

Blue-Green Algae at Petenwell, Castle Rock Lakes



Petenwell's water quality has improved, allowing stocked lake sturgeon to call it home.

But more progress is needed.

Damming the Wisconsin River

in the late 1940s to create Petenwell and Castle Rock lakes created a recreational oasis but, as with other such flowages, set the stage for blue-green algae blooms. The dams kept pollutants from flushing downstream and slowed the water, warming it up. Warmer water reduces oxygen for fish and feeds algae growth.

So Petenwell and Castle Rock, like other flowages, will never physically be as clear as a northern Wisconsin kettle lake. Water quality has improved in the last generation and now supports a diverse sport fishery with many warm water species anglers love, including walleye and northern pike. But water quality can improve by further controlling pollutants entering the lake and already in the lake.

Petenwell and Castle Rock flowages continue to provide excellent sport fishing and recreational opportunities, but blue-green algae blooms are preventing us from enjoying the full potential of these waterways. Residents and visitors to the lakes should be aware of these potentially-toxic algae blooms and avoid them.

Water quality is a big challenge, made even more difficult because flowages created by damming up a river, like Petenwell and Castle Rock, are more vulnerable to water quality issues. The dams trap pollutants and keep them from flowing downstream, and slow the water so that it warms. This fuels algal growth.

What is blue-green algae and why is it here?

Lake Petenwell's water quality problems are enormous in scope. The predominant concern is the algae blooms that occur in summer. Algae blooms are caused by phosphorous entering and/or stored in Lake Petenwell and Castle Rock -- along with the still, warm water that results when a large body of water is impounded or stored behind dams.

Phosphorus is a primary food source for algae, and a single pound can produce 500 pounds of algae. Phosphorus sources include what are technically called point and non-point sources.

- Point sources- those that have a point of output into the water; examples include paper mills, wastewater treatment plants, and septic system leaks.
- Non-point sources- do not have a single point of entry; examples include run-off from farms, construction sites, municipal storm sewers and residential homes and lawns. Most runoff events are associated with rainfall or snowmelt.

What should I do if an algae bloom is found in my lake?

Blue-green algae are naturally present in Wisconsin lakes, streams and ponds. Their number can increase, or "bloom", dramatically when conditions are favorable, usually in summer. They can occasionally produce toxins harmful to people, pets and livestock. Ingesting the toxins can irritate the skin and also cause muscle tremors, staggering, rapid paralysis, respiratory failure and death.

Water samples from summer 2007 confirm blue-green algae in some popular recreational waters across the state, particularly in flowages like Petenwell and Castle Rock. Because scientists do not know what triggers toxin production, it's important for people to assume that if blue-green algae are present – especially during “bloom” conditions – toxins may also be present. **Please take these precautions:**



- Don't swim in water that looks like "pea soup," green or blue paint, or that has a scum layer or puffy blobs floating on the surface.
- Don't boat, water ski, etc. over such water because people can be exposed through inhalation.
- Don't let children play with scum layers, even from shore.
- Don't let pets or livestock swim in or drink in waters with blue-green algae blooms.
- Don't treat lakes, rivers or ponds experiencing blue-green algal blooms with any herbicide or algaecide; toxins are released when the algae dies.
- Always shower after swimming or playing in any lake or river because of other potentially harmful bacteria and viruses.

What is being done to address the algae blooms?

There are many people working to understand the water quality in these lakes. Phosphorus is not the only problem, but phosphorus is a predominant concern of citizens at this time.

Communities and industries releasing wastewater to the Wisconsin River above the Petenwell Flowage have cut their phosphorus levels by half since a 1992 phosphorus limit took effect. However, these reductions alone are not enough to reduce the algae blooms noticeably.

A 2000 University of Wisconsin-Stevens Point study indicated that phosphorus entering the lake would need to be cut by at least half to reduce the number of blue-green algae blooms. More information indicates that municipal and industrial wastewater discharges accounted for only 25 percent of the phosphorus, while runoff from farm fields, city streets, construction sites, and other sources accounted for 32 percent. The greatest amount came from the lake itself, the decades of excess phosphorus in the lake bottom that gets stirred up into the open water every year.



In order to locate where phosphorus reductions would have the greatest impact, a monitoring and modeling effort to expand the UWSP study, is necessary. We estimate this process will cost approximately \$1.5 million to complete. The Wisconsin DNR has tried several times to secure federal funding for a Petenwell/Castle Rock study, but have been unsuccessful. However, DNR water quality staff and wastewater staff continue work to improve Lake Petenwell water quality within the limits of the existing regulatory authority and budget constraints. Department staff are working with the Petenwell Castle Rock Stewards, Adams County, Juneau County, and Health Department to explore the viability of seeking federal funds and phosphorous limits through citizen efforts.



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What can I do to reduce the algae blooms?

According to the Stevens Points study, it will be necessary to reduce phosphorus from all sources to reach the 50% reduction in order to improve the water quality and reduce the blooms. Although all contributors of phosphorus need to take responsibility, there are things that landowners (those with lake front property and those off the lake) can do to help.

- Maintain a buffer along your lakeshore consisting of native vegetation,
- Read the directions on fertilizer bags, and only apply the amount needed,
- Get a soil test to verify the nutrients your lawn needs, if any, for fertilizer,
- Fix leaking septic systems,
- Use phosphorus-free fertilizers and detergents (for dishwashing).

How can I get involved?

Petenwell and Castle Rock Stewards (PACRS), formed in 2007, is an association of citizens, local governments and interested parties that has formed to bring broader awareness to the issues at Petenwell and Castle Rock and to potentially seek the funding and phosphorus limits necessary to noticeably improve water quality at Petenwell. People concerned about the water quality issues and algae blooms is encouraged to get involved. PACRS contacts: Bruce Carlson, Petenwell Castle Rock Property Owners Association, illini@merr.com, 608-339-3585. Chris Murphy, Adams County LWCD cmurphy@co.adams.wi.us, 608-339-4269.



Find more information on blue-green algae at <http://www.dnr.state.wi.us/lakes/bluegreenalgae/>.

