

Water Quality Event Monitoring



Regional Natural Resource Management in Queensland

ID: WQEM 0624

Event Summary Load Calculation Weir River (Talwood) January 2006

Introduction

This fact sheet presents Event Mean Concentration (EMC) and load estimates for sediment and filtered nutrient samples collected in the Weir River, Talwood (Figure 1) following rainfall on the 18th - 20th January 2006.



Figure 1. Weir River Sampling location at Talwood.

Methodology

Five suspended sediment and filtered nutrient samples were collected manually from the Talwood gauging station over an eight day period (Figure 2). Samples were analysed at Queensland Health Scientific Services (QHSS) for TSS, filtered nutrients and organic carbon. To derive pollutant loads for the event, flow weighted average concentrations were multiplied by the flow over a given period. EMC was calculated by dividing the total event load by the event flow volume. Historic discharge data was used to compare this event to historic flows.

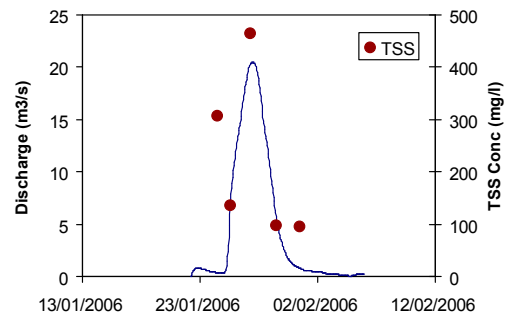


Figure 2. Discharge and TSS concentration for samples collected at Talwood from the 24th – 31st January 2006.

Flow Event Description

The runoff at Talwood was generated from good falls of between 50 – 100mm to the north east of Goondiwindi (Figure 3). No runoff was recorded at the upstream gauge, Gunn Bridge prior to this event. Flows for this event were dominated by runoff from the north east of Goondiwindi where periodic rainfall through the summer had resulted in good pasture cover and summer crops nearing harvest.

Catchment: Border Rivers
Location: GS 416202A,
 28° 29' S 149° 29' E
Catchment Area: 12,070 km²
Dominant Land Use: 65% grazing, 33% dryland cropping,
 (upstream of gauge) 1% irrigated cropping
Event Duration: 22/01/2006 – 05/02/2006

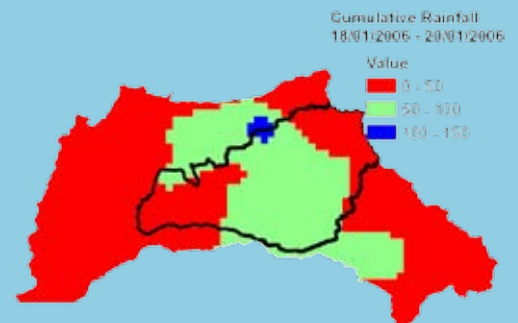


Figure 3. Cumulative rainfall upstream of Talwood sampling location.

Results

Total suspended solids concentrations (TSS) ranged from 94 – 463 mg/L (Figure 2). Approximately 1,750 tonnes of sediment passed the sample point during the 15 days of runoff (Table 1). The TSS EMC (306 mg/l) was half the EMC value calculated for an event measured at this site in July 2005. Catchment cover levels were high in cropping and grazing areas at the time of the event due to good winter and summer rainfalls over the previous 12 months. Particulate Phosphorus was 68% of total phosphorus which is 10-20% lower than values typically measured in the Condamine Balonne catchment. Particulate Nitrogen was 65% of total nitrogen. Dissolved organic carbon was 68% of total organic carbon which is high in comparison to levels in the Condamine Balonne catchments, which are typically 40-60%.

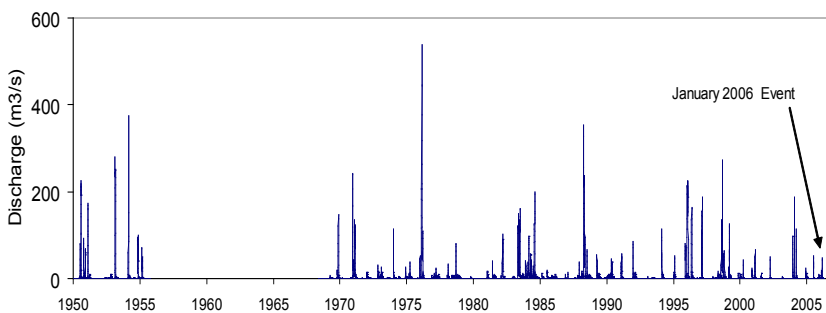


Figure 4. Weir River, January 2006 event sampled at Talwood in context to historical mean daily discharge.



Table 1. Estimated load and event mean concentration (EMC) for the January 2006 Event

Total Event Discharge (ML)	5,707
Number of samples	5
TSS Load (Tonnes)	1,746
TP Load (Tonnes)	1
FRP Load (Tonnes)	0.27
TN Load (Tonnes)	10
TKN Load (Tonnes)	10
NO _x Load (Tonnes)	0.19
NH ₃ Load (Tonnes)	0.27
TOC LOAD (Tonnes)	111
TSS EMC (mg/L)	306
TP EMC (mg/L)	10.22
FRP EMC (mg/L)	0.05
TN EMC (mg/L)	11.67
TKN EMC (mg/L)	1.67
NO _x EMC (mg/L)	0.03
NH ₃ EMC (mg/L)	0.05
TOC EMC (mg/L)	19
DOC EMC (mg/L)	13
Maximum Event Discharge (m ³ /s)	20
Period of record (yrs)	56
Average number of times peak Q exceeded (days/yr)	14
Return Period (partial series)	1 Year

For Further Information

Contact your regional NAP water quality officer.

Condamine and Old Murray Darling

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Or visit Water Quality Online, the NAP Water Quality website:

www.wqonline.info

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