	452
VA	1865	90%	1,679
VI	235	100%	235
VT	669	88%	589

WA	2589	100%	2,589
WI	1993	80%	1,594
WV	690	90%	621
WY	363	93%	338
<b>TOTAL</b>	<b>71,492</b>		<b>65,142</b>

Notes:

(1) System inventory from 4<sup>th</sup> Quarter 2004 SDWIS Fed data pull. System totals do not include 703 systems in Regions and 18 systems in PW. (71,492 + 703 + 18 = 72,213 total systems).

- Findings: 65,142 of 71,492 CWS and NTNCWS systems are on reduced monitoring which is equivalent to **91 percent** of these systems
- Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004.
- For states that did not respond to survey, assume 100 percent systems on reduced monitoring.

## **Appendix C-2: Derivation of estimates of system labor for tap monitoring**

Unlike most drinking water regulations that require sampling at entry points to the distribution system, the LCR requires that tap water samples be collected at kitchen or bathroom taps of residences and other buildings to capture the impact of distribution system and household plumbing materials on drinking water lead and copper levels. This requirement significantly complicates sample collection, requiring that water systems identify potential customers to monitor based on a tiered system, recruit those customers to participate, and coordinate with these customers to collect tap samples. Procedures associated with lead and copper tap sampling include collecting a 1-liter first draw sample from a tap regularly used for consumption where the water has stood in the pipes for at least 6 hours (e.g., no flushing, showering, etc.). Residents may collect samples, but they must follow specific instructions as to the sample collection procedures. Systems then analyze the samples for lead and copper content, calculate the 90<sup>th</sup> percentile value for the system to assess compliance, and report the results to the State.<sup>36</sup>

### **Sample Collection**

In order to collect drinking water samples from customer sites to conduct compliance monitoring for the LCR, systems undertake the following activities:

- Identification of potential monitoring locations based on the Tier system in the LCR,
- Recruitment of customers at the locations to voluntarily participate in sampling,
- Distribution of sample materials and instructions,
- Coordination with customers during sampling to remind them and answer questions,
- Collection of samples from customer locations, and
- Review of samples and validation that appropriate collection procedures have been followed.

The labor required by systems to conduct lead and copper tap sampling to assess compliance with the LCR has been estimated previously by several EPA studies. The April 1991 “Final Regulatory Impact Analysis of National Primary Drinking Water Regulations for Lead and Copper” estimates that it takes 2 hours for public water system personnel to arrange for and collect each lead and copper sample.<sup>37</sup>

These estimates have been refined since the 1991 RIA for the LCR. The June 1999 Information Collection Request states that “sample collection (the labor required for travel,

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<sup>36</sup> Source: *Lead and Copper Monitoring and Reporting Guidance for Public Water Systems*, USEPA, Office of Water, EPA-816-R-02-009, February 2002.

<sup>37</sup> Source: *Final Regulatory Impact Analysis of National Primary Drinking Water Regulations for Lead and Copper*, USEPA, Office of Drinking Water, April 1991, page 4-9.

gaining access to the sampling station, and sample collection) takes 2.5 hours per sample...”<sup>38</sup>  
 The estimate of 2.5 hours per sample for lead and copper tap sampling collection is also used in the 2004 ICR<sup>39</sup> and, in the absence of new information, has been applied in this analysis.

### Sample Analysis

The cost to analyze a compliance sample for lead and copper is based on the fee charged by certified commercial laboratories. This fee includes both the cost of labor and materials. The June 1999 ICR assumed a commercial fee of \$30 to analyze a sample for lead and copper. Updated to current dollars (4<sup>th</sup> Qtr 2006), the fee is estimated at \$36.34 per sample.<sup>40</sup> To validate that the updated analysis fee is reasonable, publicly available estimates of costs were collected as displayed in the following table.

Source	Fee for Lead and Copper Analysis of Drinking Water	Citation
US EPA	\$20 - \$100	<a href="http://www.epa.gov/safewater/lead/leadfacts.html">http://www.epa.gov/safewater/lead/leadfacts.html</a>
NY State DOH	\$15 - \$50	<a href="http://www.health.state.ny.us/nysdoh/lead/leadwtr.htm">http://www.health.state.ny.us/nysdoh/lead/leadwtr.htm</a>
CWLTI (non profit in NC)	\$24 – lead only \$30 lead and copper	<a href="http://www.leadtesting.org/orderonline.htm">http://www.leadtesting.org/orderonline.htm</a>
Hometips.com	\$35 – lead only	<a href="http://www.hometips.com/help/wat5.html">http://www.hometips.com/help/wat5.html</a>
Fairfax Water	\$35 per faucet	<a href="http://www.fcwa.org/water/lead.htm">http://www.fcwa.org/water/lead.htm</a>

The updated estimate of \$36.34 per sample for lead and copper is well within the range provided by the USEPA and the NY State Department of Health. It is also very close to the \$35 that one system charges for lead testing (Fairfax Water) and the estimate from a home advice website from two national laboratories (National Testing Labs and Suburban Water Testing).

Based on OMB guidance in order to be consistent with estimates for other drinking water rules, the June 1999 ICR assumes that all analysis is conducted in-house for utilities, requiring that the commercial fee be broken into its labor component and materials component. The labor required to analyze each sample is estimated at 1 hour, based on the use of the ICP-MS (200.8) method. The average technical labor rate for 1 hour of technical labor is estimated in the following table.<sup>41</sup>

Size Category	Labor for 1 Hr
<= 100	\$23.86
101 to 500	\$25.70

<sup>38</sup> Source: *Information Collection Request: National Primary Drinking Water Regulations For Lead and Copper*, USEPA, Office of Water, June 1999, page A-3.

<sup>39</sup> Source: *Information Collection Request: Disinfectants/Disinfection Byproducts, Chemical, and Radionuclides Rules*, USEPA, Office of Water, September 2004, page H-43.

<sup>40</sup> Updated using the CPI for 1999 to Dec 2006 (201.8/166.6=1.211)

<sup>41</sup> Source: Labor Costs for National Drinking Water Rules, SAIC, October 24, 2003, updated.

501 to 3,300	\$27.54
3.3K-10K	\$28.20
10K-100K	\$28.99
>100K	\$34.79
Mean	\$28.18

The materials cost associated with analyzing a compliance sample for lead and copper can then be estimated by subtracting the labor component of \$28.18 from the total fee of \$36.34, for an estimate of \$8.16 materials cost per sample.

### Sample Reporting: Calculation of 90<sup>th</sup> Percentile

To assess compliance with the LCR Action Levels, systems must calculate the 90<sup>th</sup> percentile of the lead and copper samples. Activities associated with determining compliance include the following:

- Collection of sampling results,
- Validation that all appropriate samples are included,
- Arrangement of samples by rank order, and
- Determination of the 90<sup>th</sup> percentile value.

The burden to calculate the 90<sup>th</sup> percentile levels from monitoring results is estimated as follows in the June 1999 ICR:<sup>42</sup>

System Size	Burden Estimate
<= 100	0.5 hours
101-500	0.5 hours
501-10K	0.5 hours
10-100K	0.75 hours
>100K	1 hour

These estimates are also used in the 2004 ICR<sup>43</sup> and, in the absence of new information, have been applied in this analysis.

### Sample Reporting: Reporting Results to State

<sup>42</sup> Source: *Information Collection Request: National Primary Drinking Water Regulations For Lead and Copper*, USEPA, Office of Water, June 1999, page A-11.

<sup>43</sup> Source: *Information Collection Request: Disinfectants/Disinfection Byproducts, Chemical, and Radionuclides Rules*, USEPA, Office of Water, September 2004, page H-27.

Systems are required to report the results of the LCR compliance monitoring to the State. Activities associated with reporting results to States include the following:

- Assembly and organization of monitoring results and compliance calculations,
- Completion of required certifications, and
- Preparation of the cover letter to the State.

The June 1999 ICR estimates that all systems will incur 1 hour to conduct these activities related to reporting results to States.<sup>44</sup> The materials cost for State reporting is the cost of one postage stamp -- \$0.39. These estimates are also used in the 2004 ICR<sup>45</sup> and, in the absence of new information, have been applied in this analysis.

### **Sample Reporting: Total**

The total labor associated with reporting compliance monitoring results to the State, including the calculation of the 90<sup>th</sup> percentile, is summarized in the following table. An additional materials cost of \$0.39 is also applied.

<b>System Size</b>	<b>Burden Estimate</b>
<= 100	1.5 hours
101-500	1.5 hours
501-10K	1.5 hours
10-100K	1.75 hours
>100K	2 hours

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<sup>44</sup> Source: *Information Collection Request: National Primary Drinking Water Regulations For Lead and Copper*, USEPA, Office of Water, June 1999, page A-11.

<sup>45</sup> Source: *Information Collection Request: Disinfectants/Disinfection Byproducts, Chemical, and Radionuclides Rules*, USEPA, Office of Water, September 2004, page H-27.



**Appendix C-3: Estimates of labor for State review of tap monitoring results per monitoring event**

<b>System Size</b>	<b>State Burden to Review Tap Monitoring Letter</b>	<b>State Burden to Check Compliance Calculations</b>
<= 500	1.0	10 minutes
501 to 3,300	1.0	15 minutes
3.3K-10K	1.0	30 minutes
10K-50K	1.0	45 minutes
50K-100K	1.0	45 minutes
>100K	1.0	1 hour

Notes:

Data Source: *Information Collection Request: Disinfectants/Disinfection Byproducts, Chemical, and Radionuclides Rules*, USEPA, Office of Water, September 2004, page H-12.

**Appendix C-4: Regulatory Change III.C System Reporting Cost (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b># Systems that Exceed Lead AL [1,2]</b>	<b># Systems Affected by Regulatory Change [3]</b>	<b>Total Additional # Monitoring Events Due to Regulatory Change [4]</b>	<b>System Reporting Burden (Hrs.) Per Monitoring Event [5]</b>	<b>Total System Reporting Burden (Hrs.) [6]</b>	<b>Total Labor Cost [7]</b>	<b>Annual Labor Cost [8]</b>	<b>Total O&amp;M Cost [9]</b>	<b>Annual O&amp;M Cost [10]</b>	<b>Total Annual Costs</b>
25-100	402	366	1,830	1.5	2,745	\$65,496	\$21,832	\$787	\$262	\$22,094
101-500	298	271	1,355	1.5	2,033	\$52,235	\$17,412	\$583	\$194	\$17,606
501-3,300	184	167	835	1.5	1,253	\$34,494	\$11,498	\$359	\$120	\$11,618
3.3K-10K	55	50	250	1.5	375	\$12,734	\$4,245	\$108	\$36	\$4,281
10K-50K	41	37	185	1.75	324	\$10,994	\$3,665	\$80	\$27	\$3,691
50K-100K	7	6	30	1.75	53	\$1,816	\$605	\$13	\$4	\$610
>100K	7	6	30	2	60	\$2,354	\$785	\$13	\$4	\$789
<b>Total</b>	<b>994</b>	<b>903</b>	<b>4,515</b>	<b>--</b>	<b>6,841</b>	<b>\$180,123</b>	<b>\$60,041</b>	<b>\$1,941</b>	<b>\$647</b>	<b>\$60,688</b>

**Notes:**

1. Assume 884 CWS and NTNCWS serving <3,300 people exceed the lead AL each year based on SDWIS/Fed database for monitoring period ending after January 2003. (Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004).
2. For systems serving >3,300 people, the # systems is based on systems that have exceeded the lead action level since 2003. data source: [www.epa.gov/safewater/lcrmr/lead-data.html](http://www.epa.gov/safewater/lcrmr/lead-data.html), 8/30/05.
3. Of CWS and NTNCWS that exceed the lead action level, assume 91% of these systems are on reduced monitoring based on USEPA Survey of States July 2004.
4. Total additional monitoring events in the 3 year period 2005-2007 is the total monitoring events for standard monitoring (6 periods in 3 years) less reduced monitoring (1 period per 3 years) multiplied by the number of systems. Assume each system was operating on a reduced monitoring schedule (once per 3 years) when the AL was exceeded; "total" means total for 3 year period.
5. Based on 1999 ICR Page H-27 Assumptions of Reporting Burden for Tap Sample Letter and Tap Sample Calcs.
6. Total system reporting burden equals the system reporting burden per monitoring event multiplied by the additional monitoring events.
7. Wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules" (2003) updated to 4th Qtr 2006. Total labor cost equals hourly labor rate multiplied by total burden.
8. Annual labor cost equals total labor costs divided by 3.
9. Total O&M costs include 1 postage stamp @ \$0.39, plus \$.04 for materials per monitoring event.
10. Annual O&M cost equals total O&M costs divided by 3.

**Appendix C-5: Regulatory Change III.C System Tap Water Monitoring Costs (Lead and Copper Monitoring) (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b># Systems that Exceed Lead AL [1,2]</b>	<b># Systems Affected by Regulatory Change [3]</b>	<b>Total Additional # Tap Samples Due to Regulatory Change [4]</b>	<b>Total Burden for Sample Collection and Analysis (Hrs) [5]</b>	<b>Total Labor Cost [6]</b>	<b>Annual Labor Cost [7]</b>	<b>Total O&amp;M Cost [8]</b>	<b>Annual O&amp;M Cost [9]</b>	<b>Total Annual Cost</b>
<= 100	402	366	9,150	32,025	\$764,117	\$254,706	\$74,664	\$24,888	\$279,594
101 to 500	298	271	14,905	52,168	\$1,340,705	\$446,902	\$121,625	\$40,542	\$487,443
501 to 3,300	184	167	18,370	64,295	\$1,770,684	\$590,228	\$149,899	\$49,966	\$640,195
3.3K-10K	55	50	11,000	38,500	\$1,307,383	\$435,794	\$89,760	\$29,920	\$465,714
10K-50K	41	37	12,210	42,735	\$1,451,195	\$483,732	\$99,634	\$33,211	\$516,943
50K-100K	7	6	1,980	6,930	\$239,709	\$79,903	\$16,157	\$5,386	\$85,289
>100K	7	6	3,300	11,550	\$453,107	\$151,036	\$26,928	\$8,976	\$160,012
<b>Total</b>	<b>994</b>	<b>903</b>	<b>70,915</b>	<b>248,203</b>	<b>\$7,326,899</b>	<b>\$2,442,300</b>	<b>\$578,666</b>	<b>\$192,889</b>	<b>\$2,635,188</b>

*Notes:*

1. Assume 884 systems serving <3,300 people exceed the lead AL each year based on SDWIS/Fed database for monitoring period ending after January 2003. (Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004).
2. For systems serving >3,300 people, the # systems is based on systems that have exceeded the lead action level since 2003. data source: [www.epa.gov/safewater/lcrmr/lead-data.html](http://www.epa.gov/safewater/lcrmr/lead-data.html), 8/30/05.
3. Of systems that exceed the lead action level, assume 91% of these systems are on reduced monitoring based on USEPA Survey of States July 2004.
4. Assume systems required to change from reduced monitoring schedule (one monitoring period per 3 years) to standard monitoring (monitoring every 6 months). "total" means total samples per 3 year period. Sampling schedule based on system size as summarized in Table 5.2.a below. For example, systems serving between 101 and 500 people are required to monitor 10 sites for standard monitoring and 5 sites for a reduced monitoring schedule. Since there are 271 systems in this category that are on reduced monitoring, the total additional number of tap samples to be collected in each 3 year period equals  $(10 \times 6 \times 271) - (5 \times 1 \times 271)$  or 14,905.
5. Assume 3.5 hours average labor for collection and analysis per sample (source: ICR, page H-43).
6. Wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules" (2003) updated to 4th Qtr 2006
7. Annual cost equals total costs divided by 3.
8. Use average O&M cost per sample \$8.16 as described in document, "Derivation of estimates for tap monitoring"

**Appendix C-6: Sampling Schedule per 40 CFR 141.86c**

<b>System size</b>	<b>Standard Monitoring # Sites</b>	<b>Reduced Monitoring # Sites</b>
<= 100	5	5
101 to 500	10	5
501 to 3,300	20	10
3,301 to 10,000	40	20
10,001 to 100,000	60	30
>100,000	100	50

**Appendix C-7: Regulatory Change III.C State Review Costs (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b># Systems that Exceed Lead AL [1,2]</b>	<b># Systems Affected by Regulatory Change [3]</b>	<b>Total Additional Tap Monitoring Events Due to Regulatory Change [4]</b>	<b>Total State Review Burden (Hrs.) [5]</b>	<b>Total Labor Cost [6]</b>	<b>Annual Labor Cost [7]</b>	<b>Total O&amp;M Cost [8]</b>	<b>Annual O&amp;M Cost [9]</b>	<b>Total Annual Costs</b>
<= 500	700	637	3,185	3,726	\$162,180	\$54,060	\$1,917	\$639	\$54,699
501 to 3,300	184	167	835	1,044	\$45,425	\$15,142	\$503	\$168	\$15,309
3.3K-10K	55	50	250	375	\$16,321	\$5,440	\$151	\$50	\$5,490
10K-50K	41	37	185	324	\$14,090	\$4,697	\$111	\$37	\$4,734
50K-100K	7	6	30	53	\$2,285	\$762	\$18	\$6	\$768
>100K	7	6	30	60	\$2,611	\$870	\$18	\$6	\$876
<b>Total</b>	<b>994</b>	<b>903</b>	<b>4,515</b>	<b>5,581</b>	<b>\$242,913</b>	<b>\$80,971</b>	<b>\$2,718</b>	<b>\$906</b>	<b>\$81,877</b>

Notes:

1. Assume 884 systems serving <3,300 people exceed the lead AL each year based on SDWIS/Fed database for monitoring period ending after January 2003. (Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004).
2. For systems serving >3,300 people, the # systems is based on systems that have exceeded the lead action level since 2003. data source: [www.epa.gov/safewater/lcrmr/lead-data.html](http://www.epa.gov/safewater/lcrmr/lead-data.html), 8/30/05.
3. Of systems that exceed the lead action level, assume 91% of these systems are on reduced monitoring based on USEPA Survey of States July 2004.
4. For the 3 year period, 2005-2007, assume systems have 5 additional tap monitoring events due to switching from a reduced monitoring schedule (once in 3 years) to standard monitoring (every 6 months). Refer to Table 5.1 above.
5. Use 2004 ICR Estimates of State burden on page H-12. The ICR estimates state burden to be 1 hour to review sample letter and between 0.17 hours and 1 hour to review sample calculations, depending on system size.
6. Use state labor rate of \$43.52/hour (Source: Information Collection Request for Contaminant Occurrence Data in Support of EPA's Second Six Year Review of National Primary Drinking Water Regulations (August 2006)).
7. Annual cost equals total cost divided by 3.
8. Unit O&M cost per event is \$0.43 per letter (postage & materials) per 2004 ICR page H-12. Assume state sends one letter to utility for each tap monitoring event and two additional letters to each utility regarding WQP monitoring.

## **Appendix D**

### **Derivation of Direct Costs for Regulatory Change III.D**

**Appendix D-1: State responses on review and approval of treatment or source changes**

State	No Requirement	Inform	Review & Approval (explicit)	Plan Submittal	Permit	No Response	# CWS and NTCWS in States without explicit review/approval process	# CWS in States without explicit review/approval process
AK			Yes					
AL		Yes					650	619
AR		Yes					768	728
AS			Yes					
AZ			Yes					
CA					Yes		4541	4541
CO		Yes					993	830
CT			Yes					
DC						Yes	6	3
DE				Yes			331	331
FL		Yes					2890	1881
GA			Yes					
GU						Yes	12	10
HI		Yes					128	115
IA			Yes					
ID				Yes			996	752
IL					Yes		2197	1792
IN		Yes					1526	840
KS		Yes					963	911
KY			Yes					
LA			Yes					
MA			Yes					
MD		Yes					1075	502
ME		Yes					768	399
MI			Yes					
MN				Yes			1528	965
MO				Yes			1704	1463
MS		Yes					1265	1170
MT			Yes					
Navajo		Yes					157	154
NC				Yes			2740	2174
ND				Yes			349	320
NE		Yes					794	606
NH		Yes					1142	698
NJ					Yes		1477	607
NM						Yes	792	645
Nmar						Yes	111	79
NV					Yes		359	253
NY			Yes					
OH				Yes			2288	1318
OK		Yes					1255	1135
OR		Yes					1211	874
PA					Yes		3348	2135

State	No Requirement	Inform	Review & Approval (explicit)	Plan Submittal	Permit	No Response	# CWS and NTNCWS in States without explicit review/approval process	# CWS in States without explicit review/approval process
PR						Yes	523	467
RI					Yes		161	83
SC			Yes					
SD	Yes						495	467
TN			Yes					
TX		Yes					5274	4489
UT				Yes			514	451
VA					Yes		1865	1263
VI						Yes	235	98
VT					Yes		669	435
WA		Yes					2589	2274
WI		Yes					1993	1086
WV					Yes		690	536
WY		Yes					363	276
<b>Total</b>	<b>1</b>	<b>19</b>	<b>14</b>	<b>8</b>	<b>9</b>	<b>6</b>	<b>53,372</b>	<b>40,499</b>



## Appendix D-2: Systems changing treatment in response to upcoming regulations

In an effort to verify the reasonableness of the assumption that 2 percent of systems will report a treatment change or addition of a new source each year, a review of the number of systems that are expected to change treatment due to upcoming drinking water regulation was conducted. Over the next several years, systems will be faced with new regulatory requirements that could result in treatment changes, including changes to comply with the already promulgated Arsenic Rule and the upcoming Long Term 2 Surface Water Treatment Rule, the Stage 2 Disinfectants/Disinfection Byproducts Rule, and the Groundwater Rule. We use estimates of the number of systems that are projected to change treatments to comply with three Rules (Arsenic, LT2 and Stage 2)<sup>46</sup> as a reasonableness check on the assumption about the number of systems that will submit treatment or sources changes for review under the LCR.

- Arsenic – 4,100 systems (Data source: Arsenic in Drinking Water EA, pp. 6-25, 6-27;
- LT2 – 2,882 systems (Data source: USEPA, Office of Water, *Economic Analysis for the Final Long Term 2 Enhanced Surface Water Treatment Rule*, EPA 815-R-06-001, December 2005. Exhibit 6-1, page 6-3);
- Stage 2 D/DBP – 2,261 systems (Data source: USEPA, Office of Water, *Economic Analysis for the Final Stage 2 Disinfectants and Disinfection Byproducts Rule*, EPA 815-R-05-010, December 2005, Exhibit ES-7a, page ES-17).

Together, these regulatory requirements are estimated to cause 9,243 systems to institute a treatment change, although not all of these treatment changes will impact corrosion control. The Stage 2 and LT2 treatment changes are projected to take place within a 6 year compliance period for large systems (with the possibility of 2-year extension) and 8 years for small systems (with the possibility of 2-year extension) according to page ES-5 of the Stage 2 EA and page ES-6 of the LT2 EA. The period of compliance for the Arsenic rule is 5 years. Depending on the range of years for compliance periods for the LT2 and Stage 2 Rules (6-8 years), approximately 1,400 – 1,600 systems may change treatment, although not all of these changes will impact corrosion control.

To account for these expected treatment changes, and to account for treatment changes unrelated to arsenic, LT2, and Stage 2 rule, EPA assumed (based on the projected rule-related treatment changes and expert judgment) that approximately 20% of the systems affected by the LCR will institute a treatment change in the next ten years. It is assumed that these changes occur uniformly over that 10-year period, so that approximately one-tenth of these systems (or 2 percent of the total) institute a treatment change each year.

Using the 2 percent estimate, 1,067 ( $53,372 \times .02$ ) systems each year would report a treatment change or source addition and incur costs in that year in States currently not covered by an explicit review and approval program. The estimate for the number of systems is 552 if States with a permitting or plan approval process are also excluded.

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<sup>46</sup> An estimate of the number of systems that may change treatment due to the Ground Water Rule is not publicly available with sufficient certainty at this time.

### Appendix D-3: Regulatory Change III.D System Review Costs (4<sup>th</sup> Qtr 2006\$)

	High Estimate	Low Estimate
# CWS and NTNCWS Affected by Reg Change III.D <sup>1</sup> Each Year:	1,067	1,067
Total System Burden (Hrs.) <sup>2</sup>	8,005.80	8,006
# CWS Affected by Reg Change III.D Each Year <sup>3</sup>	810	810
# CWS That Must Conduct an Engineering Study Each Year <sup>4</sup>	25.92	12.96
Annual Cost <sup>5</sup>	<b>\$765,083</b>	<b>\$505,883</b>

**Notes:**

1. The number of CWS and NTNCWS affected by Regulatory Change III.D is based on the USEPA Survey of States Questions on State Implementation of Lead and Copper Rule (July 2004). Survey results show that 14 States explicitly require review and approval of potential effects of treatment changes on corrosion control. 53,372 systems in States other than these 14 States would be affected by this Regulatory Change. It is assumed that each year 2% of systems have a treatment or source change that requires review and approval (per the 1999 ICR, page B-8). Therefore the number of systems to be affected by this regulatory change each year is estimated to be  $53,372 \times 0.02 = 1,067$  systems.

2. It is assumed that all systems will each spend 8 hours to prepare a submittal letter, coordinate with State, and participate in a meeting with the State primacy agency. The current system of notification for treatment changes requires a burden of 0.5 hour (per 1999 ICR) so this is deducted from the 8 hours for a total of 7.5 hours per system. The burden assumption is based on consensus of expert panelists on 11.21.05.

3. The number of CWS affected by Reg Change III.D is based on survey results from the USEPA Survey of States Questions on State Implementation of the LCR (July 2004) as described in Notes 1 and 2. The number of CWS for each State affected by Reg Change III.D was determined using the USEPA "Factoids: Drinking Water and Groundwater Statistics for 2004". It is assumed that each year 2% of systems have a treatment or source change that requires review and approval (per the 1999 ICR, page B-8). Therefore the most conservative estimate is  $40,499 \text{ CWS} \times 0.02 = 810 \text{ CWS}$  and the conservative estimate is  $21,080 \text{ CWS} \times 0.02 = 422 \text{ CWS}$ .

4. Assume that 10 to 20 percent of medium and large systems must conduct an engineering study due to Reg Change III.D based on consensus agreement of expert panelists on 11.21.05. Since 99 percent of NTNCWS are small systems (serving <3,300 people), it is assumed that only medium and large CWSs must conduct an engineering study. Assume 16% of CWS are medium or large systems based on the USEPA "Factoids: Drinking Water and Groundwater Statistics for 2004". For the most conservative estimate assume that 20% medium and large systems conduct an engineering study. For the conservative estimate, assume that 10% conduct engineering studies. Therefore, the most conservative estimate equals  $810 \text{ CWS} \times 0.16 \times 0.20 = 26 \text{ systems}$ . The conservative estimate equals  $422 \text{ CWS} \times 0.16 \times 0.10 = 7 \text{ systems}$ .

5. Annual cost is equal to the total system burden (hours) multiplied by a labor rate of \$30.81 per hr. (average of wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules" (2003) updated to 4th Qtr 2006 plus \$20,000 for an engineering study for a subset of medium and large CWS.

**Appendix D-4: Regulatory Change III.D State Review Costs (4<sup>th</sup> Qtr 2006\$)**

	<b>High Estimate</b>	<b>Low Estimate</b>
# Systems Affected by Reg Change III.D <sup>1</sup> :	1,067	1,067
State Burden (Hrs.) <sup>2</sup>	8,006	3,736
Annual Labor Cost <sup>3</sup>	<b>\$348,424</b>	<b>\$162,598</b>

*Notes:*

1. The number of systems affected by Regulatory Change III.D is based on the USEPA Survey of States Questions on State Implementation of Lead and Copper Rule (July 2004). Survey results show that 14 States explicitly require review and approval of treatment changes. 53,372 systems in States other than these 14 States would be affected by this Regulatory Change. It is assumed that each year 2% of systems have a treatment or source change that requires review and approval (per the 1999 ICR, page B-8). Therefore the number of systems to be affected by this regulatory change each year is estimated to be  $53,372 \times 0.02 = 1,067$  systems.

2. For the most conservative estimate, it is assumed that States spend 8 hours to review each system's data/reports, coordinate with system and make approval decision and formalize with management. For the conservative estimate, it is assumed that States spend 4 hours per system for the same activities. These estimates are based on a consensus agreement of expert panelists on 11.21.05. The current system of notification for treatment changes requires a State burden of 0.5 hour (per 1999 ICR); therefore, the most conservative estimate for new state burden is 7.5 hours and the conservative estimate is 3.5 hours per system.

3. Use state labor rate of \$43.52/hour (Source: Information Collection Request for Contaminant Occurrence Data in Support of EPA's Second Six Year Review of National Primary Drinking Water Regulations (August 2006)).

## **Appendix E**

### **Derivation of Direct Costs for Regulatory Change III.E**

## **Appendix E-1: Derivation of the Number of Systems That Do Not Notify Customers of Tap Monitoring Results (III.E)**

As part of EPA's review of the Lead and Copper Rule, States and primacy agencies were asked a variety of questions dealing with the implementation of the LCR. Several questions dealt with the issue of whether systems provide customers (i.e., homeowners or other drinking water consumers) who participate in lead tap sampling with the results of that sampling. The responses to these questions are used as a basis for estimating how many systems currently provide lead sampling results to customers and will therefore not incur additional costs due to regulatory change III.E.

Primacy agencies were asked the following question:

“Although not required by Federal regulation, do systems provide homeowners with lead sampling results derived from any volunteer sampling program? Does the state make any recommendations to public water systems in this area?”

We focused our analysis on answering three questions:

- Are systems required to notify homeowners with lead sampling results derived from any volunteer sampling program?
- Do States encourage systems to notify homeowners with lead sampling results derived from any volunteer sampling program?
- Do homeowners receive notification of lead sampling results derived from any volunteer sampling program?

44 States indicated whether the notification of testing results to households was required by State law. The response of each State is summarized in Table E-1.

Wisconsin is the only State that currently requires systems to notify households with lead sampling results derived from their home. This regulation is formalized in 809.541(12) Wis. Adm. Code. Texas currently requires systems to notify households if the sample from their house is above the action limit. Prior to 1993, Florida required systems to notify households if the sample from their home was above action limit. This requirement was terminated after the State realized that there was no federal action requiring such notification.

Many States, however, encourage systems to notify homeowners of sampling results, as summarized in Table 2. 52.4 percent of all States that responded encourage systems to notify households with lead sampling results derived from any volunteer sampling program. 10 States, 23.8 percent of all States that responded, encourage systems to notify households for specific situations. For example, 7 States only encourage systems to notify households if lead levels are greater than the action limit (as indicated by “If Sample is > AL” in Table E-2). 3 States only encourage systems to notify households if an occupant specifically requests the sampling and/or results (as indicated by “If Results are Requested” in Table E-3).

In addition, many States are aware of at least some systems in the State that notify homeowners at the current time, as summarized in Table E-3. 29 States indicated whether households are notified of testing results, while 11 States did not have any data or knowledge indicating whether households were notified of testing results.

The State responses to the three questions were evaluated to determine the overall notification status for the State in Table E-4. The categories for notification are as follows:

- Required
- Large systems only
- Encouraged by State
- If greater than Action Level
- Upon request by homeowner
- If greater than Action Level and upon request
- Sometimes
- If greater than 100 ppb
- None
- Unknown

For each of these categories, we assigned a percent of systems in that State that notify customers, also shown in Table E-4.

- Required: 100 percent
- Large systems only: 100 percent of large systems
- Encouraged by State: 16 percent. This value was derived from Rogers Diffusion of Innovation Theory that postulates that for a new technology or practice, 3.5% percent of affected parties will be “innovators” and 12.5% will be “early adopters” who will adopt a practice or technology without being required.<sup>47</sup> We assume that this same principle applies to the adoption of an encouraged, but not required, practice for drinking water systems, such as notification of customers.
- If greater than Action Level: 10 percent
- Upon request by homeowner: 5 percent
- If greater than Action Level and upon request: 15 percent
- Sometimes: 5 percent
- If greater than 100 ppb: 1 percent
- None: 0 percent
- Unknown: 0 percent

We calculate the number of systems per State by size category that are already notifying customers by multiplying these assumed percentages by the number of systems. We estimate the number of systems not notified, who would therefore incur costs under the new rule provision,

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<sup>47</sup> Rogers, Everett, *Diffusion of Innovation*, Free Press; 4th edition (February 1, 1995).

by subtracting the number of systems that notify from the total number of systems. Table E-5 displays the number of systems that notify and that do not notify by system size.

### Notification Required by States

State	Is Direct Notification Required?	If Sometimes Required, When is Notification Required?		State	Is Direct Notification Required?	If Sometimes Required, When is Notification Required?
AK	No	* Prior to 2003, If sample was > AL		Navajo	No	If sample is > AL
AL	No		NC	No		
AR	No		ND	No		
AZ	No		NE	No		
CO	No		NH	No		
CT	No		NJ	No		
DE	No		NV	No		
FL	No		NY	No		
GA	No		OH	No		
HI	No		OK	No		
IA	No		PA	No		
IN	No		RI	No		
KS	No		SC	No		
KY	No		SD	No		
LA	No		TN	No		
MA	No		TX	Sometimes		
MD	No		UT	No		
ME	No		VA	No		
MN	No		VT	No		
MO	No		WI	Yes		
MS	No	WV	No			
MT	No	WY	No			



### Is Notification Encouraged?

State	Is Notification Encouraged?	If Sometimes Encouraged, When is Notification Encouraged?	State	Is Notification Encouraged?	If Sometimes Encouraged, When is Notification Encouraged?	
AL	No	If Results are Requested	Navajo	Sometimes	If Results are Requested If Sample is > AL	
AR	Sometimes		NC	Sometimes		
AZ	Sometimes		ND	Yes		
CO	No		NE	Yes		
CT	No		NH	Yes		
DE	Yes		NJ	Yes		
FL	Yes		NV	No		
GA	Yes		NY	Yes		
HI	Sometimes		OK	Yes		
IA	Yes		OR	Yes		
IN	No	RI	Yes			
KS	Yes	SC	Yes			
KY	No	SD	No			
LA	No	TN	Yes			
MA	Yes	TX	Sometimes	If Results are Requested		
MD	Yes	UT	Yes			
ME	Sometimes	VA	Yes			
MI	Sometimes	VT	Yes			
MN	No	WA	Yes			
MO	Sometimes	WV	No			
MS	Yes	WY	Sometimes			
						If Sample is > AL

### Notification Received by Households At Current Time

State	Do Homeowners Receive Notification?	If Sometimes Received, When Is Notification Received?	Does System Provide Indirect Notification?
AL	Unknown		
ASPA	Sometimes	If Sample is > AL	CCR, If Requested
AR	No		
AZ	Sometimes	If Results are Requested	
DE	No		CCR
GA	Sometimes	Depends on System	
IA	Sometimes	Depends on System	
ID	Unknown		
IL	Sometimes	Depends on System	
KS	Unknown		
KY	No		
LA	No		If Requested
MD	Unknown		
ME	Sometimes	Large Systems	
MI	Sometimes	Depends on System	
MN	Sometimes	If Sample is > AL	
MO	Sometimes	Depends on System	
MS	Yes		
MT	Unknown		
Navajo	Sometimes	Depends on System	If > AL than CCR
NE	Unknown		
NH	Yes		
NJ	Sometimes	If Requested, If > AL	
NM	Unknown		
NV	No		
NY	Sometimes	If Requested, Depends on System	
OH	Unknown		
OK	Yes		
OR	Yes		
PA	Unknown		
RI	Sometimes	Large Systems	
SC	Sometimes	Depends on System	
SD	No		
TN	Sometimes	Depends on System	
TX			CCR
UT	Sometimes	Depends on System	
VA	Sometimes	If Sample is > AL	
WI	Yes		
WV	Unknown		
WY	No		

### Summary of Notification by State and Assumed Percent of Systems Notified

State	Summary of Notification	Percent of Systems Notified
AK	Upon Request	5%
AL	None	0%
ASPA	> AL	10%
AR	> AL, Upon Request	15%
AZ	Upon Request	5%
CA	Unknown	0%
CO	None	0%
CT	None	0%
DE	Encouraged	16%
FL	Encouraged	16%
GA	Encouraged	16%
HI	>100 ppb	1%
IA	Encouraged	16%
ID	Unknown	0%
IL	Sometimes	5%
IN	None	0%
KS	Encouraged	16%
KY	None	0%
LA	Upon Request	5%
MA	Encouraged	16%
MD	Encouraged	16%
ME	> AL, Large	10/100%
MI	>AL	10%
MN	>AL	10%
MO	>AL	10%
MS	Encouraged	16%
MT	Unknown	0%
Navajo	Upon Request	5%
NC	>AL	10%
ND	Encouraged	16%
NE	Encouraged	16%
NH	Encouraged	16%
NJ	>AL, Upon Request	15%
NM	Unknown	0%
NV	None	0%
NY	Upon Request	5%
OH	Unknown	0%
OK	Encouraged	16%
OR	Encouraged	16%
PA	Unknown	0%
RI	Large	0/100%
SC	Encouraged	16%
SD	None	0%
TN	Encouraged	16%
TX	>AL	10%
UT	Encouraged	16%
VA	Encouraged	16%
VT	Encouraged	16%
WA	Encouraged	16%
WI	Required	100%
WV	None	0%
WY	Greater than AL	10%

**Summary of the Number of Systems that Notify Customers of Monitoring Results and the Number of Systems that Do Not Notify**

<b>CWS</b>	<b>Total Number of Systems</b>	<b>Systems Notifying Customers of Monitoring Results</b>	<b>Systems Not Notifying Customers of Monitoring Results</b>	<b>Percent of Systems Not Notifying</b>
<=100	13,766	1,472	12,294	89%
101-500	16,240	1,685	14,555	90%
501-1,000	5,914	656	5,258	89%
1,001-3,300	8,298	903	7,395	89%
3,301-10,000	4,707	480	4,227	90%
10,001-50,000	3,057	304	2,753	90%
50,001-100,000	484	50	434	90%
100,001-250,000	259	23	236	91%
250,001-500,000	63	7	56	89%
500,001-1,000,000	32	3	29	89%
>1,000,000	18	1	17	93%
<b>TOTAL</b>	<b>52,838</b>	<b>5,583</b>	<b>47,255</b>	

<b>NTNCWS</b>	<b>Total Number of Systems</b>	<b>Systems Notifying Customers of Monitoring Results</b>	<b>Systems Not Notifying Customers of Monitoring Results</b>	<b>Percent of Systems Not Notifying</b>
<=100	9,548	1,206	8,342	87%
101-500	6,997	870	6,127	88%
501-1,000	1,925	204	1,721	89%
1,001-3,300	795	77	718	90%
3,301-10,000	96	7	89	93%
10,001-50,000	13	1	12	92%
50,001-100,000	1	0	1	100%
100,001-250,000	0	0	0	
250,001-500,000	0	0	0	
500,001-1,000,000	0	0	0	
>1,000,000	0	0	0	
<b>TOTAL</b>	<b>19,375</b>	<b>2,365</b>	<b>17,010</b>	

**Appendix E-2: Regulatory Change III.E System Public Education Costs (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b>Number of Systems [1]</b>	<b>Percentage of Systems that Do Not Currently Notify Customers [2]</b>	<b>Subtotal Systems Affected by Reg Change III.E [3]</b>	<b># Systems Affected by Reg Change III.C that are Affected by Reg. Change III.E [4]</b>	<b>Total Annual Monitoring Events [5]</b>	<b>Total Customer Notification Letters [6]</b>	<b>Annual System Burden (hrs) [7]</b>	<b>Annual System Labor Cost [8]</b>	<b>Annual System O&amp;M Cost [9]</b>	<b>Total Annual System Cost</b>
CWSs:										
<100	13,766	89%	12,252	158	6,237	31,186	6,237	\$148,817	\$13,410	\$162,227
101-500	16,240	90%	14,616	131	7,326	51,089	7,326	\$188,270	\$21,968	\$210,239
501-1K	5,914	89%	5,263	108	2,760	39,237	2,760	\$76,015	\$16,872	\$92,887
1k-3.3K	8,298	89%	7,385		3,570	48,989	3,570	\$98,305	\$21,065	\$119,370
3.3K-10K	4,707	90%	4,236	44	2,136	59,735	2,987	\$101,423	\$25,686	\$127,109
10K-50K	3,057	90%	2,751	32	1,395	58,648	2,932	\$101,431	\$25,218	\$126,649
50K-100K	484	90%	436	5	221	9,316	466	\$16,113	\$4,006	\$20,119
100K-500K	322	91%	293	5	153	10,810	541	\$21,205	\$4,649	\$25,853
500K-1M	32	89%	28		14	945	47	\$1,853	\$406	\$2,259
>1 M	18	93%	17		8	555	28	\$1,089	\$239	\$1,328
						310,510				
NTNCWSs:										
<100	9,548	87%	8,307	189	4,393	-	4,393	\$104,805	\$0	\$104,805
101-500	6,997	88%	6,157	126	3,228	-	3,228	\$82,953	\$0	\$82,953
501-1K	1,925	89%	1,713	29	887	-	887	\$24,423	\$0	\$24,423
1k-3.3K	795	90%	716	16	378	-	378	\$10,416	\$0	\$10,416
3.3K-10K	96	93%	89	1	45	-	45	\$1,529	\$0	\$1,529
10K-50K	13	92%	12	1	8	-	8	\$264	\$0	\$264
50K-100K	1	100%	1							
100K-500K			0							
500K-1M										
>1 M										
<b>Total</b>	<b>72,213</b>	<b>89%</b>	<b>64,273</b>	<b>846</b>	<b>32,757</b>		<b>35,831</b>	<b>\$978,910</b>	<b>\$133,519</b>	<b>\$1,112,429</b>

Notes:

1. Number of CWS and NTNCWS systems per SDWIS/FED Data 2004.
2. Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule (July 2004).
3. The number of systems affected by Reg. Change III.E equals the total number of CWS and NTNCWS systems (see Note 1) multiplied by the percentage of systems that currently do not notify their customers (see Note 2). For example, 89% of 13,766 CWSs serving <100 people do not notify customers; therefore, these 12,252 ( $13,766 \times 0.89$ ) systems are affected by Reg. Change III.E.
4. Regulatory Change III.E will also affect systems that are affected by regulatory change III.C that exceeded the lead action level while on reduced monitoring and had to revert to standard monitoring, and do not currently notify their customers of lead test results. The number of systems affected by regulatory change III.C is based on the number of systems exceeding the lead action level as reported in the SDWIS Fed data 2003. The number of CWS and NTNCWS are listed separately in this table because the NTNCWS have a different burden requirement. NTNCWS are not required to prepare notification letters for each sample but provide general notification through bulletin board notices. It is also assumed that 91% of these systems are on reduced monitoring based on USEPA Survey of States July 2004.
5. For the subtotal of systems affected by Reg. Change III.E, it is assumed that 9% of systems use a standard monitoring schedule with 6 monitoring events in 3 years or 2 monitoring events each year. It is also assumed that 91% of systems are on a reduced monitoring schedule with 1 monitoring event in 3 years. In addition, systems affected by Reg. Change III.C that are also affected by Reg. Change III.E use a standard monitoring schedule with 2 monitoring events each year. (Source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004). For systems affected by Reg. Change III.C, assume all systems have reverted to a standard monitoring schedule.
6. The number of customer notification letters on lead monitoring results is based on the sampling schedule for standard and reduced monitoring as summarized in Table 7.1.a. It is assumed that one letter is sent for each sampling site required by 40 CFR 141.86c.
7. For CWSs, assume burden of 1 hour per monitoring event for systems serving <3,300 people. For systems serving > 3,300 people, assume burden of 1 hour per 20 letters. For NTNCWSs, assume 1 hour per monitoring event for all system sizes. Burden estimates based on recommendations of Expert Review Panel (November 2005).
8. Wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules (2003) updated to 4th Qtr 2006.
9. O&M costs estimated at \$0.43 per letter including \$.39 postage and materials (\$.01 paper and \$.03 envelope).

**Appendix E-3: Regulatory Change III.E System Reporting Costs (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b>Number of Systems [1]</b>	<b># Systems Affected by Reg Change III.C</b>	<b>Total Annual Monitoring Events</b>	<b>Total Self Certification Letters to State</b>	<b>Annual System Burden (hrs) [2]</b>	<b>Annual System Labor Cost</b>	<b>Annual System O&amp;M cost [3]</b>	<b>Total Annual Costs</b>
<b>CWSs:</b>								
<100	13,766	366	7,386	7,386	886	\$21,146	\$3,176	\$24,322
101-500	16,240	271	8,391	8,391	1,007	\$25,879	\$3,608	\$29,487
501-1K	5,914	167	3,192	3,192	383	\$10,550	\$1,373	\$11,923
1k-3.3K	8,298		4,011	4,011	481	\$13,255	\$1,725	\$14,979
3.3K-10K	4,707	50	2,375	2,375	285	\$9,678	\$1,021	\$10,700
10K-50K	3,057	37	1,552	1,552	186	\$6,440	\$667	\$7,107
50K-100K	484	6	246	246	30	\$1,021	\$106	\$1,127
100K-500K	322	6	168	168	20	\$789	\$72	\$861
500K-1M	32		15	15	2	\$73	\$7	\$79
>1 M	18		9	9	1	\$41	\$4	\$45
<b>NTNCWSs:</b>								
<100	9,548	217	5,049	5,049	606	\$14,456	\$2,171	\$16,627
101-500	6,997	143	3,668	3,668	440	\$11,312	\$1,577	\$12,889
501-1K	1,925	33	996	996	120	\$3,293	\$428	\$3,721
1k-3.3K	795	18	420	420	50	\$1,389	\$181	\$1,570
3.3K-10K	96	1	48	48	6	\$197	\$21	\$218
10K-50K	13	1	8	8	1	\$34	\$4	\$38
50K-100K	1							
100K-500K								
500K-1M								
>1 M								
<b>Total</b>	<b>72,213</b>	<b>1,316</b>	<b>37,534</b>	<b>37,534</b>	<b>4,504</b>	<b>\$119,553</b>	<b>\$16,140</b>	<b>\$135,693</b>

1. Assumes all systems will prepare self-certification letter
2. Assumes .12 hours to prepare self-certification letter to State based on estimate to prepare self-certification for the CCR.
3. Assumes \$0.43 postage and materials cost (\$0.39 postage, \$0.01 paper and \$0.03 envelope).

**Appendix E-4: Regulatory Change III.E State Reviewing Costs (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b>Number of Systems [1]</b>	<b># Systems Affected by Reg Change III.C</b>	<b>Total Annual Monitoring Events</b>	<b>Total Self Certification Letters to State</b>	<b>Total Annual Hours to Review (hrs) [2]</b>	<b>Total Annual Labor Cost</b>
<b>CWSs:</b>						
<100	13,766	366	7,386	7,386	739	\$32,143
101-500	16,240	271	8,391	8,391	839	\$36,520
501-1K	5,914	167	3,192	3,192	319	\$13,894
1k-3.3K	8,298		4,011	4,011	401	\$17,455
3.3K-10K	4,707	50	2,375	2,375	238	\$10,337
10K-50K	3,057	37	1,552	1,552	155	\$6,753
50K-100K	484	6	246	246	25	\$1,070
100K-500K	322	6	168	168	17	\$730
500K-1M	32		15	15	2	\$67
>1 M	18		9	9	1	\$38
<b>NTNCWSs:</b>						
<100	9,548	217	5,049	5,049	505	\$21,973
101-500	6,997	143	3,668	3,668	367	\$15,963
501-1K	1,925	33	996	996	100	\$4,337
1k-3.3K	795	18	420	420	42	\$1,829
3.3K-10K	96	1	48	48	5	\$211
10K-50K	13	1	8	8	1	\$36
50K-100K	1	0	0	0	0	\$0
100K-500K						
500K-1M						
>1 M						
<b>Total</b>	<b>72,213</b>	<b>1</b>	<b>37,534</b>	<b>37,534</b>	<b>3,753</b>	<b>\$163,355</b>

1. Assumes all systems file self-certification.
2. Assumes .10 hours to review and files self-certification letter by State based on estimate to review and file self-certification for the CCR.



## **Appendix F**

### **Derivation of Direct Costs for Regulatory Change III.G**

## Appendix F-1: Derivation of estimates for lead service line replacement sampling

Under the existing rule, systems that are replacing lead service lines in response to an Action Level exceedance may sample lead levels from lead service lines to determine if physical replacement is required. If the sampled lead levels from an individual service line is below the Action Level (15 ppb), that line would not have to be physically replaced, but could be considered “replaced” towards meeting the annual goal of 7 percent replacement. The sampling of lead service lines associated with lead service line replacement activities is similar to LCR compliance sampling in that tap samples from residential homes are used. The service line samples will either require access to the house or a separate set of instructions for taking the sample if sampling is performed by the customer. In addition, sampling needs to be carried out in a way to ensure that levels of lead in the service line (as opposed to household plumbing) is measured. Often, the change in water temperature is used to determine if the water is from the service line. However, in many climates, the temperature change approach may not work, so additional time will be needed to determine the volume of water to flush to reach the service line (determining the diameter and length of the service line and household plumbing to estimate the volume of water to flush to reach the service line). Systems incur costs to collect and analyze these samples.

### Sample Collection

In order to collect drinking water samples from customer sites to conduct monitoring for lead service line replacement, systems undertake the following activities:

- Notification of customers at locations targeted for lead service line replacement,
- Distribution of sample materials and instructions,
- Coordination with customers during sampling to remind them and answer questions,
- Collection of samples from customer locations, and
- Review of samples and validation that appropriate collection procedures have been followed.

The labor required by systems to sample lead service lines for lead content has been estimated previously by EPA. The June 1999 Information Collection Request states that “Each sample will require a collection burden of 2 hours...”<sup>48</sup> The estimate of 2.0 hours per sample for lead and copper tap sampling collection is also used in the 2004 ICR<sup>49</sup> and, in the absence of new information, has been applied in this analysis. It should be noted that this estimate is slightly less (2.0 hours instead of 2.5 hours) than the estimate of similar sampling to assess compliance with

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<sup>48</sup> Source: *Information Collection Request: National Primary Drinking Water Regulations For Lead and Copper*, USEPA, Office of Water, June 1999, page A-7.

<sup>49</sup> Source: *Information Collection Request: Disinfectants/Disinfection Byproducts, Chemical, and Radionuclides Rules*, USEPA, Office of Water, September 2004, page H-2.

the LCR. Compliance sampling entails a different set of up-front activities, including identification and recruitment of participants. Lead service line replacement up-front activities are a bit different in mainly notifying customers of sampling and possible lead service line replacement. It is expected that less time is needed to recruit participants for lead service line sampling as compared to LCR compliance monitoring because the participant may receive a direct benefit (removal of lead service line if lead level is greater than 15 ppb). These differences in up front activities offer a possible explanation for the difference in collection burden between LCR compliance monitoring and lead service line sampling.

## Sample Analysis

Previous documents estimated the cost to analyze a water sample for lead content as being half the cost to analyze a sample for both lead and copper content. The method most commonly used at the current time (ICP-MS (200.8) method) provides estimates for both lead and copper. Therefore, this analysis assumes that the cost to analyze a sample for only lead is the same as the cost to analyze for both lead and copper.

The cost to analyze a compliance sample for lead is based on the fee charged by certified commercial laboratories. This fee includes both the cost of labor and materials. The June 1999 ICR assumed a commercial fee of \$30 to analyze a sample for lead and copper. Updated to current dollars (4<sup>th</sup> Qtr 2006), the fee is estimated at \$36.34 per sample.<sup>50</sup> To validate that the updated analysis fee is reasonable, publicly available estimates of costs were collected as displayed in the following table.

Source	Fee for Lead and Copper Analysis of Drinking Water	Citation
US EPA	\$20 - \$100	<a href="http://www.epa.gov/safewater/lead/leadfacts.html">http://www.epa.gov/safewater/lead/leadfacts.html</a>
NY State DOH	\$15 - \$50	<a href="http://www.health.state.ny.us/nysdoh/lead/leadwtr.htm">http://www.health.state.ny.us/nysdoh/lead/leadwtr.htm</a>
CWLTI (non profit in NC)	\$24 – lead only \$30 lead and copper	<a href="http://www.leadtesting.org/orderonline.htm">http://www.leadtesting.org/orderonline.htm</a>
Hometips.com	\$35 – lead only	<a href="http://www.hometips.com/help/wat5.html">http://www.hometips.com/help/wat5.html</a>
Fairfax Water	\$35 per faucet	<a href="http://www.fcwa.org/water/lead.htm">http://www.fcwa.org/water/lead.htm</a>

The updated estimate of \$36.34 per sample for lead and copper is well within the range provided by the USEPA and the NY State Department of Health. It is also very close to the \$35 that one utility charges for lead testing (Fairfax Water) and the estimate from a home advice website from two national laboratories (National Testing Labs and Suburban Water Testing).

Based on OMB guidance in order to be consistent with estimates for other drinking water rules, the June 1999 ICR assumes that all analysis is conducted in-house for utilities, requiring that the commercial fee be broken into its labor component and materials component. The labor

<sup>50</sup> Updated using the CPI for 1999 to Dec 2006 (201.8/166.6=1.211)

required to analyze each sample is estimated at 1 hour, based on the use of the ICP-MS (200.8) method. The average labor rate for 1 hour of labor is estimated in the following table.<sup>51</sup>

<b>Size Category</b>	<b>Labor for 1 Hr</b>
<= 100	\$23.86
101 to 500	\$25.70
501 to 3,300	\$27.54
3.3K-10K	\$28.20
10K-100K	\$28.99
>100K	\$34.79
Mean	\$28.18

The materials cost associated with analyzing a compliance sample for lead can then be estimated by subtracting the labor component of \$28.18 from the total fee of \$36.34 for an estimate of \$8.16 materials cost per sample.

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<sup>51</sup> Source: Labor Costs for National Drinking Water Rules, SAIC, October 24, 2003, updated.

**Appendix F-2: Regulatory Change III.G System Tap Water Monitoring Costs (4<sup>th</sup> Qtr 2006\$)**

# Systems Affected by Reg Change III.G [1]:	54
# Systems that re-exceed lead AL and continue LSL replacement [2]	1
Annual # LSL Samples per System [3]	1,431
Estimated # Samples in Sampling Pool [4]	21,465
Estimated # Samples that need to be Retested [5]	16,313
Total Labor Cost [6]	\$1,507,994
Total O&M Cost [7]	\$133,117
Annual Labor Cost [8]	<b>\$100,533</b>
Annual O&M Cost [8]	<b>\$8,874</b>
<b>Total Annual Cost</b>	<b>\$109,407</b>

Notes:

1. Systems that have been required to conduct a lead service line replacement program may potentially be affected by Reg. Change III.G if they discontinue the program, then later re-exceed the lead action level. The number of systems was estimated based on survey responses from the USEPA Survey of States Questions on State Implementation of Lead and Copper Rule (July 2004). Six states indicated the specific number of systems that have been required to initiate LSL replacement programs (total of 28 systems). Five other states indicated that they had systems that were required to have LSL programs but did not indicate the specific number of systems. For these 5 States, it is assumed that each State has 5 systems with LSL programs required by State, for a total of 25 systems. One system is added for DCWASA. The total number of systems affected by Reg. Change III.G is assumed to be  $28+25+1=54$  systems.
2. Assume 1.4% systems re-exceed lead action level and are required to continue LSL replacement program (data source: [www.epa.gov/safewater/lcrr](http://www.epa.gov/safewater/lcrr)) Assumption is based on current exceedance rate for lead action level by medium and large systems.
3. If a system re-exceeds the lead action level, samples must be collected from each lead service line previously deemed to be replaced through testing. The number of LSLs per system that have previously been replaced through testing is estimated based on a utility survey completed by Black and Veatch in July 2005. Twenty-six utilities reported that 558,135 LSLs in 1992 or 21,467 LSLs per system. Assuming each utility conducts LSL replacements at a rate of 7% per year or over 15 years, this equals 21,467 divided by 15 or 1,431 LSLs per system per year ([www.epa.gov/safewater/lcrr/pdfs/summary\\_lcrr\\_review\\_lead\\_line\\_replacement\\_workshop\\_10-26-04.pdf](http://www.epa.gov/safewater/lcrr/pdfs/summary_lcrr_review_lead_line_replacement_workshop_10-26-04.pdf)).
4. Assume that a system conducts a LSL replacement program for 15 years upon initial exceedance of the lead action level based on LCR requirements. The number of samples in the sampling pool is equal to the number of systems that re-exceed the lead AL, x (annual # samples per system) x 15 years.
5. Assume the utility replaces 24% of LSLs and tests-out the remaining 76% based on data from DCWASA (2003). The number of samples that needs to be retested equals the number of samples in the sampling pool x 76%.
6. Assume burden is 3 hours for sample collection and analysis as described in Appendix F-1. Use system labor rate of \$30.81 per hour (average of wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules" (2003) updated to 4th Qtr 2006.
7. Use average O&M cost per sample \$8.16 as described in Appendix F-1.
8. Assume the systems conduct retesting over a 15 year period (based on LCR requirements for LSL replacement programs).

**Appendix F-3: States with at least 1 system required to initiate lead service line replacement**

State	At Least One System Required to Do LSLR	Number of Systems (If Specified)	Number of Systems Assumed
AK			
AL			
AR			
AS			
AZ	Yes		5
CA			
CO			
CT	Consent Decree		
DC			1
DE			
FL	Withdrawn		
GA			
GU			
HI			
IA	Yes	1	1
ID			
IL	Yes		5
IN			
KS			
KY			
LA			
MA	Yes		5
MD			
ME			
MI	Yes	14	14
MN	Yes	2	2
MO			
MS			
MT	Yes		5
Navajo			
NC			
ND			
NE			
NH			
NJ			
NM			
Nmar			
NV			
NY	Yes	1	1
OH			
OK			
OR			

PA	Yes	9	9
PR			
RI			
SC			
SD			
TN			
TX			
UT	Yes	1	1
VA			
VI			
VT			
WA			
WI	Yes		5
WV			
WY			
Total	11	28	54

\* Requirement withdrawn before LSLR started due to not longer exceed AL

Notes:

- (1) Average number of systems performing LSLR in States that specified:  
28 systems in 6 States, average of 5 systems per State
- (2) Assumed 5 systems for States that did not specify number (WI, MT, MA, AZ, IL)
- (3) Added DC WASA

## **Appendix G**

### **Derivation of Direct Costs for Initial Rule Activities**



## Appendix G-1: System Rule Implementation Costs (4<sup>th</sup> Qtr 2006\$)

System Classification	# Systems [1]	Burden Per System (Hrs.) [2]	Total Burden (Hrs.)	Total Labor Cost [3]
CWS, 25-100	13,766	5	68,830	\$1,642,284
CWS, 101-500	16,240	5	81,200	\$2,086,840
CWS, 501-3,300	14,212	5	71,060	\$1,956,992
CWS, 3,300-10,000	4,707	8	37,656	\$1,278,722
CWS, 10,001-100K	3,541	8	28,328	\$979,866
CWS, >100K	372	40	14,880	\$583,742
NTNCWSs, 25-100	9,548	5	47,740	\$1,139,076
NTNCWSs, 101-500	6,997	5	34,985	\$899,115
NTNCWSs, 501-3,300	2,720	5	13,600	\$374,544
NTNCWSs, 3,300-10,000	96	8	768	\$26,080
NTNCWSs, 10,001-100,000	14	8	112	\$3,874
NTNCWSs, >100,000	0	40	0	\$0
<b>Total</b>	<b>72,213</b>		<b>399,159</b>	<b>\$10,971,135</b>

*Notes:*

1. Number of systems per SDWIS/FED Data 2004.
2. Burden estimate based on consensus agreement of expert panels on 11.21.05, adjusted to reflect comments received.
3. Wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules" (2003) updated to 4th Qtr 2006 dollars.

**Appendix G-2: State/Primacy Agencies Rule Implementation Costs (4<sup>th</sup> Qtr 2006\$)**

<b># States/Primacy Agencies [1]</b>	<b>Burden Estimate per State (Hours) [2]</b>	<b>Total Burden (Hrs.)</b>	<b>Labor Rate (\$/hr) [3]</b>	<b>Total Labor Cost</b>
57	600	34,200	\$43.52	<b>\$1,488,433</b>

*Notes:*

1. *The LCR Regulatory Changes apply to 50 states, 6 territories and 1 Indian Tribe, for a total of 57 entities.*
2. *Burden includes regulation adoption, program development and miscellaneous training. (Approximately .3 FTE or 4 months of FTE)*
3. *Use state labor rate of \$43.52/hour (Source: Information Collection Request for Contaminant Occurrence Data in Support of EPA's Second Six Year Review of National Primary Drinking Water Regulations (August 2006)).*

## **Appendix H**

### **Derivation of Direct Costs for Regulatory Change III.F**

**Appendix H-1. Summary of Cost Estimates for New Public Education Requirements for  
LCR Short Term Revisions (4<sup>th</sup> Qtr 2006\$)**

<b>Activity</b>	<b>Table</b>	<b>Requirement</b>	<b>Affected Party</b>	<b>Annual Labor Cost</b>	<b>Annual Material Cost</b>	<b>Total Cost</b>
<b>III.F(a) Changes to Mandatory Text</b>						
III.F(a)	Appendix H-2	Customer Notification	Systems that Exceed LAL	\$91,400	\$0	\$91,400
<b>III.F(b). Activities to Better Reach At-Risk Populations</b>						
III.F(b)(1)	Appendix H-3	Notify 3 Organizations	CWS that Exceed LAL	\$21,900	\$21,400	\$43,300
III.F(b)(2) (i-viii)	Appendix H-6	Additional Activities	CWS that Exceed LAL	\$292,700	\$0	\$292,700
<b>III.F(c) Communication Activities with Consumers throughout a Lead Exceedance</b>						
III.F(c)(1)	Appendix H-21	Customer Bills	CWS that Exceed LAL	\$47,400	\$0	\$47,400
III.F(c)(2)	Appendix H-22	Post on Website	Large CWS that Exceed LAL	\$100	\$0	\$100
III.F(c)(3)	Appendix H-23	Press Releases	CWS that Exceed LAL	-\$3,700	-\$500	-\$4,200
<b>III.F(e) Change in Requirements for CCR Statements</b>						
III.F(e)	Appendix H-24	CCR Statement	CWS that Don't Exceed LAL	\$354,600	\$0	\$354,600
<b>III.F(g) System Cost for Reporting and Consultation with State</b>						
III.F(g)	Appendix H-7	Consultation with State & Letter	CWS that Exceed LAL	\$33,500	\$200	\$33,700
<b>III.F(f) Cost to State Primacy Agency</b>						
III.F(f)	Appendix H-25	Review	State Primacy Agency	<b>\$63,000</b>	<b>\$0</b>	<b>\$63,000</b>
<b>Total for All Affected Parties</b>				<b>\$901,300</b>	<b>\$21,200</b>	<b>\$922,500</b>
Subtotal Water Systems				<b>\$837,900</b>	<b>\$21,200</b>	<b>\$859,200</b>

**Appendix H-2. III.F(a) Customer Notification - Additional Burden and Costs for Systems that Exceed the Lead Action Level (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b># Systems that Exceed Lead AL [1,2]</b>	<b>Annual System Burden (hrs) [3]</b>	<b>Annual System Labor Cost [4]</b>	<b>Annual System O&amp;M Cost [5]</b>	<b>Total Annual System Costs</b>
<b>CWS</b>					
25-100	185	648	\$15,449	\$0	\$15,449
101-500	155	543	\$13,942	\$0	\$13,942
501-3,300	133	466	\$12,820	\$0	\$12,820
3.3K-10K	54	189	\$6,418	\$0	\$6,418
10K-50K	40	140	\$4,843	\$0	\$4,843
50K-100K	7	25	\$847	\$0	\$847
>100K	7	25	\$961	\$0	\$961
					\$0
<b>NTNCWS</b>					\$0
25-100	217	760	\$18,122	\$0	\$18,122
101-500	143	501	\$12,863	\$0	\$12,863
501-3,300	51	179	\$4,916	\$0	\$4,916
3.3K-10K	1	4	\$119	\$0	\$119
10K-50K	1	4	\$121	\$0	\$121
50K-100K					
>100K					
<b>Total</b>	<b>994</b>	<b>3,479</b>	<b>\$91,421</b>	<b>\$0</b>	<b>\$91,421</b>

**Notes:**

1. Additional customer notification requirements affect only systems that exceed the lead action level. For systems serving <3,300 people, the # systems is based on SDWIS/Fed data for the monitoring period ending after January 2003. (Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004).
2. For systems serving >3,300 people, the # systems is based on systems that have exceeded the lead action level since 2003. data source: [www.epa.gov/safewater/lcrmr/lead-data.html](http://www.epa.gov/safewater/lcrmr/lead-data.html), 8/30/05.
3. Assume burden to prepare additional language for customer brochure is 3.5 hours for all systems based on Public Notification Rule. Tier 2 violation.
4. Loaded wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules (2003) updated to 4th QTR 2006.
5. Mailing and productions costs are covered in the existing regulation.

**Appendix H-3. III.F(b)(1) Notify Organizations: Costs to Deliver Brochures to Preschools, Licensed Daycares and OBGYNs for CWSs that Exceed the Lead Action Level (4<sup>th</sup> Qtr 2006\$)**

System Size Category	# Systems that Exceed Lead AL [1,2]	Annual System Burden for Contacting Organizations (hrs) [3]	Annual System Labor Cost [4]	Annual System O&M Cost	Total Annual System Costs
<b>CWS</b>					
25-100	185	185	\$4,414	\$85	\$4,500
101-500	155	155	\$3,984	\$303	\$4,287
501-3,300	133	133	\$3,663	\$754	\$4,417
3.3K-10K	54	135	\$4,585	\$2,630	\$7,215
10K-50K	40	100	\$3,462	\$7,317	\$10,779
50K-100K	7	18	\$614	\$3,981	\$4,595
100-500K	4	11	\$420	\$6,367	\$6,787
500K-1M	1	5	\$201	\$5,887	\$6,088
>1 M	2	15	\$569	\$33,732	\$34,301
<b>Total</b>	<b>581</b>	<b>756</b>	<b>\$21,911</b>	<b>\$21,436</b>	<b>\$43,347</b>

*Notes*

1. Additional requirements affect only systems that exceed the lead action level. For systems serving <3,300 people, the # systems is based on SDWIS/Fed data for the monitoring period ending after January 2003. (Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004).
2. For systems serving >3,300 people, the # systems is based on systems that have exceeded the lead action level since 2003. data source: [www.epa.gov/safewater/lcrmr/lead-data.html](http://www.epa.gov/safewater/lcrmr/lead-data.html), 8/30/05.
3. All CWSs that exceed the lead action level need to send a brochure with a cover letter to daycare centers and preschools, obstetrician and gynecologists, and one public health agency. Table 4.a summarizes new notifications requirements by system size. For systems serving <3,300, the only new burden is 1 hour per system to develop a cover letter and assumes that systems will use a template provided by USEPA. For systems serving 3,300 to 100,000 people, assume new annual burden requirements of 1 hours per system to update list of organizations; 1 hour per system to develop a cover letter; 0.25 hour per 100 additional brochures for production; and 0.5 hours per system to contact the public health agency. For systems serving >100,000 people, assume an annual burden of 2 hours per system to update list of organizations; 1 hour per system to develop a cover letter; 1 hour per 20 additional brochures for production; and 0.5 hours per system to contact the public health agency.
4. Loaded wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules (2003) updated to 4th Qtr 2006.
5. For systems serving <3,300 people, new O&M burden is equal to the material cost for a cover letter for each current notification per system (\$0.01 per notification). For systems serving >3,300 people, new O&M burden equals \$0.44 per brochure (\$0.39 postage, \$0.02 for 2 sheets paper and \$0.03 envelope) multiplied by the number of additional notifications (Table 4.a) multiplied by the number of systems that exceed the lead action level, plus \$0.01 for a cover letter for each current notification per system.

## Appendix H-4. Detail on Notifying Organizations

System Size Category	Average Population Served per System <sup>1</sup>	Additional Notifications Per System <sup>2</sup>	Current # of Notifications Per System
<100	46	0	5
101-500	196	0	5
501-1K	567	1	5
1k-3.3K	1,465	3	5
3.3K-10K	4,474	9	5
10K-50K	16,840	33	46
50K-100K	52,423	101	90
100-500K	146,713	283	239
500K-1M	542,647	1,047	872
>1 M	1,554,621	3,000	2535

### Notes

1. Data source: USEPA, Community Water System Survey 2000, EPA 815-R-02-005b, December 2002, Table 40. See Appendix H-5 for details.

2. Assume total of 193 new organizations per 100,000 population including 178 licensed day care facilities/preschools per 100,000 population (per National Child Care Association); and 15 ob/gyns per 100,000 population (per 2006 Statistical Abstract).

## Appendix H-5. Average Population Served per System Size

System Size	Number of CWSs	Total Population in System Size	Average Population Per System <sup>1</sup>
<100	13,766	827,126	46
101-500	16,240	4,130,005	196
501-1K	5,914	4,354,314	567
1k-3.3K	8,298	15,783,290	1,465
3.3K-10K	4,707	27,346,264	4,474
10K-50K	3,057	66,857,216	16,840
50K-100K	484	32,951,452	52,423
100-500K	322	61,352,680	146,713
500K-1M	32	22,551,546	542,647
>1 M	18	36,341,784	1,554,621
<b>Total</b>	<b>52,788</b>	<b>213,602,347</b>	<b>4,046</b>

*Notes:*

*Data source: USEPA, Community Water System Survey 2000, EPA 815-R-02-005b, December 2002, Table 40.*

*1. Average population per system is equal to the total population in the specified system size class divided by the number of CWSs in the specified size class. The average population per system was reduced by 23% to account for multiple family housing that was formerly included in the population data per consensus of EPA phone meeting 3.2.06.*



**Appendix H-6. III.F(b)(2)(i-viii) Additional Activities for CWSs that Exceed the Lead Action Level (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b># Systems that Exceed Lead AL [1,2]</b>	<b>Average Annual Costs Per System for All Activities [3]</b>	<b>Number of Activities [4]</b>	<b>Total Annual System Cost</b>
<b>CWS</b>				
25-100	185	\$44	1	\$8,142
101-500	155	\$49	1	\$7,541
501-3,300	133	\$89	1	\$11,772
3.3K-10K	54	\$289	3	\$46,886
10K-50K	40	\$928	3	\$111,380
50K-100K	7	\$1,865	3	\$39,162
>100K	7	\$3,231	3	\$67,856
<b>Total</b>	<b>581</b>			<b>\$292,739</b>

*Notes*

1. *These additional requirements affect only CWSs that exceed the lead action level. For systems serving <3,300 people, the # systems is based on SDWIS/Fed data for the monitoring period ending after January 2003. (Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004).*
2. *For systems serving >3,300 people, the # systems is based on systems that have exceeded the lead action level since 2003. data source: [www.epa.gov/safewater/lcrmr/lead-data.html](http://www.epa.gov/safewater/lcrmr/lead-data.html), 8/30/05.*
3. *See detail on separate worksheet entitled "Add'l. Activities", Column L rows 8-14*
4. *For new regulatory provision 7A-H, systems serving <3,300 people must complete 1 activity while systems serving >3,300 people must complete 3 activities each year.*

**Appendix H-7. III.F(g) Consultation with State and Self-Certification Letter for CWSs that Exceed the Lead Action Level (4<sup>th</sup> Qtr 2006\$)**

System Size Category	# Systems that Exceed Lead AL [1,2]	Annual System Burden for Consultation with State [3]	Annual System Labor Cost for Consultation with State	Annual System Burden for Preparing Self-Certification Letter [4]	Annual System Labor Cost for Self-Certification Letter	Annual O&M for Self-Certification Letter	Total Annual System Costs
<b>CWS</b>							
25-100	185	370	\$8,828	22.2	\$530	\$80	\$9,437
101-500	155	310	\$7,967	18.6	\$478	\$67	\$8,512
501-3,300	133	266	\$7,326	15.96	\$440	\$57	\$7,822
3.3K-10K	54	108	\$3,667	6.48	\$220	\$23	\$3,911
10K-50K	40	80	\$2,767	4.8	\$166	\$17	\$2,950
50K-100K	7	14	\$484	0.84	\$29	\$3	\$516
>100K	7	14	\$549	0.84	\$33	\$3	\$585
<b>Total</b>	<b>581</b>	<b>1162</b>	<b>\$31,589</b>	<b>69.72</b>	<b>\$1,895</b>	<b>\$250</b>	<b>\$33,734</b>

*Notes:*

1. *These additional requirements affect only CWSs that exceed the lead action level. For systems serving <3,300 people, the # systems is based on SDWIS/Fed data for the monitoring period ending after January 2003. (Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004).*
2. *For systems serving >3,300 people, the # systems is based on systems that have exceeded the lead action level since 2003. data source: [www.epa.gov/safewater/lcrmr/lead-data.html](http://www.epa.gov/safewater/lcrmr/lead-data.html), 8/30/05.*
3. *Systems activities include consultation with state on additional activities, content of cover, discussion of alternative mechanisms, and discussion of extending deadlines at a burden of 2 hours per system.*
4. *Systems will also prepare a letter self-certifying that PE activities have taken place and that materials have been distributed, at a burden of .12 per letter per year, with \$0.43 O&M costs (\$0.39 postage, \$0.01 paper, \$0.03 for envelope).*

**Appendix H-8. Cost of Each Additional Activity for F(b)(2)(i-viii) (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b>A. Public Service Announcements</b>	<b>B. Paid Advertisements</b>	<b>C. Display in Public Areas</b>	<b>D. Internet Notification</b>	<b>E. Public Meetings</b>	<b>F. Delivery to Every Household</b>	<b>G. Targeted Contact</b>	<b>H. Materials Directly to Multi-Family &amp; Ints</b>	<b>Average Annual Cost Per System for All Activities</b>
<b>CWS</b>									
25-100	\$98	\$105	\$24	\$24	\$48	\$7	\$34	\$12	\$44
101-500	\$101	\$105	\$26	\$26	\$51	\$30	\$35	\$15	\$49
501-3,300	\$105	\$180	\$111	\$28	\$55	\$166	\$37	\$27	\$89
3.3K-10K	\$118	\$180	\$137	\$420	\$900	\$435	\$44	\$81	\$289
10K-50K	\$1,400	\$850	\$696	\$596	\$2,400	\$1,114	\$66	\$303	\$928
50K-100K	\$1,400	\$5,000	\$1,392	\$596	\$3,000	\$2,448	\$138	\$945	\$1,865
>100K	\$1,400	\$5,000	\$3,943	\$1,035	\$5,000	\$3,874	\$563	\$5,035	\$3,231

Notes

- A. See Appendix H-9 for details.
- B. See Appendix H-10 for details.
- C. See Appendix H-11 for details.
- D. See Appendix H-12 for details.
- E. See Appendix H-13 for details.
- F. See Appendix H-18 for details.
- G. See Appendix H-19 for details.
- H. See Appendix H-20 for details.

**Appendix H-9. Cost for Activity F(b)(2)(i) Public Service Announcements (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b>Price Per PSA Radio<sup>1</sup></b>	<b>Price Per PSA TV<sup>2</sup></b>	<b>Total PSA Radio</b>	<b>Total PSA TV</b>	<b>Total Cost Per System</b>
<b>CWS</b>					
25-100	\$98	\$840	1	0	\$98
101-500	\$101	\$840	1	0	\$101
501-3,300	\$105	\$840	1	0	\$105
3.3K-10K	\$118	\$840	1	0	\$118
10K-50K	\$560	\$840	1	1	\$1,400
50K-100K	\$560	\$840	1	1	\$1,400
>100K	\$560	\$840	1	1	\$1,400

*Notes:*

1. For systems serving <10,000 people, assume they use free-lance talent for voice-over of an announcement developed by the system. Assume 2 hours of system labor to write the announcement, \$50 to produce spot using freelance voice talent.

For systems serving >10,000 people, assume \$560 for production of a radio PSA including \$280 to produce the audio using union talent, \$80 for 1 hour of studio time, and \$200 for developing the script.

2. Assume \$840 for production of a TV PSA including \$560 to produce the audio using union talent, \$80 for 1 hour of studio time, and \$200 for developing the script.

**Appendix H-10. Cost for Activity F(b)(2)(ii) Paid Advertisements (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b>Cost Per 10 Inch Newspaper Advertisement [1]</b>	<b>Number of Times Published</b>	<b>Total Per System</b>
<b>CWS</b>			
25-100	\$105	1	\$105
101-500	\$105	1	\$105
501-3,300	\$180	1	\$180
3.3K-10K	\$180	1	\$180
10K-50K	\$850	1	\$850
50K-100K	\$5,000	1	\$5,000
>100K	\$5,000	1	\$5,000

*Notes*

1. Assume 10 column inches (1/8 page) per advertisement. Rates range from \$105 per 10 column inch for local weekly newspapers to \$5,000 for the Washington Post based on a random search of six newspapers.

**Appendix H-11. Cost for Activity F(b)(2)(iii) Display in Public Area (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b>Number of Posting [1]</b>	<b>Hours to Post [2]</b>	<b>Materials Cost [3]</b>	<b>Total Cost Per System</b>
<b>CWS</b>				
25-100	5	1	\$0.20	\$24
101-500	5	1	\$0.20	\$26
501-3,300	20	4	\$0.80	\$111
3.3K-10K	20	4	\$0.80	\$137
10K-50K	100	20	\$4.00	\$696
50K-100K	200	40	\$8.00	\$1,392
>100K	500	100	\$20.00	\$3,943

*Notes:*

1. *It is assumed that small and medium systems may post a notice at the local grocery store, Laundromat or similar establishment. Assume that systems serving <500 people would need 5 such postings, and systems serving between 501 and 10,000 people may need 20 postings. It is assumed that the posting is free but each system spends 1 to 2 hours in travel time.*
2. *Burden hours based on estimated travel time between postings.*
3. *Assume material cost equals \$0.04 per posting.*
4. *Loaded wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules (2003) updated to 4th QTR 2006.*

**Appendix H-12. Cost for Activity F(b)(2)(iv) Internet Notification (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b>Hours to Compose Email &amp; Check Email List</b>	<b>Materials Cost</b>	<b>Total Cost Per System</b>
<b>CWS</b>			
25-100	1	\$0.00	\$24
101-500	1	\$0.00	\$26
501-3,300	1	\$0.00	\$28
3.3K-10K	5	\$250.00	\$420
10K-50K	10	\$250.00	\$596
50K-100K	10	\$250.00	\$596
>100K	20	\$250.00	\$1,035

*Notes*

1. *It is assumed that small systems may prefer to notify customers via e-mail, and would have a pre-existing list of customer e-mail addresses. Assume that it would take systems 1 hour to compose and send out the e-mail.*
2. *Large systems would purchase email list and verify it.*

**Appendix H-13. Cost for Activity F(b)(2)(v) Public Meetings (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b>Total Cost Per System</b>
<b>CWS</b>	
25-100	\$48
101-500	\$51
501-3,300	\$55
3.3K-10K	\$900
10K-50K	\$2,400
50K-100K	\$3,000
>100K	\$5,000

*Notes*

- 1. For systems serving <3,300 people, assume that system representatives would bring up the issue for discussion at an existing town meeting. Assume 2 hours for preparation and meeting time.*
- 2. See detailed cost estimates on separate worksheet for systems serving >3,300 people based on cost of USEPA public stakeholder meetings not including cost of meeting space.*



**Appendix H-14. Cost for Activity F(b)(2)(v) Public Meetings for Systems Serving 3,301-10,000 People (4<sup>th</sup> Qtr 2006\$)**

Activity	Management		Technical		Total
	Rate:	\$ 56.99	Rate:	\$ 28.20	
	Hours	Cost	Hours	Cost	\$
Pre-meeting logistical arrangements <sup>1</sup>	0	\$ 0	6	\$ 169.20	\$ 169.20
Preparation of presentation/talking points <sup>2</sup>	2	\$ 113.98	12	\$ 338.40	\$ 452.38
Attend meeting <sup>3</sup>	3	\$ 170.97	3	\$ 84.60	\$ 255.57
Post meeting, including notes <sup>4</sup>	0	\$ 0	0	\$ -	\$ -
<b>Total</b>	<b>5</b>	<b>\$ 284.95</b>	<b>21</b>	<b>\$ 592.20</b>	<b>\$ 877.15</b>
<b>Estimated Total<sup>5</sup></b>					<b>\$ 900</b>
<b>Hours</b>					<b>26</b>

*Notes*

1. Select date, research and select site, negotiate with site for use, publicize meeting, set up room including electronics (microphones, sound system, presentation).
2. Prepare 30 minute presentation including consultation with health experts and technical personnel as necessary, 30-50 slides, feedback from management, practice presentation
3. Based on WASA, 1.5 hour open house, one hour presentation/Q&A, 15 minutes before and after, for a total of three hours, one senior management, one technical staff
4. Prepare and review meeting transcript or notes, follow up with attendees as appropriate
5. The estimated cost, \$877.15, is rounded to the nearest hundred, \$900.00.

**Appendix H-15. Cost for Activity F(b)(2)(v) Public Meetings for Systems Serving 10,001-50,000 People (4<sup>th</sup> Qtr 2006\$)**

Activity	Management		Technical		Total
	Rate:	\$56.99	Rate:	\$ 28.99	
	Hours	Cost	Hours	Cost	\$
Pre-meeting logistical arrangements <sup>1</sup>	0	\$ 0	10	\$ 289.90	\$ 289.90
Preparation of presentation/talking points <sup>2</sup>	8	\$ 455.92	30	\$ 869.70	\$ 1,325.62
Attend meeting <sup>3</sup>	6	\$ 341.94	6	\$ 173.94	\$ 515.88
Post meeting, including notes <sup>4</sup>	0	\$ 0	8	\$ 231.92	\$ 231.92
<b>Total</b>	<b>14</b>	<b>\$ 797.86</b>	<b>54</b>	<b>\$ 1,565.46</b>	<b>\$ 2,363.32</b>
<b>Estimated Total<sup>5</sup></b>					<b>\$ 2,400</b>
<b>Hours</b>					<b>68</b>

*Notes*

1. Select date, research and select site, negotiate with site for use, publicize meeting, set up room including electronics (microphones, sound system, presentation).
2. Prepare 30 minute presentation including consultation with health experts and technical personnel as necessary, 30-50 slides, feedback from management, practice presentation
3. Based on WASA, 1.5 hour open house, one hour presentation/Q&A, 15 minutes before and after, for a total of three hours, one senior management, one technical staff
4. Prepare and review meeting transcript or notes, follow up with attendees as appropriate
5. The estimated cost, \$ 2,363,32 is rounded to the nearest hundred, \$2,400.

**Appendix H-16. Cost for Activity F(b)(2)(v) Public Meetings for Systems Serving 50,001-100,000 People (4<sup>th</sup> Qtr 2006\$)**

Activity	Management		Technical		Total
	Rate:	\$56.99	Rate:	\$ 28.99	
	Hours	Cost	Hours	Cost	\$
Pre-meeting logistical arrangements <sup>1</sup>	0	\$ 0	20	\$ 579.80	\$ 579.80
Preparation of presentation/talking points <sup>2</sup>	10	\$ 569.90	40	\$ 1,159.60	\$ 1,729.50
Attend meeting <sup>3</sup>	6	\$ 341.94	6	\$ 173.94	\$ 515.88
Post meeting, including notes <sup>4</sup>	0	\$ 0	6	\$ 173.94	\$ 173.94
Total	16	\$ 911.84	72	\$ 2,087.28	\$ 2,999.12
<b>Estimated Total<sup>5</sup></b>					<b>\$ 3,000</b>
<b>Hours</b>					<b>88</b>

*Notes*

1. Select date, research and select site, negotiate with site for use, publicize meeting, set up room including electronics (microphones, sound system, presentation).
2. Prepare 30 minute presentation including consultation with health experts and technical personnel as necessary, 30-50 slides, feedback from management, practice presentation
3. Based on WASA, 1.5 hour open house, one hour presentation/Q&A, 15 minutes before and after, for a total of three hours, one senior management, one technical staff
4. Prepare and review meeting transcript or notes, follow up with attendees as appropriate
5. The estimated cost, \$ 2,999.12, is rounded to the nearest hundred, \$3,000.

**Appendix H-17. Cost for Activity F(b)(2)(v) Public Meetings for Systems Serving >100,000 People (4<sup>th</sup> Qtr 2006\$)**

Activity	Management		Technical		Total
	Rate:	\$56.99	Rate:	\$ 34.79	
	Hours	Cost	Hours	Cost	\$
Pre-meeting logistical arrangements <sup>1</sup>	0	\$ 0	20	\$ 695.80	\$ 695.80
Preparation of presentation/talking points <sup>2</sup>	10	\$ 569.90	40	\$ 1,391.60	\$ 1,961.50
Attend meeting <sup>3</sup>	12	\$ 683.88	18	\$ 626.22	\$ 1,310.10
Post meeting, including notes <sup>4</sup>	0		28	\$ 974.12	\$ 974.12
<b>Total</b>	<b>22</b>	<b>\$ 1,253.78</b>	<b>106</b>	<b>\$ 3,687.74</b>	<b>\$ 4,941.52</b>
<b>Estimated Total<sup>5</sup></b>					<b>\$ 5,000</b>
<b>Hours</b>					<b>128</b>

*Notes*

1. Select date, research and select site, negotiate with site for use, publicize meeting, set up room including electronics (microphones, sound system, and presentation).
2. Prepare 30 minute presentation including consultation with health experts and technical personnel as necessary, 30-50 slides, feedback from management, practice presentation
3. Based on WASA, 1.5 hour open house, one hour presentation/Q&A, 15 minutes before and after, for a total of three hours, one senior management, one technical staff
4. Prepare and review meeting transcript or notes, follow up with attendees as appropriate
5. The estimated cost, \$ 4,941.52, is rounded to the nearest thousand, \$5,000.00.

**Appendix H-18. Cost for Activity F(b)(2)(vi) Delivery to Every Household (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b>Average Population Per System<sup>1</sup></b>	<b>Persons Per Household<sup>2</sup></b>	<b>Delivery Cost Per Household<sup>3</sup></b>	<b>Total Per System</b>
<b>CWS</b>				
25-100	46	2.57	\$0.39	\$7
101-500	196	2.57	\$0.39	\$30
501-3,300	1,091	2.57	\$0.39	\$166
3.3K-10K	4,474	2.57	\$0.25	\$435
10K-50K	16,840	2.57	\$0.17	\$1,114
50K-100K	52,423	2.57	\$0.12	\$2,448
>100K	248,896	2.57	\$0.04	\$3,874

*Notes*

1. Data source: USEPA, Community Water System Survey 2000, EPA 815-R-02-005b, December 2002, Table 40. See Appendix H-5 for details.

2. Data source: US Census, Current Population Reports, America's Families and Living Arrangements: 2003, Table 1.

3. Assume delivery to every postal address either through mail or distribution of flyers. Mailing costs would be \$0.39 each. Assume systems serving <3,300 people send notice through mail (\$0.39 each). Assume systems serving >3,300 people distribute flyers at a cost of \$0.25 per piece for systems serving 3,301 to 10,000 people; \$0.17 per piece for systems serving 10K to 50K; a \$0.12 per piece for systems serving 50K to 100K, and \$0.04 for >100K (materials cost only, assumes inclusion with existing mailing).

**Appendix H-19. Cost for Activity F(b)(2)(vii) Targeted Contact (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b>Average Population Per System<sup>1</sup></b>	<b>Upfront Cost For List<sup>2</sup></b>	<b>Pro-rated Upfront Cost</b>	<b>Number of Targeted Contacts<sup>3</sup></b>	<b>Labor for Production</b>	<b>Labor Costs for Production</b>	<b>Material Cost<sup>4</sup></b>	<b>Total Cost</b>
<b>CWS</b>								
25-100	46	\$250	\$28	1	0.25	\$6	\$0.44	\$34.18
101-500	196	\$250	\$28	1	0.25	\$6	\$0.44	\$34.64
501-3,300	1,091	\$250	\$28	4	0.25	\$7	\$1.92	\$36.58
3.3K-10K	4,474	\$250	\$28	18	0.25	\$8	\$7.87	\$44.14
10K-50K	16,840	\$250	\$28	67	0.25	\$9	\$29.64	\$66.06
50K-100K	52,423	\$250	\$28	210	0.52	\$18	\$92.26	\$138.18
>100K	248,896	\$250	\$28	996	2.49	\$98	\$438.06	\$563.48

*Notes*

1. Data source: USEPA, Community Water System Survey 2000, EPA 815-R-02-005b, December 2002, Table 40. See Appendix H-5 for details.
2. Assume \$250 for purchase of targeted list.
3. Assume 1 targeted communication for every 250 population served (based on Portland, OR targeted contact experience of approximately 2000 homes for a population served of 482,500).
4. Use \$0.44 for unit materials and printing cost for letter, envelope and postage.

**Appendix H-20. Cost for Activity F(b)(2)(viii) Provide Materials Directly to Multi-Family Homes and Institutions (4<sup>th</sup> Qtr 2006\$)**

System Size Category	Average Population Per System <sup>1</sup>	Multi-Family Per 100,000 <sup>2</sup>	Number of Multi-Family Per System	Time to Identify Multi-Family (Hrs) <sup>3</sup>	Upfront Labor Cost <sup>4</sup>	Pro-rated Upfront Labor Cost	Labor Burden for Production	Labor Cost for Production	Material Cost <sup>5</sup>	Total Cost
<b>CWS</b>										
25-100	46	4,035	2	0.17	\$4	\$0.44	0.5	\$12	\$0.08	\$12
101-500	196	4,035	8	0.67	\$17	\$1.90	0.5	\$13	\$0.32	\$15
501-3,300	1,091	4,035	44	3.67	\$101	\$11.22	0.5	\$14	\$1.76	\$27
3.3K-10K	4,474	4,035	181	15.08	\$512	\$56.91	0.5	\$17	\$7.24	\$81
10K-50K	16,840	4,035	679	56.58	\$1,957	\$217.47	1.6975	\$59	\$27.16	\$303
50K-100K	52,423	4,035	2115	176.25	\$6,096	\$677.39	5.2875	\$183	\$84.60	\$945
>100K	248,896	4,035	10043	836.92	\$32,832	\$3,648.03	25.1075	\$985	\$401.72	\$5,035

*Notes:*

1. Data source: USEPA, Community Water System Survey 2000, EPA 815-R-02-005b, December 2002, Table 40. See Appendix H-5 for details.
2. Data source: U.S. Census Housing Survey for buildings with more than 10 units each.
3. Assume five minutes per establishment to identify multi-family homes and institutions.
4. Loaded wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules (2003) updated to 4<sup>th</sup> Qtr 2006. Annual labor cost equals hourly labor rate multiplied by annual burden.
5. Assume a materials cost of \$0.04 per notice.

**Appendix H-21. III.F(c)(1) Customer Bills: Cost to Add Note to Customer Bills for CWSs that Exceed the Lead Action Level (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b># Systems that Exceed Lead AL [1,2]</b>	<b>Annual System Burden for Adding Notes to Customer Bills(hrs) [3]</b>	<b>Annual System Labor Cost [4]</b>	<b>Annual System O&amp;M Cost</b>	<b>Total Annual System Cost</b>
<b>CWS</b>					
25-100	185	555	\$13,242	\$0	\$13,242
101-500	155	465	\$11,951	\$0	\$11,951
501-3,300	133	399	\$10,988	\$0	\$10,988
3.3K-10K	54	162	\$5,501	\$0	\$5,501
10K-50K	40	120	\$4,151	\$0	\$4,151
50K-100K	7	21	\$726	\$0	\$726
>100K	7	21	\$824	\$0	\$824
<b>Total</b>	<b>581</b>	<b>1,743</b>	<b>\$47,383</b>	<b>\$0</b>	<b>\$47,383</b>

*Notes:*

1. Additional customer notification requirements affect only CWSs that exceed the lead action level. For systems serving <3,300 people, the # systems is based on SDWIS/Fed data for the monitoring period ending after January 2003.(Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004).
2. For systems serving >3,300 people, the # systems is based on systems that have exceeded the lead action level since 2003. data source: [www.epa.gov/safewater/lcrmr/lead-data.html](http://www.epa.gov/safewater/lcrmr/lead-data.html), 8/30/05.
3. All CWS that exceed the lead action level need to include a note on customer bills. Assume all systems use quarterly billing. Current requirements call for adding a note to one bill each year, so new burden is adding a note to 3 bills each year per system. Assume 1 hour per billing period per system per year, which equals 3 hours per system per year. No additional O&M costs.
4. Loaded wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules (2003) updated to 4th Qtr 2006.



**Appendix H-22. III.F(c)(2) Post on Website: Cost for Posting Notice on Website for CWSs that Exceed the Lead Action Level and Serve >100,000 People (4<sup>th</sup> Qtr 2006\$)**

System Size Category	# Systems that Exceed Lead AL [1,2]	Annual System Burden for Posting on Website (hrs) [3]	Annual System Labor Cost [4]	Annual System O&M Cost	Total Annual System Costs
<b>CWS</b>					
25-100	185	0	\$0	\$0	\$0
101-500	155	0	\$0	\$0	\$0
501-3,300	133	0	\$0	\$0	\$0
3.3K-10K	54	0	\$0	\$0	\$0
10K-50K	40	0	\$0	\$0	\$0
50K-100K	7	0	\$0	\$0	\$0
>100K	7	3.5	\$137	\$0	\$137
<b>Total</b>	<b>581</b>	<b>3.5</b>	<b>\$137</b>	<b>\$0</b>	<b>\$137</b>

*Notes:*

1. Additional requirements affect only systems that exceed the lead action level. For systems serving <3,300 people, the # systems is based on SDWIS/Fed data for the monitoring period ending after January 2003. (Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004).
2. For systems serving >3,300 people, the # systems is based on systems that have exceeded the lead action level since 2003. data source: [www.epa.gov/safewater/lcrrm/lead-data.html](http://www.epa.gov/safewater/lcrrm/lead-data.html), 8/30/05.
3. CWSs that serve more than 100,000 people that exceed the lead action level must post a notice on their website. Assume burden of 0.5 hours per system (source: ICR (PWSS ICR, 2040-0090, page B-6). No O&M costs.
4. Loaded wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules (2003) updated to 4th Qtr 2006.

**Appendix H-23. III.F(c)(3) Press Releases: Cost for Press Releases for CWSs that Exceed the Lead Action Level (4<sup>th</sup> Qtr 2006\$)**

<b>System Size Category</b>	<b># Systems that Exceed Lead AL [1,2]</b>	<b>Annual System Burden for Press Release (hrs) [3]</b>	<b>Annual System Labor Cost [4]</b>	<b>Annual System O&amp;M Cost [5]</b>	<b>Total Annual System Costs</b>
<b>CWS</b>					
25-100	185	0	\$0	\$0	\$0
101-500	155	0	\$0	\$0	\$0
501-3,300	133	0	\$0	\$0	\$0
3.3K-10K	54	-54	-\$1,834	-\$232	-\$2,066
10K-50K	40	-40	-\$1,384	-\$172	-\$1,556
50K-100K	7	-7	-\$242	-\$30	-\$272
>100K	7	-7	-\$275	-\$30	-\$305
<b>Total</b>	<b>581</b>	<b>-108</b>	<b>-\$3,734</b>	<b>-\$464</b>	<b>-\$4,198</b>

*Notes*

1. Additional requirements affect only CWSs that exceed the lead action level. For systems serving <3,300 people, the # systems is based on SDWIS/Fed data for the monitoring period ending after January 2003. (Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004).
2. For systems serving >3,300 people, the # systems is based on systems that have exceeded the lead action level since 2003. data source: [www.epa.gov/safewater/lcrmr/lead-data.html](http://www.epa.gov/safewater/lcrmr/lead-data.html), 8/30/05.
3. Systems serving more than 3,300 people that have exceeded the lead action level have a reduced burden as compared to current requirements. Current requirements are 2 public service announcements (PSAs) and 1 press release (PR) to 8 entities. New requirements are 2 PRs to 8 entities. Assume 1 hour of burden per system for each PSA or PR per 2004 ICR. Therefore, the burden for new requirements equals one less hour per system as compared to current requirements.
4. Loaded wage rates from SAIC contract study, "Labor Costs for National Drinking Water Rules (2003) updated to 4th Qtr 2006.
5. The reduced burden for annual system O&M cost equals the materials and postage for 10 PSAs (5 to TV and 5 to radio stations) at \$0.43 each (\$0.39 postage, \$0.01 paper and \$0.03 envelope) for a total savings of \$4.30 per system.

**Appendix H-24. III.F(e) CCR Statement: Cost to Add Statement to Consumer Confidence Report for CWSs that Don't Exceed the Lead Action Level (4<sup>th</sup> Qtr 2006\$)**

System Size Category	Total Number of CWSs [1]	# Systems that Exceed Lead AL [2,3]	Additional Systems Affected by New Requirement [4]	Annual System Burden to Add Statement to CCR (hrs) [5]	Annual System Labor Cost	Annual System O&M Cost	Total Annual System Costs
<100	13,766	185	13,581	3,395	\$81,011	\$0	\$81,011
101-500	16,240	155	16,085	4,021	\$103,346	\$0	\$103,346
501-3.3K	14,212	133	14,079	3,520	\$96,934	\$0	\$96,934
3.3K-10K	4,707	54	4,653	1,163	\$39,502	\$0	\$39,502
10K-50K	3,057	40	3,017	754	\$26,090	\$0	\$26,090
50K-100K	484	7	477	119	\$4,125	\$0	\$4,125
100K-500K	322	7	315	79	\$3,089	\$0	\$3,089
500K-1M	32		32	8	\$314	\$0	\$314
>1 M	18		18	5	\$177	\$0	\$177
<b>Total</b>	<b>52,838</b>	<b>581</b>	<b>52,257</b>	<b>13,064</b>	<b>\$354,586</b>	<b>\$0</b>	<b>\$354,586</b>

Notes:

1. Number of CWS systems per SDWIS/FED Data 2004.
2. For systems serving <3,300 people, the # systems is based on SDWIS/Fed data for the monitoring period ending after January 2003.(Data source: USEPA Survey of States - Questions on State Implementation of Lead and Copper Rule. July 2004).
3. For systems serving >3,300 people, the # systems is based on systems that have exceeded the lead action level since 2003. data source: [www.epa.gov/safewater/lcrmr/lead-data.html](http://www.epa.gov/safewater/lcrmr/lead-data.html), 8/30/05.
4. Under the new requirement, all systems will have to include an informational statement in their CCR. Currently, all systems whose 95th percentile sample is above the lead action level include an informational statement in their CCR. The estimated number of systems affected by this requirement are the total number of systems affected by the LCR less the systems that exceed the lead action level. These estimates are conservative because we are including some systems that are already required to provide this information in their CCR (systems whose 95 percentile sample exceeds the lead action level).
5. Assume burden hours to add statement to Consumer Confidence Report regarding lead issues will be 15 minutes per system, for all system sizes.

**Appendix H-25. Changes to State Burden for Review and Consultation Activities (4<sup>th</sup> Qtr 2006\$)**

	Number of Affected States <sup>1</sup>	Net Change in State Burden (Hours) <sup>2,3,4,6</sup>	Labor Rate (\$/hr) <sup>5</sup>	Total Labor Cost
Customer Notification Review	57	236	\$43.52	\$10,272
Review and Filing of Self-Certification Letter	57	58	\$43.52	\$2,529
Consultation on Activities	57	1,162	\$43.52	\$50,572
<b>Total</b>		<b>1,456</b>		<b>\$63,372</b>

*Notes:*

1. *The LCR Regulatory Changes apply to 50 states, 6 territories and 1 Indian Tribe, for a total of 57 entities.*
2. *States no longer have to approve changes for systems serving between 501 and 3,300 people. Assume 0.5 hours savings for each of the 184 systems in this size category (Refer to Table 1 above). The total reduction in burden equals 92 hours (184 \* 0.5 hours).*
3. *For customer notification, States need to review additional language for 994 systems that are estimated to exceed the LAL at an estimated 20 minutes per system. The total new burden to States equals 328 hours (994 systems \* 0.33 hours). The net new burden to States equals 328 hours minus 92 hours equals 236 hours.*
4. *State labor rate of \$43.52/hour (Source: Information Collection Request for Contaminant Occurrence Data in Support of EPA's Second Six Year Review of National Primary Drinking Water Regulations (2006)).*
5. *For consultation on activities, review of cover content, discussion of alternative mechanisms, and discussion of extending deadlines, States need to review activities with CWSs that exceed the LAL once per year at 2 hours per year.*
6. *For review and filing of letter from CWSs that exceed the LAL self-certifying that additional PE activities have taken place, States will require .10 hours per system per year, based on similar activity for the CCR.*

## **Appendix I**

### **Uncertainty Analysis for III.F(b)(2) Activities**

## Uncertainty Analysis for Choosing Activities III.F(b)(2)(i)-(viii)

Due to the uncertainty in predicting the selection of activities (i) through (viii) by systems to comply with Regulatory Change III.F(b)(2), three alternative selection scenarios have been developed to illustrate the potential range of costs. The three scenarios represent predicted activity selection based on different considerations:

- Cost as the sole consideration
- Cost as a primary consideration, with other factors as a secondary considerations
- Other factors as a primary consideration.

### Cost as the sole consideration

To simulate a situation in which cost minimization is the sole criteria for choosing activities, this analysis assumes that systems will choose the three least costly activities. The average cost per system is calculated as the average of the three least costly activities. The selection of activities and resulting average costs are presented in Table I-1.

**Table I-1: Activity Selection and Resulting Average Cost Per System:  
Cost as Sole Consideration (4<sup>th</sup> Qtr 2006\$)**

System Size Category	(i) Public Service Announcements	(ii) Paid Advertisements	(iii) Display in Public Areas	(iv) Internet Notification	(v) Public Meetings	(vi) Delivery to Every Household	(vii) Targeted Contact	(viii) Materials Directly to Multi-Family & Institutions	Weighted Average Cost Per System
25-100	0%	0%	33%	0%	0%	33%	0%	33%	\$14
101-500	0%	0%	33%	33%	0%	0%	0%	33%	\$22
501-3,300	0%	0%	0%	33%	0%	0%	33%	33%	\$30
3.3K-10K	0%	0%	0%	33%	0%	0%	33%	33%	\$182
10K-50K	0%	0%	33%	0%	0%	0%	33%	33%	\$355
50K-100K	0%	0%	0%	33%	0%	0%	33%	33%	\$560
>100K	33%	0%	0%	33%	0%	0%	33%	0%	\$999

Although cost is an important consideration, it is not usually the sole consideration. Systems may choose more costly activities to reach a broader range of audiences in a more effective manner. To simulate a situation in which cost is a primary, but not the sole, factor for choosing activities, this analysis assumes that less costly activities are more likely to be chosen and the more costly activities will be chosen, but at a lower rate. For each system size category, the activities are characterized as “more likely”, “likely”, and “unlikely” to be chosen based on the cost per system. The two lowest cost activities are classified as “more likely”, the two highest cost activities are classified as “unlikely” and the middle four activities are classified as “likely”. To calculate a weighted average cost per system given the activity choices, more likely activities are assigned a probability of 25 percent (i.e., the activity is chosen 25 percent of the time), likely activities are assigned a probability of 10 percent, and the unlikely activities are assigned a value of 5 percent. The resulting selection of activities and weighted average cost per system are presented in Table I-2.

**Table I-2: Activity Selection and Resulting Average Cost Per System:  
Cost as the Primary (but not sole) Consideration (4<sup>th</sup> Qtr 2006\$)**

System Size Category	(i) Public Service Announcements	(ii) Paid Advertisements	(iii) Display in Public Areas	(iv) Internet Notification	(v) Public Meetings	(vi) Delivery to Every Household	(vii) Targeted Contact	(viii) Materials Directly to Multi-Family & Institutions	Weighted Average Cost Per System
25-100	5%	5%	10%	10%	10%	25%	10%	25%	\$28
101-500	5%	5%	10%	25%	10%	10%	10%	25%	\$35
501-3,300	10%	5%	10%	25%	10%	5%	10%	25%	\$62
3.3K-10K	10%	10%	10%	10%	5%	5%	25%	25%	\$184
10K-50K	5%	10%	10%	10%	5%	10%	25%	25%	\$608
50K-100K	10%	5%	10%	25%	5%	10%	25%	10%	\$1,202
>100K	10%	5%	10%	25%	5%	10%	25%	10%	\$2,325

The third scenario reflects a best guess estimate of activity choices if cost were not a factor. The members of the NDWAC working group were asked to rank the activities on a scale of 1-8, with 1 representing activities most likely to be chosen and 8 for activities least likely to be chosen within each system size category. The NDWAC working group members were not provided information on the cost per system, so their responses reflect considerations other than cost. Due to time constraints, only a limited number of responses were received. The rankings were averaged across the responses, so that each activity had an average ranking. The activities with the two lowest average ranking were characterized as most likely and assigned a probability of 25 percent. The activities with the two highest average ranking were considered unlikely and assigned a probability of 5 percent. All other activities were considered likely and assigned a

probability of 10 percent. The resulting activity choices and weighted average cost per system are displayed in Table I-3.

**Table I-3: Activity Selection and Resulting Average Cost Per System:  
Other Factors as the Primary Consideration (4<sup>th</sup> Qtr 2006\$)**

System Size Category	(i) Public Service Announcements	(ii) Paid Advertisements	(iii) Display in Public Areas	(iv) Internet Notification	(v) Public Meetings	(vi) Delivery to Every Household	(vii) Targeted Contact	(viii) Materials Directly to Multi-Family & Institutions	Weighted Average Cost Per System
25-100	10%	5%	25%	5%	10%	25%	10%	10%	\$33
101-500	10%	5%	25%	10%	10%	25%	5%	10%	\$40
501-3,300	10%	5%	25%	10%	10%	25%	5%	10%	\$101
3.3K-10K	10%	10%	25%	25%	5%	10%	5%	10%	\$268
10K-50K	10%	25%	10%	25%	5%	10%	10%	5%	\$824
50K-100K	10%	25%	10%	25%	5%	10%	10%	5%	\$2,134
>100K	25%	25%	10%	10%	5%	10%	10%	5%	\$3,043

Table I-4 summarizes the weighted average cost per system for each system size and for each of the three scenarios. Across all system sizes, the weighted average cost per system is lowest for the scenario in which activities are chosen with cost as the only consideration and highest when other factors are the primary consideration. Table I-4 also displays the total costs for III.F(b)(2) for each scenario. It should be noted that the total cost under the highest of the three scenarios, the other factors as the primary consideration scenario at \$276,952 is lower than the cost of III.F(b)(2) reported in the main section of the Economic Analysis (\$292,700) based on an un-weighted average of all activities. Thus, the costs reported in the Economic Analysis may overstate actual costs that will be experienced.

**Table I-4: Summary of Average Cost Per System and Resulting Total Costs (4<sup>th</sup> Qtr 2006\$)**



System Size	Weighted Average Cost Per System		
	Cost as Sole Consideration	Cost as Primary Consideration	Other Factors Primary Consideration
25-100	\$ 14	\$ 28	\$ 33
101-500	\$ 22	\$ 35	\$ 40
501-3,300	\$ 30	\$ 62	\$ 101
3.3K-10K	\$ 182	\$ 184	\$ 268
10K-50K	\$ 355	\$ 608	\$ 824
50K-100K	\$ 560	\$ 1,202	\$ 2,134
>100K	\$ 999	\$ 2,325	\$ 3,043
<b>Total Costs</b>	<b>\$ 114,997</b>	<b>\$ 195,532</b>	<b>\$ 276,952</b>

## **Appendix J**

### **Derivation of Direct Costs for Regulatory Change III.A**

**Appendix J-1: Regulatory Change III.A One-Time System Reporting Cost (4<sup>th</sup> Qtr 2006\$)**

11 States that Favor 1 Sample & Alaska	# NTNCWS By State [1]	% of NTNCWS With <5 taps [2]	# NTNCWS With <5 taps	CWS Serving <100 By State [1]	% of CWS<100 With <5 taps [6]	# of CWS <100 With <5 taps	Total Systems with <5 Taps	One-Time System Burden for Verification Letters [3]	One Time System Labor Cost for Verification Letters [4]	One-Time System O&M Costs for Verification Letters [5]	Total System One-Time Cost for Verification Letters [5]
<b>AK</b>	N/A	N/A	N/A	341	5%	17	17	17	\$472	\$7	\$479
<b>IN</b>	686	53%	364	317	5%	16	380	380	\$10,551	\$163	\$10,714
<b>MI</b>	1631	53%	864	744	5%	37	901	901	\$25,016	\$387	\$25,403
<b>WI</b>	907	53%	481	592	5%	30	511	511	\$14,188	\$220	\$14,407
<b>IL</b>	405	53%	215	670	5%	34	249	249	\$6,913	\$107	\$7,020
<b>TX</b>	785	53%	416	2105	5%	105	521	521	\$14,465	\$224	\$14,689
<b>VT</b>	234	53%	124	319	5%	16	140	140	\$3,887	\$60	\$3,947
<b>UT</b>	63	53%	33	241	5%	12	45	45	\$1,249	\$19	\$1,269
<b>WA</b>	315	53%	167	1748	5%	87	254	254	\$7,052	\$109	\$7,161
<b>MD</b>	573	53%	304	327	5%	16	320	320	\$8,885	\$138	\$9,022
<b>MN</b>	563	53%	298	484	5%	24	322	322	\$8,940	\$138	\$9,079
<b>TN</b>	46	53%	24	151	5%	8	32	32	\$888	\$14	\$902
<b>Total</b>	<b>6208</b>		<b>3290</b>	<b>8039</b>		<b>402</b>	<b>3692</b>	<b>3692</b>	<b>\$102,507</b>	<b>\$1,588</b>	<b>\$104,094</b>

*Notes:*

(1) Number of NTNCWSs and CWSs <100 in States derived from "SDWISFED GPRA, summ inv, compl trends, FY96-04 FINAL" at <http://www.epa.gov/safewater/data/pivottables.html>

(2) Percent of small systems with <5 taps from data supplied by MI in comments to the draft LCRSTR.

(3) Assumes 1 hour per system to verify number of taps, prepare letter, and submit to State

(4) Assumes average labor cost per hour for small systems of \$27.76

(5) Assumes O&M cost equals \$0.43 per letter (\$0.39 postage, \$0.01 paper and \$0.03 envelope).

(6) Assumes relatively rare occurrence of CWSs with fewer than 5 taps: 5%

**Appendix J-2: Regulatory Change III.A One-Time State Review Cost (4<sup>th</sup> Qtr 2006\$)**

<b>Number of Letters for State Review</b>	<b>One-Time Burden for State Review of Verification Letters [1]</b>	<b>State Labor Cost to Review and Document Number of Taps [2]</b>	<b>State O&amp;M Costs to Mail Approval Letter</b>	<b>Total One-Time State Costs</b>
3692	3692	\$160,681	\$1,588	\$162,269

Notes:

(1) Assumes 1 hour of State labor required to review and track letters from NTNCWSs with <5 taps

(2) Assumes State labor costs of \$43.52per hour.

## **Appendix K**

### **Derivation of Revenue Estimates for Small Systems**

**Revenue Estimates of Community Water Systems Serving  
10,000 or Fewer People**

Contract No. 68-C-02-069  
Work Assignment No. 4-09

*Prepared for:*

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July 12, 2007



This document provides an estimate of community water system (CWS) revenue for systems serving 10,000 or fewer people.<sup>52</sup> The estimates are based on two sources of information: EPA's 2000 CWS Survey and the 2002 Census of Governments fielded by the Census Bureau. CWS revenue and municipal government revenue for publicly owned CWSs are combined to provide an estimate of the total resources available to CWSs serving 10,000 or fewer people.

CWS revenue comes from three sources:

- **Water sales.** This revenue is generated by the sale of water to customers and is usually based on a rate charged per unit of water sold.
- **Water-related revenue.** This revenue consists of transfers from municipal government general funds, fees, penalties, or other charges related to the provision of water, but not tied directly to the sale of water. *Note: Water sales and water-related revenue together are referred to as "water revenue."*
- **Non-water revenue.** Systems also may have non-water revenue. For example, combined drinking water and wastewater systems may have revenue from sewerage charges. These sources of revenue are excluded from this analysis, with two important exceptions. Ancillary systems – small privately owned systems (generally, serving populations of 3,300 or fewer people) that provide water as an essential part of another business – will have revenue from their primary business and often do not report any water revenue at all. Municipal governments may rely on general revenue in addition to or in lieu of water revenue to finance their systems. In many cases, these sources of revenue are available to systems to support their operations; therefore, they must be included to fully account for the resources available to water systems.

Exhibit 1 reports revenue of systems by the source of revenue and the size of the system. The estimates are based on data from the 2000 Community Water System Survey (CWSS) and the 2002 Census of Governments. For each source, it reports the average revenue for systems with that source of revenue in the top portion of the table; in other words, it excludes systems with zero revenue from that source. The middle portion of the table shows the number of systems in the nation with that source of revenue. The bottom portion of the table reports the number of observations in the sample on which the estimates are based. (Because the exhibit excludes systems that report zero revenue from each source, the revenue figures from each source cannot be summed to reach the total. See below for a more detailed explanation.)

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<sup>52</sup> *Community water system* means a public water system which serves at least 15 service connections used by year round residents or regularly serves at least 25 year-round residents.



**Exhibit 1: Average Revenue of Community Water Systems Serving 10,000 or fewer  
People by Source (Dollars are in 2006 Dollars)**

Population Served	Water Revenue					Non-water Revenue of Privately Owned Ancillary Systems	Municipal Non-water System Revenue (Net of Transfers to Water System)	Total Revenue, Including Municipal Government Revenue <sup>1</sup>
	Water Sales Revenue	Water Related Revenue			Total Water Revenue <sup>1</sup>			
		General Fund Transfers	Other Water Related Revenue	Total Water Related Revenue <sup>1</sup>				
<b>Mean Revenue</b>								
25-100	10,207	9,356	8,733	8,735	12,067	561,670	139,709	219,745
101-500	36,797	7,325	5,506	5,976	40,152	2,917,969	274,364	792,880
Subtotal, 25-500	26,979	7,346	6,084	6,472	29,753	1,641,430	266,141	552,581
501-3,300	197,270	25,602	29,641	31,129	220,212	3,429,775	1,481,239	1,447,859
3,301-10,000	806,916	255,226	104,241	119,406	924,690	687,113,152	6,159,156	12,642,535
Subtotal, 25-10,000	191,252	61,519	35,894	39,581	218,702	5,843,880	2,068,030	2,166,712
<b>Number of Systems</b>								
25-100	6,511	4	1,355	1,359	8,056	3,736	345	10,118
101-500	11,121	399	6,206	6,206	12,772	3,160	5,307	14,015
Subtotal, 25-500	17,632	403	7,561	7,565	20,828	6,896	5,652	24,133
501-3,300	13,333	747	10,159	10,288	13,673	13	10,954	13,250
3,301-10,000	4,574	251	4,227	4,227	4,852	43	4,060	4,628
Subtotal, 25-10,000	35,540	1,401	21,947	22,080	39,353	6,951	20,667	42,011
<b>Observations</b>								
25-100	81	1	23	24	101	32	11	112
101-500	119	4	72	72	138	24	68	141
Subtotal, 25-500	200	5	95	96	239	56	79	253
501-3,300	201	11	163	165	205	1	172	200
3,301-10,000	155	11	143	143	166	1	139	157
Subtotal, 25-10,000	556	27	401	404	610	58	390	610

1. While each row is based on the most accurate information available, columns do not sum. See the Basis of Estimate below for additional information about this table.

Source: 2000 Community Water System Survey questions 26 and 27.

US Census Bureau's 2002 Census of Governments (Volume 4, Number 4), Table 13.

Many systems do not have each source of revenue. Exhibit 2 reports the percentage of systems that reported positive revenue from each revenue source. According to the CWSS, approximately 82 percent of systems reported revenue from water sales. Less than 3 percent reported transfers from the general fund (the percentage is higher for publicly owned systems), and 51 percent reported other water-related revenue. Overall, 80 percent of systems reported revenue from water sales or water related revenue.

Judging from the percentage of systems reporting, it would appear that fewer systems reported positive water revenue than reported positive water sales. This apparent contradiction is due to different response rates to the various revenue questions in the survey. Some systems reported water sales, but could not provide their water-related revenue. Total water revenue for these systems therefore was not available and these systems are excluded from the estimate of the percentage of systems reporting positive total water revenue. Other systems reported their total water revenue, but could not distinguish between water sales and other water revenue. They are included in the estimate of the percentage of systems that reported positive water revenue but are not included in any of the components. If we limit the analysis to systems that provided data on all revenue components, approximately 81 percent of systems reported positive water revenue. Less than 1 percent of these systems reported zero water sales revenue. (In other words, they relied solely on water-related revenue.)

Approximately 20 percent of small systems do not charge directly for water, either through water sales or water-related charges. Among some subclasses of systems, the percentage of systems that do not charge for water is substantially higher. For example, according to the CWSS, 92 percent of ancillary systems reported zero water revenue. Systems without water revenue may rely – directly or otherwise – on other sources of revenue.

**Exhibit 2. Percentage of Systems Reporting Positive Revenue, by Revenue Source and Population Served**

Population Served	Water Revenue					Non-water Revenue of Privately Owned Ancillary Systems	Municipal Non-water System Revenue (Net of Transfers to Water System)
	Water Sales Revenue	Water Related Revenue			Total Water Revenue <sup>1</sup>		
		General Fund Transfers	Other Water Related Revenue	Total Water Related Revenue <sup>1</sup>			
25-100	60.8%	0.0%	12.5%	12.5%	59.2%	36.1%	3.4%
101-500	77.9%	2.4%	44.1%	44.1%	74.6%	22.2%	37.9%
Subtotal, 25-500	70.6%	1.4%	30.4%	30.4%	68.1%	28.1%	23.4%
501-3,300	97.6%	5.3%	76.0%	77.0%	97.5%	0.1%	82.7%
3,301-10,000	95.8%	5.0%	89.5%	89.5%	95.8%	0.9%	87.7%
Subtotal, 25-10,000	81.8%	2.9%	51.0%	51.3%	80.25%	15.93%	49.2%

1. While each row is based on the most accurate information available, columns do not sum. See the Basis of Estimate below for additional information about this table.

Source: EPA's 2000 Community Water System Survey, questions 26 and 27.

## Sources of Data

The 2000 CWSS collects data on all three sources of revenue. It asks each system for water sales and water-related revenue. The survey also asks ancillary systems to report non-water related revenue because many of these systems do not charge directly for water. (The survey does not ask for non-water revenue of other systems.) Because so many ancillary systems do not charge for water, estimates of the resources available to these systems include survey data from their main source of revenue.

The 2000 CWSS collected data from 104 ancillary systems. The response rate on the question about non-water revenue was relatively low; approximately 50 percent of these systems provided data on their non-water revenue. It is not clear whether this non-response introduces bias into the estimate of non-water revenue of ancillary systems. The revenue reported also varies greatly.

While some of the ancillary systems are small water systems, often mobile home parks, they also may be relatively large companies and their water revenue may be a very small part of their total revenue. Other ancillary systems may have very limited revenue from their other sources. Mobile home parks, for example, may fund all their expenses – water-related and other wise – from pad fees that may be quite modest. The estimates of non-water revenue of ancillary systems are therefore not precise.

Approximately 6 percent of publicly owned systems serving 10,000 or fewer people report zero water revenue in the survey; nearly half of publicly owned systems serving 100 or fewer people report zero water revenue. For these systems to operate, they must have other sources of revenue that are not included in the survey. Even systems run as public enterprise funds may have access to funds from the general fund of their municipality. Therefore, estimates of water revenue do not fully describe the financial resources available to these systems. To account for this potential resource of publicly owned systems, therefore, data from the US Census Bureau's 2002 Census of Governments were used to estimate total municipal revenue of cities and towns that provide water to 10,000 or fewer people. Non-water revenue of municipalities is the difference between the total revenue of the municipality and the revenue generated by its water system. Many municipalities transfer money from their general funds to their water systems. To avoid double counting these transfers, they are excluded from the estimate of municipal non-water revenue and included as part of water revenue.

## Basis of the Estimates

The 2000 CWSS sample is used to calculate the average water system revenue estimates. The estimates are weighted by the inverse of the sampling probabilities, corrected for overall non-response. Four systems were dropped from the analysis because they were outliers (resorts or other special cases). If they had been included, the revenue estimates would have been higher.

Not every system reported revenue from each source in the CWSS. For example, of the 610 systems that reported revenue from any source, 54 did not report positive water sales revenue. These systems are excluded from the calculation of average water sales revenue. Therefore, total revenue is not equal to the sum of revenue from each source. Before we can sum the components, we must account for systems that did not report revenue from an individual revenue source.

Exhibit 3 summarizes how water revenues are calculated based on the average revenue reported for each source and the percentage of systems with each source of revenue. (Details may not sum to the total due to rounding.) The calculation can be divided into two parts. The first part is shown in lines A through I. We sum the sources of revenue, adjusting for systems that reported zero revenue from each source. For example, the average water sales revenue of all systems with water sales is \$191,252 (line A, the last column). Approximately 82 percent of systems reported positive water sales (line B). The average water sales revenue of all systems, including those reporting zero water sales revenue, is \$156,538, or line A multiplied by line B. This calculation is repeated for general fund transfers (lines D through F) and other water-related revenue (lines G through I). The sum of these products is \$176,658, and is shown in line J (i.e., the sum of lines C, F, and I).

The second part of the calculation is shown in lines J through M in Exhibit 3. We make two adjustments to the sum shown in line J. First, we account for systems that reported revenue from only one or two of the three sources of revenue. For example, some systems reported their water sales revenue but did not know how much general fund or other water-related revenue they received. While we can estimate their water sales revenue, their total revenue is unknown. We must exclude systems that did not report revenue from water sales, general fund, and other water-related revenue when we derive water revenue to ensure it includes revenue from all sources. Furthermore, some systems reported total water revenue, but could not divide their revenue by source. These systems are included in the estimate of water revenue, but excluded from the estimates of one or more of the components of revenue. The net effect of these adjustments is -\$1,141 for all systems (line K). This must be added to the total on line J.

Second, approximately 20 percent of all systems that did not report water revenue (line M). These systems must be removed to estimate the average water revenue of systems with positive water revenue. Line N reports the adjusted total water revenue of systems with water revenue.

As we cannot distinguish between systems that did not respond to a revenue question and systems who, in fact, have zero revenue to report, we may be over-estimating the percentage of systems with no revenue for any given revenue category. Thus, in calculating the average revenue for all small systems, we may be underestimating revenue by assuming that a non-response equals a zero.

**Exhibit 3. Calculation of Average Total Water Revenue**

	Population Served					Total, 25- 10,000
	25- 100	101- 500	Subtotal, 25-500	501- 3,300	3,301- 10,000	
A Average Water Sales Revenue of Systems Reporting Positive Water Sales Revenue:	10,207	36,797	26,979	197,270	806,916	191,252
B Percentage of Systems Reporting Positive Water Sales Revenue	60.8%	77.9%	70.6%	97.6%	95.8%	81.8%
C Average Water Sales Revenue (A*B)	6,205	28,672	19,040	192,499	773,148	156,538
D Average Transfers from the General Fund of Systems Reporting Positive General Fund Transfers:	9,356	7,325	7,346	25,602	255,226	61,519
E Percentage of Systems Reporting Positive Water-Related Revenue that Reported General Fund Transfers	0.0%	2.4%	1.4%	5.3%	5.0%	2.9%
F Average General Fund Revenue (D*E)	3	177	102	1,365	12,687	1,796
G Average Other Water-Related Revenue of Systems Reporting Positive Other Water-Related Revenue:	8,733	5,506	6,084	29,641	104,241	35,894
H Percentage of Systems Reporting Positive Water-Related Revenue that Reported Other Water-Related Revenue	12.5%	44.1%	30.4%	76.0%	89.5%	51.0%
I Average Other Water-Related Revenue (G*H)	1,091	2,429	1,847	22,535	93,340	18,323
J Sum of Average Water Sales, General Fund Transfers, and Other Water-Related Revenue (C+F+I)	7,299	31,279	20,989	216,399	879,175	176,658
K Adjust for systems not reporting all components of water system revenue	-153	-1,311	-735	-1,749	6,905	-1,141
L Percentage of Systems Reporting Positive Water Revenue	59.2%	74.6%	68.1%	97.5%	95.8%	80.3%
M Average Water Revenue of Systems Reporting Positive Water Revenue (J+K)/L	12,067	40,152	29,753	220,212	924,690	218,702

The non-water revenue of publicly owned systems is based on the Bureau of the Census estimate of total revenue of municipalities with fewer than 10,000 people. Exhibit 4 shows how we estimate the non-water system revenue of municipalities. According to the 2002 Census of Governments, there were 16,745 municipalities (line B of exhibit 4) with populations under 10,000 in 2002. The total revenue of these municipalities was \$34,944,647,000 in 2002 (line A). Average revenue per municipality is line A divided by line B, or \$2,086,871 (line C). Based on the US Bureau of Labor Statistics, Consumer Price Index, the cumulative change in consumer prices between 2002 and 2006 was 13.8 percent (line D). The inflation-adjusted estimate is \$2,375,157, shown in line E.

**Exhibit 4: Calculation of Non-water System General Fund Revenue of Publicly Owned Systems**

A	Total General Revenue for Municipalities with fewer than 10,000 people	34,944,647,000
B	Number of Municipalities	16,745
C	Average Revenue per Municipality (A/B)	2,086,871
D	Percentage Change in Consumer Price Index, 2002-2006	13.8%
E	Inflation-Adjusted Revenue per Municipality [C*(1+D)]	2,375,157

The Census Bureau does not provide estimates of municipal revenue for each of the size categories we use. To estimate municipal revenue for each size category, we assume it is proportional to the publicly owned systems' water revenue. The calculation is shown in Exhibit 5. Column 1 of the table shows the estimate of water revenue of publicly owned systems, by the size of the system. (These estimates are derived from the survey data.) Column 2 shows the ratio of average water revenue for each size category to the average water revenue for all systems serving populations of 10,000 or less. This ratio is multiplied by the inflation-adjusted revenue per municipality, or \$2,375,157 to arrive at the estimate of municipal revenue for each size category. This result is shown in column 3.

**Exhibit 5. Calculation of Non-water System General Fund Revenue of Publicly Owned Systems by System Size**

	(1)	(2)	(3)
Population Served	Water Revenue	Average Water Revenue of Systems in Each Size Category in Column 1 Divided by Revenue of All Systems Serving 10,000 or Fewer People	Municipal Revenue (Average municipal revenue (line E from exhibit 3) multiplied by the percentage in column 2)
25-100	20,748	0.068	160,458
101-500	40,746	0.133	315,110
Subtotal, 25-500	39,525	0.129	305,666
501-3,300	219,981	0.716	1,701,220
3,301-10,000	914,708	2.978	7,073,864
Total	307,127	1.000	2,375,157

Source: EPA's *2000 Community Water System Survey*, question 26.

Total revenue is a weighted average of system revenue and non-system revenue. The calculation is shown in Exhibit 6. Line A reports total water system revenue for systems that report positive revenue (from exhibit 3). Lines B, C, and D calculate average municipal general fund revenue of publicly owned systems, net of system revenue and transfers to the system. Lines E, F, and G calculate the percentage of systems that are publicly owned and potentially have access to municipal revenue.

We assume that privately owned systems that provide water as an essential part of another business have non-water revenue. According to the CWSS, average non-water revenue for small systems that report it is \$5,843,880 (the last column of line H). The CWSS reports that 16.3 percent of small systems have this non-water revenue (line I).

The resources available to water systems is the weighted average of water revenue, municipal revenue for publicly owned systems, and non-water revenue of privately owned systems. Column J of exhibit 6 shows how total system revenue is calculated.



**Exhibit 6. Calculation of Total Revenue**

	Population Served					
	25-100	101-500	Subtotal, 25-500	501-3,300	3,301- 10,000	Total, 25-10,000
A Average Water Revenue of Systems Reporting Positive Water Revenue (Line M from Exhibit 3)	12,067	40,152	29,753	220,212	924,690	218,702
B Total General Revenue for Municipalities with fewer than 10,000 people (from Exhibit 5)	160,458	315,110	305,666	1,701,220	7,073,864	2,375,157
C <u>Total System Revenue of Publicly Owned Systems</u>	<u>20,748</u>	<u>40,746</u>	<u>39,525</u>	<u>219,981</u>	<u>914,708</u>	<u>307,127</u>
D Municipal Revenue, Net of Water System Revenue and Transfers to the Water System (B-C)	139,709	274,364	266,141	1,481,239	6,159,156	2,068,030
E Number of Publicly Owned Systems	345	5,307	5,652	10,954	4,060	20,667
F <u>Number of Privately Owned Systems</u>	<u>9,773</u>	<u>8,708</u>	<u>18,481</u>	<u>2,296</u>	<u>567</u>	<u>21,344</u>
G Percentage of Systems that are Publicly Owned [E/(E+F)]	3.4%	37.9%	23.4%	82.7%	87.7%	49.2%
H Average Non-water Revenue of Private Systems Reporting Positive Non-Water Revenue	561,670	2,917,969	1,641,430	3,429,775	687,113,152	5,843,880
I Percentage of Systems Reporting Positive Non-water Revenue	36.1%	22.2%	28.1%	0.1%	0.9%	15.9%
J Total Revenue (A+D*G+H*I)	219,745	792,880	552,581	1,447,859	12,642,535	2,166,712

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## Conclusions

The average revenue available to small systems serving 10,000 or fewer people is \$2,166,712. This estimate includes revenue from all sources. This estimate includes non-water business and government revenue that will be used for purposes other than financing the operations of the water system. But it provides the best estimate of the financial situation of these water systems.

Efforts to estimate the resources available to small water systems are complicated by several factors. First, there are few sources of data on small systems. The CWSS is one of the only surveys to systematically collect data on small system finance. Its focus is system operations and finance, so it does not collect information about non-water system finance that would inform this analysis. The Census of Government data fill some of the gaps and help portray a complete picture of small system finance.

Second, small systems are a relatively diverse group that finances its operations many different ways. Some charge directly for water, but many do not. For example, a homeowners' association may provide water as one of its services, but it may not charge its members a separate water fee; rather, it pays its water-related expenses out of general fees its charges its members. A small town may pay for water services out of general fund revenue and not charge its residents for water. The water revenue, as we define it, is in fact zero in both cases. But both the homeowners' association and the small town have resources to pay for repairs and improvements to their water system. Other demands are placed on these resources, so further analysis is required to determine whether those resources are sufficient to meet the needs of the water system.

Finally, the data that are available on small system finances are often incomplete. This is due, in part, to the relative complexity of small system finance. Systems may not respond to financial questions because it is difficult to distinguish water- from non-water-revenue. As shown in Exhibit 2, some systems provided data on some sources of revenue but not others. To produce the best estimates, we use all the data available for each question rather than limiting the analysis to only those systems that answered all the questions. These estimates provide the best estimates available of the resources available to small systems.

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## References

- US Bureau of Labor Statistics, Consumer Price Index, series CUUR0000SA0, accessed at <http://data.bls.gov/cgi-bin/surveymost> on 3/15/07.
- US Census Bureau, *2002 Census of Governments* (Volume 4, Number 4), Table 13, accessed at <http://www.census.gov/govs/www/cog2002.html> on 7/16/06.
- US Environment Protection Agency, *2000 Community Water System Survey*, questions 26 and 27, estimated using sample data.

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## **Appendix L**

### **Summary of Differences Between the Proposed and Final Rule**

**Appendix L-1: Summary of Differences Between the Proposed and Final Rule  
(Differences Are Highlighted)**

<b>Provision</b>	<b>July 2006 Proposed Revisions</b>	<b>Final Rule Revisions</b>
<b>A. Minimum # of Samples Required</b>	Clarifies the minimum number of samples requirement (five).	Clarifies the minimum number of samples requirement (five). Allows State discretion to allow PWS to sample 100 percent of taps if there are fewer than five taps that can be used for human consumption in the system.
<b>B. Definitions for Compliance and Monitoring Periods</b>	Clarifies that "compliance period" is a 3-year calendar year period as defined in 141.2.  "Monitoring period" is specific period in which a water system must provide required monitoring (e.g., June – September).  Also will define more precisely when the "start date" for compliance calendar and actions occur.  Systems on triennial monitoring must monitor once every 3 calendar years.	Clarifies that "compliance period" is a 3-year calendar year period as defined in 141.2.  "Monitoring period" is specific period in which a water system must provide required monitoring (e.g., June – September).  Also will define more precisely when the "start date" for compliance calendar and actions occur. States have discretion to extend deadlines for completing public education activities.  Systems on triennial monitoring must monitor once every 3 calendar years.
<b>C. Reduced Monitoring Criteria</b>	Systems that meet water quality parameters must also meet the Lead Action Level, but not necessarily the Copper Action Level to go to reduced monitoring.  Copper will be dealt with during next set of revisions.	Systems that meet water quality parameters must also meet the Lead Action Level, but not necessarily the Copper Action Level to go to reduced monitoring.  Copper will be dealt with during next set of revisions.
<b>D. Advanced Notification and Approval for Treatment Changes</b>	Systems must provide notice of change or source addition in advance and the State must approve the change.	Systems must provide notice of long-term change or source addition in advance and the State must approve the change.
<b>E. Consumer Notice of Lead Tap Results</b>	Systems must notify consumers who occupy homes or buildings tested with results.	Systems must notify consumers who occupy homes or buildings tested with results.

Provision	July 2006 Proposed Revisions	Final Rule Revisions
<b>F. Public Education Requirements</b>	<p><u>Content</u> – shortened introductory statement and flexibility on body of statement, changed health effects language.</p> <p><u>Delivery</u> – Add licensed child care centers, preschools, Ob-Gyns, and midwives to list of organizations. Include a cover letter            -Systems directly contact local health agencies by phone or in person            - Additional activities: &gt;3,300 pick 3, &lt;3,300 pick 1: public service announcements, paid ads, information displays in public areas, using internet or email, public mtgs, delivery to every household, individual contact with customers, materials to multi-family homes and institutions, other methods approved by State            -<i>Systems exceeding Lead Action Level</i> must: include information on water bill as long as they have the exceedance; must post public education material on website if they serve &gt;100,000; issue 2 press releases per year. No public service announcements required</p> <p><u>Timeframe</u> – systems must deliver most public education materials within 60 days after end of monitoring period in which exceedance occurred. Flexibility for State to allow longer for completion of water bill delivery and selected additional activities</p> <p><u>CCR</u> – all CWS that detect lead must include informational statement. NDWAC recommended changes to statement language.</p>	<p><u>Content</u> – shortened introductory statement and flexibility on body of statement, changed health effects language.</p> <p><u>Delivery</u> – Add licensed child care centers, preschools, Ob-Gyns, and midwives to list of organizations. Include an informational notice            -Systems directly contact local health agencies by phone or in person            - Additional activities: &gt;3,300 pick 3, &lt;3,300 pick 1: public service announcements, paid ads, information displays in public areas, using internet or email, public mtgs, delivery to every household, individual contact with customers, materials to multi-family homes and institutions, other methods approved by State            -<i>Systems exceeding Lead Action Level</i> must: include information on water bill as long as they have the exceedance; must post public education material on website if they serve &gt;100,000; issue 2 press releases per year. No public service announcements required</p> <p><u>Timeframe</u> – systems must deliver most public education materials within 60 days after end of monitoring period in which exceedance occurred. Flexibility for State to allow longer for completion of all activities</p> <p><u>CCR</u> – all CWS must include informational statement. NDWAC recommended changes to statement language.</p>
<b>G. Reevaluation of Lead Service Lines Deemed Replaced Through Testing</b>	Applies to a system that (1) exceeds the action level, (2) tests out one or more service lines, (3) brings lead levels below the action level for two consecutive 6-month monitoring periods and discontinues replacing lead service lines, and (4) later exceeds the action level again. That system would have to reinstate lead service line replacement considering all lead service lines including those that had previously tested out of the replacement program.	Applies to a system that (1) exceeds the action level, (2) tests out one or more service lines, (3) brings lead levels below the action level for two consecutive 6-month monitoring periods and discontinues replacing lead service lines, and (4) later exceeds the action level again. That system would have to reinstate lead service line replacement considering all lead service lines including those that had previously tested out of the replacement program. Provision added for State discretion when systems have already completed a 15-year replacement program.
<b>H. Other Issues Related to LCR</b>		

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<b>Provision</b>	<b>July 2006 Proposed Revisions</b>	<b>Final Rule Revisions</b>
Plumbing Component Replacement	Specifically define plumbing component replacement as corrosion control treatment when 100% of plumbing fittings and fixtures are directly controlled by the system.	No revisions made. Current rule provides flexibility for systems to implement.
POU and POE Treatment	Specifically define POU/POE as corrosion control treatment when 100% of taps are directly controlled by the system.	No revisions made. Current rule provides flexibility for systems to implement.
Site Selection in Areas with Water Softeners and POU	Allow lead and copper tap samples at taps with POU/POE under certain conditions	No revisions made. Monitoring issues will be dealt with during next set of revisions.
Water Quality Parameter Monitoring	Synchronize water quality parameter sampling with lead and copper sampling.	No revisions made. Monitoring issues will be dealt with during next set of revisions.