In accordance with the Alabama Department of Environmental Management Water Supply Program Division 335-7, please find the attached 2016 Lead and Copper Sampling Plan.

Feel free to contact Drusilla Hudson with any questions concerning the plan. Drusilla Hudson 205-244-4466 or drusilla.hudson@bwwb.org.
# Lead & Copper Sampling Plan

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System Information

System Name: The Water Works Board of the City of Birmingham

PWSID Number: AL0000738

Address: 3600 First Avenue North (35222)
P.O. Box 830110
Birmingham, Alabama 35283-0110

Contacts:
Mr. Mac Underwood
General Manager, Birmingham Water Works Board
(205) 244-4000
Mac.Underwood@bwwb.org

Mr. Darryl Jones
Assistant General Manager, Operations & Technical Services
(205) 244-4000
Darryl.Jones@bwwb.org

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(205) 244-4466
Drusilla.Hudson@bwwb.org

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Manager of Water Treatment
(205) 244-4371
Floyd.Stephens@bwwb.org

Mr. Jarrod Shotts
Regulatory Compliance Specialist
(205) 244-4206
Jarrod.Shotts@bwwb.org

System Type: Surface Water System

Treatment Facilities:
Shades Mountain Filter Plant
2990 Shades Crest Road
Birmingham, Alabama 35216

Western Filter Plant
1400 Bankhead Highway W.
Birmingham, Alabama 35214

Putnam Filter Plant
4400 Inglennook Lane
Birmingham, Alabama 35217

Carson Filter Plant
6560 Alabama State Highway 151
Pinson, Alabama 35126
Source Information: Shades Mountain Filter Plant – Cahaba River and Lake Purdy
Western Filter Plant – Mulberry and Sipsey Rivers
Putnam Filter Plant – Mulberry River, Sipsey River and Inland Lake
Carson Filter Plant – Inland Lake and Sipsey River

Treatment: Conventional Treatment (Coagulation, Sedimentation, Filtration and Disinfection). Western, Putnam, and Carson Filter Plants use chlorine gas for disinfection. Shades Mountain Filter Plant disinfects water with sodium hypochlorite.

Corrosion Control: The Lead and Copper Rule defines Optimal Corrosion Control Treatment (OCCT) as treatment that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any national primary drinking water regulations (CFR-2011 title 40 vol. 23 part 141.2). The Birmingham Water Works Board (BWWB) meets all national primary drinking water regulations while controlling levels of lead and copper. Optimal Corrosion Control Treatment is achieved by following corrosion control strategies. These strategies include the control of pH and alkalinity at all Birmingham Water Works Board Filter Plants. Each of the Filter Plants control pH and alkalinity with the addition of calcium carbonate or calcium hydroxide. Carson Filter Plant’s control strategy involves the addition of an orthophosphate corrosion control inhibitor, in addition to management of pH and alkalinity.

Population Served: 450,001 - 600,000
Number of Samples: 50 (Verified consumers participating as of 5/27/16)
Sample Frequency: 3 years (Reduced Monitoring)
Laboratory: Envirolab
Birmingham Water Works Board (BWWB)
3600 Second Avenue North
Birmingham, Alabama 35222
Alternate Laboratory: Guardian Systems, Inc.
1108 Ashville Road
Leeds, AL 35094
## Verified Customer Sampling List

<table>
<thead>
<tr>
<th>Street Name</th>
<th>Tier</th>
<th>Year</th>
<th>Material of Construction</th>
</tr>
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<td>Goldcrest Way SW</td>
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<td>Copper</td>
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<td>1972</td>
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</table>
Lead and Copper Study
Sample Collection Procedures

Directions for the Sample Collected at the Homeowners Tap

The samples are being collected to determine the lead and copper levels in your tap water. This sampling effort is required by the U.S. Environmental Protection Agency (EPA) and the Alabama Department of Environmental Management (ADEM) under the Lead and Copper Rule and is being accomplished through this collaboration between the Birmingham Water Works Board and you, our valued customer.

Please collect a 1 liter sample from a faucet that has not been used for a period of at least 6 hours. The best time to collect the sample is early in the morning or in the evening upon returning home from work. This will ensure the necessary stagnant conditions exist prior to collection. Be sure to use the cold water tap of a faucet in either the kitchen or bathroom that has been commonly used for drinking water consumption during the past few weeks.

The Collection Procedures are described below:

1. We will make arrangements with you, the customer, to coordinate the sample collection. The date and times for delivery and pick-up of the sample kit will be scheduled by our BWWB staff.

2. There must be a minimum of 6 hours of non-use (toilet flushing, showering, brushing teeth, etc.) at the faucet where the sample is to be collected and any taps adjacent or close to that tap. Either early mornings or evenings upon returning home are the best sampling times. Do not intentionally flush or use the selected water line before the start of the 6 hour stagnant period prior to collection.

3. Use a kitchen or bathroom COLD water faucet for sampling. Please use a location that is not attached to a softener or a filter, if possible. Do not remove the aerator prior to sampling. Place the opened sample bottle below the faucet and open the cold water tap as you would do to fill a glass of water. Fill the sample bottle to the top, and then turn off your water.

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

5. Make sure to tighten the bottle cap and place it into the provided sample kit bag. Review the label to ensure that all your information on the label is correct.

6. If plumbing repairs and/or replacements have been made within the previous 3 years, please make note of it in addition to if sampled from a faucet connected to a filter or a water softener.

7. Place the sample kit in the same location it was delivered so that our BWWB staff can easily collect it.

8. All the results and information generated from this monitoring will be provided to you no later than 30 days after we learn of the monitoring results. However, if excessive lead and/or copper levels are found, you will be notified immediately. This usually will be 1 to 2 working days after learning the monitoring results of the collected sample.

If you have any questions regarding these instructions, please don’t hesitate to call Mrs. Green at (205) 244-4381 in the Water Quality Operations Department.
2016 Lead and Copper Study

SAMPLE COLLECTION FORM (INSTRUCTIONS)

****PLEASE ENCLOSE THIS SHEET WITH YOUR SAMPLE****

WATER WAS LAST USED: ___________/__________/2016 ___________ AM / PM
Month Day Time

SAMPLE WAS COLLECTED: ___________/__________/2016 ___________ AM / PM
Month Day Time

6 - 18 HOURS from last time used

SAMPLE LOCATION & FAUCET (e.g. Bathroom sink): ____________

Customer’s Address: ____________________________

☐ Check box if sample and form are enclosed in the sample kit.
☐ Check box if you have a water filtering or whole home filtration system.
☐ Check box if you have a water softening system.

I have read and understand the sampling directions. I have taken a tap sample in accordance with these directions.

Samples must be submitted within 24 hours of collection.
Fill bottle to the top

Customer’s Signature ____________________________ Date ____________________________

Customer’s Name (PLEASE PRINT) ____________________________

BWWB Employee’s Signature ____________________________ Date/Time of Sample Pick-Up

PLEASE PRINT
#1

**2016 Lead and Copper Study**

**SAMPLE COLLECTION FORM**

****PLEASE ENCLOSE THIS SHEET WITH YOUR SAMPLE****

WATER WAS LAST USED: _______/______/2016 ________ AM / PM

SAMPLE WAS COLLECTED: _______/______/2016 ________ AM / PM

SAMPLE LOCATION & FAUCET (e.g. Bathroom sink): ________________

**Customer’s Address:** ________________________________________

☐ Check box if sample and form are enclosed in the sample kit.
☐ Check box if you have a water filtering or whole home filtration system.
☐ Check box if you have a water softening system.

I have read and understand the sampling directions. I have taken a tap sample in accordance with these directions.

Samples must be submitted within 24 hours of collection.
Fill bottle to the top

______________    ______________
Customer’s Signature     Date

______________
Customer’s Name (PLEASE PRINT)

______________    ______________
BWWB Employee’s Signature     Date/Time of Sample Pick-Up
# Lead & Copper Sampling Plan

## Reporting Form (Sample)

<table>
<thead>
<tr>
<th>Name and Address of Customer</th>
<th>Tier</th>
<th>Lead Service Line Sample (yes or No)</th>
<th>Date of Collection</th>
<th>Date of Analysis</th>
<th>Lead Results (mg/l)</th>
<th>Year of Plumbing</th>
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<td>7/19/2016</td>
<td>&lt;0.005</td>
<td>1924</td>
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<td>7/19/2016</td>
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</tbody>
</table>
Lead & Copper Action Level Exceedance Guidelines

All water systems with an action level exceeding a lead or copper compliance limit shall install and properly operate optimum corrosion control processes continuously to reduce the potential for lead or copper exposure by the consumers (335-7-11-.11). Within six months of exceeding the compliance limit a system shall provide a detailed report indicating the process and equipment to be used to provide corrosion control treatment. Installation and startup of the equipment must be completed within 24 months of approval from the Alabama Department of Environmental Management (ADEM). A corrosion control treatment study may be required by ADEM to determine the optimum process to be installed. Existing corrosion control processes prior to the effective date of these regulations and acceptable to ADEM may have the treatment study requirements waived. The corrosion control treatment study shall be completed and submitted along with a proposal for the process to be used to ADEM within 12 months of exceeding a compliance limit. This report must include a proposed construction schedule for installation of the equipment. This project must be completed no more than 24 months after the study submittal. Corrosion control treatment processes shall be monitored during the next two consecutive six-month compliance periods. The water in a water system is considered to meet optimum corrosion control when the distribution system:

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

Lead & Copper Corrosion Control Study

Purpose: Systems exceeding the lead and copper compliance limit may be required to conduct and submit a corrosion control study to determine the optimum corrosion control process to minimize exposure of lead and copper to the consumers. The study shall evaluate the effectiveness of each of the following treatment processes and if appropriate, any combination of these processes:

1. Alkalinity and pH adjustment,  
2. Calcium hardness adjustment, and  
3. The addition of a phosphate or silicate based corrosion inhibitor.

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

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

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

The study shall identify all chemical or physical constraints that may limit or prohibit the use of a particular corrosion treatment method, identify any previously used corrosion control treatment that was found ineffective, or adversely affected any treatment processes; evaluate the effect of the proposed chemicals to be used on the water quality treatment processes demonstrating adequate corrosion control; and provide a recommendation of the proposed process to be installed. Information to be included with the recommended process shall include cost of the proposed installation, equipment to be used including model number and brand, chemical to be added including proposed concentration rate, NSF approval document; and availability information on the chemical and a construction schedule demonstrating the equipment can be operational within 24 months of the study submittal. Lead and copper monitoring shall continue each six-month compliance period from the date the parameter values are set.

**Lead & Copper Source Water Monitoring and Treatment**

Any water system which exceeds the lead or copper compliance limit must analyze the treated water for the contaminant using the same methodology and location as required for inorganic contaminants in each source used by the system (335-7-11-.15). This analysis must be completed within 180 days after the exceedance. Should these levels exceed 0.015 mg/l lead or 1.3 mg/l copper, confirmation monitoring must be collected within 7 days. The value of the initial and all confirmation monitoring will be averaged. Treatment modifications must be installed which will result in the finished water meeting the drinking water standard. Unless written approval by ADEM is given, the source will be taken out of service within 60 days and remain out of service until these additional treatment requirements are provided. Prior to reactivation of this source, monitoring of the treated water shall demonstrate compliance with drinking water standards and a second set of lead and copper monitoring conducted in six months. All initial sites for lead and copper shall be monitored for the next two six-month compliance periods. Modifications to the treatment process must be approved and permitted by ADEM.

**Lead Service Line Replacement**

Systems which exceed the compliance limit for lead shall identify the number and location of lead service lines and develop and implement a removal action plan (ADEM 335-7-11-.16). The plan shall identify the number of lines, including an identification of the portion owned by the system, general distribution locations, cost of replacement, proposed disposal site for removed lines, and a time schedule for removal. This plan shall be provided within six months of exceeding the compliance limit and shall be implemented within twelve months of the end of the monitoring period in which the exceedance occurred. If the monitoring frequency is annual or less, the end of the monitoring period is September 30 of the year in which the sampling occurred. The plan shall provide for full replacement of all services lines, except those excluded in the following subparagraphs, within 15 years.

1. At least 7% of the initial number of lead service lines shall be replaced annually. Lead service lines which have demonstrated to meet the compliance limit for lead through service line monitoring can be excluded from the process. The state may require a water system to replace more than 7% of the lead service lines annually.
2. The plan shall clarify the legal ownership of service lines. If the customer owns a lead service line, BWWB must notify the customer of its existence and offer to replace that service line for a fair and equitable cost.
3. Service line replacement may cease when two consecutive monitoring periods of first draw samples collected from lead service lines are meeting the compliance limit due to enhanced corrosion control activity.
4. The entire length of a service line does not require replacement if the following is adhered to:
At least 45 days prior to commencing with the partial replacement of a lead service line, BWWB shall provide notice to the residents of all buildings served by the line explaining that they may experience a temporary increase of lead levels in their drinking water, along with guidance on measures consumers can take to minimize their exposure to lead. ADEM may allow notice less than 45 days prior to commencing partial lead service line replacement where such replacement is done in conjunction with emergency repairs. In addition, BWWB shall inform the residents served by the line that the BWWB will, at BWWB's expense, collect a sample for a lead analysis from each partially replaced lead service line within 72 hours after the completion of the partial replacement of the service line. The system shall collect the sample and report the results of the analysis to the owner and the residents served by the line within three business days of receiving the results. Mailed notices post-marked within three business days of receiving the results shall be considered "on time."

BWWB shall provide the required information to the residents of individual dwellings by mail or by other methods approved by ADEM. In instances where multi-family dwellings are served by the line, BWWB shall have the option to post the information at a conspicuous location.

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

**Delivery of Public Education Materials for Lead Exceedance**

Public education for non-English speaking consumers must be in the appropriate language(s).

1. Printed materials shall be provided to all bill paying customers.

2. Within 60 days of the end of the monitoring period in which the exceedance occurred, public education must be conducted.

3. Consumers who are at the most risk shall have educational materials delivered to local public health agencies even if they are not located within the service area, along with an informational notice that encourages distribution to all potentially affected customers or water system users.
   - A. The local public health agencies must be contacted by phone or in person.
   - B. The required public educational materials must be provided to all organizations provided by the local public health agencies that target the affected populations. This list may include organizations inside or outside of the service area.
   - C. BWWB shall request a list of organizations from public health agencies, including ones not in the service area, and provide these organizations with the educational materials and informational notices that encourage distribution to all potentially affected customers.
     - (i) Licensed childcare centers.
     - (ii) Public and private preschools.
     - (iii) Obstetricians-Gynecologists and Midwives.

4. Consumers who are at the most risk must have educational materials delivered to the following organizations that are located in the service area along with an informational notice that encourages distribution to all the potentially affected consumers:
   - (i) Public and private schools or school boards;
   - (ii) Women, Infants and Children (WIC) and Head Start Programs;
   - (iii) Public and private hospitals and medical clinics;
   - (iv) Pediatricians;
   - (v) Family planning clinics; and,
(vi) Local welfare agencies.

5. Each quarter the lead action level is exceeded, each customer shall be provided with public notice. Sentence A below (exactly as written) shall be included on at least one water bill each quarter.

A. The Birmingham Water Works Board found high levels of lead in drinking water in some homes. Lead can cause serious health problems. For more information please call The Birmingham Water Works Board or visit www.bwwb.org.

B. BWWB must submit a press release to all newspapers, television and radio stations that service the BWWB service area.

C. From the list of categories below, at least three activities must be selected and implemented. The selection of activities and educational content shall be approved by ADEM prior to implementation.
   1. Public service announcements.
   2. Paid advertisements.
   3. Public area information displays.
   4. E-mails to customers.
   5. Public meetings.
   6. Household deliveries.
   7. Targeted individual customer contact.
   8. Direct material distribution to all multi-family homes and institutions.
   9. Other methods as approved by ADEM.

6. Continued exceedance shall trigger repeat of the activities in the above section “Delivery of Public Education Materials for lead exceedance” as follows:
   (a) Repeat the tasks contained in paragraph 2 and 5C of this section every 12 months.
   (b) Repeat the tasks contained in subparagraph 5A of this section with each billing cycle.
   (c) Maintain on a publically accessible website a copy of all public educational material required under paragraph 4 until the action level is no longer exceeded.
   (d) Repeat the tasks contained in subparagraph 5B twice every 12 months on a schedule approved by ADEM.

7. Delivery of public educational materials may be discontinued if the action level has not been exceeded during the most recent six month monitoring period conducted in accordance with this section.

8. BWWB shall offer to sample the tap water of any customer who requests it if the action level is exceeded. BWWB is not required to pay for collecting or analyzing the sample, nor is BWWB required to collect and analyze the sample itself.
APPENDICES
Dear Valued Customer:

The quality of Birmingham’s water consistently ranks among the highest in the nation and exceeds all State and Federal Standards. The Birmingham Water Works would like to keep that high ranking, but we need your help.

Every three (3) years, all water systems, including the Birmingham Water Works are required by the U.S. Environmental Protection Agency, US-EPA, and the Alabama Department of Environmental Management, ADEM, to measure lead and copper levels in their drinking water. You have been selected to participate in our area wide sampling program to test for the presence of lead and copper in our drinking water. Lead and copper primarily enters drinking water systems through corrosion of household plumbing materials.

If you would like to volunteer to participate in this testing, please do so by returning the enclosed participation card. After receipt of the participation card, a Birmingham Water Works employee will call and ask you a few questions from a brief survey before water samples can be collected. Sample bottles will be delivered to your home by Birmingham Water Works personnel and the completed water samples will be collected the following day. If you volunteer to participate detailed instructions regarding the sampling procedures will be provided when the sample bottles are delivered. The lead and copper results will be provided to you at the completion of the area wide testing.

The Birmingham Water Works effectively treats the water to reduce its corrosivity as it is processed at our water treatment plants. Our lead and copper levels has consistently tested below the US-EPA’s maximum contaminant level and with your help, this year’s results will continue to confirm that our water is among the best in the country. Please fill out the enclosed participation card and return it to us so that we may contact you and begin the sample collection process. I thank you for your cooperation and participation in this year’s lead and copper study.

Sincerely yours,

Darryl R. Jones, P.E.
Assistant General Manager,
Operations & Technical Services
Consumer Monitoring Results Letter (Sample)

RE: Lead and Copper Monitoring Results

Dear Customer:

Thank you for participating in the Lead and Copper Sampling Program. We are providing you with a copy of the lead and copper monitoring results for your residence. The samples were collected on «Country_or_Region» and are reported in parts per billion (ppb).

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Action Level</th>
<th>Unit of Measure</th>
<th>Results at your home</th>
<th>Compliance Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>15</td>
<td>ppb</td>
<td></td>
<td>Yes/No</td>
</tr>
<tr>
<td>Copper</td>
<td>1300</td>
<td>ppb</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Health Effects of Lead**

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

**Steps to Reduce Lead Exposure**

Flush your pipes before drinking and only use cold water for consumption. The longer that water sits in your home’s pipes, the more lead it may contain. Anytime the water in a particular faucet has not been used for six hours or longer, “flush” your cold-water pipes by running the water until it becomes as cold as it will get. This could take as little as five to thirty seconds if there has been recent heavy water use such as showering or toilet flushing. Otherwise, it could take two minutes or longer.

Use only water from the cold-water tap for drinking, cooking, and especially for making baby formula. Hot water is likely to contain higher levels of lead. The actions recommended above are very important to the health of your family. They will probably be effective in reducing lead levels because most of the lead in household water usually comes from the plumbing in your house, NOT from the local water supply. More information on lead in drinking water is available on the US EPA web site at [http://www.epa.gov/safewater](http://www.epa.gov/safewater).

**Maximum Contaminate Level Goal (MCLG), Minimum Detection Limit (MDL), and Action Level (AL)**

The MCLG is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety. The MDL is the minimum concentration that can be measured with 99% confidence that the concentration’s greater than zero (0). An AL is the concentration of a contaminant that triggers treatment or other requirements a water system shall follow. The MCLG for lead is 0 ppb and for copper is 1,300 ppb. The AL for lead is 15 ppb and for copper is 1,300 ppb.

If you have any questions or would like additional information, please contact Drusilla Hudson at (205) 244-4466.

Sincerely,

Drusilla Hudson; REM, CSEM
Manager; EnviroLab, Water Quality & Regulatory Compliance
Lead Action Level Exceedance Public Education (Sample)

{First_Name} {Last_Name}
{Address_Line_1}
{City} {State} {ZIP_Code}

RE: Lead Monitoring Results

Dear Customer:

IMPORTANT INFORMATION ABOUT LEAD IN YOUR DRINKING WATER. The Birmingham Water Works Board found elevated levels of lead in drinking water in some homes/buildings. Lead can cause serious health problems, especially for pregnant women and young children. Please read this information closely to see what you can do to reduce lead in your drinking water.

Health Effects of Lead

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

Lead is a common metal found throughout the environment in lead-based paint, air, soil, household dust, food, certain types of pottery, porcelain, pewter, and water. Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join copper pipe, brass and chrome plated brass faucets, and in some cases, pipe made of lead that connect your house to the water main (service lines). Beginning in 2014, materials, devices, and components used to supply water for human consumption must meet the new “lead-free” requirement of 0.25%. The previous “low Lead” requirement was 8%. Any materials used for installation or repair must be lead-free, including pipes, pipe fittings, plumbing fittings, and plumbing fixtures.

Reasons for elevated lead levels in drinking water and what BWWB is doing to correct the problem

Steps to Reduce Lead Exposure

Flush your pipes before drinking and only use cold water for consumption. The longer that water sits in your home's pipes, the more lead it may contain. Anytime the water in a particular faucet has not been used for six hours or longer, "flush" your cold-water pipes by running the water until it becomes as cold as it will get. This could take as little as five to thirty seconds if there has been recent heavy water use such as showering or toilet flushing. Otherwise, it could take two minutes or longer. Use only water from the cold-water tap for drinking, cooking, and especially for making baby formula. Hot water is likely to contain higher levels of lead. Boiling water does not reduce lead levels. Additional steps to reduce your exposure to lead include: purchasing or leasing a home treatment device, purchasing bottled water for drinking and cooking. The actions recommended above are very important to the health of your family. If you are concerned that your child may have been exposed to lead, your family doctor or pediatrician can perform a blood test for lead.

For additional information, please contact Drusilla Hudson, at (205) 244-4466 or visit our website www.bwwb.org. More information on lead in drinking water is available on the US EPA web site at http://www.epa.gov/safewater.

The following is a list of some State approved laboratories in your area that you can call to have your water tested for lead.
Lead & Copper Sampling Plan

The Birmingham Water Works Board
(205) 244-4466

Guardian Systems – Leeds Alabama
(205) 699-6647

Bessemer Utilities Laboratory
(205) 481-4333 ext.237

ENERSOLV - Decatur
(256) 350-0846

Sincerely,

Drusilla Hudson; REM, CSEM
Manager; EnviroLab, Water Quality & Regulatory Compliance
Dear Customer:

The Alabama Department of Environmental Management (ADEM) and The Birmingham Water Works Board are concerned about lead in your drinking water. Although most homes have very low levels of lead in their drinking water, some homes in the community have lead levels above the EPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/L). Under Federal law we are required to have a program in place to minimize lead in your drinking water by (insert date when corrosion control program will be completed). This program includes corrosion control treatment, source water treatment, and public education. We are also required to replace each lead service line that we control if the line contributes lead concentrations of more than 15 ppb after we have completed the comprehensive treatment program. If you have any questions about how we are carrying out the requirements of the lead regulation please give us a call at (205) 244-___. This brochure explains the simple steps you can take to protect you and your family by reducing your exposure to lead in drinking water.

Health effects of lead. Lead is a common metal found throughout the environment in lead-based paint, air, soil, household dust, food, certain types of pottery, porcelain and pewter, and water. Lead can pose a significant risk to your health if too much of it enters your body. Lead builds up in the body over many years and can cause damage to the brain, red blood cells and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that will not hurt adults can slow down normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination such as dirt and dust that rarely affect an adult. It is important to wash children's hands and toys often, and to try to make sure they only put food in their mouths.

Lead in Drinking Water. Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person's total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. The EPA estimates that drinking water can make up 20 per cent or more of a person's total exposure to lead. Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join copper pipe, brass and chrome plated brass faucets, and in some cases, pipe made of lead that connect your house to the water main (service lines). In 1986, Congress banned the use of lead solder containing greater than 0.2% lead, and restricted the lead content of faucets, pipes and other plumbing materials to 8.0%. When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon after returning from work or school, can contain fairly high levels of lead.

Steps You Can Take in the Home To Reduce Exposure To Lead in Drinking Water. Despite our best efforts mentioned earlier to control water corrosivity and remove lead from the water supply, lead levels in some homes or buildings can be high. To find out whether you need to take action in your own home, have your drinking water tested to determine if it contains excessive concentrations of lead. Testing the water is essential because you cannot see, taste, or smell lead in
Lead & Copper Sampling Plan

drinking water. Some local laboratories that can provide this service are listed at the end of this booklet. For more information on having your water tested, please call (205) 244- ).

If a water test indicates that the drinking water drawn from a tap in your home contains lead above 15 ppb, then you should take the following precautions:

Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six hours. The longer water resides in your home's plumbing the more lead it may contain. Flushing the tap means running the cold water faucet until the water gets noticeably colder, usually about 15-30 seconds. If your house has a lead service line to the water main, you may have to flush the water for a longer time, perhaps one minute, before drinking. Although toilet flushing or showering flushes water through a portion of your home's plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your family's health. It usually uses less than one or two gallons of water and costs less than (insert a cost estimate based on flushing two times a day for 30 days) per month. To conserve water, fill a couple of bottles for drinking water after flushing the tap, and whenever possible use the first flush water to wash the dishes or water the plants. If you live in a high-rise building, letting the water flow before using it may not work to lessen your risk from lead. The plumbing systems have more, and sometimes larger pipes than smaller buildings. Ask your landlord for help in locating the source of the lead and for advice on reducing the lead level.

Try not to cook with or drink water from the hot water tap. Hot water can dissolve more lead more quickly than cold water. If you need hot water, draw water from the cold tap and heat it on the stove.

Remove loose lead solder and debris from the plumbing materials installed in newly constructed homes, or homes in which the plumbing has recently been replaced, by removing the faucet strainers from all taps and running the water from 3 to 5 minutes. Thereafter, periodically remove the strainers and flush out any debris that has accumulated over time.

If your copper pipes are joined with lead solder that has been installed illegally since it was banned in 1986, notify the plumber who did the work and request that he or she replace the lead solder with lead-free solder. Lead solder looks dull gray, and when scratched with a key looks shiny. In addition, notify the Water Supply Branch of ADEM about the violation.

Determine whether or not the service line that connects your home or apartment to the water main is made of lead. The best way to determine if your service line is made of lead is by either hiring a licensed plumber to inspect the line or by contacting the plumbing contractor who installed the line. You may be able to identify the plumbing contractor by checking the record of building permits which should be maintained in the files of the (insert name of department that issues building permits). A licensed plumber can at the same time check to see if your home's plumbing contains lead solder, lead pipes, or pipe fittings that contain lead. The public water system that delivers water to your home should also maintain records of the materials located in the distribution system. If the service line that connects your dwelling to the water main contributes more than 15 ppb to drinking water, after our comprehensive treatment program is in place, we are required to replace the portion of the line we own. If the line is only partially controlled by the Birmingham Water Works Board, we are required to provide you the owner of the privately-owned portion of the line with information on how to replace your privately-owned portion of the service line, and offer to replace that portion of the line at the owner's expense and take a follow-up tap water sample within 14 days of the replacement. If we replace only the portion of the line that we own, we also are required to notify you in advance and provide you with information on the steps you can take to minimize exposure to any temporary increase in lead levels that may result from the partial replacement, to take a follow-up sample at our expense from the line within 72 hours after the partial replacement, and to mail or otherwise provide you with the results of that sample within three business days of receiving the results. Acceptable replacement alternatives include copper, steel, iron, and plastic pipes.

Have an electrician check your wiring. If grounding wires from the electrical system are attached to your pipes, corrosion may be greater. Check with a licensed electrician or your local electrical code to determine if your wiring can be grounded elsewhere. DO NOT attempt to change the wiring yourself because improper grounding can cause electrical shock and fire hazards.

The steps described above will reduce the lead concentrations in your drinking water. However, if a water test indicates that the drinking water coming from your tap contains lead concentrations in excess of 15 ppb after flushing, or after we have completed our actions to minimize lead levels, then you may want to take the following additional measures:
Purchasing or leasing a home treatment device. Home treatment devices are limited in that each unit treats only the water that flows from the faucet to which it is connected, and all of the devices require periodic maintenance and replacement. Devices such as reverse osmosis systems or distillers can effectively remove lead from your drinking water. Some activated carbon filters may reduce lead levels at the tap, however all lead reduction claims should be investigated. Be sure to check the actual performance of a specific home treatment device before and after installing the unit.

Purchase bottled water for drinking and cooking.

You can consult a variety of sources for additional information. Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead. State and local government agencies that can be contacted include:

The Birmingham Water Works Board (205) 244-x can provide you with information about your community's water supply. For more information on reducing lead exposure around your home/building and the health effects of lead, visit EPA's website at http://www.epa.gov/lead or contact your health care provider.

(name of city or county department that issues building permits) at (205- - ) can provide you with information about building permit records that should contain the names of plumbing contractors that plumbed your home; and

The Alabama Department of Public Health at 1-800-ALA-1818 or the County Health Department at 205- can provide you with information about the health effects of lead and how you can have your child's blood tested.

The following is a list of some State approved laboratories in your area that you can call to have your water tested for lead.

Bessemer Utilities Laboratory
(205) 481-4333 ext237

Birmingham Water Works Board
(205) 244-4464

ENERSOLV - Decatur
(256) 350-0846

Guardian Systems – Leeds Alabama
(205) 699-6647

Montgomery Branch Laboratory- Alabama Department of Public Health
(334) 260-3400

TTL Laboratory
(205) 345-0816
Consumer Certification Letter (Sample)

Ms. Laura Taylor  
Drinking Water Branch  
Alabama Department of Environmental Management  
P.O. Box 301463  
Montgomery, Alabama 36130-1463

Re: Lead and Copper Certification of Delivery

Dear Ms. Taylor:

As required by State law, we are providing you with a sample copy of the lead and copper monitoring results letter that was sent to each customer whose residence was sampled for lead and copper.

I hereby certify that each residence where lead and copper tap water monitoring was collected has been informed of the results of said monitoring and that the notice (sample copy attached) contains all the information as required in ADEM Admin. Code r. 335-7-11.17(1)(a). Each customer was provided the results within 30 days of the water system receiving the results from the laboratory. The information was provided to each customer by direct mailing or hand delivery as deemed appropriate to ensure that all persons receiving the water at said location received notification of the results.

If you have any questions, please contact me at (205) 244-4000.

Sincerely,

Darryl Jones  
Assistant General Manager
### Materials Inventory for Service Lines
(Water Main to Meter Setting)

<table>
<thead>
<tr>
<th>Installed Date</th>
<th>Type of Pipe Material</th>
<th>Total</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prior to 1945</strong> - (Estimated number of service lines installed prior to 1945 that have not been changed)</td>
<td>Lead, Galvanized Steel, Partial Lead, Cast Iron, (See Note)</td>
<td>2,347</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>After 1945</strong></td>
<td>Galvanized Steel, Copper, PVC, Ductile Iron, PEX, HDPE, other</td>
<td>191,226</td>
<td>98.8</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>193,573</td>
<td>100</td>
</tr>
</tbody>
</table>

**NOTE:**

*The Birmingham Water Works Board started to install copper pipe for service lines between the water main and the meter setting in 1945. Prior to that time, service line material could consist of lead, galvanized steel, partial lead, or even cast iron pipe material.

**Total number of service lines in the table does not include in-active service lines or fire protection service lines. (May 2016)**

***Materials for service lines installed prior to 1945 could vary based on actual location. Most of these service lines have been replaced with copper pipe or retired from service. Therefore, the number of service lines made of lead or partial lead material is estimated in the table above.
## Materials Inventory for Water Meters

### As of Year-2016

<table>
<thead>
<tr>
<th>Water Meter Sizes</th>
<th>No Lead</th>
<th>Low Lead Brass (&lt; 0.25%)</th>
<th>Leaded Brass (&lt; 8%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2-inch (Residential)</td>
<td>20,818</td>
<td>53,250</td>
<td>115,522</td>
<td>189,590</td>
</tr>
<tr>
<td>2-inch and Larger (Commercial)</td>
<td>3,952</td>
<td></td>
<td>31</td>
<td>3,983</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>24,770</strong></td>
<td><strong>53,250</strong></td>
<td><strong>115,553</strong></td>
<td><strong>193,573</strong></td>
</tr>
</tbody>
</table>

**NOTE:**
- No Lead = 0% Lead Content
- Low Lead Brass = Up to 0.25% Lead Content in wetted materials (Compliant to current standards of the SDWA Lead Levels)
- Leaded Brass = Up to 8.0% Lead Content in wetted materials (Compliant to the pre-2014 standards of the SDWA Lead Levels)
## Materials Inventory for Water Mains

<table>
<thead>
<tr>
<th>Water Main Material</th>
<th>Quantity (Miles)</th>
<th>Percentage (%)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast Iron (Unlined)</td>
<td>273.00</td>
<td>6.7</td>
<td>Some old cast iron may be lead-jointed. Quantity unknown.</td>
</tr>
<tr>
<td>Cast Iron (Cement Lined)</td>
<td>1,228.50</td>
<td>30.2</td>
<td>No issues believed based upon the cement lining</td>
</tr>
<tr>
<td>Galvanized Steel</td>
<td>322.90</td>
<td>7.9</td>
<td>No lead content in galvanized steel pipe</td>
</tr>
<tr>
<td>Ductile Iron (Cement Lined)</td>
<td>1,857.20</td>
<td>45.6</td>
<td>No issues believed based upon the cement lining</td>
</tr>
<tr>
<td>PVC</td>
<td>293.80</td>
<td>7.2</td>
<td>No issues based on pipe material</td>
</tr>
<tr>
<td>Other (Concrete, Copper, Steel, etc.)</td>
<td>98.20</td>
<td>2.4</td>
<td>No issues based on pipe material</td>
</tr>
<tr>
<td>Valves, Fittings, etc.</td>
<td></td>
<td></td>
<td>Older materials may contain lead of unknown content</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>4,073.60</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>
The distribution system map below displays water mains installed prior to 1945. These water mains may be the most likely locations for lead or partial lead service lines. The Birmingham Water Works Board started to install copper pipe for service lines between the water main and the meter setting in 1945.