

What the Heck is a LWAP?

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You may have heard colloquially, in conversation or at a lake association meeting, folks talking about something called LWAP, *Lake Watershed Action Plan*. A LWAP looks at the potential sources of nutrients and proposes solutions for keeping excess nutrients out of our waterways. More than a dozen lakes throughout Vermont have or are in the process of developing LWAPs. Lake Watershed Action Plans are assessment tools used to determine the sources and inputs of nutrients into water bodies. The Vermont Department of Environmental Conservation (DEC) has a water quality monitoring program that measures nutrient levels in lakes throughout the state. When these levels start to rise, we want to know why.

So, what is a LWAP?

A Lake Watershed Action Plan (LWAP) is an assessment and planning tool that identifies the greatest threats to the lake ecosystem. The LWAP process identifies the problems and solutions within a lake watershed to best protect water quality, wildlife habitat, and the lake's ecosystem health. These plans help to answer the questions "What issues threaten the health of our lake the most?" and "What can we do about them?"

Why Conduct a LWAP?

LWAPs look at inputs of sediment and pollution into the watershed and the lake in three areas: shoreland, roads and streams. These areas can be significant sources of phosphorus and other undesirable chemical inputs into the water system.

SHORELAND

When a lake's natural vegetation is removed and replaced by lawns and impervious surfaces, fish and wildlife habitat degrades, shores erode, and nutrient loading to the lake increases. These factors make the lake more vulnerable to water quality problems such as algae blooms. Cleared shores are also more susceptible to erosion during flood events.

ROADS

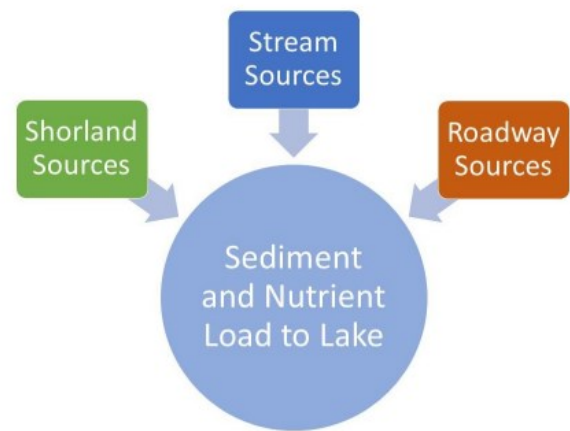
In addition to the threats from shoreland development, lakes receive stormwater runoff from other land uses in the watershed, including roadways. Each lake has its own set of public roads, private roads, and driveways; how these are managed will influence the lake's condition. Through the LWAP process, the extent of the impact of road sys-

tems on lake water quality will be determined and highlight the stretches that most need improvement to reduce erosion and runoff.

STREAMS

Another source of potential pollutants into the lake is through tributary flow and the loading of phosphorus and sediment into a lake, which can fuel aquatic plant growth, negatively impact recreational use, and increases a lake's nutrient levels, which in turn, can lead to algal blooms. A LWAP will determine the tributaries of concern and with greater understanding, planning can occur to mitigate any identified issues.

Ultimately, a LWAP provides clear guidance on the steps for protecting a lake and its watershed and maintaining or improving its current condition. When a lake's ecosystem is healthy, then lake residents can enjoy and benefit from all the existing uses they are accustomed to in these water bodies, such as recreation, aquatic habitat, and aesthetic conditions.



What is the outcome of an LWAP?

LWAPs are designed to answer specific concerns about each lake, for example, what land uses within the watershed cause the most significant stress to a lake ecosystem. Each lake has different land use patterns, and understanding exactly which ones are causing degradation to the lake will help guide restoration and protection efforts. The LWAP assesses and compares the varying land uses and provides a ranking of the greatest threats to the lake with recommendations for fixing the problems. A LWAP com-

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bines an assessment of a lake’s shoreland, tributaries, and hydrologically connected roads and leads to an individual planning guide that prioritizes restoration and protection actions for that lake. A LWAP can also help identify cumulative impacts on a lake ecosystem, thereby helping lake stakeholders “see the bigger picture” and identify situations where the combination of individual stressors may lead to declines in lake health.

The LWAP assessment process should be participatory with the lake association or similar local organizations, lake users, shoreland owners, the town, and other stakeholders or interested groups and people included.

LWAP Reports

A LWAP final report will include a list of prioritized problems and solutions and provide a table of projects. This prioritized list of projects and strategies addresses the sources of pollution and habitat degradation identified in the assessment. Some of these projects benefit from preliminary ecological and conceptual design work as part of the LWAP development process. The prioritized list of projects can feed into the DEC’s Watershed Projects database and be considered for funding under the Clean Water Initiative Program and other sources.

So, who gets a LWAP?

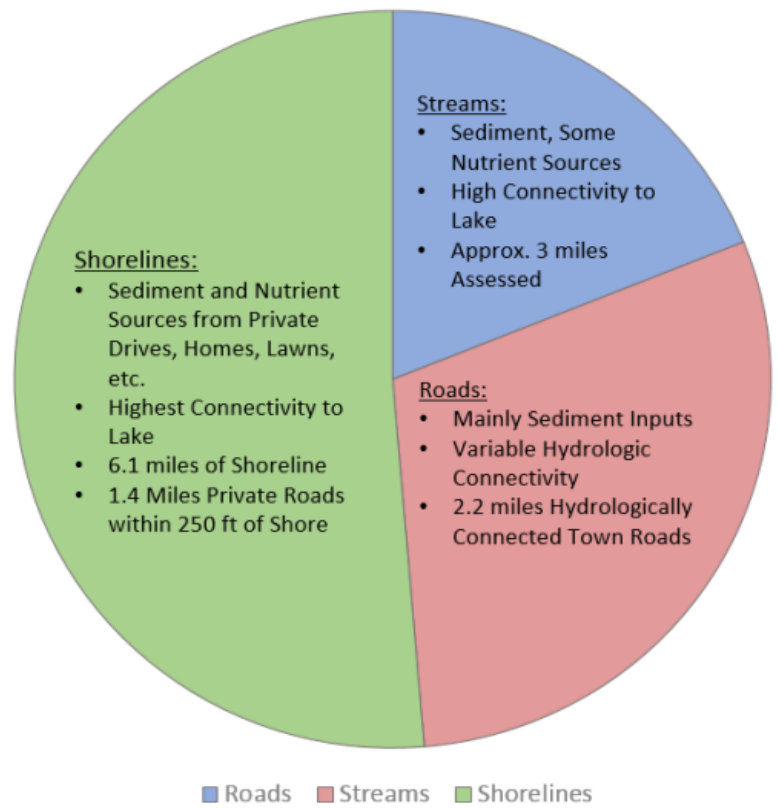
LWAPs have been funded through several different sources. Some were directly financed through DEC, such as the first-ever LWAPs in Vermont – the [Lake Eden and Lake Elmore](#) LWAPs. Others were self-funded by a lake association - [Lake Dunmore and Fern Lake LWAP](#). Lakes within the Lake Champlain Basin received funding from the Lake Champlain Basin Program to produce a LWAP. All the LWAPs follow the same [technical guidance](#) set out by DEC.

Where are LWAPs currently happening?

There are 12 active LWAPs happening around the state: Maidstone Lake; Lake Fairlee; Lake Willoughby; Shadow Lake; Lake Morey; Caspian Lake; Keeler Bay, Lake Champlain; Lake Iroquois; Lake St. Catherine; and Fairfield Pond.

What happens when a LWAP is complete?

There are three completed LWAPs in Vermont: [Lake Eden](#), [Lake Elmore](#), and [Lake Dunmore and Fern Lake](#). Each lake group or association created a prioritized list of pro-



Relative contribution of sediment and nutrients to Lake Eden (Eden) from various sources.

jects to improve water quality. From there, it takes a champion to take some of those projects and move them forward to receive funding for design and implementation. In some cases, the projects have been moved forward by an NRCD, which is the case at Lakes Eden and Elmore. In both cases the Lamoille NRCD was involved with the LWAP process from the beginning, contracting with Fitzgerald Environmental to complete the assessment. Once the assessment was complete, the Lamoille NRCD has been working hard to take the prioritized projects and apply for block grant funding to bring those projects through the design and implementation phase. Several projects were completed on both lakes last year using block grant funding and utilizing a Vermont Youth Conservation Corps work crew. More projects are planned for this summer.

Lake Dunmore is another example of a completed LWAP. The Lake Dunmore and Fern Lake Association self-funded their LWAP, contracting directly with Fitzgerald Environmental to perform the assessment. The Lake Dunmore Fern Lake Association has continued to work with Fitzgerald and has secured funding for several projects from their LWAP that will begin implementation in 2023.

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We hope as more LWAPs end we will see more projects getting implemented on these various lakes to curb erosion and stormwater and help keep our Vermont lakes clean!

More information about Lake Watershed Action Plans can be found on the [DEC LWAP page](#).
