

Water Quality Event Monitoring



Regional Natural Resource Management in Queensland

ID: WQEM 0621

Event Summary Load Calculation Dogwood Creek (Miles) December 2005

Introduction

This fact sheet presents Event Mean Concentration (EMC) and load estimates for sediment and nutrient samples collected for two runoff events in Dogwood Creek, Miles (Figure 1) following storm events from the 1st December-3rd December 2005.

Methodology

Twelve suspended sediment and filtered nutrient samples were collected manually from the Dogwood Creek Bridge, Miles over an eight day period (Figure 2). Samples were collected at the old gauging station 7km upstream of Gilweir weir gauge. Discharge was offset to account for the difference in travel time. Samples were analysed at Queensland Health Scientific Services (QHSS) for TSS, laboratory filtered nutrients and organic carbon. To derive pollutant loads for the event, flow weighted average concentrations were multiplied by the flow over the 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.

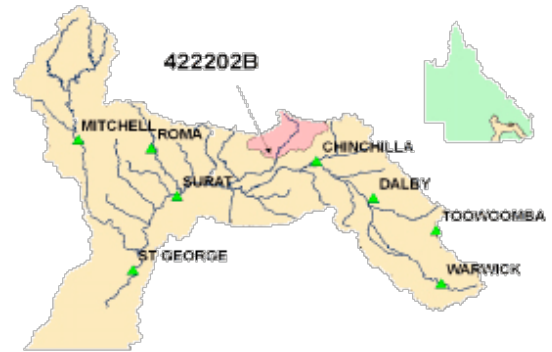


Figure 1. Dogwood Creek sampling location at Miles.

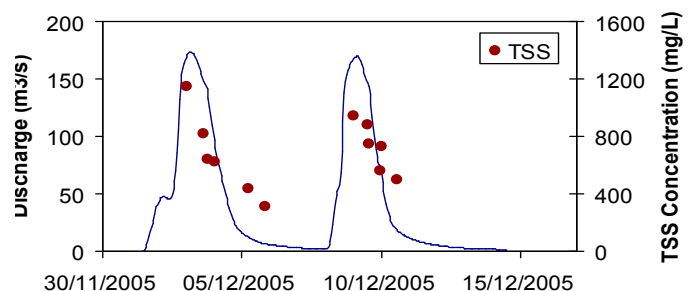


Figure 2. Discharge and TSS concentration for samples collected at Miles from the 3rd - 10th December 2005

Flow Event Description

The runoff at Miles commencing on the 1st of December, was generated from falls of between 50 – 100mm over most of the dogwood creek catchment and some higher rainfall between 100-150mm over the town of Miles. Runoff had not completely ceased when a second storm cell commencing one week after the first storm, saw falls between 50-100mm occurring upstream of Miles which generated runoff similar in peak and volume to the runoff event one week prior (Figure 3). (Miles 68 mm, Dalby 50 mm).

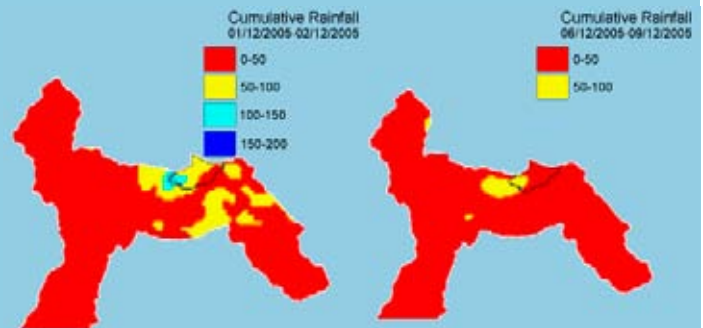


Figure 3. Cumulative rainfall upstream of Miles for two runoff events between 01/12/2005 and 09/12/2005.

Catchment:	Condamine
Location:	GS 422202A
	26° 39' S 150° 10' E
Catchment Area:	2,890 km ²
Dominant Land Use:	55% grazing, 42% State Forest,
(upstream of gauge)	2% dryland cropping
Event Duration:	01/12/2005 – 14/12/2005

Results

Total suspended solids concentrations (TSS) ranged from 312 – 1150 mg/L (Figure 2). Approximately 42,200 tonnes of sediment passed the sample point during the 14 days of runoff (Table 1). Sediment loads were similar for both events. The TSS EMC (873 mg/l) was double that measured in the adjacent Charley's Creek catchment and half that measured in the other adjacent catchment, Yuleba Creek. Particulate Phosphorus was 83% of total phosphorus which is similar to other events recorded in the Condamine and Balonne catchment. Particulate Nitrogen was 68% of total nitrogen. Dissolved organic carbon was 55% of total organic carbon.

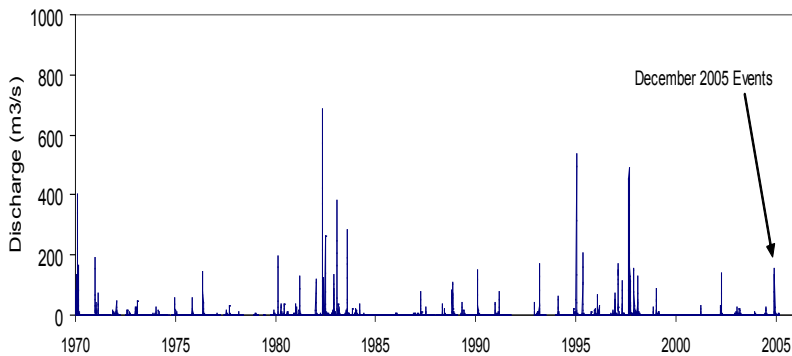


Figure 4. Dogwood Creek, December 2005 event sampled at Miles in context to historical mean daily discharge.



Table 1. Estimated load and event mean concentration (EMC) for the December 2005 Event at Miles .

Total Event Discharge (ML)	48,370
Number of samples	12
TSS Load (Tonnes)	42,246
TP Load (Tonnes)	12
FRP Load (Tonnes)	1.5
TN Load (Tonnes)	103
TKN Load (Tonnes)	97
NO _x Load (Tonnes)	6.3
NH ₃ Load (Tonnes)	1.4
TOC LOAD (Tonnes)	1279
TSS EMC (mg/L)	873
TP EMC (mg/L)	0.25
FRP EMC (mg/L)	0.03
TN EMC (mg/L)	2.14
TKN EMC (mg/L)	2.00
NO _x EMC (mg/L)	0.13
NH ₃ EMC (mg/L)	0.03
TOC EMC (mg/L)	26
DOC EMC (mg/L)	13
Maximum Event Discharge (m ³ /s)	173
Period of record (yrs).	56
Average number of times peak Q exceeded (days/yr)	1
Return Period (partial series)	5 Years

For Further Information

Contact your regional NAP water quality officer.

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

www.wqonline.info

Acknowledgements: Thanks go out to Miles councillor Patrick Fitzgerald, for collecting water samples over the two weeks of the event. Without local assistance the collection of event data would not be possible.

To reference this information sheet: Waters, D. (2006) Water Quality Event Monitoring - Dogwood Creek (Miles) December 2005: Event Summary Load Calculation (WQEM 0621) Department of Natural Resources and Water. ISBN 1-7417-2286-1.

Produced by the National Action Plan for Salinity and Water Quality
Queensland Water Quality State-level Investment Project