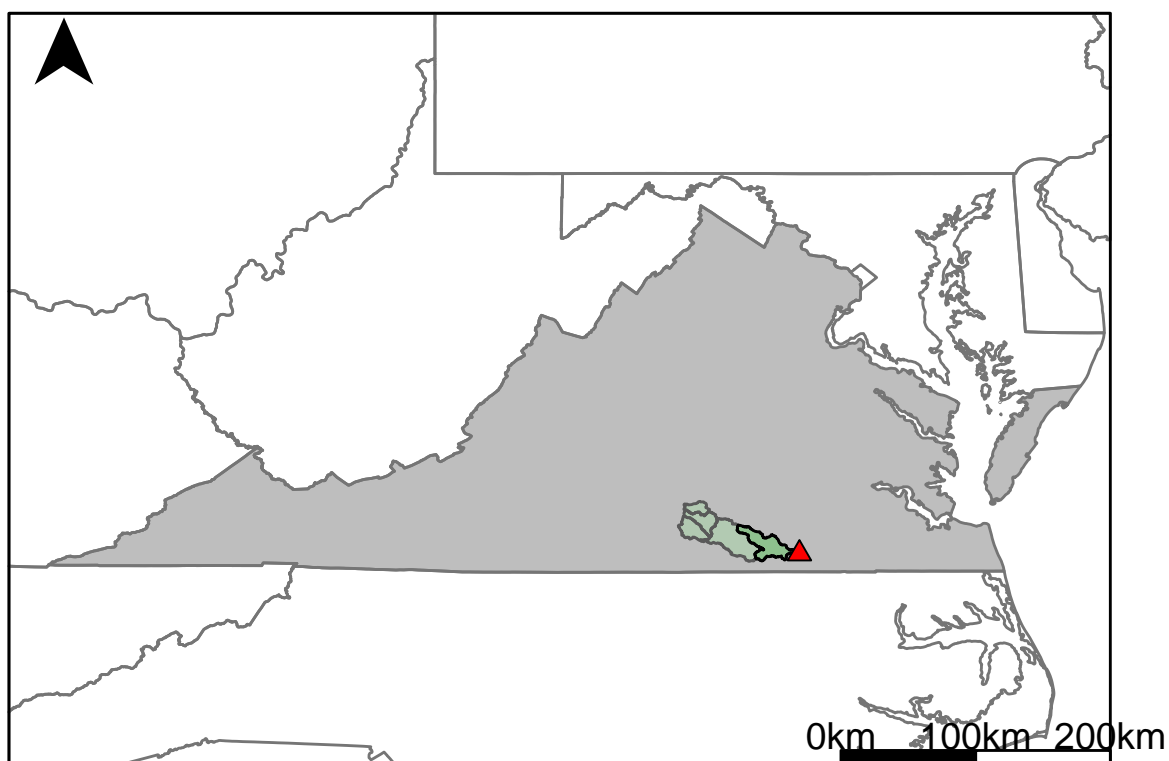


Appendix E.4: USGS Gage 02052000 vs. MN4_8260_8400



This river segment follows part of the flow of the Meherrin River. The gage is located in Emporia City, VA (Lat 36°41'24", Long 77°32'27") approximately 0.3 miles north of Emporia, VA. Drainage area is 744 sq. miles. This gage started taking data in 1951 and is still taking data. The flow in this area is regulated by the Virginia Electric Power Company's dam that is 0.8 miles upstream. The average daily discharge error between the model and gage data for the 20 year timespan was 3.3%, with 45.4% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

| | USGS Gage | Model | Pct. Error |
|---------------|-----------|-------|------------|
| Jan. Low Flow | 61 | 58.7 | 3.77 |
| Feb. Low Flow | 151 | 144 | 4.64 |
| Mar. Low Flow | 166 | 183 | -10.2 |
| Apr. Low Flow | 298 | 313 | -5.03 |
| May Low Flow | 397 | 535 | -34.8 |
| Jun. Low Flow | 413 | 403 | 2.42 |
| Jul. Low Flow | 348 | 303 | 12.9 |
| Aug. Low Flow | 176 | 171 | 2.84 |
| Sep. Low Flow | 112 | 116 | -3.57 |
| Oct. Low Flow | 60 | 76.3 | -27.2 |
| Nov. Low Flow | 52 | 58.3 | -12.1 |
| Dec. Low Flow | 58 | 66.9 | -15.3 |

Table 2: Monthly Average Flows

| | USGS Gage | Model | Pct. Error |
|-------------------|-----------|-------|------------|
| Overall Mean Flow | 727 | 703 | 3.3 |
| Jan. Mean Flow | 1010 | 941 | 6.83 |
| Feb. Mean Flow | 1130 | 1170 | -3.54 |
| Mar. Mean Flow | 1430 | 1470 | -2.8 |
| Apr. Mean Flow | 1120 | 1070 | 4.46 |
| May Mean Flow | 701 | 605 | 13.7 |
| Jun. Mean Flow | 451 | 396 | 12.2 |
| Jul. Mean Flow | 306 | 253 | 17.3 |
| Aug. Mean Flow | 364 | 362 | 0.55 |
| Sep. Mean Flow | 647 | 667 | -3.09 |
| Oct. Mean Flow | 299 | 362 | -21.1 |
| Nov. Mean Flow | 599 | 525 | 12.4 |
| Dec. Mean Flow | 702 | 649 | 7.55 |

Table 3: Monthly High Flows

| | USGS Gage | Model | Pct. Error |
|----------------|-----------|-------|------------|
| Jan. High Flow | 637 | 386 | 39.4 |
| Feb. High Flow | 1710 | 1010 | 40.9 |
| Mar. High Flow | 2910 | 1170 | 59.8 |
| Apr. High Flow | 4550 | 2640 | 42 |
| May High Flow | 4230 | 2470 | 41.6 |
| Jun. High Flow | 5020 | 3570 | 28.9 |
| Jul. High Flow | 4200 | 3040 | 27.6 |
| Aug. High Flow | 1940 | 1020 | 47.4 |
| Sep. High Flow | 782 | 384 | 50.9 |
| Oct. High Flow | 1040 | 347 | 66.6 |
| Nov. High Flow | 1180 | 762 | 35.4 |
| Dec. High Flow | 470 | 383 | 18.5 |

Table 4: Period Low Flows

| | USGS Gage | Model | Pct. Error |
|--------------------------|-----------|-------|------------|
| Min. 1 Day Min | 3.6 | 7.36 | -104 |
| Med. 1 Day Min | 21 | 39.6 | -88.6 |
| Min. 3 Day Min | 4.29 | 7.51 | -75.1 |
| Med. 3 Day Min | 28.7 | 42.4 | -47.7 |
| Min. 7 Day Min | 6.36 | 8.29 | -30.3 |
| Med. 7 Day Min | 40.9 | 48 | -17.4 |
| Min. 30 Day Min | 13.5 | 12.7 | 5.93 |
| Med. 30 Day Min | 81 | 63.8 | 21.2 |
| Min. 90 Day Min | 25 | 34.3 | -37.2 |
| Med. 90 Day Min | 162 | 122 | 24.7 |
| 7Q10 | 15.1 | 15.6 | -3.31 |
| Year of 90-Day Min. Flow | 2002 | 2002 | 0 |
| Drought Year Mean | 165 | 703 | -326 |
| Mean Baseflow | 260 | 329 | -26.5 |

Table 5: Period High Flows

| | USGS Gage | Model | Pct. Error |
|-----------------|-----------|-------|------------|
| Max. 1 Day Max | 18000 | 29700 | -65 |
| Med. 1 Day Max | 8320 | 7780 | 6.49 |
| Max. 3 Day Max | 16800 | 18900 | -12.5 |
| Med. 3 Day Max | 6910 | 6510 | 5.79 |
| Max. 7 Day Max | 10700 | 12500 | -16.8 |
| Med. 7 Day Max | 4080 | 4560 | -11.8 |
| Max. 30 Day Max | 4370 | 4250 | 2.75 |
| Med. 30 Day Max | 1870 | 1900 | -1.6 |
| Max. 90 Day Max | 2990 | 2920 | 2.34 |
| Med. 90 Day Max | 1410 | 1390 | 1.42 |

Table 6: Non-Exceedance Flows

| | USGS Gage | Model | Pct. Error |
|--------------------------|-----------|-------|------------|
| 1% Non-Exceedance | 16.5 | 21.6 | -30.9 |
| 5% Non-Exceedance | 48 | 44.4 | 7.5 |
| 50% Non-Exceedance | 334 | 347 | -3.89 |
| 95% Non-Exceedance | 2820 | 2470 | 12.4 |
| 99% Non-Exceedance | 6700 | 5790 | 13.6 |
| Sept. 10% Non-Exceedance | 39.9 | 40.4 | -1.25 |

Fig. 1: Hydrograph

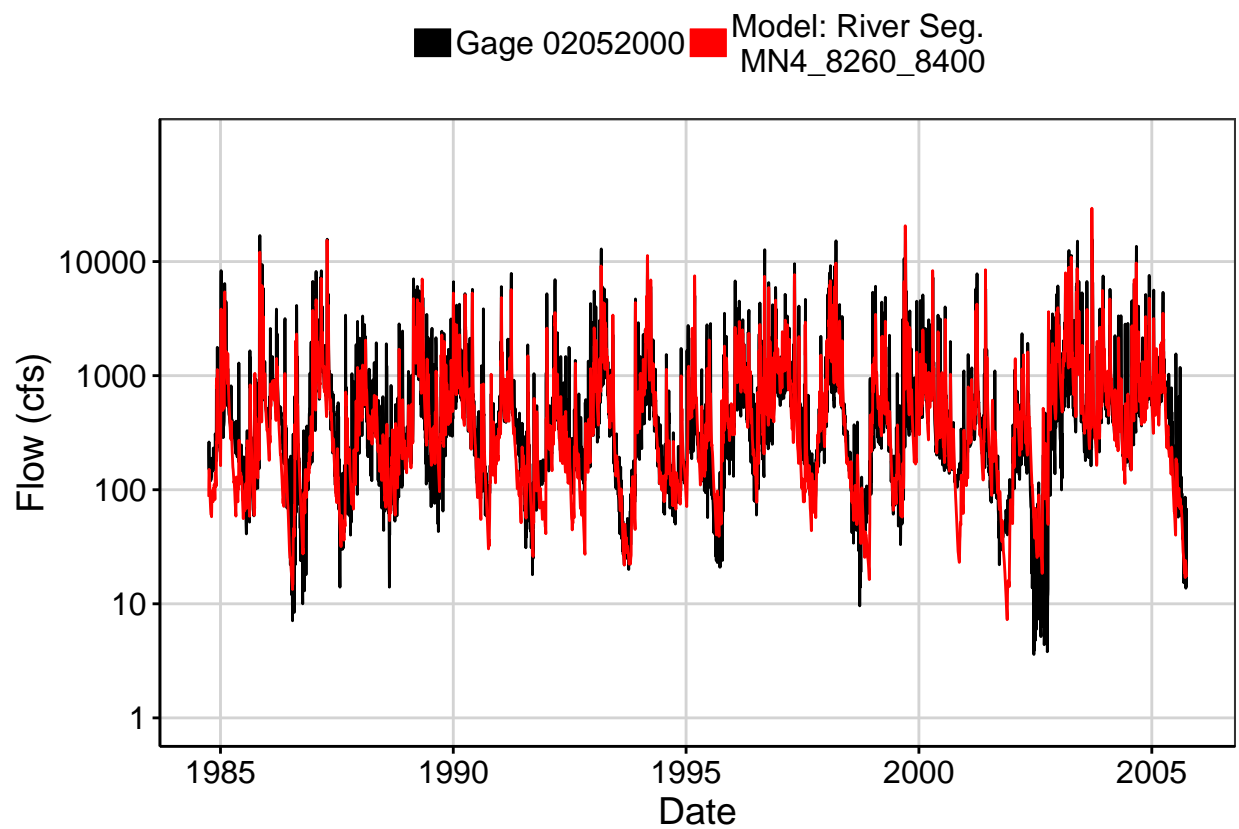


Fig. 2: Zoomed Hydrograph

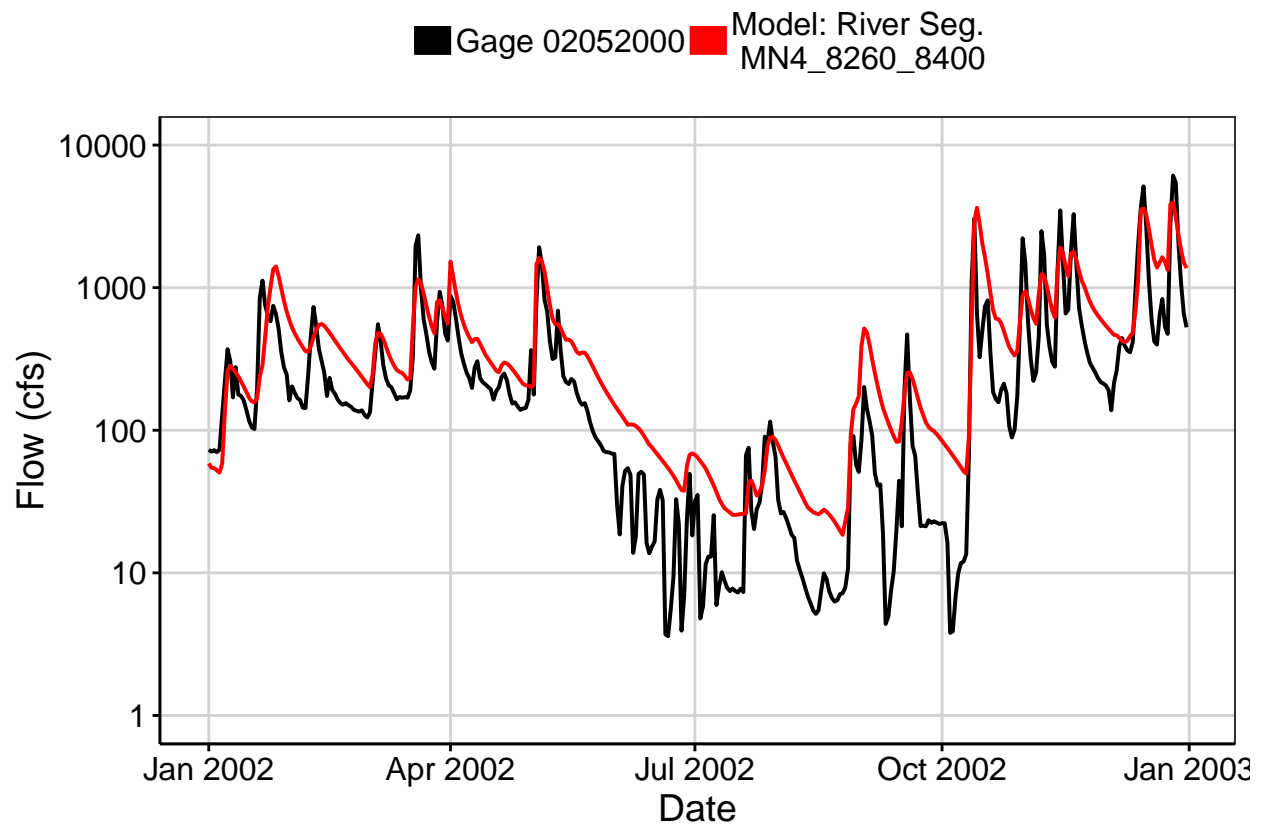


Fig. 3: Flow Exceedance

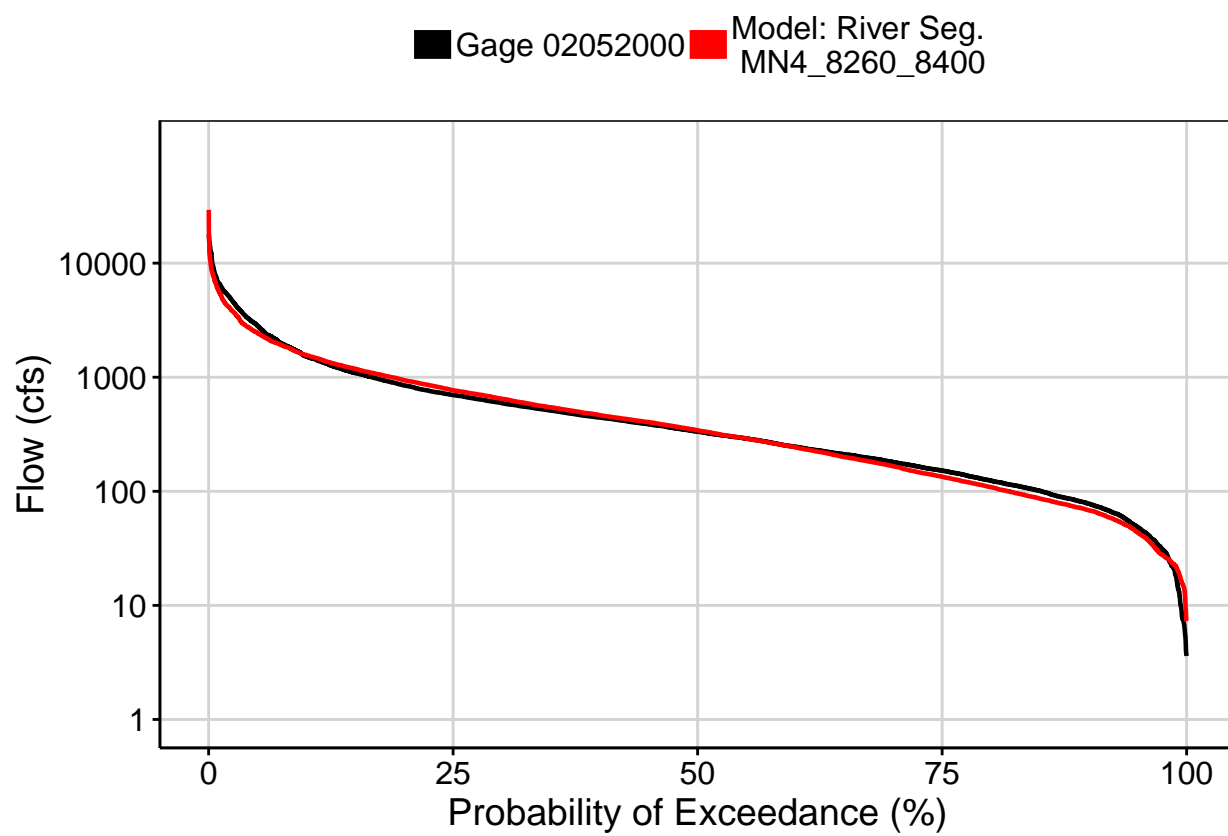


Fig. 4: Baseflow

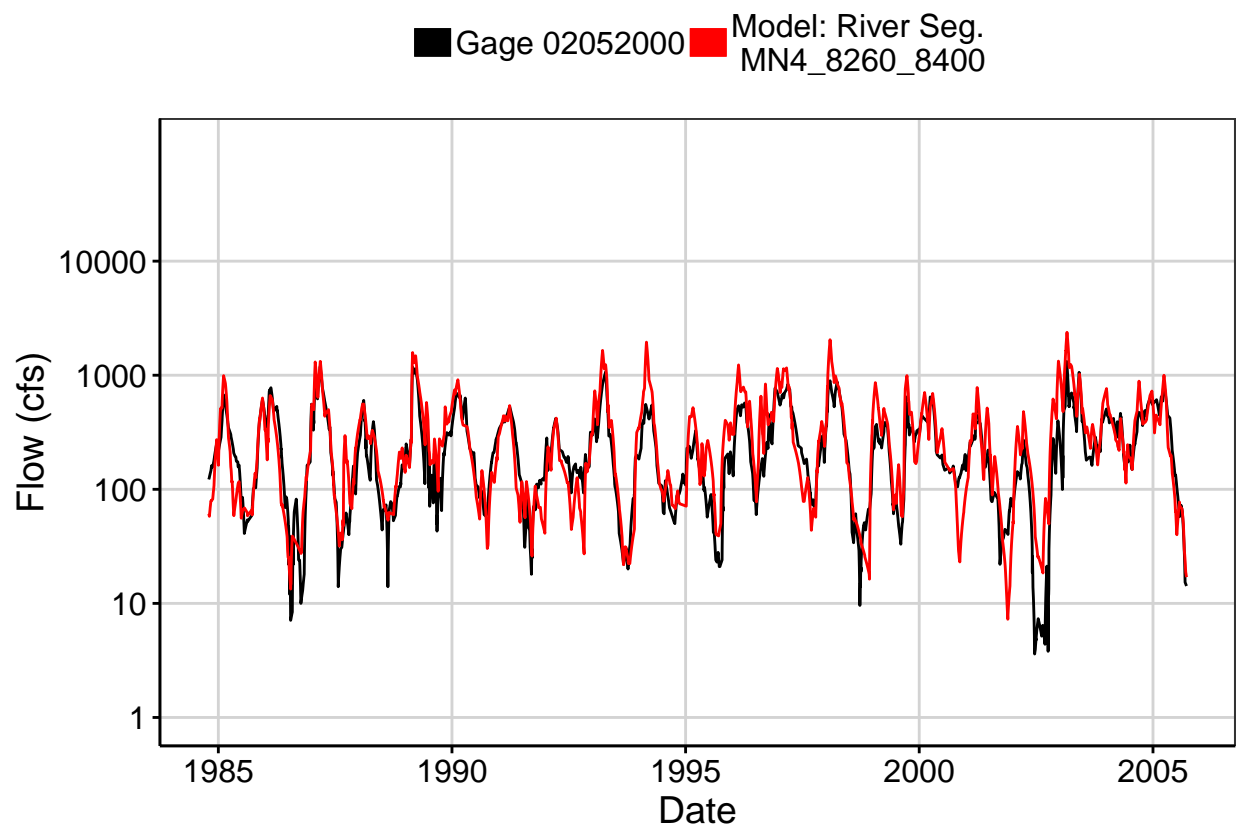


Fig. 5: Combined Baseflow

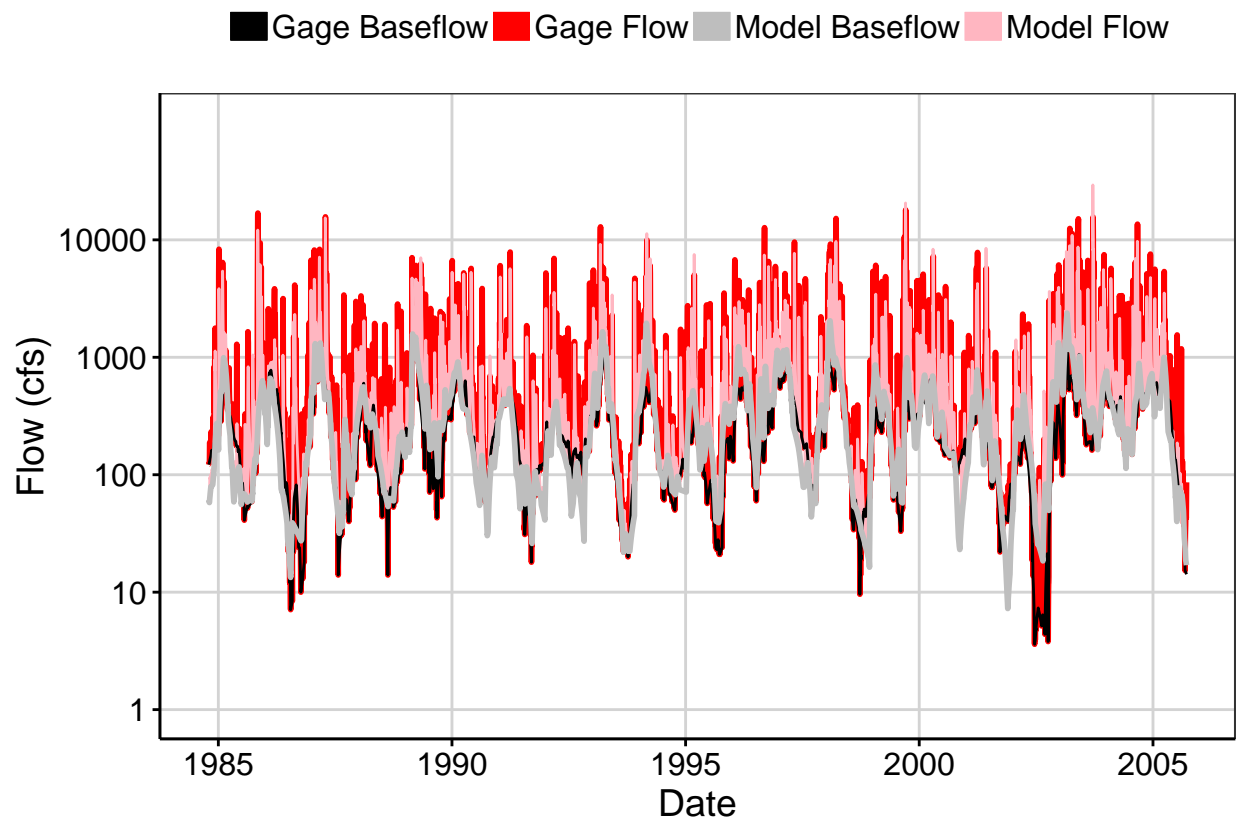


Fig. 6: Largest Error Segment

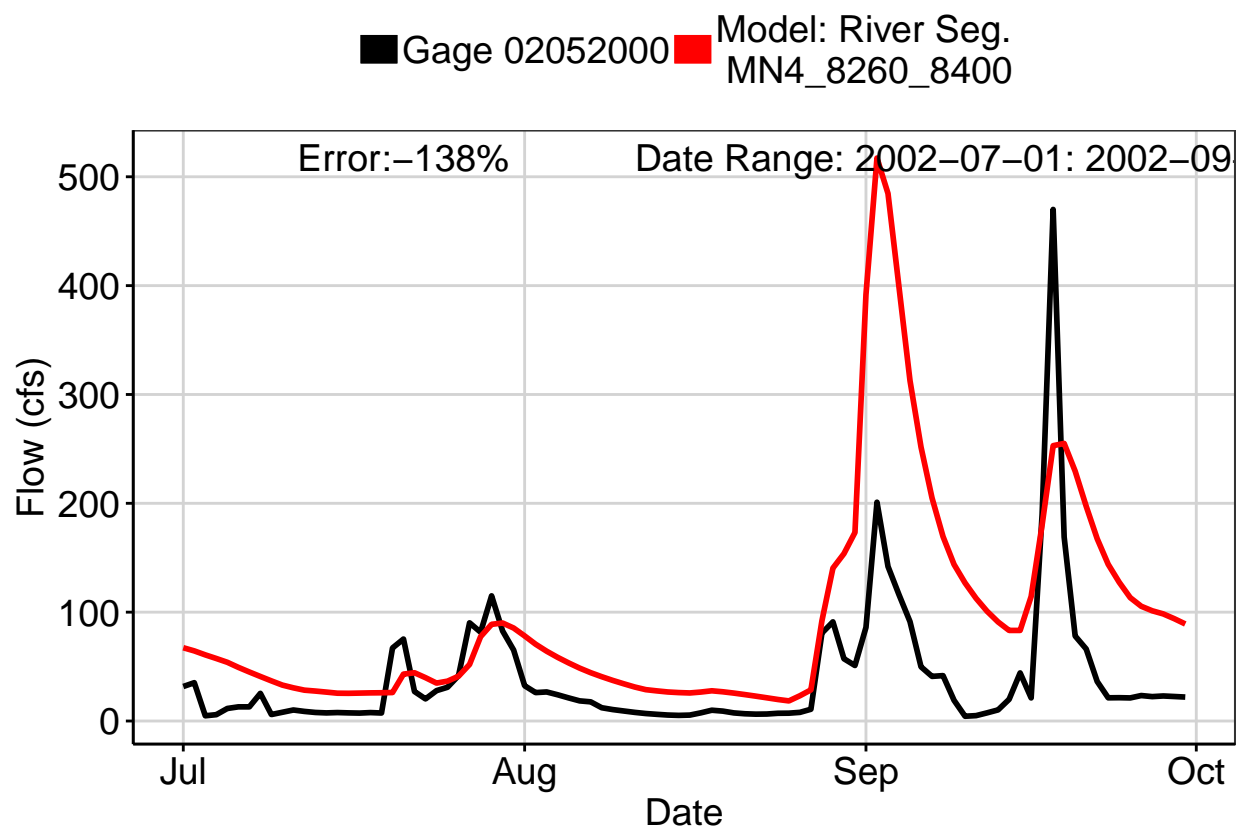


Fig. 7: Second Largest Error Segment

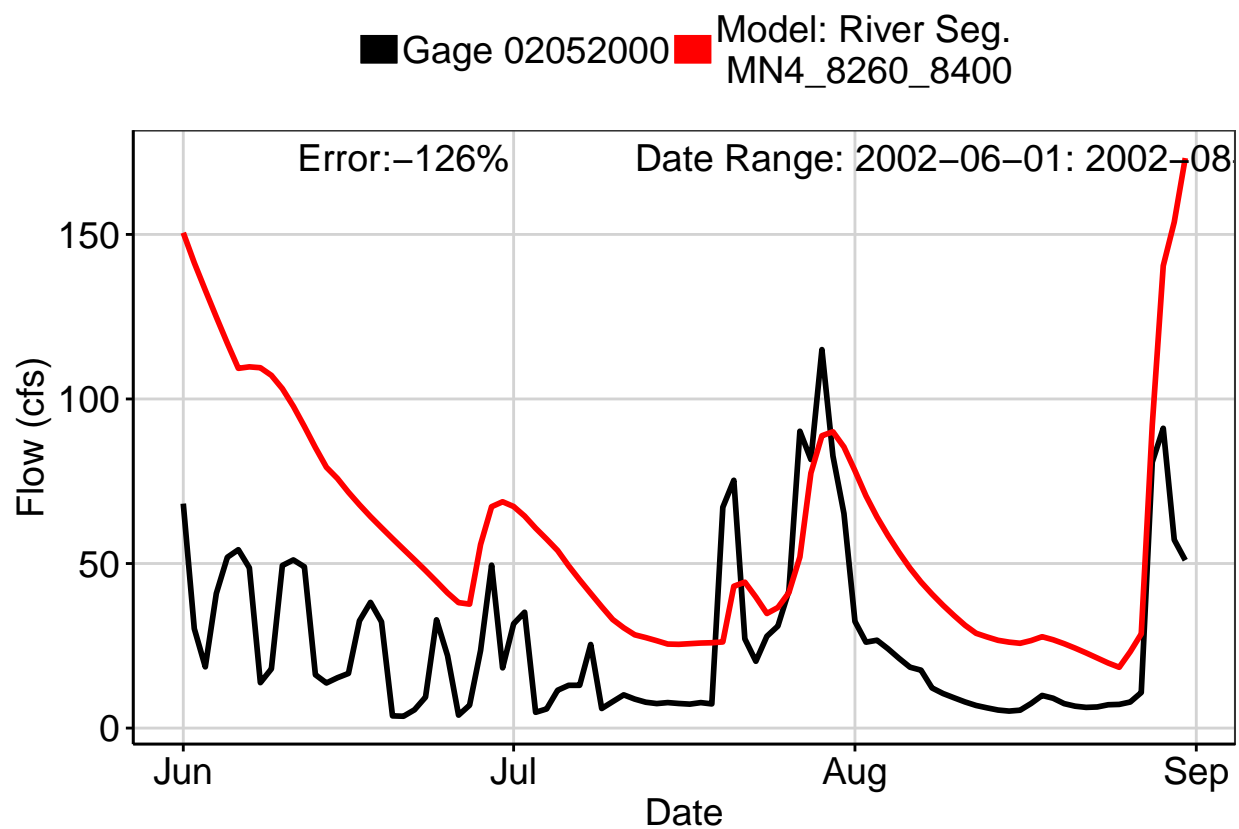


Fig. 8: Third Largest Error Segment

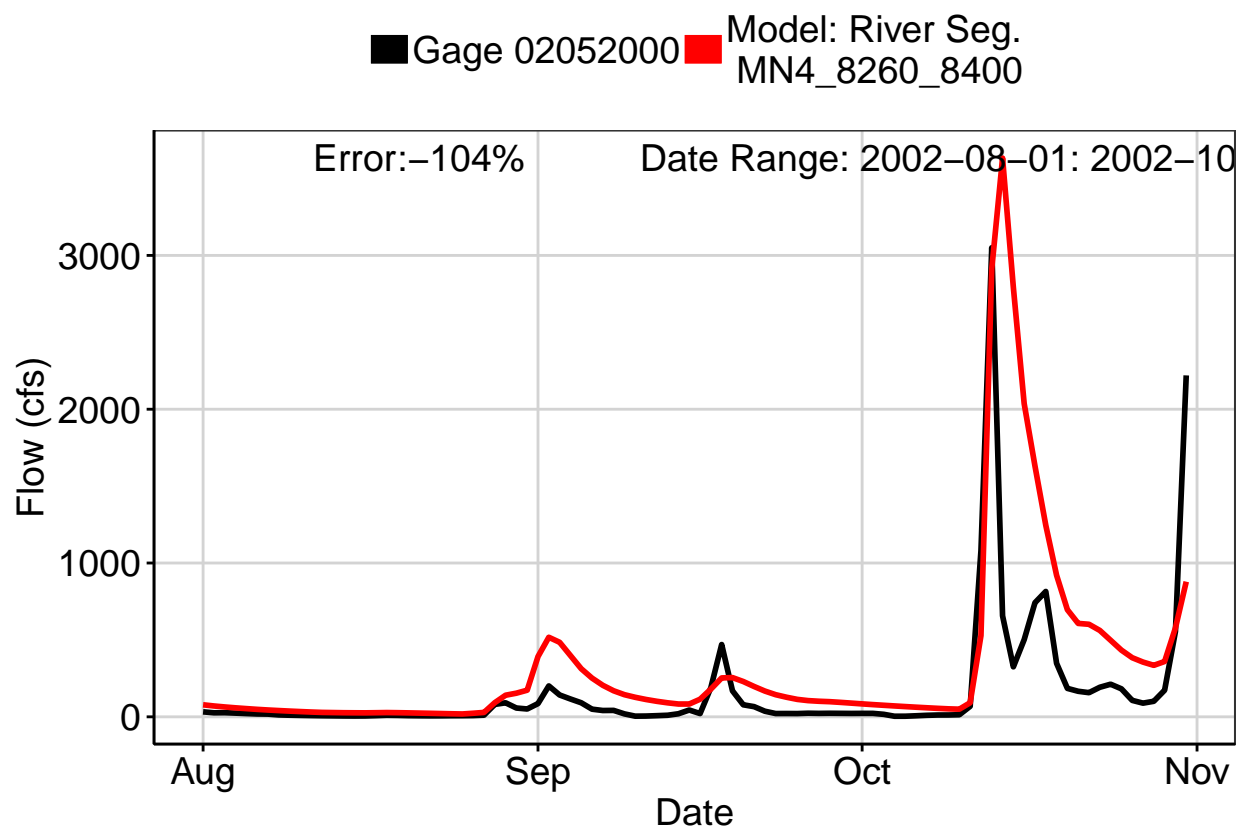


Fig. 9: Residuals Plot

