



Capital Improvement Project Apple Valley: Alimagnet Iron-Enhanced Sand Filter



Improving Alimagnet Lake

Alimagnet Lake is split between the Cities of Apple Valley and Burnsville and is a recreational destination for lake residents and visitors alike. The Lake has a surplus of phosphorus, which leads to algae blooms and poor aesthetics and diminished recreational opportunities.

The City of Apple Valley and the Vermillion River Watershed Joint Powers Organization (VRWJPO) identified one portion of the watershed draining to the lake that was contributing a large amount of phosphorus and developed a project that would help address the issue. An area directly next to a stormwater pond, which drains to Alimagnet Lake, was retrofitted with an iron-enhanced sand filter.

Alimagnet Lake, a nutrient-impaired water, receives too much phosphorus from the surrounding watershed. An iron-enhanced sand filter directly next to a City stormwater pond allows for a portion of the phosphorus load to the lake to be captured and treated, helping to improve water quality.

Phosphorus in stormwater can be found in two forms; particulate-bound phosphorus and dissolved phosphorus. The iron that is mixed with the sand can treat the dissolved phosphorus in the stormwater and the sand will treat the particulate-bound phosphorus, making this project more efficient at treating the phosphorus-laden stormwater than other types of projects.

The project will help to reduce phosphorus loads in Alimagnet Lake, which will result in improved water quality in the lake, and in waters the lake drains to, such as East Lake in Lakeville.

Vermillion River Watershed Joint Powers Organization

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Problem:

- Too much phosphorus-laden stormwater is draining to Alimagnet Lake
- Excess phosphorus is leading to algae blooms and problematic water quality conditions for the lake
- Alimagnet Lake is impaired for excess nutrients, (doesn't meet the State water quality standard), which requires actions to address the pollutant source(s)

Actions:

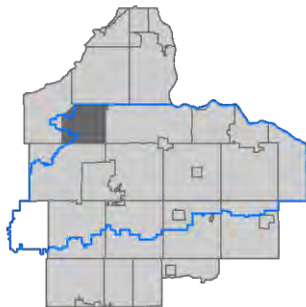
- An iron-enhanced sand filter was constructed to remove phosphorus from one of the primary sources of phosphorus draining to the lake

Benefits:

- Reduces phosphorus load by 12.4 lbs./year in Alimagnet Lake
- Reduction in phosphorus aids in meeting water quality standards and removing the lakes from the impaired waters list
- Assists in phosphorus reduction goals for East Lake, downstream in Lakeville
- Restores and protects water resources for public use

Costs and contributions:

- Vermillion River Watershed Joint Powers Organization: \$37,435 in cash match
- City of Apple Valley: \$110,067 in cash match and in-kind staff time
- Clean Water Fund: \$122,369 grant



City of Apple Valley, MN
Near 140th St.W. and Huron Ct.

A rock gabion wall will remove sediment and organic materials to keep the filter performing efficiently



A project completed cooperatively by:

- Vermillion River Watershed Joint Powers Organization
- City of Apple Valley
- Clean Water Fund Grant

A grant from the Clean Water Fund, one of four funds established by the Clean Water, Land & Legacy Amendment, supported this project. [Clean Water Stories](#) can be found on the Minnesota Board of Water and Soil Resources website.

