

LAKE CHAMPLAIN BASIN PROGRAM

Fact Sheet Series

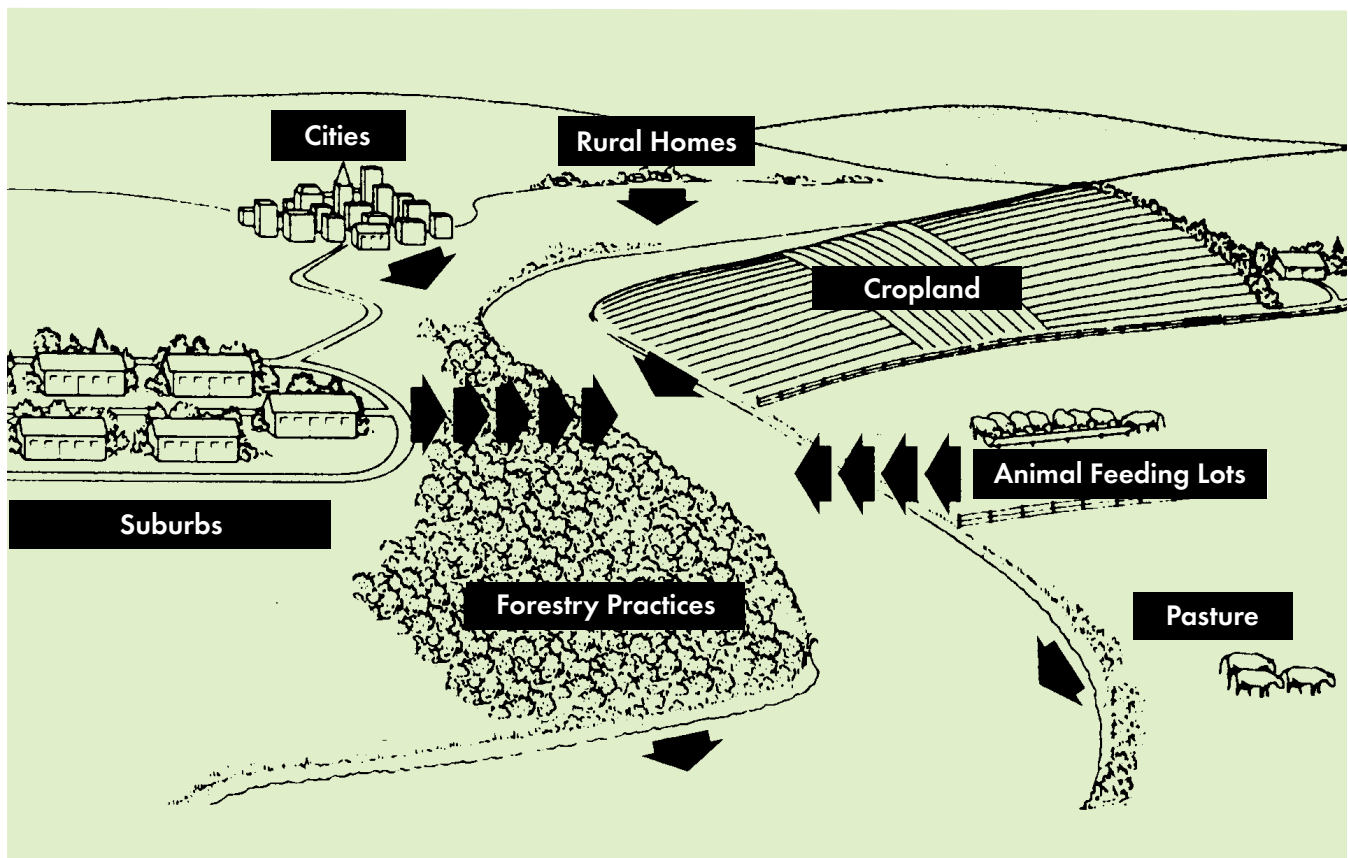
Number 2



NONPOINT SOURCE POLLUTION

Every time it rains, water flows through 8,234 square miles of the Lake Champlain Basin, collecting pollutants from agricultural fields, driveways, lawns, highways, and other surfaces. Much of this runoff is untreated, usually unfiltered and often laden with bacteria, nutrients and toxic substances. Known as nonpoint source pollution, this

runoff flows over the land, into tributaries and eventually Lake Champlain. Nonpoint source pollution can also enter the Lake or its tributaries through groundwater flow. Controlling pollution from nonpoint sources is challenging, since it is derived from many land uses and human activities throughout the Basin.



Land uses which contribute to nonpoint source pollution in the Lake Champlain Basin.

What is Nonpoint Source Pollution?

Water pollution is separated into two categories: point source and nonpoint source.

Point source pollution consists of waste products discharged from a specific point such as a sewage treatment plant or an industrial facility. The pollutants from these sources can usually be measured and traced to a pipe or a specific "point" of origin. Problems from point source pollution input to Lake Champlain and its tributaries have decreased during the last few decades as communities and industries have complied with federal, state and local water quality regulations.

Nonpoint source pollution enters the Lake from a wide geographic area rather than a specific pipe or point of origin. For example, nonpoint source pollution results from agricultural activities, septic system discharge, eroding shorelines, and runoff from parking lots. Substances added to the water by nonpoint source pollution include pathogens, sediments, nutrients, and toxic substances. These substances often upset the delicate balance necessary to maintain a healthy ecosystem. While steady progress has been made in the reduction of point source pollution, addressing nonpoint source pollution is more difficult. A more diverse approach is needed to reduce nonpoint source pollution because it derives from many different sources.

Phosphorus is the most serious nonpoint source pollutant facing Lake Champlain. Although phosphorus is not harmful to people, too much of it in Lake Champlain is a problem because it promotes algae growth and deteriorates water quality. Nonpoint sources of phosphorus include manure and fertilizer runoff from agricultural fields, soil erosion, construction site and development activities, forestry and failing septic systems. In 2005, about 90% of the phosphorus in Lake Champlain was from nonpoint sources, and 10% from point sources.

How Does Nonpoint Source Pollution Reach Lake Champlain?

Nonpoint source pollution is carried to Lake Champlain by stormwater runoff, atmospheric deposition and groundwater discharge.

Stormwater runoff consists of rainwater and snowmelt, which is not absorbed by the soil or vegetation. The excess water washes nutrients, sediments and other contaminants from the land into streams and rivers. While runoff occurs in both rural and urban areas, it is a greater problem in urban areas, which are covered with asphalt, concrete and buildings that prevent rainwater from soaking into the ground.

Atmospheric deposition contributes additional nonpoint source pollution to Lake Champlain. As rain forms, it absorbs pollutants from the atmosphere. When it rains or snows, the precipitation that falls can contain traces of pollutants such as mercury.

Groundwater discharge also contributes nonpoint source pollution. Discharges from septic systems, landfills and hazardous waste sites may seep into groundwater, which then slowly flows into Lake Champlain or one of its tributaries.



Agricultural land in the Basin contributes much of the nonpoint source phosphorus load to Lake Champlain. For this reason, many farmers have begun to implement Best Management Practices (BMPs) to prevent agricultural runoff from entering nearby waterways. BMP's include manure pits, milk house runoff treatments, and stream buffers. Many of these management practices have been successful. Estimates from 2001 show that a total of 16.1 metric tons of phosphorus per year have been removed from agricultural nonpoint sources in the Basin since 1995.

Types of Nonpoint Source Pollution

Nonpoint source pollutants include nutrients, pathogens, sediments and toxic substances.

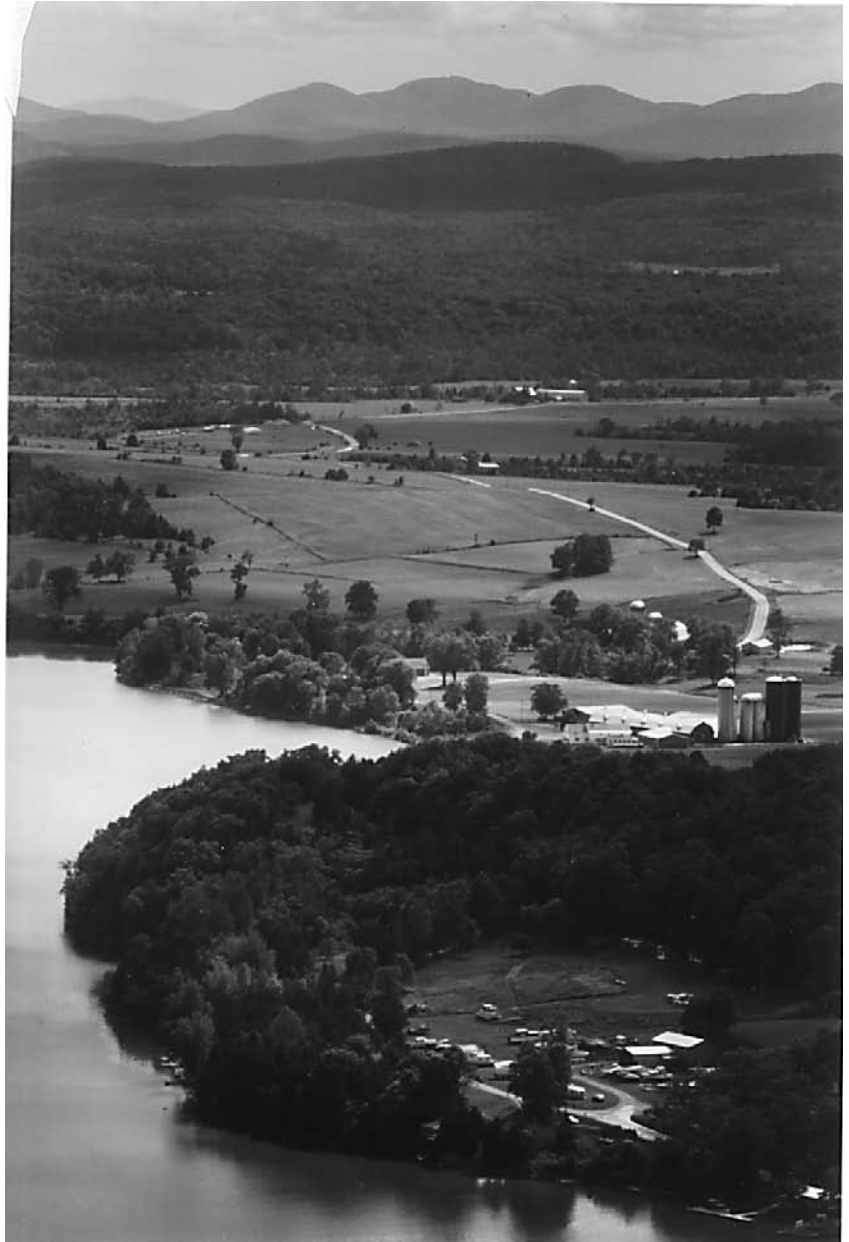
Nutrients, particularly phosphorus, accelerate the eutrophication, or aging, process within Lake Champlain, which promotes the growth of algae and aquatic plants. An overabundance of algae decreases recreational and aesthetic enjoyment of the Lake, and steals essential oxygen from the system needed by aquatic life. Most algae blooms are not harmful to people, but dense blue-green algae can sometimes produce neurotoxins that are dangerous if ingested and may irritate skin. Blue-green algae have been more common in the northeastern parts of Lake Champlain since 1999. Since phosphorus attaches to soil particles easily, it is often carried with sediment. Common nonpoint sources of phosphorus are manure and lawn fertilizers.

Pathogens are bacteria, viruses and other disease causing organisms. Their presence sometimes forces beach closings or makes water unfit for human or animal consumption. Pathogens are usually found in human and animal waste (farm animals, wild animals and household pets). The pollutants are carried to Lake Champlain through stormwater runoff and groundwater.

Sediments or soil particles, often erode from areas where groundcover has been disturbed, such as agricultural fields, streambanks, and land disturbed by logging or construction. Sediments are carried through streams and rivers to Lake Champlain, filling the Lake and river bottoms and clouding the water. Unfortunately, human activity can greatly speed up the sedimentation process. Sedimentation can also contribute to flooding problems and have a detrimental effect on fish spawning areas, especially in streams.

Toxic Substances include many inorganic and organic chemicals, which at some concentration may harm both human health and the Lake's ecosystem. Fish consumption advisories are currently posted for several Lake Champlain species due to toxic substances. Examples of toxic substances include: poly-

chlorinated biphenyls (PCB's), lead, mercury, zinc, and arsenic. Many toxic substances are collected as stormwater picks up gasoline and oil from paved surfaces. Others result from household hazardous wastes, factory emissions, car and bus exhaust, and pesticides. The fish consumption advisories for Lake Champlain are posted on:
www.lcbp.org/fishadvs.htm



Agricultural runoff, failing septic systems, runoff from parking lots and roads, shoreline construction, and erosion are just some of the many land uses which pollute the water. Although only about 6% of the Basin is developed land, there is typically more phosphorus runoff from an urban acre than from an agricultural one.

We are all Responsible for Nonpoint Source Pollution

Although some nonpoint source pollution comes from natural sources, most results from the daily activities of people who live or work within the Basin. Virtually every person produces some nonpoint source pollution every day. If you drive a car, fertilize your lawn, or apply pesticides to your garden or backyard apple tree in the Basin, you are probably contributing pollution to Lake Champlain. Better planning and the use of Best Management Practices (BMPs) will help reduce pollution from activities such as agriculture, construction and logging.



Help reduce nonpoint source pollution by properly disposing motor oil and reducing the use of household hazardous wastes. Used motor oil should be recycled not dumped down household or storm drains.

You Can Help the Lake!

The health of Lake Champlain depends on all of us. Here are some things you can do:

Test Your Soil: Test your lawn and garden before you fertilize. You may need less than you think or none at all.

Make a Dish-wash Switch: Most automatic dishwashing detergents still contain phosphorus. Switch to a phosphate-free version. Try using other environmentally sound products to clean your home.

Look for Leaks: Leaking oil, anti-freeze and gas can pollute the Lake, so keep your engines tuned and recycle your oil. Carpool, take the bus, walk, or ride your bike.

Don't Trash Toxics: Don't throw products like paints, cleaners, bug sprays, and hobby supplies into the regular trash. Take these items to a hazardous waste depot where they can be properly disposed of or used by others.

Only Rain in the Storm Drain: Storm drains carry water directly to lakes and rivers. Never dump anything down the storm drain.

Wash Cars on Lawns: Wash cars on the lawn, not the driveway, to prevent soap and grime from washing into the Lake. Or, go to a car wash.

Reduce Erosion: Plant trees and vegetation to help hold soil in place and reduce erosion, particularly in areas next to streams, lakes, or other surface waters. Do not disturb groundcover unless absolutely necessary. Use conservation practices on agricultural lands.

Leave it on the Lawn: Let your mowed grass clippings mulch your lawn. This adds nutrients and decreases the need for watering. Don't rake yard waste into nearby streams, lakes, or drainage ditches.

Pick Up after Your Pet: Pick up pet waste and throw it in the trash or toilet to keep it from washing into the Lake.

Check the Septic: If not properly maintained, your septic system may pollute the Lake with harmful E. coli bacteria.

Inspect Your Boat: Remove all mud, plants and animals from your boat and trailer between launches to keep nuisance species from spreading. Drain the water and wash all parts of your fishing gear and boat that have been in contact with water. Do not allow wash water to flow into any waterbody or stormdrain.

Get Involved: Volunteer with a local watershed group and attend public meetings about water issues - let your voice be heard!

What is being done about Nonpoint Source Pollution?

Many citizens, communities, state and federal agencies, and watershed groups are working together to prevent nonpoint source pollution. The Lake Champlain Basin Program (LCBP), along with Vermont, New York, and Quebec, supports local efforts to control water pollution. Vermont's Clean and Clear Action Plan and Quebec's Corporation Bassin Versant Baie Missisquoi are among the many other partnerships that have formed to protect water quality. The LCBP supports local watershed projects that reduce nonpoint source pollution.

Reducing Sediment from Rural Roads:

The LCBP funded the Essex County, New York Department of Public Works to reduce sediment from road runoff in the Adirondacks. Roadside ditches were stabilized and new sediment traps installed. LCBP grants also helped the Vermont Better Backroads Program, which promotes cost-effective erosion control to protect and enhance Vermont's waterways.

Reducing Polluted Runoff from Urban Communities:

An LCBP grant funded the Bartlett Brook Stormwater Treatment System, in South Burlington, Vermont. This stormwater treatment system uses a restored stream corridor and a constructed wetland to prevent pollution to Bartlett Brook and Lake Champlain. The LCBP has supported Lake-friendly gardening demonstrations by the Cornell Cooperative Extension of Clinton County, New York, and toxic reduction efforts and stream cleanups by the Lake Champlain Committee. In 2005, the city of South Burlington created the Basin's first storm waste utility to manage urban and suburban runoff.

Reducing Sediment Pollution from Rivers and Streams:

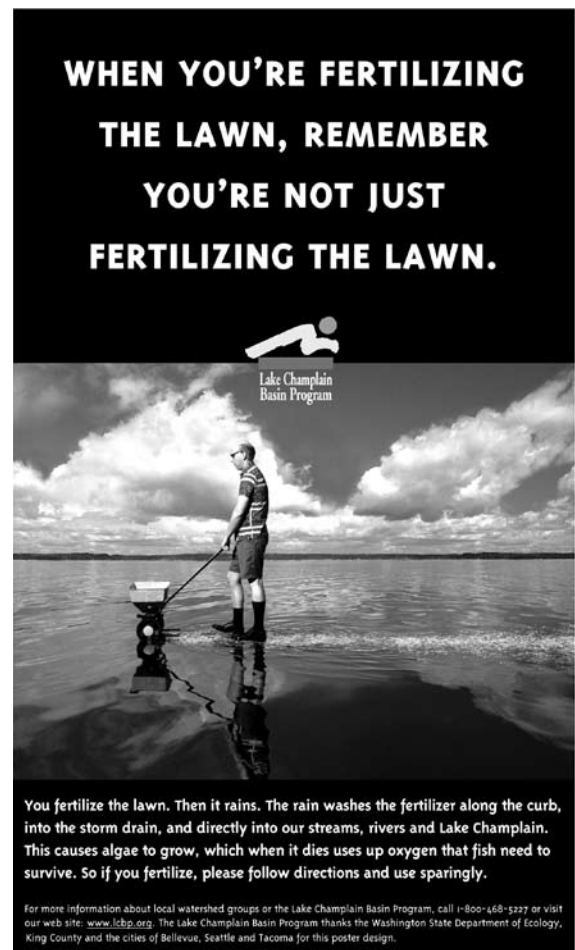
The Vermont Youth Conservation Corps (VYCC) has used LCBP funding for stream restoration projects. VYCC crews have stabilized thousands of feet of streambank and re-vegetated many river buffers. LCBP funds also helped the town of Williston, Vermont design control erosion on Sucker Brook.

Getting the Word Out:

LCBP funds supported *The Shoreline Stabilization Handbook*, by the Northwest Regional Planning Commission. This erosion-control guide for property owners, includes information on both traditional and innovative methods of shoreline protection.

The LCBP also operates a Resource Room within ECHO at the Leahy Center Lake Aquarium and Science Center, in Burlington, Vermont. The room features a library of Lake research, educational resources, exhibits, hands-on activities, and computers.

In June 2005, the LCBP produced the *State of the Lake*, report to provide citizens with a better understanding of the overall health of Lake Champlain and guide them to additional resources. Call the LCBP for a copy or read it online at: www.lcbp.org/lcstate.htm



This LCBP poster series illustrates four different sources of polluted runoff to the Lake: excess phosphorus from lawn fertilizers; leaking oil from cars; pet waste; and runoff from washing cars. For more information on these and other LCBP publications and educational materials visit: <http://www.lcbp.org/programs.htm>

GLOSSARY

Atmospheric Deposition: Pollutants deposited through rain or snow.

Best Management Practices (BMPs): Management practices that help contain pollutants and keep them out of the water.

Drainage Basin: A drainage basin consists of all the land that drains toward one body of water. To outline a drainage basin, connect the points of highest elevation around a lake on a topographic map. Water falling within this bowl flows by gravity in streams and groundwater to the lake.

Ecosystem: A biological community and the physical and chemical environment with which it interacts.

Eutrophication: The process whereby a lake becomes enriched by biological and chemical materials, causing it to become more productive, produce decaying materials and fill with sediment in the process of aging.

Nonpoint Source Pollution: Pollution that comes from many different sources rather than a specific point such as an outfall pipe.

About the LCBP

The Lake Champlain Basin Program is implementing a plan to ensure that the Lake and its drainage basin will be restored, protected and maintained so that current and future generations will enjoy its full benefits. If you would like to learn more about the program or become involved, contact:

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Grand Isle, VT 05458
802-372-3213 or 1-800-468-LCBP
or visit our website at www.lcbp.org

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ADDITIONAL RESOURCES

US Environmental Protection Agency - Nonpoint Source Pollution
<http://www.epa.gov/owow/nps/>

USDA Natural Resource Conservation Service
<http://www.nrcs.usda.gov/>

Vermont

Vermont Clean and Clear Action Plan
<http://www.anr.state.vt.us/cleanandclear/>

Vermont Department of Environmental Conservation (DEC)
802-241-3808 or 1-800-823-6500
<http://www.anr.state.vt.us/dec/dec.htm>

USDA Natural Resource Conservation Service
Vermont State Office: 802-951-6796
Vermont website: <http://www.vt.nrcs.usda.gov/>

New York

NYS Department of Environmental Conservation
Region 5
518-897-1200
<http://www.dec.state.ny.us/website/reg5/index.html>

USDA Natural Resource Conservation Service
New York State Office: 315-477-6524
New York website: <http://www.ny.nrcs.usda.gov/>

NYS Soil and Water Conservation Committee
518-457-3738
<http://www.agmkt.state.ny.us/soilwater/>

TIPP - Turn in Poachers and Polluters
1-800-TIPP-DEC
<http://www.nyscc.com/TIPP.htm>

Quebec

Quebec Ministry of Sustainable Development, Environment, and Parks
<http://www.mddep.gouv.qc.ca/eau/interen.htm>

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