

CIVE 716 EROSION AND SEDIMENTATION

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Assignment #5 for Chapters 10 and 11 due on Wednesday December 9, 2009

Problem # 1 (80 points)

Consider the velocity and sediment concentration profiles of the Rio Grande in Homework #3. Consider that the channel width is 300 ft and remembering that the slope is $S = 0.0008$, not 0.00008. Answer the four questions of Problem 10.6 (E&S p. 203). Additionally, determine the following:

- (e) Calculate the daily sediment load in metric tons per day from the methods of Karim and Kennedy and Yang.
- (f) Compare with the measured sediment load in metric tons per day from the product of velocity and concentration.
- (g) Define the ratio u_*'/ω and find out if sediment is transported primarily as bedload or in suspension?
- (h) What sampling technique would you recommend for suspended sediment? and
- (i) Define the time scale for vertical mixing.
- (j) Define the length scale for lateral mixing.

Problem # 2 (20 points) English Units

Repeat the calculation example of the mean annual sediment load in Table 11.6 considering Figure 11.10 and assuming that the sediment concentration relationship in Figure 11.11 is replaced with $C \text{ mg/l} = 0.2 Q \text{ m}^3/\text{s}$. Provide answers in English tons per year.
