

Randolph Township School District
**LEAD DRINKING WATER TESTING
SAMPLING PLAN**

Project Manager – Matthew Geary, Director of Facilities

Contents

1. INTRODUCTION	3
2. OBJECTIVE	3
3. SAMPLING PROJECT COORDINATION.....	3
3.1 School District Program Manager	3
3.2 Sampling Project Manager	4
Project Manager Responsibilities	4
3.3 Individual School Sampling Project Officers	5
Project Officer Responsibilities	5
3.4 Individual School Protocols.....	6
4. SCHOOL SAMPLING PRIORITY.....	6
5. PLUMBING SURVEY.....	6
5.1 Plumbing Profile.....	7
6. PLANNING	7
6.1 Walk –Through.....	7
6.2 Floor Diagram.....	8
7. SAMPLE LOCATIONS	8
7.1 Sample Locations.....	8
7.2 Sample Location Codes	8
7.3 Sampling Location Inventory	9
8. SAMPLING PROCEDURES	9
8.1 Timeline	9
Prior to Sampling	9
Day of Sampling	10
8.2 Sample Collection.....	10
Sample Collection Highlights.....	10
Sample Collection Method	10
Additional Sampling Event.....	12
8.3 New Jersey Certified Laboratories.....	12
Laboratory Responsibilities	12
Sampling Personnel Responsibilities.....	12
8.4 Sampling Results	13
8.5 Intermediate Remedial Measures.....	13
Glossary	14

1. INTRODUCTION

This Lead Drinking Water Testing Sampling Plan (Sampling Plan) was developed by the Randolph Township Schools, based on guidance developed by the New Jersey Department of Environmental Protection (NJDEP) and the United States Environmental Protection Agency (USEPA), to establish a plan for sampling lead at drinking water outlets used for consumption or food preparation in every school within the District (See Attachment A for full school listing). The data collected through the execution of this Sampling Plan will determine if immediate remedial measures are necessary and will assist in the prioritization of future water testing for lead in accordance with this Sampling Plan.

This Sampling Plan is based on the USEPA publication, “The 3Ts for Reducing Lead in Drinking Water in Schools” and NJDEP guidance.

The District has also developed a Quality Assurance Project Plan (QAPP) for the sampling program which is available under separate cover.

2. OBJECTIVE

The 1988 Lead Contamination Control Act (LCCA) is aimed at identifying and reducing lead (Pb) in drinking water in schools and child care facilities. In response, the USEPA prepared guidance documents to assist school districts in meeting the requirements of the LCCA. The guidance documents were used as a resource in developing this Sampling Plan.

It should be noted, for the purpose of determining immediate remedial measures (i.e. taking drinking water outlets out of service and notifying parents/guardians of results), the District is required to utilize the lead action level established in the SDWA rules by the USEPA at 40 CFR 141.80 for lead in drinking water. At the time of development of this Sampling Plan, the lead action level is 15 µg/L, which is more stringent than the guidance provided by USEPA in their Lead in Schools Guidance which recommends action be taken at drinking water outlets greater than 20 µg/L. Schools in New Jersey that are served by their own well (not public water), which are regulated pursuant to the Federal and New Jersey SDWA, must adhere to the 15 µg/L value for determining compliance.

3. SAMPLING PROJECT COORDINATION

Testing for lead in schools requires a coordinated effort especially when multiple schools are to be included in the testing effort. Designated personnel and set protocols are essential to ensuring a coordinated effort.

3.1 School District Program Manager

Randolph Township Schools Program Manager:

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Director of Facilities

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The School District Program Manager is the overall authority in the execution of the District's lead sampling project. He/she is responsible for the initial notification to the District of the testing program, obtaining funds for testing, assigning the Sampling Project Manager, requesting/enlisting the assistance from other District departments if needed, approving the District's QAPP(s), approving the Final Report for each school and coordinating with other District officials to make the results of the testing available to the public.

3.2 Sampling Project Manager

Randolph Township Schools Sampling Project Manager:

Matthew Geary

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The Sampling Plan Project Manager is responsible for overseeing the execution of lead sampling at each of the district's schools. This involves the prioritization of schools to be sampled, and adherence with the District's Sampling Plan and QAPP. He/she serves as the liaison between the District, State agencies, local Health Departments, laboratories and public water systems (if applicable). He/she reports to the Program Manager.

Project Manager Responsibilities

- Prepare the District's Specific Quality Assurance Project Plan (QAPP) and Sampling Plan;
- Manage the Sampling Plan and QAPP;
- Oversight of Individual School Project Officers (Project Officers) to ensure that they adhere to the Sampling Plan procedures and the QAPP;
- Purchase of equipment needed for district lead sampling;
- Coordinate with New Jersey laboratories certified for lead testing in drinking water;
- Coordinate with Project Officers to establish sampling schedules;
- Ensure properly signed QAPPs are in place prior to initiation of sampling;
- Verify that officials from each school are aware when sampling is scheduled and the expected duration;
- Review of the School Field Sampling Summary Reports prepared by Project Officers;
- Review of Laboratory Data Reports (LDR) from Laboratory Managers;
- Review of Final Project Reports prepared by Project Officers;
- Identify limitations in the use of any laboratory data due to information provided in the accompanying School Field Sampling Summary Report;
- Maintain the original signed QAPP(s);
- Maintain documents, reports and records listed in QAPP, including:
 - Laboratory Data Reports (LDR)

- Copy of Field Sampling Summary Report with copies of field logbooks,
- Field Walk-Through reports including Attachments B, C, D E and F of this Sampling Plan,
- Chain of custody forms and flush tags.
- Copy of Final Project Report
- Maintenance of other relevant records, such as:
 - Purchase orders for analytical costs (copy).
 - Agreement with laboratory to sample, analyze, and report with details for payment
 - Receipts (originals or copies)

3.3 Individual School Sampling Project Officers

An Individual School Sampling Project Officer (Project Officer) is assigned for each school. A Project Officer should be someone who is familiar with the school building layout and plumbing system. See District's QAPP for a list of the Project Officers.

Project Officer Responsibilities

- General project oversight for assigned school(s).
- Generate field log book for each assigned school. Document field activities including any changes to procedures outlined in the Sampling Plan or QAPP.
- Ensure proper completion of the Plumbing Profile Form for assigned school(s) - See Attachment B.
- Oversight of completion of the following reports found in the Sampling Plan which require sign-off by Project Officer:
 - Water Outlet Inventory (Attachment C)
 - Filter Inventory (Attachment D)
 - Flushing Log (Attachment E)
 - Pre Sampling Water Use Certification (Attachment F).
- Prepare labels for outlets to be sampled.
- Prepare for Walk-Through including acquisition of School Floor Plan.
- Attend school Walk-Through.
- Ensure proper completion of Walk-Through documentation including identification of outlets on Floor Plan, and Sampling Location Inventory with coding according to the Sampling Plan (Attachment C).
- Supervision of field activities such as Walk- Through, flushing (if required), locking school prior to sampling, and sample collection.
- Identify low use water outlets requiring flushing and attach flush tag (Attachment G).
- Ensure that Field Sampling Team has all relevant sampling supplies including sampling bottles, labels, proper reagent water and chain of custody forms prior to collection of samples.
- Ensure that all water outlets to be sampled prior to sampling event are labeled.
- Ensure that all low use outlets identified for sampling had been flushed.
- Remove flush tags from outlet once sampling is completed.

- Responsible for ensuring water remains motionless for a minimum of eight hours (last to leave the school) prior to sampling event by following procedures in Section 8.
- Verify that the Sampling Plan was followed prior to initiating sampling by completing the Pre-Sampling Water Use Certification (Attachment F).
- Provide supervision of sampling event.
- Document issues during sampling event in field log book.
- Prepare Field Walk-Through Report, School Field Sampling Summary Report and Final Project Report for assigned school(s).
- Maintain field log books for each school.
- Prepare samples for shipment and delivery to laboratory per certified laboratory instructions.
- Ensure that samples are delivered to laboratory within the time period specified by the certified laboratory

3.4 Individual School Protocols

A separate log book and supporting documentation shall be kept for each school. The contents of the log book are to include the Attachments A through F found at the end of this plan. A field log book should include but not be limited to: a material evaluation, filter log, drinking water outlet inventory, flushing log, and label identification codes.

4. SCHOOL SAMPLING PRIORITY

The District developed a list of all school facilities scheduled for sampling. See Attachment A for the school sampling listing. Please note that the list may be updated based on conditions at the school, which prevent sampling from occurring or scheduling issues. Accordingly, the list should include a revision date.

Districts may need to prioritize the sampling schedule. For those cases, development of criteria is required and the criteria needs to be included in the Sampling Plan.

District Schools were prioritized based on:

- The presence of lead plumbing or infrastructure as determined in the Plumbing Profile;
- Age of the students; and
- Student population.
- Scheduling Availability

5. PLUMBING SURVEY

Prior to a sampling event, documentation of various aspects of each school's water system needs to be completed. This following information needs to be compiled and the attachments completed including:

5.1 Plumbing Profile

The purpose of a Plumbing Profile (Attachment B) is to identify and categorize plumbing and infrastructure in order to prioritize schools/outlets for testing, and to identify potential sources of lead (i.e. lead service lines, or lead piping or solder). The results of the Plumbing Profile determine the sampling locations and priority within the individual school facilities.

A Plumbing Profile should include all of the following:

- Year school built and dates of any additions
- Building blue prints and floor diagrams
- Service line material;
- Material of internal plumbing, this is an important part of a plumbing profile, and whether it meets the current New Jersey “lead-free” plumbing code;
- Point-of-entry or point-of-use treatment being used;
- All drinking water outlets including fountains that are permanently out of service;
- All drinking water outlets including fountains that are temporarily out of service;
- All drinking water outlets including drinking water fountains that are leaking or evidence of staining and in need of repair;
- Type (make and model) and location of all drinking water fountains, including detailed description that identifies of whether they are lead-lined or if they have been involved in any recalls, (See USEPA Fact Sheet at <http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=30005UPU.txt>);
- Locations of all drinking water outlets including fountains;
- All plumbing repairs and replacements needed for internal plumbing;
- All plumbing repairs and replacements conducted within the past year;
- Locations of any electrical wires grounded to water pipes

6. PLANNING

6.1 Walk –Through

A Walk-Through must be conducted by the Project Officer prior to sampling as part of the planning process. The Walk-Through must include every room (including but not limited to classrooms, offices, bathrooms, kitchens and recreational areas) in the facility. During the Walk-Through, all drinking water and food preparation outlets to be sampled will be labelled by the Project Officer on the Floor Diagram (6.2).

The Project Officer will also conduct an onsite assessment of each sample outlet to document (using Attachment C) specific characteristics of the outlet (e.g. leaking outlets; staining). During this assessment, the water should be turned on to determine the spray pattern, whether there is adequate flow to collect samples or if any odor or color differences are present and whether the cold water faucet is functioning properly. Only cold water faucets are to be sampled. For motion sensor and metered sinks, the hot water valve will be shut off on the day of sampling. All outlets in need of repair must be repaired prior to sampling or documented on the temporary out of service list in the Plumbing Profile (Attachment B).

6.2 Floor Diagram

Each drinking water outlet shall be identified on the school schematic (floor diagram). The floor diagram should have the classroom numbers and the following locations labeled:

- Service Line = SL
- Point of Entry¹
- Food preparation outlets (i.e. cafeteria, kitchen and home economics class faucets);
- Drinking Water Fountains; and
- Other drinking water outlets to be sampled (i.e. nurse's office, teacher's lounge, home economics, etc.), and any other room or outside facility used for water consumption.

The Project Officer must date and sign the floor diagram.

7. SAMPLE LOCATIONS

7.1 Sample Locations

The following locations shall be identified and labeled for each school:

- Kitchen outlets
- Food Preparation outlets
- Teacher Lounge outlets
- Nurse's Office outlets
- Home Economic Sink outlets
- Drinking Water Fountains – Bubblers and Water Coolers
- Outside drinking water fountains and food preparation areas
- Ice Machines
- Other drinking water outlets used for consumption

Examples of outlets that do not need to be sampled include utility sinks, outside spigots, bathroom sinks and classroom sinks, unless any of these sinks are used routinely for consumption.

7.2 Sample Location Codes

Each sampling location shall be identified by its location and type using the following coding system (Note additional codes as needed):

KC = Kitchen Outlet, Cold

CT= Cafeteria Outlet

FP= Food Preparation Sink

TL= Teacher Lounge Sink

NS = Nurse's Office Sink

EC = Home Economics Outlet, Cold

¹Point of entry is the closest water outlet to the entrance of the service line into the school.

DW= Drinking Water bubbler
WC = Water Cooler (Chiller Unit)
IM = Ice Machine

7.3 Sampling Location Inventory

Attachment C shall be used to develop a detailed inventory of each drinking water outlet in the school to be sampled. The inventory must be completed and signed by the Project Officer.

The Drinking Water Outlet Inventory shall include the following information:

- All drinking water outlets in the school
- The type, location, and sample location code of each drinking water outlet
- If the drinking water outlet has a chiller unit
- If the drinking water outlet has an aerator/screen
- If the drinking water outlet is motion activated, in which the hot water at the outlet must be turned off prior to sampling
- If the drinking water outlet is operational
- If the drinking water outlet has not been used frequently
- If the drinking water outlet is leaking
- If the drinking water outlet has a filter
- The make and model of all drinking water fountains and water coolers

8. SAMPLING PROCEDURES

8.1 Timeline

Samples should be collected before the facility opens in the morning and before any water is used in the building. The water shall sit in the pipes unused for at least 8 hours, but no more than 48 hours, before a sample is collected.

At no time should filters, aerators and screens be removed prior to or during the sampling event.

Prior to Sampling

- For buildings that have not been used for more than 48 hours, the District will perform systematic flushing 48 hours prior to the sampling event, as described in the USEPA's "3Ts For Reducing Lead in Drinking Water in Schools" (revised October 2006, see page 56). This flushing event and locations shall be documented in a log (Attachment E).
 - The flushing log must be completed and signed by the Project Officer.
- The Project Officer will contact the laboratory to confirm sample bottles, weatherproof labels, chain of custody forms and coolers are available and ready for the sampling event.
- Every drinking water outlet to be sampled (previously identified in Attachment C) will be labeled with a specific Sample Location Code in indelible marker on the underside of the sampling fixture in the event the District has to re-visit the sample location.
- A communication will be sent out to all staff in schools being sampled explaining what time all staff must exit the building.

- After this time, signs shall be posted to indicate that water should not be used and access to the building shall be restricted to ensure that water sits undisturbed for a minimum of 8 hours.
- Turn off all irrigation and outdoor water features.

Day of Sampling

The Project Officer will use Attachment F to document when the water was last used and when sampling began.

8.2 Sample Collection

Sample Collection Highlights

- All samples shall be collected in a pre-cleaned HDPE 250mL wide mouth single use rigid sample container.
- Identify on the Sampling Plan the outlet closest to the water service line(s) entry point to be collected first, then identify the next closest outlet as second, and move away from the water service line(s) entry point until the outlet farthest away is identified to be sampled last on the sampling plan. This will minimize the chance that a sampling location will be flushed by an upstream fixture. Sampling will begin at the outlet closest to the point of entry and continue to the furthest outlet to ensure the water remains motionless in the plumbing.

Sample Collection Method

USEPA recommends a two-step sampling process be followed for identifying lead contamination. Lead in a water sample taken from an outlet can originate from the outlet fixture (the faucet, bubbler etc.), plumbing upstream of the outlet fixture (pipe, joints, valves, fittings etc.), or it can already be in the water that is entering the facility. The two-step sampling process helps to identify the actual source(s) of lead.

In Step 1, initial samples are collected to identify the location of outlets providing water with elevated lead levels and to learn the level of the lead in the water entering the facility (i.e., at the service connection). In Step 2, follow-up flush samples are taken only from outlets identified as problem locations to determine the lead level of water that has been stagnant in upstream plumbing, but not in the outlet fixture. Sample results are then compared to determine the sources of lead contamination and to determine appropriate corrective measures.

Schools may wish to collect both initial and follow-up samples at the same time. This is more convenient and may save time and money; however, using this approach creates a trade-off between convenience and confidence. The confidence in the sample results will decrease since flushing water through an outlet immediately after taking the initial sample could compromise the flushed locations depending on the interior plumbing of buildings. Protocols for both options are provided below. School districts can decide which option works best for their situation.

All sampling must be conducted in accordance with this Sampling Plan and the District's QAPP.

Collection Method Protocol the District will follow

Sample Collection for First Draw and Follow-up Flush Sampling Conducted on Different Days

1. For each drinking water outlet sampled, a new pair of non-colored latex or nitrile gloves shall be used. This is to minimize the potential for cross contamination of sample outlets by sampling personnel.
2. First draw samples (i.e. samples collected from outlets where water sat undisturbed for a minimum of 8 hours) will be collected from a cold water outlet at each location identified in 7.3 above. The sample must be collected by placing the bottle under the drinking water outlet before turning the cold water outlet on. No water should be allowed to run prior to collecting a sample. For motion-activated faucets, the hot water valve must be turned off prior to sampling.
3. Each sample collected will be properly identified on the sample bottle and chain of custody using the Sample Location Code previously identified by the District (as identified on the label on the outlet and on the floor diagram).
4. Upon receiving the testing results, the District will conduct a second sample event collecting a follow-up flush sample at any drinking water outlet with an initial result of greater than 15 µg/L (as defined as greater than or equal to 15.5 µg/L).
5. The following planning will take place prior to the follow-up sampling event:
 - a. The drinking water outlets requiring a flushed sample shall be listed on a Follow-Up Sampling form (See Attachment H.vii for example), labelled with an indelible marker, and identified on the floor diagram.
 - b. Procedure for ensuring the water remains stagnant for a minimum of 8 hours shall be followed.
6. The drinking water outlet will be turned on and allowed to run for 30 seconds then the water will be captured in a pre-cleaned 250 mL container. Note: If the drinking water outlet is a water cooler with a cooler unit then allow the water to run for 15 minutes prior to collecting a flushed sample in a pre-cleaned 250 mL container.
1. Each sample collected will be properly identified on the sample bottle and chain of custody using the Sample Location Code previously identified by the District (as identified on the label on the outlet and on the floor diagram). Additionally, the follow-up flush samples will be identified by noting "FLUSH" after the Sample Location Code on the sample bottle and on the chain of custody (e.g. MM-2F-DW-01 and MM-2F-DW-01 FLUSH).

Additional Sampling Event

Upon receiving the results of the initial and follow-up flush samples at all outlets, the District will conduct additional sampling events for the following situations: any location required to be sampled previously but was not sampled (not operational during initial sampling event), where there was a possible lab error or sample collection error, and any location that was not sampled but could help pinpoint the source of lead in a sampled outlet.

8.3 New Jersey Certified Laboratories

Laboratory Responsibilities

Certify to the District that they have received, and will follow, the Sampling Plan and QAPP.

- Each laboratory must document that laboratory personnel have previous experience sampling for lead and have been properly trained to conduct USEPA Method 200.8 or other methods that are approved sampling methods. Approved sampling methods are USEPA methods for the analysis of lead in drinking water (USEPA Method 200.9, USEPA Method 200.5, SM3113B, ASTM3559-D) provided that the reporting limit used by the laboratory for that method is less than or equal to 2 µg/L.
- The laboratory will conduct analysis of a laboratory fortified blank (Field Blank) to assess the accuracy. The acceptance criteria for accuracy for the results will be within plus or minus 15% recovery of the known value.
- Laboratories must provide the results to the District within timeframe required under contract (14 day is average).
- Laboratories will report in µg/L (ppb) and to at least three significant figures.

Sampling Personnel Responsibilities

Each sampler will be responsible for the following:

- Preparation of pre-printed waterproof labels, which will include, the sampler's name, the school name, the Sample Location Code, parameter to be analyzed (lead), date of collection and any preservation technique used;
- Preparation of a chain of custody to include the field sample information;
- Obtaining from the laboratory, prior to the sampling event, ASTM Type I reagent-grade water (RGW) to be used as Field Reagent Blanks (FRB). The sampler will transport this

RGW to the school to be sampled. Before the first sample is collected the RGW collected at the Laboratory will be transferred to a sample container near the first sample location inside the school building. This FRB sample will be stored and transported in the same cooler, handled and preserved in the same manner as samples collected at that school.

- Documentation of any and all observations such as automatic sensors, odors, change in water color, low water flow, water outlet leaks (i.e. 1 second drip), irregular water spray, attached filter(s), if the screen/aerator is on/off the water outlet or if the water becomes warm/hot.
- Minimizing the potential for cross contamination of sample outlets by sampling personnel. The water will be collected from the outlet directly into each container.
- Following all of the sampling procedures outlined in the Sampling Plan and QAPP.

8.4 Sampling Results

The laboratories will provide the lead sample results to the District in electronic format within the timeframe required under the contract. A spreadsheet of all results, the analytical results report, and the chain of custody forms must be included.

Within 24 hours after the District has reviewed and verified the final laboratory results, the District shall make the test results of all water samples publicly available at the school facility and on the District's website. If any results exceed the lead action level, the District must also provide a written notification to the parents/guardians of all students attending the facility, facility staff, and the Department of Education (DOE).

8.5 Intermediate Remedial Measures

Upon receiving sample results, the District will turn off all outlets with results that exceed 15 µg/L (as defined as greater than or equal to 15.5 µg/L). If these locations must remain on for non-drinking purposes, a "DO NOT DRINK – SAFE FOR HANDWASHING ONLY" sign will be posted (Attachment H.v).

Glossary

Drinking Water Outlet- an outlet that can be used for the consumption of water, such as, water fountains, water coolers, bubblers, kitchen sinks and food preparation sinks; however, classroom, bathroom, and outlets used for washing dishes are not drinking water outlets.

Action Level (AL)- The lead level established by the USEPA at 40 CFR 141.80 for lead in drinking water.

Bottled Water- includes sealed purchased water from an external company (individual bottles or dispensers). Drinking water dispensers that utilize purchased water are not required to be sampled.

First Draw Sample – a sample that is collected from outlets where water sat undisturbed for a minimum of 8 hours.

Follow-up Flush Sample - sample that is collected from outlets after they have been manually flushed.

Low-Use Outlets- outlets that are not used routinely and may sit for periods of time with minimal or no use. Examples include those outlets in a wing of a school that is temporarily closed off and are not being used, or fountains and food preparation outlets that are only used during sporting or other events.

Out of Service Outlets- drinking water outlets as identified on Attachment C that are not operational.

- a. **Permanently Out of Service Outlets-** outlets that are not being used and the District plans to decommission.
- b. **Temporarily Out of Service Outlets-** outlets that require repair or replacement and will be put back in service once they are repaired. For example, an outlet with a broken handle.

Point of entry (POE)- The point at which the service line enters the building. For the purposes of sample collection, the POE sample location is the closest water outlet to the entrance of the service line into the school.

Quality Assurance Project Plan (QAPP) Template- describes the planning, implementation, and evaluation steps that will be consistently applied by those involved in a School District's Sampling Plan. The QAPP will provide a high level of confidence

in the results of this sampling and aide in meeting the overall goal of ensuring any appropriate remediation measures are quickly identified and implemented.

Sampler- personnel responsible for collecting the drinking water outlet samples for a school. The individual is required to review and understand their roles and responsibilities under the District's Quality Assurance Program Plan and be able to collect samples in accordance with the District's Sampling Plan.

Service Line- the pipe that carries water to the school from the public water system's main in the street.

School Wide Systematic Flush- system flushing is required if the school has been dormant for greater than 48 hours (holiday or seasonal break). A Flushing Log (Attachment E) needs to be completed for each school flushed.

Water Cooler- any mechanical device affixed to drinking water supply plumbing that actively cools water for human consumption. The reservoir can consist of a small tank or a pipe coil.