

## NUTRIENTS

*Nutrients* are elements such as nitrogen, phosphorus, carbon, sulfur, calcium, potassium, and iron that are essential to the growth of living things. In particular, nitrogen and phosphorus are critical nutrients for all types of plants, including aquatic species, and also happen to be the two nutrients of highest concern in the Grand Traverse Bay and its watershed.

Elevated quantities of either of these nutrients can upset the balance in an aquatic ecosystem. In Michigan, rooted aquatic vegetation and algal growth are most commonly limited by the amount of phosphorus in the water column. Ordinarily, as the amount of phosphorus in the water column increases, rooted plant and algal growth increase as well. When elevated levels of phosphorus occur in the water column, rooted plant and algae growth can be excessive, resulting in nuisance conditions. Blooms of algae resulting from nutrient enrichment eventually die and decompose, removing oxygen from the water and potentially leading to levels of dissolved oxygen that are insufficient to sustain aquatic life. In the presence of too much phosphorus, sandbars turn into weed beds, clean rocky shores become covered with slime and waving mosses, and clear water is clouded by an over abundance of microscopic plant life.

Generally, in terms of water quality, nutrients have a negative impact on the system when their concentrations exceed natural background levels. This condition can effectively reduce the recreational value of the waters by making the water unpleasant and undesirable for swimming, fishing, or boating due to increased algae and aquatic plant growth.

Nutrient pollution results from a variety of human activities including:

- improper fertilizer application (by residents, businesses, golf courses, and agricultural operations)
- faulty septic systems
- stormwater runoff (from agricultural, residential, and urban areas)

Nutrients often attach to soil particles, thereby linking sediment and nutrient pollution.

This information has been compiled by:  
The Watershed Center  
Grand Traverse Bay  
If you have any questions or need additional information, please contact us at:  
232 E. Front Street  
Traverse City, MI 49684  
Phone: 231-935-1514  
Fax: 231-935-3829  
www.gtbay.org  
Email: info@gtbay.org