



STATE OF MAINE  
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY  
BOARD OF PESTICIDES CONTROL  
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## Memorandum

To: Board of Pesticides Control  
From: Pamela J. Bryer, Ph.D. | Pesticides Toxicologist  
Subject: Forestry Herbicide Use Via Aerial Application Water Quality Sampling Plan

April 7, 2023

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### **Summary:**

Environmental sampling associated with Executive Order (EO) 41 did not occur as scheduled in 2022 due to a lack of allocated funding. BPC proposes the following plan for the 2023 spray year that would meet the requirements of the EO 41 using funds consolidated from the BPC's EPA Program Partnership Grant.

### **History:**

EO 41, *An Order Establishing the Governor's Review of the Aerial Application of Herbicides For Forest Management* (available at this link:

<https://www.maine.gov/future/sites/maine.gov/governor.mills/files/inline-files/EO41%20FY2021.pdf>) contained the following language:

#### **“Section 1 B.**

Development of a surface water quality monitoring effort to focus on aerial application of herbicides in forestry to be conducted in 2022.”

### **Rationale:**

In order to understand the potential for off-target drift of herbicides during aerial application, BPC is currently planning a two-pronged approach that includes drift and water sampling.

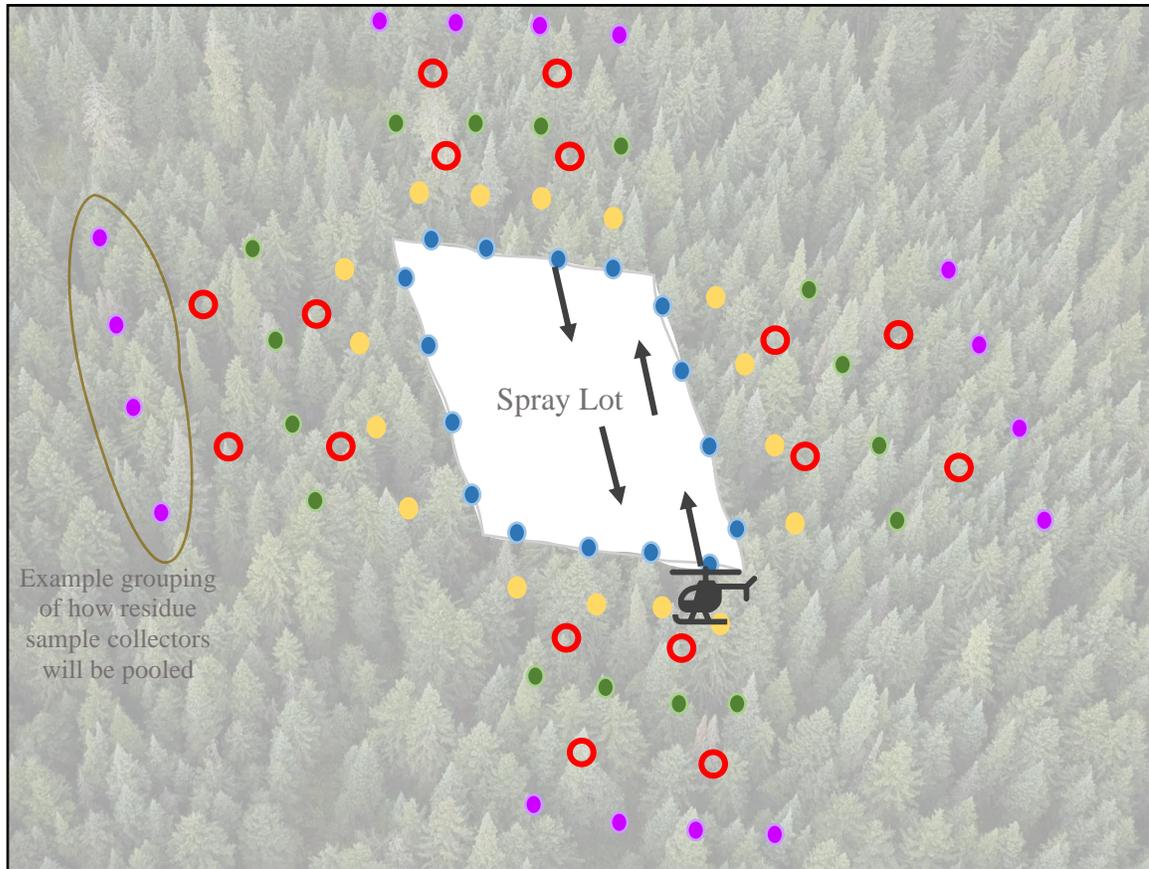
**Drift sampling-** Five cleared lots set to be sprayed in 2023 will be selected for intensive study. The lots are to be representative of a typical aerial spray in terms of acreage, geography, and forest practices. At each location, staff will set up air particle counters and residue sample collectors. The sample collectors will be positioned at the forest edge, 25 feet, 100 feet, and 250 feet in all directions around the lot. A minimum of four collectors will be set along the length of each side at each of the distances mentioned in order to adequately represent the lot's edges. These replicates will be pooled and an

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average concentration will be for each distance calculated. This sampling plan is intended to describe the distance into the areas surrounding the sprayed plot where pesticide residues can be found. See the figure below for a graphical representation of this sampling plan.



- Residue sample collector (water sensitive paper) @ 0 feet
- Residue sample collector (water sensitive paper) @ 25 feet
- Residue sample collector (water sensitive paper) @ 100 feet
- Residue sample collector (water sensitive paper) @ 250 feet
- Drift particle collector

The drift sampling plan includes measuring drift with particle counters which allow for continuous sampling of the air for hours following the application. These units will be repeatedly deployed at each site.

The residue sample collectors will be collected as pools wherein all four collectors on each side at a given distance will be condensed into one sample. Pooling these residue collectors allows the BPC to reduce analytical costs while maintaining good coverage. Residue data captured at different distances within the canopy allows a test of the current buffer distance to water established in BPC regulations.

### **Water sampling-**

Currently only limited data exist to describe patterns of presence or absence of pesticide residues in rivers and streams of northern Maine. This part of the project aims to describe the current status of herbicide pesticide detections surrounding forested landscapes.

Early in summer 2023, submitted aerial spray plans will be surveyed and combined into a master map. DACF managed boat launches will be superimposed on the planned spray locations map. Boat launch areas will be sampled as they provide a public access opportunity that allows for testing of herbicide residues in areas where people recreate. Samples will be taken to represent both those boat launches within watersheds containing aerial forestry activities and those that do not contain known aerial locations based on the 2022 application year. This sampling plan is intended to cover as much ground and variation as possible and represents a range-finding study intended to better understand the scope of the issue.

### **Basic Estimated Budget**

#### Equipment Costs

Drift particle counters (16 units, \$225 each)	\$3,600
Water sensitive papers (7 units, \$67 for 50 +shipping)	\$510
Deployment hardware (stakes, ties, etc)	\$250
Sample collection containers	\$100

#### Laboratory Analytical Costs

Pooled residue samples -multiresidue (80 samples, \$450 each)	\$36,000
Pooled residue samples -glyphosate (80 samples, \$250 each)	\$20,000
Water samples -multiresidue (50 samples, \$250 each)	\$22,500
Water samples -glyphosate (50 samples, \$250 each)	\$12,500

#### Travel

Two weeks for two staff:	
Housing @ GSA rate (\$98/day)	\$1,960
Meals @ GSA rate (\$59/day)	\$1,180
Mileage (3,000 miles)	\$1,380

**Total estimated project cost** **\$99,980**