GEO 350 – Assignment 3 Fact Sheet

Hydraulic Geometry of Stream Channels

Purpose

The purpose of this exercise was to learn how to:

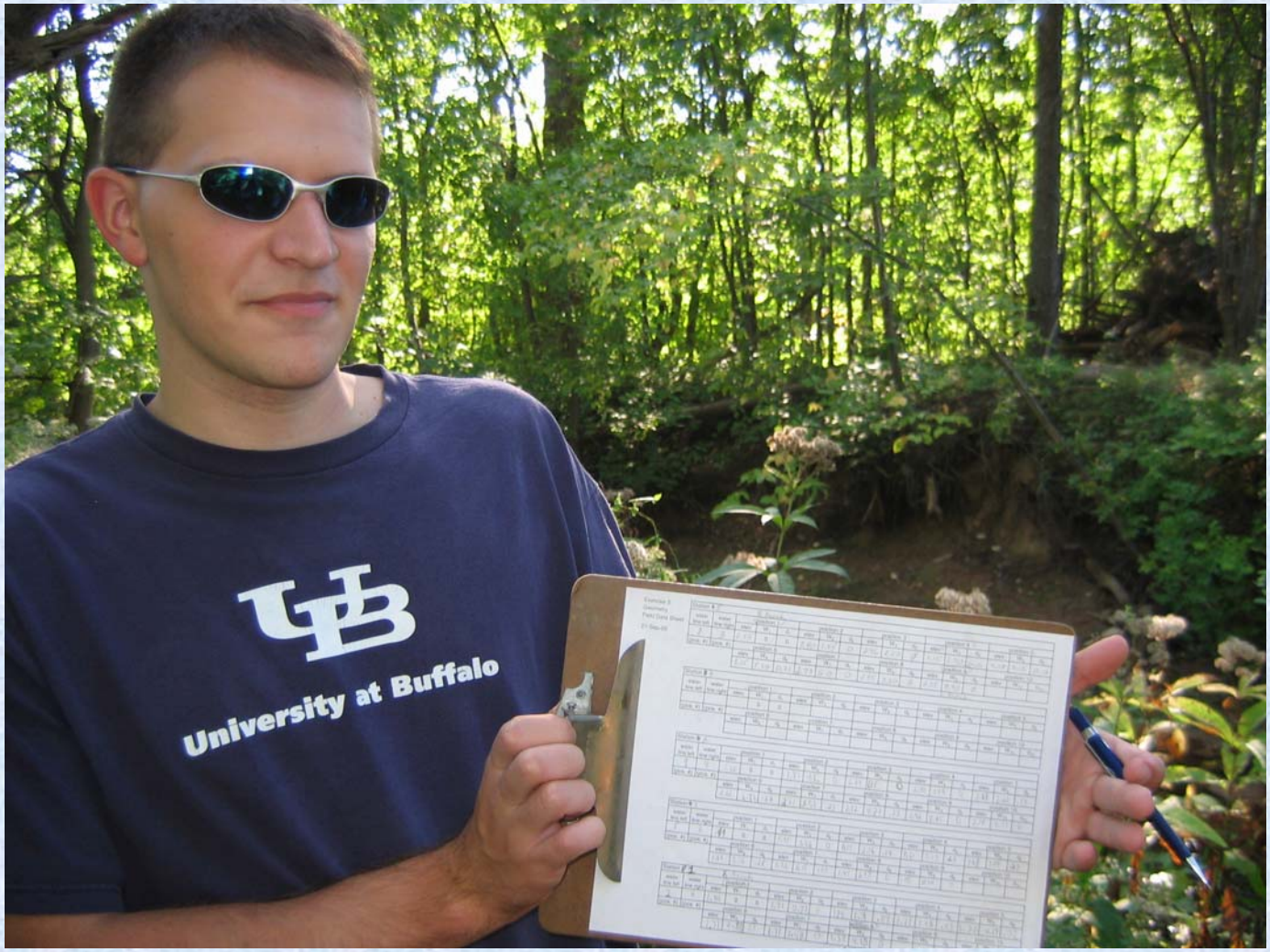
1.) Collect, process and reach conclusions about stream channel dimensions.

2.) Assess the changes in stream channel geometry with distance downstream and local controls on channel shape

To start off, Sean gives us a little lesson on how to use the measuring rod.

The theodolite should be placed in a spot that has good vision of the entire cross-section.

Make sure to take accurate measurements with the measuring tape



Make sure to record all of your data accurately

Steve stands in the raging waters of Ransom Creek

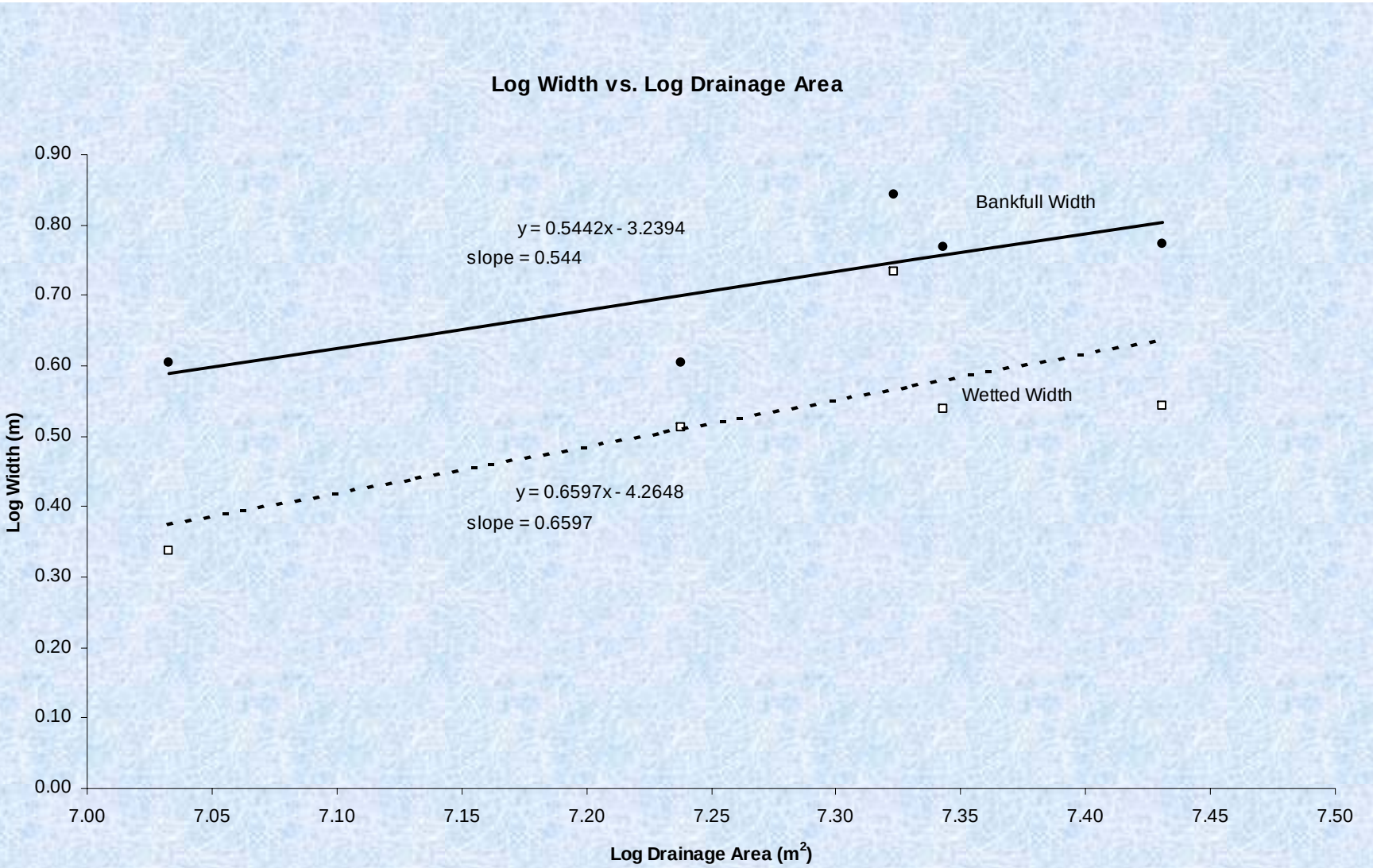
We found a shoe of a former GEO 350 student who got swept away by the raging waters of Ransom Creek. (He should have never signed that waiver)

Width-average Flow Depth (d_W) Worksheet					
i	W_i	d_i	$(d_i+d_{i-1})/2$	W_i-W_{i-1}	((di+di-1)/2) *(Wi-Wi-1)
0	0	0			
1	0.80	0.14	0.070	0.80	0.056
2	1.61	0.20	0.170	0.81	0.138
3	2.38	0.23	0.215	0.77	0.166
4	3.56	0.28	0.255	1.18	0.301
5	4.59	0.30	0.290	1.03	0.299
6	5.41	0	0.150	0.82	0.123
Notes:					
All units in meters					
n = 6					

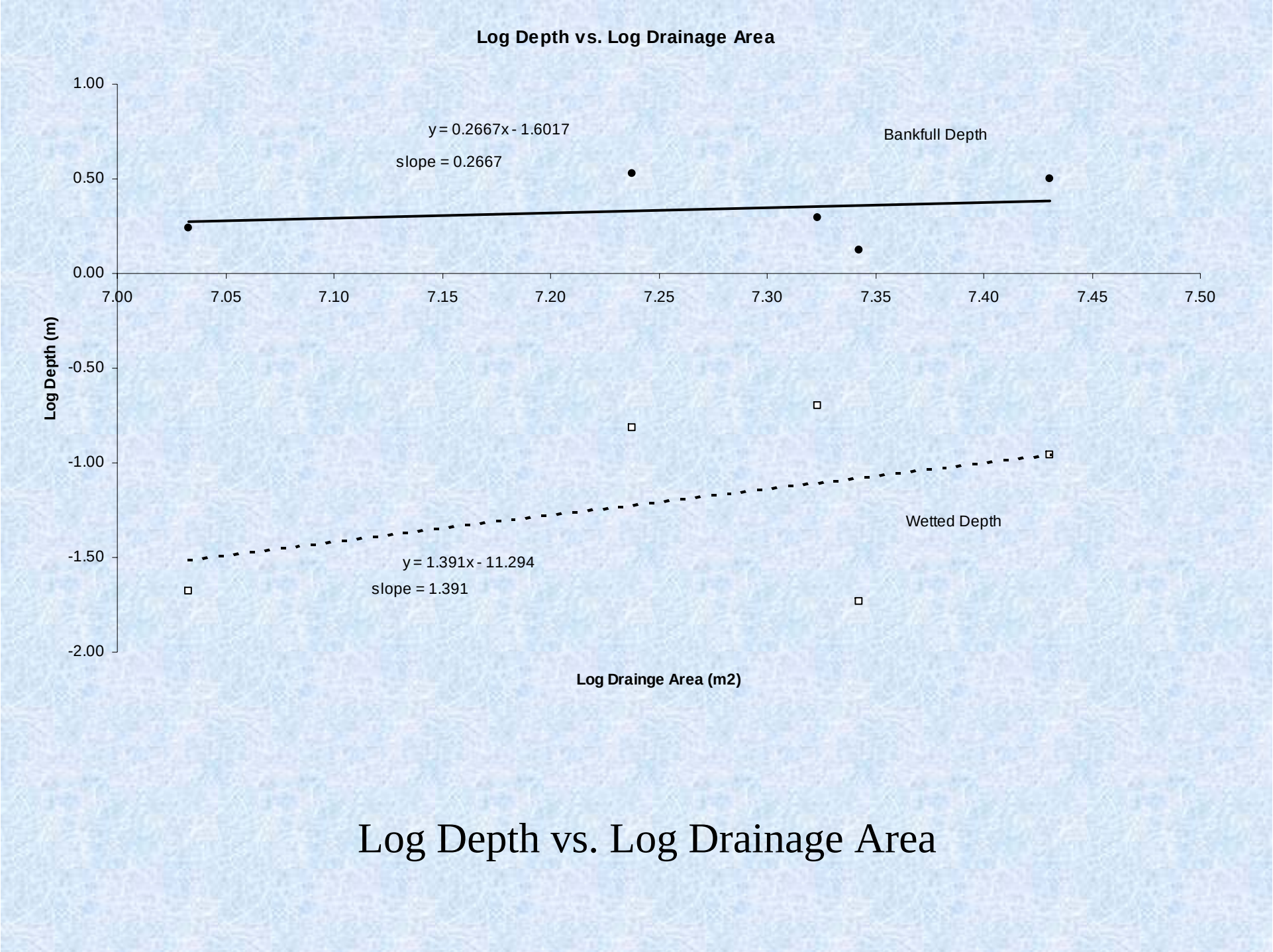
An example of the width-average flow depth.

Cross-Section Data			
Position #	X	Y	d
1	0	0	0
2	1.56	-0.42	0
3	2.36	-0.54	0.14
4	3.17	-0.62	0.20
5	3.94	-0.64	0.23
6	5.12	-0.67	0.28
7	6.15	-0.73	0.30
8	6.97	-0.42	0
9	8.72	0.24	0
Notes:			
All units in meters			
Bold positions are L & R water lines			
X = width to position mark			
Y = channel bottom elevation			
d = water depth			

An example of our cross-section data



Log Width vs. Log Drainage Area



Log Depth vs. Log Drainage Area

Conclusions

The slope of the line for the log width vs. log drainage area is .544 (bankfull width) and .66 (wetted width).

Additional controls of channel geometry:

- Station 4 was very shallow, with boulders blocking about 1/3 of the stream

- Plant growth in the stream (station 3)