

## **TOTAL SUSPENDED SOLID VARIATION DURING HIGH/LOW TIDE OF SPRING TIDE ALONG SAMPADI RIVER, SARAWAK**

**M. Bimol<sup>1</sup>, Ling T.Y.<sup>1</sup>, L. Nyanti<sup>2</sup>, Norhadi I.<sup>2</sup> & J.J.J. Emang<sup>3</sup>**

<sup>1</sup> Department of Chemistry  
Faculty of Resource Science and Technology  
Universiti Malaysia Sarawak  
94300 Kota Samarahan

<sup>2</sup> Department of Aquatic Science  
Faculty of Resource Science and Technology  
Universiti Malaysia Sarawak  
94300 Kota Samarahan

<sup>3</sup> Natural Resources and Environment Board Sarawak  
Kuching, Sarawak  
mordibimol@yahoo.com

### **ABSTRACT**

Total Suspended Solid (TSS) is important as one of the parameters that can be influenced by a stream power which will affect the ecological condition of the system. Therefore, the objectives of this study were to improve understanding in TSS variation along Sampadi River and provide fundamental data for monitoring purposes as Sampadi River is important for fisheries activities among the local people. Six sampling trips for samples collection were conducted at 12 selected stations along Sampadi River during high (February 25; October 22; and November 11) and low (February 25; May 21; and November 11) tide of Spring tide. Water samples for TSS analysis were collected in triplicates from the subsurface. Transparency and turbidity data were recorded in-situ.

TSS values along Sampadi River during the study period ranged from  $26.33 \pm 3.51$  mg l<sup>-1</sup> at station 1 to  $104.33 \pm 7.57$  mg l<sup>-1</sup> at station 13 during low tide. The range increased during high tide from  $27.00 \pm 13.89$  mg l<sup>-1</sup> at station 10 in February to  $160.00 \pm 1.15$  at station 12 in November. TSS at station 13 is significantly higher compared to all other stations during low tide. However during high tide, the TSS value at station 12 is significantly higher compared to all stations but do not have significant difference as compared to station 13. Turbidity values range from  $2.77 \pm 0.06$  NTU at station 3 in May to  $92.6 \pm 0.00$  NTU at station 13 in February. However the range of values decreases slightly during high tide, from  $2.03 \pm 0.06$  NTU at station 6 in October to  $52.03 \pm 3.63$  NTU at station 12 in November. Transparency, measured in centimeter ranged from  $15.33 \pm 0.58$  cm at station 13 in February to  $119.33 \pm 1.15$  cm at station 3 in November. While during high tide the transparency value increased to  $28.67 \pm 1.15$  cm to  $150.33 \pm 0.58$  at station 3 in October during high tide. This suggests that TSS variation along Sampadi River support the theory of turbidity maximum zone which normally occurred at up or down estuary. Based on TSS values as compared to the Interim National Water Quality Index (INWQS) for Malaysia of the Department of Environment, Sampadi River falls into class III which is within range for common, of economic value and tolerant species.

**Keywords:** Total Suspended Solid, Turbidity, Transparency, Estuary, High/Low Tide

### **INTRODUCTION**

Total Suspended Solid (TSS) is important as one of the indicator of stream power or

the ability of the river to do work (Gore, 2006). The work performed by the river influences the distribution of suspended