

## **Scientific Analysis carried out by the Water Management Unit (WMU) is a Unit, Environment and Heritage Service**

Ballysaggart Lough was sampled on 17/09/2007. Six samples were taken from the lough at the points marked on the aerial photograph below. These gave a spread across the entire lough and covered the major areas of input to the lough.

### **Condensed lab report findings:**

The lough was averaged to be less than 1.5m deep, which equates to very shallow. The alkalinity was determined to be Medium at an average of 86 where the medium range is between 50 and 100 for Calcium Carbonate concentration. The pH for all samples was 7.8 which is in the middle of the normal range.

The following results are an approximation, given that a single set of samples were collected, this should be borne in mind with reference to the Total Phosphorous levels observed. For all of the following results, they have been fitted into the draft Water Framework Directive, (WFD), environmental standards or the current Freshwater Fish Directive, (FFD), standards. These would generally be based on a yearly sampling regime of 12 sets of samples and examining trends, but this analysis gives a fair approximation of the state of the lough at the time of sampling.

### **Total Phosphorous:**

- Sampled in range of 80 – 100micrograms per litre.

Draft WFD standard for good status would be 15-36 micrograms per litre. This then is a relatively high figure, but Phosphorous can have a fluctuation over the course of a year, high uptake by algae and plants in the prime growing season, release back to the water in the autumn as plants are dying back etc. There may be two explanations for this, either a source entering the lough maintaining a higher than normal level, or the peak point of Phosphorous in the water as part of the normal ecological cycle. Further examinations of the samples will be carried out, but combined with the other results below, the latter reason may be applicable.

### **Suspended solids:** (Particles that have not dissolved into the water)

- All results came back at less than 2 milligrams per litre.

The Draft WFD standard for a high classification is 25 milligrams per litre. Obviously this is well below that figure and therefore very good.

### **Biochemical Oxygen Demand:** (A measure of the organic content of the water, e.g. sewage, slurry etc)

- Results came back between 1.0 and 1.5 milligrams per litre.

The FFD looks for surface waters to have BOD of less than 3milligrams per litre. Therefore again, these results would be very good.

**Nitrite:** (A measure of whether effluent containing ammonia has been treated poorly)

**Nitrate:** (The final end product of ammonia breakdown – typically from sewage treatment etc)

These have been grouped together as they are related in the chain of breakdown of organic matter in the environment. Urine for example contains a significant amount of nitrogen. Partial breakdown results in Ammonia, then Nitrite and then Nitrate. Thus high levels of Nitrate in a sample show the contamination of a poorly treated effluent.

- Nitrite levels were between 0.002-0.003 milligrams per litre, (FFD standards require <0.01mg/l).
- Nitrate levels came in at an average of 0.04 milligrams per litre. (No WFD draft standard as yet but less than 2milligrams per litre is regarded as a high quality water)

Thus both results came back as very good.

**Soluble Reactive Phosphorous (SRP):** A measure of phosphorous which is expected to originate from point sources such as sewage works discharges rather than diffuse runoff from fields and the like.

- These levels were in the range 0.04 – 0.05 milligrams per litre which equates to 40-50 micrograms per litre.

The Draft WFD standard is <50micrograms/litre for high quality status. Thus these results are on line for high quality status.

Macrophytes (larger aquatic plants) were briefly examined and did not show signs of being under stress.

An amount of general debris was noted by the samplers, which contributed to the aesthetic impression of the lake, rather than any chemical impact.

This scientific analysis has therefore concluded that Ballysaggart Lough had good water quality at the time of sampling.

