

McKenzie River 2008 –

Date of Collection: Sept. 22–26, 2008

Equipment: Trimble TSC2 controller  
Trimble 5800 GPS receiver equipped with a R8 antenna S/N 4816151227, firmware vrs 3.62.  
Sokkia barcode level S/N 6574.  
Topcon GTS 211D, S/N LG0208 (used with HP and prism rods)

Operators of Equipment: Adam Stonewall, Ryan Cole

Methods used for data collection:

All cross-section GPS benchmarks: minimum occupation time for static GPS, 3.0 hours.

Reach 1 (renamed Reach 2) Walking Survey: Survey points in direct line of the cross section were shot with the Sokkia and barcode level. A magnetic orientation was established for the cross section, and for any points not directly in line with the cross section.

Reach 1 (renamed Reach 2) Boat Survey: A tether rope was established across the cross-section. Ryan Cole secured the boat to various points along the cross-section, and placed the barcode level rod on the stream bed at each point, which was shot from the shore.

Reach 3 (renamed Reach 4) Walking Survey: Survey points in direct line of the cross section were shot with the Sokkia and barcode level. A magnetic orientation was established for the cross section, and for any points not directly in line with the cross section.

Reach 3 (renamed Reach 4) Boat Survey: Due to the speed and turbulence of the water at this section, the approach used for reach 1 was unsuitable. A tether rope and tagline were established across the cross-section. A pole was marked in one tenth of one foot increments. Adam Stonewall and Ryan Cole were both in the kayak, and would move across the river by both hand-pulling along the tether and paddling from the back of the kayak. The paddler would hold the boat in position while the other operator would hold the pole vertically and lower it until it reached the streambed.

Reach 5 (renamed Reach 6) Walking Survey: Survey points in direct line of the cross section were shot with the TopCon and prism level rod.

Reach 5 (renamed Reach 6) Bridge Survey: Water depths were calculated using a bridge board and sounding weight.

Reach 8 (renamed Reach 9) Walking Survey: Survey points in direct line of the cross section were shot with the TopCon and prism level rod.

Reach 8 (renamed Reach 9) Bridge Survey: Water depths were calculated using a bridge board and sounding weight.

Methods used for data preparation and processing:

Benchmarks: The benchmark used to tie in all elevations and horizontal coordinates for Reach 5 was a brass tablet on the measurement bridge. GPS coordinates for the benchmark were obtained from Lane County. All other benchmarks were obtained from the GPS readouts of the Trimble unit. Centimeter accuracy was not needed for the purposes of this study, so the GPS readings were not sent to OPUS.

Data: All TopCon data was tabulated in TDS Survey Works software. Cross-section data was tabulated in ArcMap.

Horizontal Position Accuracy:

Emphasis was made for vertical, not horizontal accuracy. Horizontal measurements should not be considered sub-meter due to approximations made using magnetic orientation. The notable exception to this would be data collected using the TopCon, which should be considered sub-meter.

Vertical Position Accuracy:

Varies widely, RTK GPS benchmarks should be sub-meter. Topcon level should be considered +/- .05 ft. Sokkia level should be considered +/- .003 ft. Handheld rod over river should be considered +/- .1 ft. Bridge-board technique should be considered +/- .1 ft.

Altitude Datum Name: NAVD88

Altitude Distance Units: meters

09-22-09 A.J. Stonewall