

Town of Penhold- Aeration Information

Information provided by ACC Water Solutions Inc

IMPORTANT SAFETY INFORMATION

The Town of Penhold does not permit swimming at anytime in any Stormwater Ponds. The Town of Penhold has installed Aeration within this pond. Swimming is not permitted in this pond. Being in the water around Aeration is dangerous, as when air is introduced to the water, it reduces your bodies buoyancy. Please do not enter the water at anytime.

Stormwater Pond Aeration System

The Town of Penhold has installed a bottom-diffused aeration system in the recreational stormwater pond to help maintain good water quality and support safe recreational use.

Stormwater ponds collect runoff from roads, roofs, and other surfaces throughout the community. This water often contains nutrients and organic material that can accumulate in the pond over time. Without circulation and oxygen, these nutrients can contribute to algae growth, unpleasant odours, and declining water quality.

The aeration system helps prevent these problems by continuously circulating and oxygenating the water.

How the Aeration System Works

The aeration system works by pumping air from compressors located on shore through weighted air lines to special diffusers placed on the bottom of the pond.

These diffusers release streams of very fine air bubbles. As the bubbles rise to the surface they gently lift and circulate the surrounding water. This process helps mix the entire water column and maintain healthy oxygen levels.

Maintaining good oxygen levels in the pond helps to:

- Improve overall water quality
- Reduce the buildup of organic sediments
- Limit nutrient release from bottom sediments
- Reduce the likelihood of excessive algae growth
- Prevent odours associated with low oxygen conditions
- Support aquatic life such as fish

Aeration systems like this are commonly used in recreational ponds, lakes, reservoirs, and water treatment facilities to improve and maintain water quality.

What the System Consists Of

Compressor Cabinets

Air compressors are located in sound-suppressed cabinets near the pond. These compressors generate the airflow that powers the system.

Air Distribution Lines

Weighted airline tubing carries air from the compressors along the pond bottom.

Diffusers

Specially designed diffusers placed on the bottom of the pond release fine bubbles into the water. As the bubbles rise, they circulate and mix the water column.

The system installed in the Penhold pond uses multiple diffusers placed strategically across the pond bottom to provide circulation throughout the entire basin.

Why Circulation Is Important

In calm conditions, ponds can develop layers of warm water near the surface and cooler water near the bottom. This process is called thermal stratification.

When stratification occurs, oxygen cannot easily reach the bottom waters. Microbial activity in the sediments can then consume the remaining oxygen, creating low-oxygen conditions that release nutrients such as phosphorus and nitrogen back into the water. These nutrients can stimulate algae growth and reduce water quality.

By circulating the water and maintaining oxygen levels, the aeration system helps prevent these conditions from developing.

Recreational Safety Information

The aeration system is designed to operate safely in a recreational environment. However, visitors should be aware of a few important precautions:

- Avoid swimming directly above areas where bubbles are visible at the surface.
- Do not attempt to pull up or snag underwater equipment while fishing.
- Avoid anchoring boats or dropping anchors in areas where diffusers may be located.
- Do not tamper with shoreline compressor cabinets or equipment.

The rising bubbles you may see on the surface are normal and indicate the system is operating as intended.

System Layout

The aeration system includes multiple diffusers distributed across the pond bottom to create circulation throughout the entire water body.