

Water Quality Event Monitoring



Regional Natural Resource Management in Queensland

ID: WQEM 0635

Event Summary Load Calculation Baffle Creek (Mimdale) January 1991

Introduction

This fact sheet presents Event Mean Concentration (EMC) sediment load estimates collected from Baffle Creek at Mimdale gauging station associated with four days of rain in January 1991 (Fig.1).

Methodology

Five suspended sediment samples (Tab.1) were collected from the gauging station GS 134001B (Fig.2), and recorded in the DNR archives. Discharge was assumed to be $\pm 10\%$ of actual flow (http://www.nrm.qld.gov.au/water/monitoring/pdf/wm_data_col_stds.pdf), although accuracy during high flows is likely to be poorer (David Amos, NRW Hydrographer, *pers. comm.*). Field replicates were not collected, so there was no precision estimate for concentration data.

To relate total suspended sediment (TSS in mg/L) with discharge (m^3/s), the average TSS value for the five samples was assumed across the hydrograph. Error margins were 2 standard errors around the average TSS concentration, which were propagated across the hydrograph together with the 10% variation in flow. The event load was the sum of the products of hourly discharge and TSS concentrations (Tab.2). The EMC was calculated by dividing the event load by the event volume (Tab.2).



Figure 1. Baffle Creek event sampling location at Mimdale

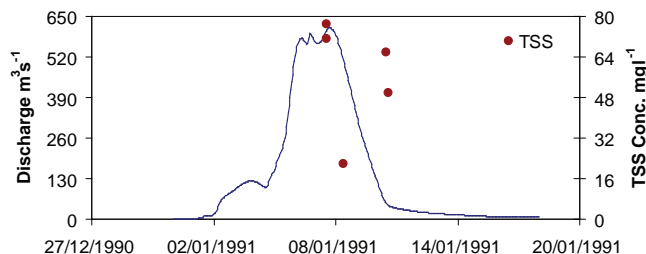


Figure 2. Sample times, discharge and TSS concentration of samples collected at Mimdale

Flow Event Description

Catchment:	Baffle
Location:	GS134001B, Mimdale 24°30'S; 151°44'E
Catchment Area:	3994 km ² (1402 km ² upstream of the gauge)
Dominant Land Use:	Grazing (65%), Nature conservation (18%), (upstream of gauge) Rural residential (6%)
Event Duration:	02/01/1991 - 14/01/1991

Cumulative Rainfall (mm)

07/01/91 - 10/01/91

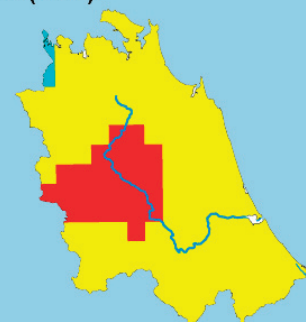
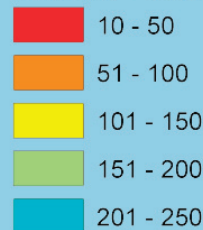


Figure 3. Cumulative rainfall during the event

Results

This was a strong runoff event (Fig.4) from an unregulated catchment. The EMC for TSS was relatively low compared with similar magnitude flows from other parts of the Burnett-Mary region (Tagigun Road in 1982; Home Park in 1983). The sediment load (12.6 KT) was predictable on the basis of loads observed at Mimdale in 1973, 1988 and 2003 (Fig.5).

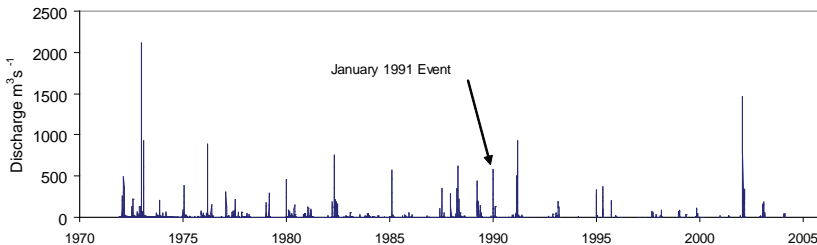


Figure 4. Baffle Creek January 1991 event sampled at Mimdale in the context of historical (mean daily) discharge

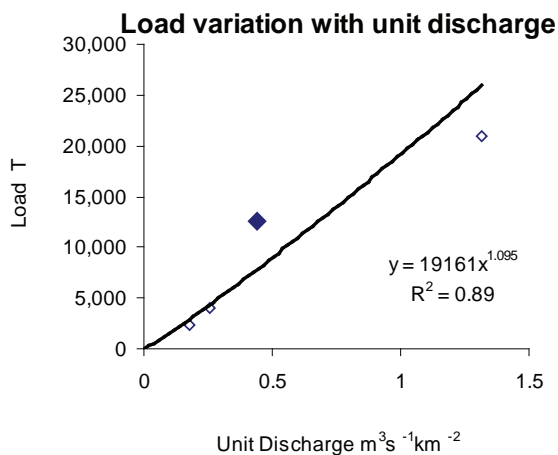


Figure 5. Baffle Creek January 1991 event sampled at Mimdale in the context of historical (mean daily) discharge

Table 1. Discharge and sediment data for the January 1991 event at Mimdale.

Date/Time	Gauge Height (m)	Q (m³/s)	TSS (mg/l)
7/01/1991 13:00	12.6	622.4	77
7/01/1991 13:30	12.7	625.4	71
8/01/1991 9:35	11.7	475.5	22
10/01/1991 11:10	3.11	48.63	66
10/01/1991 13:55	2.88	43.09	50

Table 2. Estimated load and event EMC for the January 1991 event at Mimdale.

Gauging station number	134001B		
Site Name	Mimdale		
Total Event Discharge (ML)	220,715		
Number of samples	5	Lower-bound	Upper-bound
TSS Load (Kilo-tonnes)	12.6	7.4	18.7
TSS EMC (mg/L)	57	34	85
Maximum Event Discharge (m³/s)	615		
Period of record (yrs)	34		
% of time that the peak is equalled or exceeded	0.18		

For Further Information

Contact your regional NAP water quality officer.

Burnett Mary Regional Group

Graeme Esslemont

Phone: (07) 4132 8315

graeme.esslemont@burnettmarynrm.org.au

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

www.wqonline.info

We would like to thank the NRM&W Hydrographic unit, Bundaberg for collecting samples and supplying data.

To reference this information sheet:

Esslemont, G. (2006) Water Quality Event Monitoring - Baffle Creek (Mimdale) January 1991: Event Summary Load Calculation (WQEM 0635) Department of Natural Resources and Water. ISBN 00000

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