INTRODUCTION

Pest management plays an integral role in the health and economic vitality of New York State. At the same time, improperly used pesticides have the potential to impact environmental quality. This Long Island Pesticide Pollution Prevention Strategy (Strategy) was developed in response to concerns over detection of pesticide-related constituents in the groundwater over time at various locations on Long Island and recognition of the importance of protecting the environment while meeting critical pest management needs.

The New York State Department of Environmental Conservation (DEC) regulates the registration, commercial use, purchase and custom application of pesticides. The Environmental Conservation Law (ECL) sets forth the state's policy regarding pesticide usage. ECL 33-0301. According to the ECL, pesticides, when properly used, are "valuable, important and necessary to the welfare, health, economic well-being and productive and industrial capabilities of the people of this state." ECL 33-0301. However, pesticides also present potential dangers to health, property and the environment if improperly used. ECL 33-0301.

DEC exercises its broad regulatory responsibilities in consultation with the Departments of Health (DOH) and Agriculture and Markets (DAM) in order to protect public health and the environment while ensuring that pesticides proposed for use in New York State are properly registered and applied for the benefit of agricultural and other economic enterprises that rely on pesticide usage. In the interests of providing further protection to Long Island's precious groundwater resources, DEC engaged the public, municipalities, agricultural and other regulated communities in a discussion on how to further protect Long Island's groundwater resources. As a result, DEC developed the Long Island Pesticide Pollution Prevention Strategy. Implementation of the Strategy will enhance DEC's existing regulatory program using principles of pollution prevention. The Strategy presents a blueprint for DEC, in consultation with stakeholders, to evaluate pesticide usage on Long Island, identify pesticides that have the greatest potential to cause adverse impacts and work with partners to reduce or eliminate such usage or find alternatives that do not present such impacts. This approach will both protect Long Island's water resources from pesticide impacts and encourage effective methods of pest management.

ES.1 THE CHALLENGE OF PESTICIDE USE AND GROUNDWATER ON LONG ISLAND

ES.1.A. Critical Natural Resource and Essential Pest Management

Almost three million people in Nassau and Suffolk Counties rely on clean drinking water from Long Island's sole source aquifer, a unique and critical resource in the State. The heavy reliance on the sole source aquifer plus the nature of the aquifer system itself (e.g., shallow depth of groundwater, sandy and permeable soils overlying it), which is a factor in its vulnerability to contaminants, underscores the critical need to protect the quality of the groundwater before it becomes impaired for such usage. Pesticides play an important and beneficial role in managing pests on Long Island. This includes regional pests which threaten public health, agricultural and horticultural productivity, structural integrity of public and private infrastructure (e.g., termite/carpenter ant control), quality of stored and marketed goods, and the condition of the

environment. Annual regional pesticide use by many entities (e.g., agriculture, businesses, institutions and homeowners) averages in the millions of pounds and hundreds of thousands of gallons.[1]

ES.1.B. Pesticide Detections in Long Island Groundwater

Water quality monitoring by Suffolk County and other entities shows that pesticides are among a number of contaminants detected in Long Island groundwater as a result of a wide range of human activities (e.g., nitrates, volatile organic compounds, pharmaceuticals and personal use products). The water quality monitoring data presented in this document, as well as the water quality monitoring data summary tables, are available at ftp://ftp.dec.ny.gov/dshm/pesticid/liwaterqualitydata.docx Data obtained from Suffolk County indicates that 117 pesticide-related chemicals were detected in the groundwater at a number of locations on Long Island at various points in time since 1997.[2] Approximately half of these are legacy compounds (from pesticides no longer or never registered for use on Long Island or in New York State), which have not been used in many years. Although the samples demonstrate that pesticides can persist in the Long Island aquifer, most detections were at low or trace levels. Some pesticide-related compounds were detected (mostly at low levels) at multiple locations, distributed broadly over Long Island. Primary examples include the active ingredients imidacloprid (insecticide), metalaxyl (fungicide), and atrazine (herbicide).[3]

ES.1.C Drinking Water Quality

It is important to note that much of the water quality monitoring data presented in this document does not represent what the majority of residents of Long Island are using for drinking and other household purposes. Few detections of individual pesticide-related contaminants exceeded applicable standards. The Suffolk County Water Authority ensures that finished water (treated water) that they supply to their customers exceeds expectations for quality set by New York State drinking water standards.[4] Public water supplies are subject to regulation by the NYSDOH through the Suffolk County Department of Health Services (SCDHS) under New York Codes Rules and Regulation (NYCRR) Subpart 5-1.[5] The regulations establish water quality standards known as maximum contaminant levels (MCLs), and require routine water quality monitoring. If finished drinking water is found to contravene a standard, corrective action is required. Private wells are not regulated by NYSDOH, but SCDHS has a program to test private wells for pesticides and other contaminants. Through their work, if contaminants are found in a private well that exceeds standards then the homeowner is advised to not drink that water, and to either find an alternative source or to invest in treatment to achieve compliance with drinking water standards.

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[1] NYS Department of Environmental Conservation, Final Annual Report for New York State Pesticide Sales and Applications 2005. http://www.dec.ny.gov/chemical/37825.html

[2] See Appendices A and B of the Strategy for a summary of results of Long Island water quality monitoring conducted by the Suffolk County (SC) Department of Health Services, SC Water Authority, and U.S. Geological Survey. See additional monitoring data at http://www.dec.ny.gov/.

[3] DEC data analysis regarding these active ingredients (AIs) is contained in Appendix B of this Strategy.

[4] 2012 Annual Drinking Water Quality Report, Suffolk County www.scwa.com.

[5] Title 10. Department of Health Chapter I. State Sanitary Code Part5. Drinking Water Supplies Subpart 5-1. Public Water Systems.

ES.1.D. Significance of NYSDEC Pesticide Product Registration

DEC's pesticide product registration process forms an integral component of a comprehensive pest management program. The product registration program acts as a gatekeeper to control the universe of pesticide products in New York State that may be made available consistent with public health and environmental protection. The current in-depth pesticide product review process did not exist prior to the early 1990s. Older pesticides, registered before that time, have often not received a comprehensive DEC review, or received only a very limited review of a subset of products. The data demonstrate that DEC's existing pest management regulatory program has proven effective at preventing products which pose unreasonable adverse effects from being registered and used in the State. DEC's enhanced pesticide registration program relies on the New Active Ingredient (NAI) and Major Change in Labeling (MCL) review process. During this process pesticide registrants work with DEC to implement a feasible and effective resolution of any environmental concerns identified during DEC's review. For example, some pesticides may be registered for use in New York State with restrictions that prohibit or modify use on Long Island if the chemical or product use pattern poses a leaching risk for Long Island's vulnerable groundwater system. In this way, the current regulatory process effectively provides pesticide products needed by the user community while ensuring groundwater protection.

ES.2 PESTICIDE POLLUTION PREVENTION GOAL

In general, once a contaminant that has the potential to adversely impact public health or the environment is found in groundwater, technological and fiscal constraints severely limit remedial options, and accurate assessments of public health and environmental quality implications are challenging. Therefore, it is essential to prevent contamination in the first instance, to the extent practicable, while still allowing for needed pest management.

DEC developed this Strategy as an approach for managing the ongoing need to prevent potential pesticide impacts to water resources while continuing to meet critical pest management needs on Long Island. In general terms, pollution prevention means reducing or eliminating the creation of pollutants at the source. In the context of pesticides on Long Island, pollution prevention may mean modifying pest management processes, promoting the use of alternative pest management practices, and utilizing effective, less-toxic products when available.

GOAL OF STRATEGY

Prevent adverse effects on human health and the environment by protecting Long Island's groundwater and surface water resources from pesticide-related contamination, while continuing to meet the pest management needs of agricultural, residential, commercial, industrial, and institutional sectors.

ES.3 PESTICIDE POLLUTION PREVENTION (P2) BLUEPRINT

DEC's strategy to meet this goal of protecting water quality while meeting pest management needs is based on a blueprint of actions to further pesticide pollution prevention on Long Island. The greatest benefits can be gained from prevention when it is implemented through collaboration with involved entities. Therefore, the pesticide pollution prevention (P2) blueprint includes components to be acted on by DEC, in conjunction with various partners and Long Island stakeholders. In brief, the blueprint forms an approach for moving forward by supplementing the existing protective measures of the product registration, compliance and outreach components of DEC's pesticide regulatory program with P2 measures.

There are five main components in the pesticides P2 blueprint. The blueprint calls for actions essential to effective implementation of pesticide P2 in Long Island and, without which the Strategy cannot be meaningfully implemented. The blueprint is summarized below. Most of its components are based on multi-party actions needed to bring pesticide P2 to fruition. The actions must be feasible and carried out with available resources of DEC and its partners.

PESTICIDE P2 BLUEPRINT SUMMARY

DEC Conducts Initial Assessments of Specific Active Ingredients (AIs) and Related Pesticide P2 Needs

DEC Forms, Convenes and Chairs Pesticide P2 Workgroups; Workgroups Consider Various Matters Regarding Specified AIs and Related P2 and Advise DEC

DEC Identifies and Prioritizes Pesticide P2 Measures and Partners Collaborate to Implement P2 Measures

DEC Tracks Pesticide P2 Results and Assesses Need for P2 Modifications

DEC Maximizes Department Use of Water Quality Monitoring for Pesticides (Monitoring underlies implementation of the entire blueprint.)

These interrelated blueprint components follow a sequence which starts with assessing certain pesticide active ingredients detected in Long Island groundwater, then evaluating the type of P2 needed and implementing it, followed by tracking P2 results and modifying P2 if needed. Maximizing DEC use of water quality monitoring for pesticides involves actions which will provide an important part of the foundation for implementing P2 throughout the blueprint.

A number of action steps are needed to implement each component of the blueprint. These are shown in the full P2 blueprint on the following pages. Implementation of each component is designed to yield benefits which facilitate carrying out subsequent components and steps in the P2 process. Further detail on the blueprint is contained in chapter 3.

BLUEPRINT for LONG ISLAND PESTICIDE POLLUTION PREVENTION

NYSDEC Conducts Initial Assessments of Active Ingredients (AIs) and Related Pesticide P2 Needs

Review water quality monitoring results for Long Island groundwater; identify AIs detected as well as factors such as location, number, frequency and concentration of detections and potential for human exposure and associated health risks.

- Review AI-related standards, use and product information and water quality standards and benchmarks
- Identify AIs for which P2 measures potentially need to be taken
- Identify types of additional information needed to consider potential pesticide P2 needs and plan for AIs.

Note: DEC anticipates that the first group of AIs to be considered for assessment will be metalaxyl (fungicide), atrazine (herbicide) and imidacloprid (insecticide). These AIs have been detected by Suffolk County at multiple groundwater monitoring locations.

DEC Forms, Convenes and Chairs Pesticide P2 Workgroups; Workgroups Consider Various Matters Regarding AIs and P2

NYSDEC forms, convenes and chairs workgroups:

- A Technical Review and Advisory Committee (TRAC) which, at the request of DEC, considers AIs specified by the Department and advises on factors such as AI use and critical needs, potential for human exposure, human health risks, effective alternatives for AI, aquifer vulnerability, potential pesticide P2 measures (see below), P2 implementation partners, and other considerations to provide DEC with background information to support Department decisions regarding AIs and related P2 actions and implementation. (For further information on the TRAC, see Box ES-3 at close of the Executive Summary.)
- Additional workgroups, to ensure broad representation of involved entities in consideration of AIs and P2 measures (e.g., entities with direct involvement in pest management, pesticide use, and water quality on Long Island as well as academia). These workgroups may also consider AIs specified by NYSDEC, provide NYSDEC with requested information on particular subject areas (e.g., human health implications, water quality concerns, effective alternatives), and suggest feasible P2 measures and implementation partners.

NYSDEC Identifies and Prioritizes Pesticide P2 Measures and Partners Collaborate to Implement P2 Measures

NYSDEC considers workgroups' information and determines, the scope and priority of pesticide P2 measures appropriate for each AI to be addressed.

- NYSDEC will identify and prioritize P2 measures from among this overall scope of primary P2 measures:
  - Develop and disseminate best management practices and track their use.

BLUEPRINT for LONG ISLAND PESTICIDE POLLUTION PREVENTION

DEC Identifies and Prioritizes Pesticide P2 Measures and Partners Collaborate to Implement P2 Measures, cont'd.

- Research alternative products and practices, including organic practices, and provide related outreach and education to implement
- Conduct outreach and education on use pattern-specific integrated pest management
- Encourage voluntary label revisions (through registrant and USEPA process)
- Restrict products to certified applicator use.

- DEC will identify partners to collaborate with the Department to implement pesticide P2 measures (e.g., product registrants, user groups, academic entities, State and local agencies) and, as needed, convene P2 implementation workgroups.
- DEC and partners will collaborate to implement P2 within available resources.
- DEC may strengthen existing outreach partnerships with Cornell University and other entities, forge new partnerships and maximize Internet resources.
- DEC and partners will identify stakeholders and build P2 implementation support.

DEC Tracks Pesticide P2 Results and Assesses Need for P2 Modifications or Regulatory Measures

- DEC, with, as needed, assistance of pesticide P2 partners, monitors results of P2 implementation and determines additional monitoring and measures, if any, for effective pest management and water quality protection.
- DEC may consider certain regulatory measures to manage use of a specific AI, if P2 actions prove insufficient and if DEC and NYSDOH determine that detections of a pesticide-related chemical in water quality monitoring data indicate significant public health or environmental impacts may occur. Under such circumstances, DEC may reassess the registration status of products containing the target AI by reviewing the product registrations associated with the AI and, if necessary, take regulatory action to prohibit use on Long Island.

DEC Maximizes Department Use of Water Quality Monitoring for Pesticides

NOTE: This underlies all actions under the blueprint, in that water quality monitoring results are essential to conducting the work under each component (e.g., determining AIs to be considered, specifying P2 needed, etc.)

- Adjust emphasis of monitoring, as needed and within available resources and flexibility, to meet DEC information needs for Long Island (e.g., focus on specific AIs to capture information and discern trends and new detections in particular pesticide use settings, such as greenhouses, turf, vineyards) as well as to monitor P2 results, if applicable.
- Focus water quality monitoring, including the acquisition of finished drinking water monitoring results, conducted under available resources by Suffolk County and Cornell University or others, on AIs of concern to determine trends and changes in detection levels and frequency.

TECHNICAL REVIEW AND ADVISORY COMMITTEE (TRAC) - SUMMARY DESCRIPTION

Composition: DEC will convene, approximately six months after this Strategy is finalized, a TRAC to pool expertise of State and local government agencies as well as statewide and local public service and academic entities closely involved with pesticide regulation and water quality monitoring for Long Island:

- New York State: DEC (Chair), Department of Health, Department of Agriculture and Markets; Cornell University Department of Agriculture and Life Sciences.
- Local Entities: Suffolk County Department of Health Services, Water Authority, and Soil and Water Conservation District; Nassau County Health Department; Cornell Cooperative Extension of Suffolk County

After 5 years, Department and involved participants assess ongoing need for TRAC.

Primary purposes:

- Assist DEC in investigation and assessment of active ingredients (AIs), identified and ranked by the Department (potential contaminants detected in Long Island groundwater)
- Consider factors such as groundwater monitoring data, exceedances of chemical-specific water quality standards, potential for human exposure, public health risks, existing needs for pest management, and pest management alternatives
- Advise DEC regarding potential and feasible response actions to prevent further pesticide-related impacts to the Long Island aquifer while recognizing pest management needs. (Scope of response actions - see P2 measures in Information Box ES-1.)

ES.4 SUMMARY OF LONG ISLAND PESTICIDE P2 STRATEGY CONTENTS

A summary of the contents of each chapter in the Strategy is contained in Table ES-1.

Table ES-1: EXECUTIVE SUMMARY OF CHAPTERS AND APPENDICES
LONG ISLAND PESTICIDE POLLUTION PREVENTION STRATEGY

	Summary of Chapters and Appendices
1. Goal, Philosophy, and Purpose	***Goal:*** Given that groundwater, pest management and pesticide use are vital to public and economic welfare on Long Island, the overall goal of this Strategy is to: Prevent adverse effects to human health and the environment by protecting Long Island's groundwater and surface water resources from pesticide-related contamination, while continuing to meet the pest management needs of agricultural, residential, commercial, industrial, and institutional sectors. ***Philosophy:*** The goal of enhancing water quality protection from pesticide impacts and maintaining needed pest management on Long Island can be effectively achieved through a strong pollution prevention approach that recognizes the importance of both and incorporates the involvement and cooperation of various stakeholders. Preventive measures can be taken to both minimize further pesticide contamination after a pesticide has been detected and to prevent contamination before a pesticide is detected in water resources. ***Purpose:*** Establish a long-term pesticide pollution prevention blueprint to meet the goal of the Strategy and to outline enhanced DEC partnerships with involved entities that are essential to success. This blueprint should serve to enhance use of pest management methods on Long Island that incorporate pollution prevention techniques and protect Long Island water resources from pesticide-related contamination.
2. Overview: Groundwater and Pesticide Use on Long Island	▪ ***Importance of Long Island sole source aquifer and its protection.*** ▪ ***Aquifer structure and multiple uses by approx. 3 million people make it a critical resource.*** ▪ ***Pesticide-related statistics for Long Island*:** • Of the 13,688 pesticides registered in the State, 361 are prohibited from use and 145 are registered for use on Long Island only when certain conditions are met (June 2012); • 4,733 certified pesticide applicators and technicians on Long Island (2012); • 5.3 million pounds and 407,000 gallons of pesticides applied on Long Island (2005). ▪ ***Pesticide use yielded substantial benefits,*** including Suffolk County's statewide lead in sales of horticultural, agricultural and vineyard products. ▪ ***The signs of pesticide use are showing up in Long Island's groundwater.*** 117 pesticide-related chemicals detected in the aquifer at various locations since 1997; approximately half are legacy compounds (no longer or never registered in NYS). Some detections at multiple locations and multiple compounds detected at individual wells. ▪ ***Most pesticide-related detections are much lower than water quality criteria.*** Seven types of State and federal water quality criteria are summarized.

Table ES-1: EXECUTIVE SUMMARY OF CHAPTERS and APPENDICES, cont'd.
LONG ISLAND PESTICIDE POLLUTION PREVENTION STRATEGY

Chapter	Summary of Chapters and Appendices
3. Action Plan to Implement Pesticide Pollution Prevention Strategy	▪ ***Pollution prevention can prevent water quality impacts while continuing to meet critical pest management needs.*** ▪ ***DEC Pesticide P2 Process Steps:*** • Conduct Initial P2 Needs Assessment • Determine Scope of Applicable P2 Measures • Convene P2 Working Groups • Review Information from P2 Working Groups as Basis for P2 Assessment • Identify and Prioritize Active Ingredients and P2 Measures • Collaborate with Partners to Implement P2 Measures and Build Stakeholder Support • Monitor Results of P2 Actions and Determine if Further/Modified Action Needed Based on Success Criteria
4. Pesticide Registration in New York State	▪ ***History and evolution of New York State pesticide registration process*** ▪ ***Current NYS registration process*** ▪ ***NYS product review process for potential groundwater impacts*** - Safeguards against groundwater pollution built-into process ▪ ***Factors considered during registration***, include land and groundwater characteristics ▪ ***Overview of leachate assessment and modeling*** of new active ingredients ▪ ***Current Pesticide Use Statistics in NYS:*** Approximately 13,688 registered products, and 1,700 restricted pesticides , 361 of which are prohibited from use on Long Island
5. Existing Pollution Prevention Programs and Activities	▪ ***Summary of existing non-regulatory and regulatory measures to prevent or reduce potential impacts of pesticide use.*** Examples of non-regulatory: outreach, education, best management practices, integrated pest management, environmental benefit projects, agricultural environmental management. Examples of regulatory preventive measures: pesticide product registration, mixing and loading requirements, toxic and hazardous materials storage, and local pesticide phase-outs. Measures conducted by State and local governments, academia, pesticide users, interest groups and others.
6. Legal Authority and Enforcement	▪ ***Summary of existing DEC statutory and regulatory authority over pesticides*** registration, sales, use, storage and disposal as well as certain water quality requirements, primarily under the Environmental Conservation Law and related regulations. ▪ ***Comparison of DEC and USEPA authorities*** ▪ ***Summary of DEC enforcement mechanisms related to pesticides*** ▪ ***Summary of statutory authorities of other State agencies*** to conduct pesticide-related work, such as water quality and pesticide management-related functions under the authority of State laws.
Appendices	▪ *Appendix A* Pesticide-Related Chemicals Detected In Long Island Groundwater 1996-2010 ▪ *Appendix B* DEC Summaries of Long Island Water Quality Monitoring Data ▪ *Appendix C TRAC Description and Ongoing Pest Management Education and Outreach Efforts*

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