

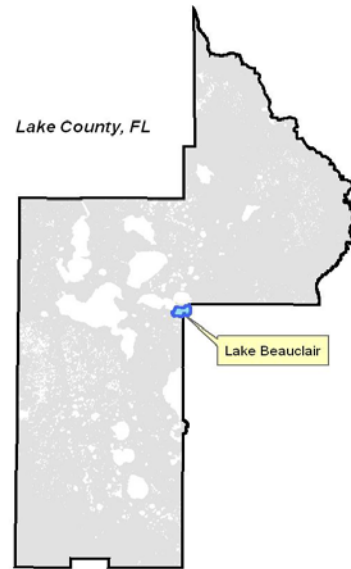


## Lake Beauclair EcoSummary October-November 2007

**Lake Condition Index (LCI):** A biological assessment tool developed by the Florida Department of Environmental Protection to indicate ecosystem health and identify impairment in Florida lakes

### Watershed Characteristics

Located in central Lake County with a portion of the lake located in Orange County, 1119-acre Lake Beauclair is surrounded largely by a mix of residential, natural and recreational lands. Lake Beauclair has nutrient loadings more than four times that of any other lake in the Upper Ocklawaha River basin largely due to incoming flow from the Apopka-Beauclair Canal. Lake Beauclair has a turnover rate of approximately 56 days (or 6.5 turns/year) under average conditions. Because Lake Beauclair is larger than 1000 acres in size, two separate LCIs were performed, one on the east side and one on the west. The 12 benthic grabs for Lake Beauclair East were taken in October 2007 and the 12 benthic grabs for Lake Beauclair West were taken in November 2007.



### Results

Both sides of Lake Beauclair received a very poor rating on the LCI. Nine different macroinvertebrate taxa were collected on the west side, and four on the east. A conventional LCI can not be calculated for Beauclair East because the lake conditions have deteriorated and only 31 macroinvertebrates were present in all twelve complete benthic grabs. Normally, 12 benthic grabs are subsampled and macroinvertebrates are collected using a stereoscope until approximately 100-110 macroinvertebrates are sorted for the LCI. The poor lake conditions have reduced the number (biomass) and diversity of the macroinvertebrates present in Lake Beauclair over the last four years. The last two years of drought have lowered lake levels and greatly reduced the flow from Lake Apopka into Lake Beauclair. Macroinvertebrates are an integral part of the food chain which support other invertebrates, fish, birds etc. On Lake Beauclair East, the most abundant macroinvertebrate collected was the oligocheate, tubificid worm *Limnodrilus hoffmeisteri*. Oligocheates made up 70.9% of macroinvertebrates collected on Beauclair East, while the Diptera *Chaoborus punctipennis* or phantom midges made up 16% of the total population of macroinvertebrates. The Chironomid *Cladotanytarsus sp.B* and oligocheate worms *Limnodrilus*

*hoffmeisteri* and *Haber speciosus* comprised the majority of macroinvertebrates at 63.2% and 20.4%, respectively. The most abundant two taxa for each of the portions of Lake Beauclair were identical to the previous 2 years. Tubificids frequently form dense populations in organically enriched habitats with a mucky substrate tending toward anoxic conditions. The sediment in all of the 12 benthic grabs in Beauclair East was predominately muck and coarse particulate organic matter. Beauclair West was predominately sand in 6 of the 12 benthic/sediment grabs. The dipteran (fly) larvae present consisted of pollution tolerant species such as *Cladotanytarsus sp.B*, *Chaoborus punctipennis* and *Glyptotendipes paripes*. The mean LCI scores dropped in both Lake Beauclair East and Lake Beauclair West (see table below). Lake Beauclair East and Lake Beauclair West were both given Hulbert Index scores of 0 (down from scores of 2 and 1 respectively, the previous year). The HI is based on the number of pollution-intolerant lake macroinvertebrate species present.

LCI SCORES

	<u>2005</u>	<u>2006</u>	<u>2007</u>
Beauclair East	29.12	22.83	19.20
Beauclair West	25.66	21.07	13.92



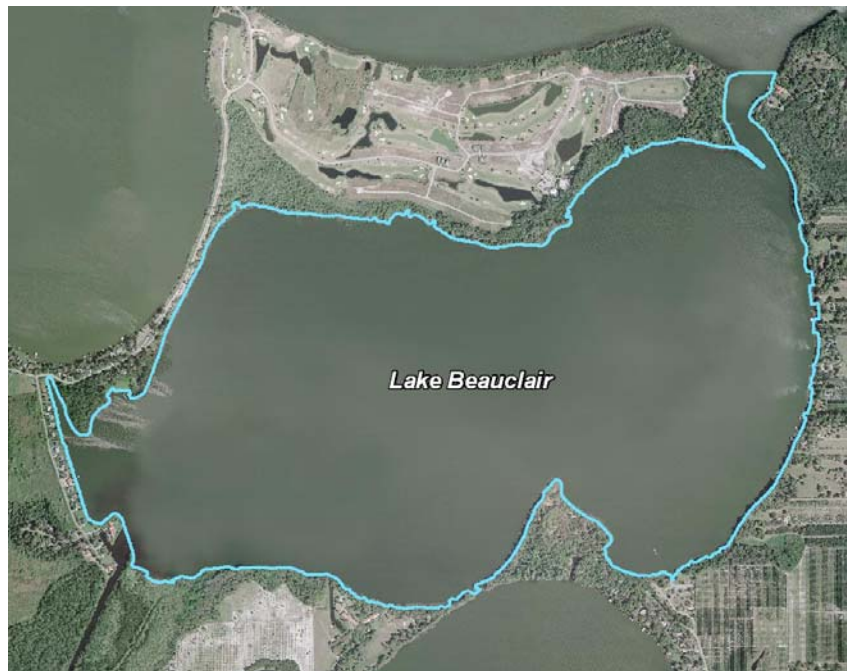
Photo courtesy of Dana Denson DEP

Aquatic worm

**Significance**

The Lake County Water Authority has an off-line alum system or NuRF (Nutrient Reduction Facility) project under construction that would reduce the total phosphorus load in Lake Beauclair by as much as 81% annually. When the project is completed, Lake Beauclair should improve from a nutrient-rich

hypereutrophic lake to a considerably 'healthier' mesotrophic lake. This could increase recreation on the lake by eliminating persistent algal blooms, eventually leading to reestablishment of beneficial vegetation and a more productive sportfish population. The Lake County Water Authority will continue to monitor the macroinvertebrates in Lake Beauclair in order to assess the NuRF project impacts on the ecosystem health.



\* A conventional LCI could not be calculated for Beauclair East in 2007 due to inadequate sample size of macroinvertebrates present.

For more information, please contact:

Sandi Hanlon-Breuer - Lake County Water Authority 107 North Lake Avenue Tavares, FL 32778  
(352) 343-3777 ext. 26  
Email:sandihb@lcwa.org

## References

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