

The quality of water in Darebin Creek at Darebin Parklands

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The following data was collected by volunteers during 2005 and 2006 from the lower part of Darebin Creek, in the Darebin Parklands

Biological results

- **Aquatic Macro-invertebrates**

Monitoring macro-invertebrate communities can reflect the general water quality, the effects of nutrients and pollutants and differences in physical habitat conditions caused by changes in flow, vegetation, sedimentation and other human activities.

Monitoring results collected on 11th of November 2006 show the water quality is good. The number of invertebrates collected (result: 55) and the diversity (bug score: 38) fall in abundance category of 2, representing good rating. Bug scores range from 1 to 8 with the orders of macro-invertebrates most sensitive to pollution being assigned scores close to or equal to 8. Those tolerant to pollution score closer to 1.

Monitoring in November (Spring) is favourable because invertebrate diversity is highest. The important factors for macro-invertebrates to survive and breed are warmer temperatures, available nutrients, and enough oxygen.

The lack of rain in recent months has also had a positive impact on invertebrate diversity. Although rain usually improves the diversity of life in rivers, however in urban areas rain results in pollutants entering the waterways from stormwater runoff.

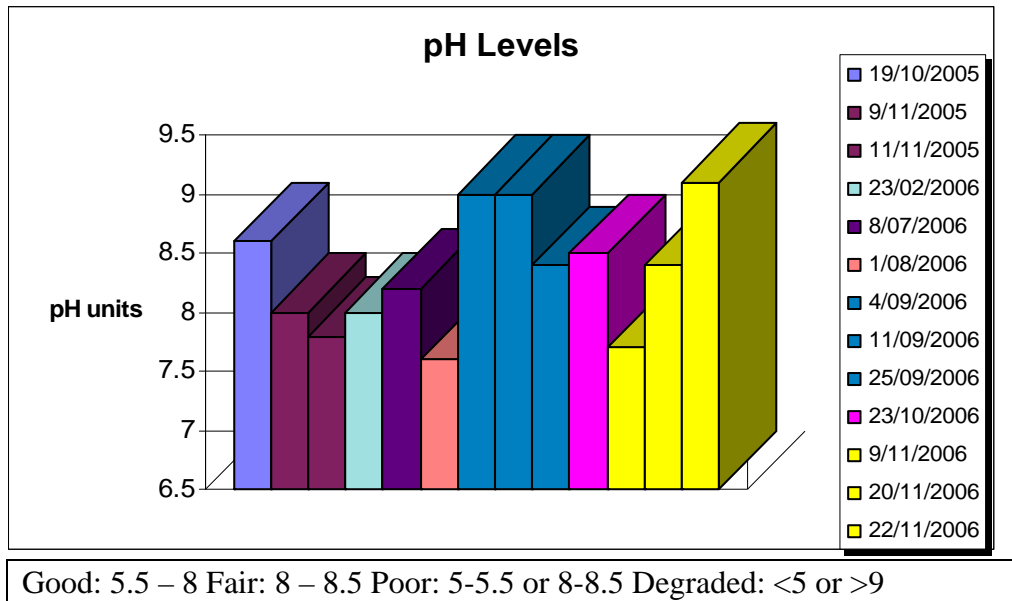
Macro-invertebrates monitoring on 22/11/2006 at 4.30pm

Invertebrate Name	Bug Score	Result
Caddis fly Larvae	7	5
Dragonfly Larvae	6	15
Damselfly Larvae	6	2
True Bugs	4	8
Snail	3	5
Flatworms	3	5
Roundworm	3	1
Black fly larvae	2	1
Biting midge	2	11
Chironomids	1	1
Segmented worms	1	1
Total	38	55

Abundance Category 2
Stream condition GOOD

Physical chemical results

- pH



The pH of water is a measure of hydrogen ion concentration and indicates acidity and alkalinity of water. Measurement of pH is important for water quality as all aquatic animals and plants are adapted to specific pH ranges. The pH scale ranges from 0-14. The pH of freshwater usually falls between 6.5 to 8.2.

The pH of water varies due to factors such as stormwater input, rainfall, time of day, water temperature, amount of plant growth in the water, geology and soils, discharge from pollution sources, salinity and photosynthesis.

High pH levels during the sampling in Oct 2005, Nov, Sep, Feb 2006 Could be due to the time of the day sampled in the afternoon and sunny weather. The pH of water increases in warmer temperatures.

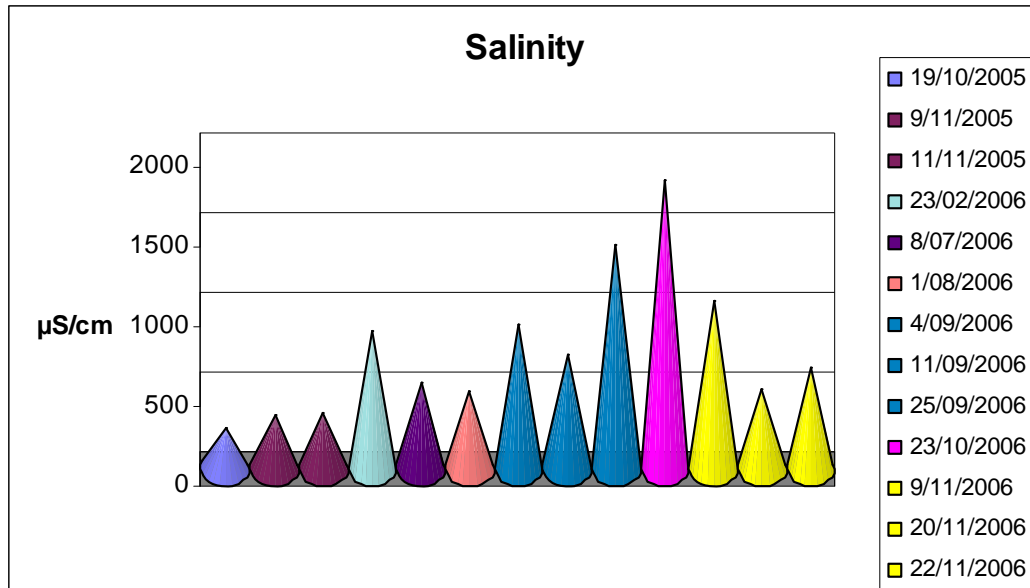
Salinity is another factor of high level pH. There are combined effects of water temperature, salinity and pH. Naturally elevated salinity in the Darebin Creek caused by the geology of the creek resulting high pH

- Salinity

Salinity is a measure of dissolved salts in water and is affected by: geology, groundwater inflows, temperature, evaporation and dilution. Excessive amount of salt degrades water quality and productivity of soil.

Naturally high salinity is mainly caused by the type of rocks within Darebin creek including Tertiary basalt.(known as bluestone) The Basalt's eastern limit is the Darebin Creek and the Yarra river to the south (*Ref:*<http://www.dcmc.org.au/parklands/geology.php>).

Other factors involved in high salinity includes drought as the concentration of salt increases by evaporation and high level of water table in upper (Northern) part of Creek. Salinity is usually caused by a rise in the level of underground water tables bringing naturally occurring salt to the surface. In some parts of Australia because of deforestation, farming and urbanisation, the water table has risen near to the surface or to the ground level. Groundwater is currently inflowing upstream of the Darebin Parklands.



Excellent: <100 Good: 100 -250 Fair: 250 – 500 Poor: 500-750 Degraded: >750

Ref: Waterwatch Australia National Technical Manual – Module 4 – Physical and Chemical Parameters. July 2002. By the Waterwatch Australia steering committee.

A.Infanti, Darebin Creek Management Committee. Pers comm. 04/12/06