

# Water Quality *Event* Monitoring



Regional Natural Resource Management in Queensland

ID: WQEM 0620

## Event Summary Load Calculation

### Warrego River (Cunnamulla) April 2006

#### Introduction

This fact sheet presents Event Mean Concentration (EMC) and load estimates for sediment and filtered nutrient samples collected following a storm event which occurred from the 10th – 13th April 2006 in the Warrego Catchment upstream of Cunnamulla (Figure 1).

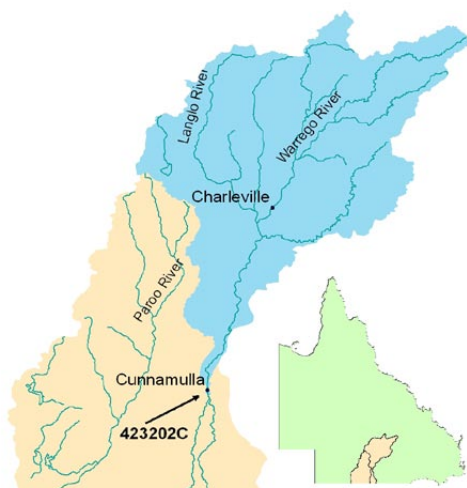


Figure 1. Warrego River sampling location at Cunnamulla.

#### Methodology

Ten suspended sediment and lab filtered nutrient samples were collected manually downstream of the Cunnamulla Weir, over a seven day period (Figure 2). Samples were analysed at Queensland Health Scientific Services (QHSS) for TSS, lab 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 from the downstream gauge at Wyandra was used to compare this event to historic flows.

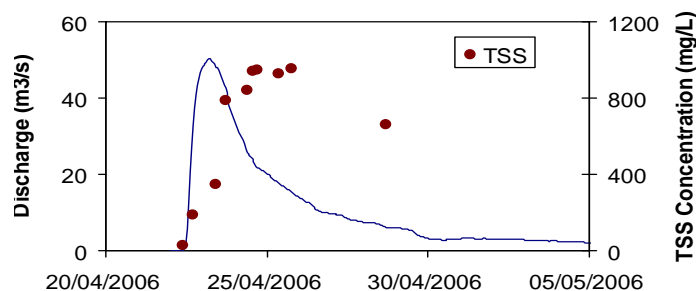


Figure 2. Discharge and TSS concentration for samples collected at Cunnamulla Weir from the 22nd – 28th April 2006.

#### Flow Event Description

Runoff for this event was generated in the headwaters of the catchment from the Langlo River north west of Charleville (figure 3), with falls between 100-150mm. The gauging station at Charleville did not record any runoff for this event which confirmed that no runoff was generated in the north east of the catchment.

Catchment: Warrego  
 Location: GS 423202C, Cunnamulla Weir,  
 28° 07' S 145° 41' E  
 Catchment Area: 48,690 km<sup>2</sup>  
 Dominant Land Use: 97% grazing, State forest <2%, National Park < 1%  
 (*upstream of gauge*)  
 Event Duration: 22/04/2006 – 08/05/2006

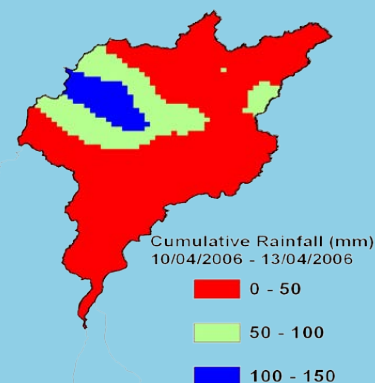


Figure 3. Cumulative rainfall upstream of Cunnamulla gauge.

## Results

Total suspended solids concentrations (TSS) ranged from 30 – 954 mg/L (Figure 2). Approximately 8,700 tonnes of sediment passed the sample point during the 16 days of runoff (Table 1). The TSS EMC (652 mg/l) was below the average concentrations observed in the Condamine and Balonne catchments. Particulate Phosphorus was 83% of total phosphorus which is similar to that recorded the Balonne catchment. Dissolved organic carbon was 52% of total organic carbon similar to observed results from the Condamine and Balonne catchments.

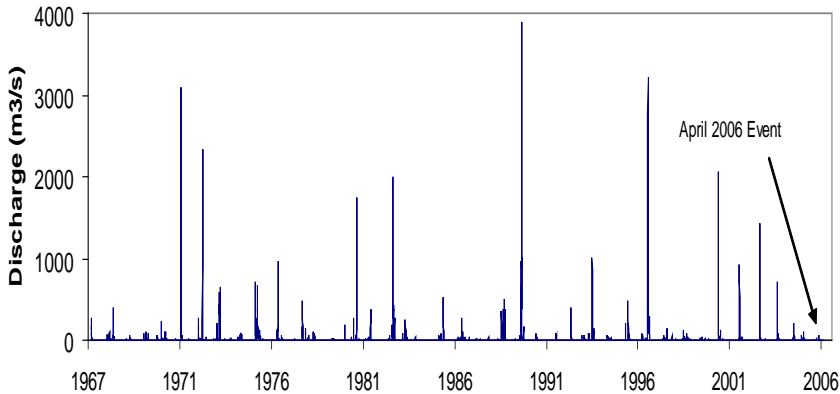


Figure 4. Wyandra Gauging Station, April 2006 event in context to historical mean daily discharge (Note: Wyandra historical data shown as Cunnamulla data only available for 14 years prior).



Figure 5: Sampling at the base of the Cunnamulla Weir April 2006.

Table 1. Estimated load and event mean concentration (EMC) for the April 2006 event at Cunnamulla.

Total Event Discharge (ML)	13,356
Number of samples	10
TSS Load (Tonnes)	8,711
TP Load (Tonnes)	4.2
FRP Load (Tonnes)	0.56
TN Load (Tonnes)	25
TKN Load (Tonnes)	21
NO <sub>x</sub> Load (Tonnes)	4
NH <sub>3</sub> Load (Tonnes)	0.27
TOC LOAD (Tonnes)	198
TSS EMC (mg/L)	652
TP EMC (mg/L)	0.31
FRP EMC (mg/L)	0.04
TN EMC (mg/L)	1.87
TKN EMC (mg/L)	1.57
NO <sub>x</sub> EMC (mg/L)	0.31
NH <sub>3</sub> EMC (mg/L)	0.02
TOC EMC (mg/L)	15
DOC EMC (mg/L)	8
Maximum Event Discharge (m <sup>3</sup> /s)	50
Period of record (yrs)	40
Average number of times peak Q exceeded (days/yr)	19
Return Period (partial series)	1 Year

## For Further Information

Contact your regional NAP water quality officer.

*Condamine and Old Murray Darling*

*Dave Waters*

*Phone: (07) 4688 1598*

[david.waters@nrm.qld.gov.au](mailto:david.waters@nrm.qld.gov.au)

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

[www.wqonline.info](http://www.wqonline.info)

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