

Randy E. Hayman, Water Commissioner

## MEMORANDUM

**To:** [REDACTED], PA DEP

**CC:** [REDACTED], Manager, SRA; [REDACTED], Director, BLS

**From:** [REDACTED], Environmental Engineer, SRA

**Date:** Tuesday, October 8, 2019

**Subject:** 2019 – Sample Site Location Plan Update

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### Sample Site Location Plan

This document is the 2019 update of the Philadelphia Water Department's (PWD) Sample Site Location Plan (SSLP). This plan contains a summary of the preparation and results for the 2019 round of the Lead and Copper Rule (LCR) sampling program.

#### I. LCR Materials Evaluation

Table 5 on pages 5 - 18 at the end of this document serves as an update for PWD's LCR materials evaluation. The table contains plumbing and tier information about all homes who have participated in the LCR sampling programs since 1992. A map with the geographical distribution of LCR sampling sites from 1992 to 2019 is provided on page 29.

#### II. LCR Sampling Locations

##### *Participant Enrollment*

In the January preceding any LCR sampling period, an extensive effort is begun to recruit PWD's customers to participate in the upcoming program. The steps that we undertake to recruit an adequate and representative sampling pool consist of:

- ❖ Recruitment letters were sent to the addresses of all previous volunteers, including those originally sampled in 1992 at the outset of the program.
- ❖ A bill stuffer was sent out to 500,000 accounts asking customers with lead service lines to contact PWD. Also, Utility Emergency Services Fund (UESF) provided community outreach in underserved areas of the city.
- ❖ The new applicants and previous volunteers were asked to complete a survey of plumbing components and were contacted by PWD staff to verify survey information and answer questions about the program.
- ❖ PWD conducted on-site material evaluations in homes of applicants. Each new applicant and previous participants who report changes to the plumbing components undergo a plumbing inspection at their home and have their plumbing materials checked for presence of lead.
- ❖ Homes which comply with LCR Tier 1 selection criteria were enrolled in the sampling program.

PWD contacted a total of 509 people, consisting of past participants and new applicants, to participate in the 2019 round of LCR sampling. Table 1 notes some significant numbers regarding the recruitment effort. In total, 199 people applied to participate in the sampling program. 71 out of the 199 were ineligible due to replacing the LSL, not having a LSL upon inspection, having a Tier 2 or 3 designation, not being able to bypass a filtration system, having a leak, or declining a home plumbing inspection. In June 2019, 110 homes were sent sampling kits. Recruitment efforts continued throughout the LCR sampling round from June to September 2019.

*Table 1: Final Recruitment Effort s for 2019 LCR*

<b>Total Participants Contacted</b>	<b>509</b>
<b>Total Applicants for 2019</b>	<b>199</b>
<i>Previous Applicants</i>	<i>84</i>
<i>New Applicants</i>	<i>115</i>
<b>Total Home Plumbing Inspections</b>	<b>114</b>
<i>Previous Applicants</i>	<i>3</i>
<i>New Applicants</i>	<i>111</i>
Total Ready to Sample with Lead Service Lines	110
<b>Total Participants Returned Samples</b>	<b>99</b>
<i>Previous Participants</i>	<i>64</i>
<i>New Participants</i>	<i>35</i>

A comprehensive effort to build the sample pool is undertaken due to problems retaining participants in the program year after year. It has proven impossible to retain the original 1992 participants, as they have dropped out due to three main reasons: low lead results, the inconvenience of sampling, and moving. In 2016, PWD started offering a \$50 credit on a volunteer's water bill to recruit and retain more homes. Customers receive the credit after successfully completing the sampling program. The credit has proven to be useful in retaining participation from one round to another. All the 2019 participants are listed in Table 6 on pages 19-21 at the end of this document. PWD's lead 90<sup>th</sup> percentile and historical data graph can be found on page 22. The 90<sup>th</sup> percentile for lead for the 2019 round of sampling was 3 ppb and for copper the 90<sup>th</sup> percentile was 0.279 ppm.

### *Sample Site Tiers*

The tiers for each 2019 LCR sampling site are listed in Table 6 on pages 19-21 at the end of this document. Table 2 below lists the breakdown of recruited homes by Tier. A map with the geographical distribution of 2019 sample sites is provided on page 28.

*Table 2: Tier Breakdown of 2019 Sampling Locations*

<b>Tier</b>	<b>Count</b>	<b>Criteria</b>
1	99	SFR LSL: 99
2	0	MFR LSL: 0
3	0	SFR Pb Solder: 0

### III. Water Quality Parameters – Entry Point and Distribution Sites

#### Entry Points

The entry point locations are currently sampled once every week for orthophosphate and on weekdays for pH (PA Code Chapter 109.1103(c)(2)(iii)(B) required sampling frequency is every two weeks). PWD is using a PA DEP approved orthophosphate-based corrosion inhibitor to achieve our Optimal Corrosion Control Treatment (OCCT) at levels specified in the OCCT permit. A map of the OCCT sampling locations is provided on page 27.

The three entry point locations are listed in Table 3 below:

*Table 3: Entry Point Water Quality Parameter Locations*

Plant	Entry Point Location	PWD LOC ID	PADEP LOC ID
Baxter			
Queen Lane			
Belmont			

#### Distribution System Locations

Under reduced water quality parameter monitoring PWD is required to sample 10 distribution sites twice in a 6-month period; PWD has chosen to sample 12 sites every quarter. We refer to these 12 locations as PWD's OCCT sites. OCCT sites were chosen to be representative of the three WTP service areas. At each OCCT site, the parameters tested include: pH, alkalinity, orthophosphate, and zinc. The 12 locations currently sampled are listed in table 4; the locations have not changed since the beginning of water quality parameter monitoring in 2003.

*Table 4: Distribution System Water Quality Parameter Monitoring Locations*

PA DEP LOC ID	Location	Plant Service Area
		Baxter
		Baxter
		Baxter
		Baxter
		Queen Lane
		Queen Lane
		Queen Lane
		Baxter/Queen Lane Mix
		Baxter/Queen Lane Mix
		Belmont
		Belmont
		Belmont

## IV. Sample Procedure Certification

The sampling procedure used in the 2019 LCR program meets the sample collection methods that are identified in PA Code Chapter 109.1103(h)(1). The requirements for the LCR sampling procedures that specifically affect the sampling instructions we provide our customers are identified below. It is not a comprehensive listing of all requirements under PA Code Chapter 109.1103(h)(1), just those that affect the instructions we provide to the customer.

- i. Each first-draw tap sample for lead and copper shall be 1 liter in volume and have stood motionless in the plumbing system of each sampling site for at least 6 hours.
- ii. First-draw samples from residential housing shall be collected from the cold-water kitchen tap or bathroom sink tap. First-draw samples from a nonresidential building shall be collected at an interior tap from which water is typically drawn for drinking.

PWD's LCR sampling procedure meet these requirements, and the others found under PA Code Chapter 109.1103(h)(1). A copy of the sampling instructions and the Chain-of-Custody that are provided to each customer as part of the sampling can be found on pages 23-26 at the end of the SSLP.

## V. Communication of LCR Results

- ❖ Results were reported to customers within 30 days of availability. Letters were mailed to each participant with the lead and copper results, health information about lead, and best practices to reduce potential lead exposure in drinking water.
- ❖ Results were reported to PA DEP via DWELR by the 10<sup>th</sup> of the month following analyses.
- ❖ Any 2019 LCR program results that exceeded the AL were reported to PA DEP within 1 hour of determining the result and followed up in writing to PA DEP within 24 hours.
- ❖ Lead results above the EPA action level (AL) of 15 ppb were reported to the customer within 24 hours of availability. PWD continues to work with these customers to provide better lead control strategies to minimize exposure to lead in their drinking water.
- ❖ The consumer tap notice for lead results certification form was sent to the PA DEP by October 10, 2019.

**Appendix:****Table 5: PWD LCR Materials Inventory Updated as of October 1, 2019**

Key:						
<u>Type of Structure</u>		<u>Distribution System</u>		<u>Interior Plumbing Material</u>		
SFR – Single Family Residence		LSL – Lead Service Line		LP – Lead Pipe		
		Y, F (Full)		CLSb82 – Cu Pipe w/ Lead Solder after 1982		
		Y, P (Partial)		CLSb83 – Cu Pipe w/ Lead Solder before 1983		
<u>TIER</u>		N		P – Plastic		
NT – No Tier		UNK – Unknown		None – Cu pipe without leaded solder		
				UNK – Unknown		
PA DEP LOC ID	Street Address	Type of Structure	Most Recent Inspection Date	LSL	Interior Plumbing Material	Tier
█	█	SFR	1992	Y, F	UNK	1
█	█	SFR	2017	Y, F	CLSb83	1
█	█	SFR	1992	N	CLSb82	1
█	█	SFR	2005	N	CLSb82	1
█	█	SFR	2016	Y, F	CLSb83	1
█	█	SFR	2017	N	UNK	NT
█	█	SFR	2005	N	CLSb82	1
█	█	SFR	2019	N	UNK	3
█	█	SFR	2011	N	CLSb83	3
█	█	SFR	1992	Y, F	UNK	1
█	█	SFR	2005	N	CLSb82	1
█	█	SFR	1992	N	CLSb82	1
█	█	SFR	2005	N	CLSb82	1
█	█	SFR	1992	Y, F	UNK	1
█	█	SFR	1992	Y, F	UNK	1
█	█	SFR	1992	N	CLSb82	1
█	█	SFR	1992	N	CLSb82	1
█	█	SFR	2005	N	CLSb83	3
█	█	SFR	1992	N	CLSb82	1
█	█	SFR	1992	N	CLSb82	1
█	█	SFR	2016	Y, F	CLSb83	1
█	█	SFR	2005	Y, F	CLSb83	1
█	█	SFR	2005	Y, F	CLSb83	1
█	█	SFR	1992	Y, F	UNK	1
█	█	SFR	1992	Y, F	UNK	1
█	█	SFR	1992	Y, F	UNK	1
█	█	SFR	1992	Y, F	UNK	1
█	█	SFR	1992	Y, F	CLSb82	1
█	█	SFR	2008	Y, F	CLSb82	1
█	█	SFR	1992	N	CLSb82	1

█	██████████	SFR	2016	Y, P	UNK	1
█	██████████	SFR	2005	N	None	NT
█	██████████	SFR	1992	N	CLSa82	1
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█	██████████	SFR	2005	Y, F	CLSa83	1
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████	████████████	SFR	2017	Y, F	CLSb83	1

## 2019 LCR – Sample Site Location Plan Updated on October 1, 2019

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████	████████████████	SFR	2017	Y, F	P	1
████	████████████████	SFR	2017	Y, F	CLSb83	1
████	██████████████	SFR	2017	Y, F	UNK	1
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████	████████████████████	SFR	2019	Y, F	P	1
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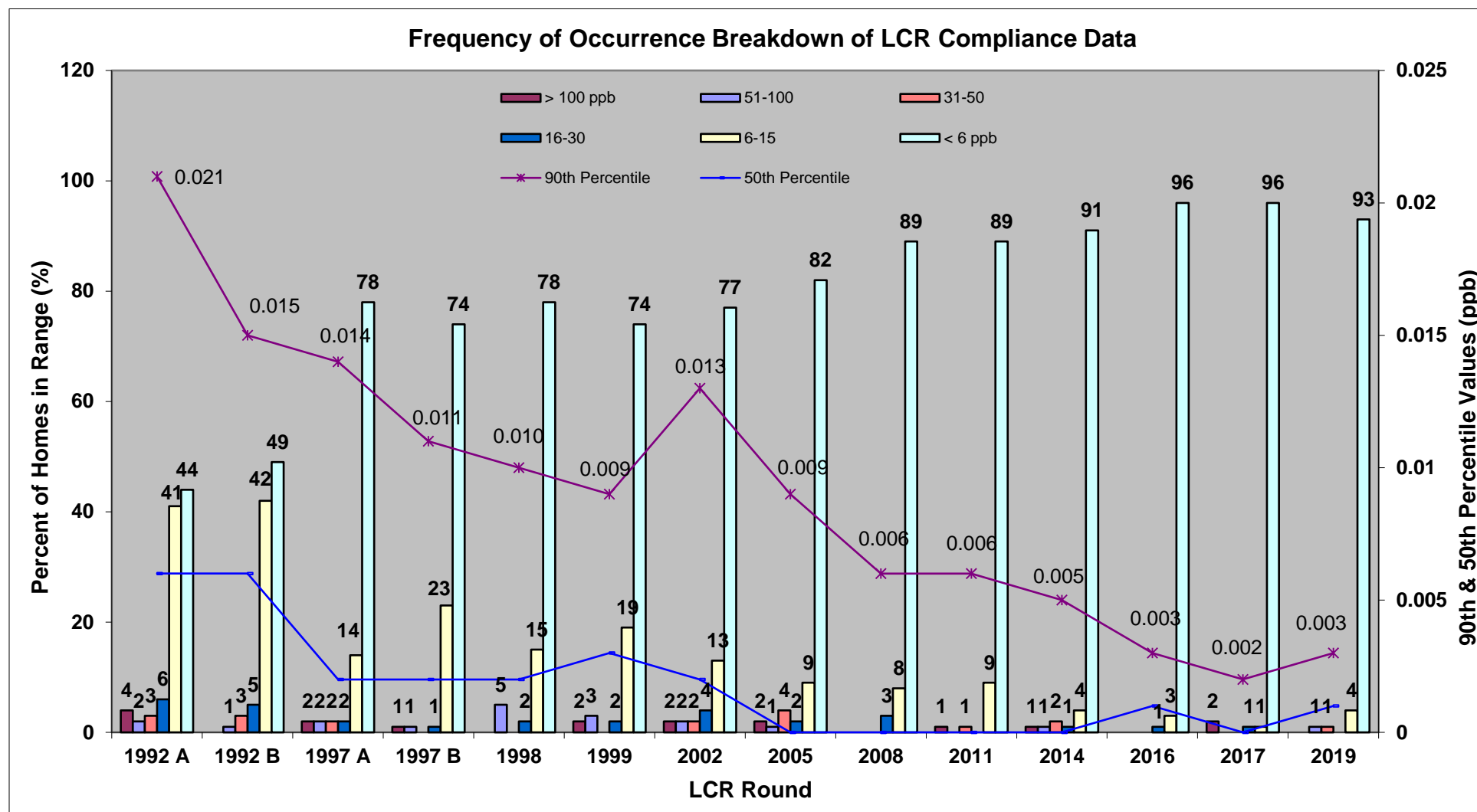
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		SFR	2019	Y, F	CLSb83	1
		SFR	2019	Y, F	CLSb83	1
		SFR	2019	Y, F	CLSb83	1

*Table 6: List of 2019 LCR Sampling Locations*

[illegible]



[illegible]



## PART 3 OF 3

## Call for sample pick-up:

CHECK

1.



Place the sample bottle and the completed Chain-of-Custody Form in the sample box.



2.



Before you call or text for pick-up, make sure you can tell us:



- Loc ID number (located on the label on the sample box)
- Your name
- Your address
- A contact number where we can reach you.

3.



**For pick up:**

Call or text [REDACTED]



In your message, let us know the information listed above, and where you left the sample.

We will pick up the sample from your front door on the day of your call or the following business day. If you call on a weekend, we'll pick the sample on Monday.

## Questions?



Call PWD's Bureau of Laboratory Services at [REDACTED]

## Lead and Copper Water Sampling Instructions

Last Reviewed: March 2019

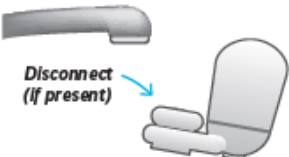





**PHILADELPHIA**  
**WATER**  
— DEPARTMENT —

## PART 1 OF 3

## 6 or more hours BEFORE the water sampling:


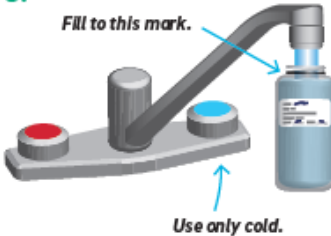
CHECK

1.  Disconnect (if present) any faucet attachments, such as ice maker or water filter. Turn off ice maker. ☐
  2. Bypass any in-line water softener or water treatment device. Isolate any leaks in the house. ☐
  3.  **DO NOT REMOVE AERATOR** (also called screen) from faucet. ☐
  4. Make sure that **COLD WATER** was the **LAST WATER** used at this faucet **BEFORE** you begin the 6-hour stagnation period or the 6-hour No Water Use period. ☐
  5. **DO NOT RUN WATER ANYWHERE** in your house until after the sample has been taken. Do not run the dishwasher or clothes washer, use hot water, take a bath or flush toilets. ☐
- 
6.  Write the date and time on the Chain-of-Custody form. ☐  
*Make note here of time and date when the water was last used.*

## PART 2 OF 3

## How to collect the water sample:

CHECK

1. **AT LEAST 6 or more hours** must have passed before you take the sample. If you used cold or hot water by accident during the 6-hour period, you can reschedule the sample collection to another day. ☐
2.  If everything is OK, you can take the water sample. Write on the label on the bottle: your **Loc ID number** (located on the label on the sample box) and the **Date and Time** of sample collection. ☐
3.  **USE ONLY COLD WATER** ☐
  - a. Carefully uncup the bottle and keep the cap clean.
  - b. Place bottle under the faucet.
  - c. **ONLY** turn on **COLD WATER** faucet.
  - d. Let the water flow into the bottle as if you are filling a glass of water. Fill to the **BLACK** mark on the neck of the bottle. Do not overfill (or overflow) sample bottle.
  - e. Turn off faucet.
4. Replace and tighten the bottle's cap. ☐
5. Fill out the Chain-of-Custody Form. If you have any questions please call [REDACTED] ☐

Instructions continue on next page ➤





**Philadelphia Water Department**  
**Lead and Copper Rule**  
**Chain of Custody Form**

«PA\_DEP\_Loc\_ID»

**COMPLETE AT TIME OF SAMPLING**

**Before sampling, when was the water used last?** Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Time \_\_\_\_ AM/PM  
 (No tap should have been opened or toilet flushed since the stagnation period started as per the directions.)

**Sample collected by** \_\_\_\_\_ **Date** \_\_\_\_/\_\_\_\_/\_\_\_\_ **Time** \_\_\_\_ AM/PM

**Please Print**

**Circle One:** Ms. Mr. Mrs.

**First Name:** \_\_\_\_\_ **Last Name:** \_\_\_\_\_

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

1. **Have you made any recent plumbing changes in your home?** ( ) Yes ( ) No

If Yes, please describe: \_\_\_\_\_

When? Month \_\_\_\_\_ Year \_\_\_\_\_

2. **Do you have any leaks in your house? (Faucets, toilets, etc)?** ( ) Yes ( ) No

a) Was the leak isolated with a shut-off valve before collecting the sample? ( ) Yes ( ) No

3. Our records indicate that the **Kitchen Faucet** is designated as your sampling tap.

**Please write faucet used for sample collection (ie. Kitchen, Bathroom):** \_\_\_\_\_

4. **Do you use any water treatment systems or devices at this sample location?** ( ) Yes ( ) No

a) Please check if you have:

- ( ) a water softener  
 ( ) an ice-maker/refrigerator line  
 ( ) a filter at the tap where you collected the sample  
 ( ) an in-line filter for the whole house

b) **Was the device bypassed or disconnected before the stagnation period?** ( ) Yes ( ) No

**Additional Comments:** \_\_\_\_\_

Date Last Updated: 5/23/19

## PWD USE ONLY

LOC ID \_\_\_\_\_ CHECKED \_\_\_\_\_ LIMS # \_\_\_\_\_

**Sample Class:** Lead/Copper

**Project Name:** LCR Compliance

Relinquished by	Date	Time	Received by	Date	Time

Sample received within 14 days of sample collection?    YES    NO

Sample received on ice?    YES    NO                      Cooler/Sample temperature on receipt                      °C

**Sample Analysis Information**

Sample Acidification:                      Date    /    /                      Time                      AM/PM

Sample pH check:                      Date \_\_\_\_/\_\_\_\_/\_\_\_\_    Time \_\_\_\_\_ AM/PM

Sample pH < 2 pH:    (circle one)                      YES / NO

*Following verification that pH < 2, sample is analyzed for turbidity.*

Sample turbidity: \_\_\_\_\_ NTU (if turbidity is > 1 NTU, sample must be digested)

Is sample digestion required? (circle one)    YES / NO

***Quality Control records for all steps in the laboratory handling and analysis of samples are maintained in the Metals Laboratory.***

**Comments:**

## PWD USE ONLY

Date Last Updated: 5/23/19

