



STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
BOARD OF PESTICIDES CONTROL
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AUGUSTA, MAINE 04333

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JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

To: Maine Board of Pesticides Control
From: Mary Tomlinson, Pesticides Registrar/Water Quality Specialist
RE: Proposal for 2021 Groundwater Monitoring Program
Date: July 10, 2020

Background

In 2019, the Board approved funding to sample 200 wells for the statewide sampling for pesticides in groundwater. The project met with several hurdles which slowed sampling including: refusals to participate, people not home or not answering the door, wells that failed to meet site criteria upon field reconnaissance, and impassable roads due to early thawing. Additional time is required to select potential replacement wells. Unfortunately, sampling was halted in early March as result of Covid-19 with approximately 35% of the samples collected.

The pros and cons of the following three options were discussed: continue with where the sampling ended in 2020, resample wells and continue the project, or start with an entirely new data set. It was determined the best option to provide the most reliable data would be resample the wells and continue with the remainder of the wells selected. This would also provide the opportunity to compare results in wells sampled over two years under different weather patterns.

The Hexazinone Statewide Management Plan is scheduled to be conducted in 2021. Sampling for hexazinone has been ongoing about every 4 years since 1994 and includes long-term data for some of the remaining original wells sampled. Efforts to complete the 2020 water quality monitoring project will now overlap with the hexazinone effort.

Due to the concerns with exposure to Covid-19, new protocols will be instituted to protect staff and conserve time selecting wells include:

1. Field reconnaissance of all potential sampling sites to be completed summer of 2020 to ensure sites meet criteria.
2. Tax maps and other resources will be used to obtain mailing addresses to initiate contact by mail with well owners and seek tentative agreements to participate in sampling.
3. Staff will followup by telephone in early winter to set appointments for sampling beginning in December.

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4. State employees will not enter homes, will wear proper PPE, and will follow disinfection procedures of equipment and materials.
5. Residents will collect their sample following instructions provided.

Study Objectives

Study objectives remain the same but are expanded to include sampling to meet the requirements of the Hexazinone State Management Plan.

- Assess the occurrence of pesticides in private drinking water wells associated with active agricultural and blueberry fields throughout the state of Maine.
- Determine trends in agricultural pesticides detected in groundwater collected from private drinking water wells associated with active agricultural and blueberry fields.

Sampling Plans

Statewide Groundwater Survey

- Samples for the statewide sampling program were drawn across the state from the 200 randomly-selected domestic wells selected in 2020. Sampling points are allocated uniformly across all areas within one quarter mile of agricultural land in the state. Sites selected must be down gradient of an active agricultural pesticide use site.
- Ten field duplicates and 10 field blanks will be collected for quality control and quality assurance purposes. The number of duplicates and blanks are collected on a 5% basis or one in 20 samples which will be distributed across all five inspection regions.
- All historical samples from the 2014 statewide groundwater monitoring will be incorporated as part of the 200 samples to assess trends in groundwater contamination over time. Any historical sites no longer viable for sampling will be replaced with new randomly selected sites.
- Samples will be shipped to Montana Analytical Laboratory, an accredited lab with a current Quality Assurance Project Plan (QAPP). The QAPP is required by the Environmental Protection Agency (EPA) as part of the Cooperative Agreement between the EPA and Maine and is also required under the **State of Maine Generic State Management Plan for Pesticides and Groundwater** (BPC, 1994). The analysis method employed will be the “Universal Method for the Determination of Polar Pesticides in Water Using Solid Phase Extraction and Liquid Chromatography/Mass Spectrometry/ Mass Spectrometry” and analyzes for 102 pesticides.

Hexazinone Survey

- Samples for the hexazinone sampling program will be drawn from 50 randomly-selected domestic wells located across the state. Sampling points are allocated uniformly across all areas within one quarter mile of blueberry production sites in the state. Sites selected must be down gradient of an active agricultural pesticide use site.

- Four field duplicates and four field blanks will be collected for quality control and quality assurance purposes. The number of duplicates and blanks are generally collected on a 5% basis or one in 20 samples which will be distributed across the inspector regions involved.
- Remaining historical samples from the 1994 groundwater monitoring project will be incorporated to assess trends in groundwater contamination over time. Any historical sites no longer viable for sampling will be replaced with new randomly selected sites.
- Samples will be shipped to Montana Analytical Laboratory, an accredited lab with a current Quality Assurance Project Plan (QAPP). The QAPP is required by the Environmental Protection Agency (EPA) as part of the Cooperative Agreement between the EPA and Maine and is also required under the **State of Maine Generic State Management Plan for Pesticides and Groundwater** (BPC, 1994). The analysis method employed will be the “Universal Method for the Determination of Polar Pesticides in Water Using Solid Phase Extraction and Liquid Chromatography/Mass Spectrometry/ Mass Spectrometry” and analyzes for 102 pesticides.

Proposal

We propose to repeat the statewide survey, resampling the wells from 2020 and continuing with the remainder of the wells selected. In addition, we propose to add the hexazinone survey to be conducted following the conclusion of the statewide survey and request support for funding these projects. We believe this is feasible given that:

- The lack of enough oversample points to replace eliminated wells, as previously discussed, will reduce the number of wells sampled in the statewide survey by 25-50 wells. The additional 50 wells and associated QA/QC samples for hexazinone will not significantly increase the total number of wells sampled beyond the 200 wells initially planned for.
- One-third of the wells for the statewide survey have already been sampled and will simply require calling to verify participation and setting an appointment.
- All the preliminary site work will be completed this summer for both projects with precontact initiated in the fall to determine participation.

Estimated Project Cost

The estimated cost for analysis and shipping of 220 samples is \$91,000. The final number of wells sampled will not be known until the end of the project. Montana Analytical Laboratory offers a 20% discount on six or more samples. When possible, they aggregate the samples shipped by different staff to provide the BPC greater benefit from the discount.

Project	Number of Samples	Cost
Statewide Groundwater Survey	220	\$91,000
Hexazinone Survey	54	\$23,210
Both projects	274	114,210