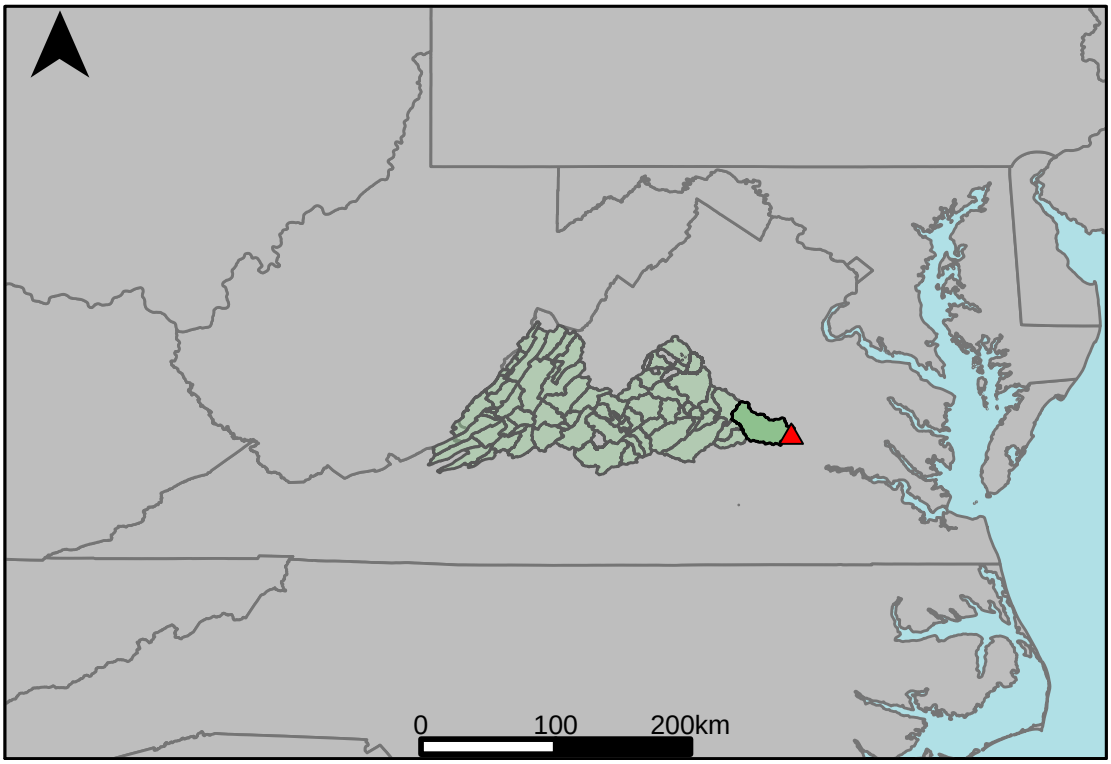
# Appendix A.33: USGS Gage 02037000 vs. JL7_6800_7070 Lower James River




This river segment follows part of the flow of the James, a tributary of the James. The gage is located in Henrico County (Lat. 37°33'52.5", Long. -77°34'27.0"), approximately 6 miles northwest of Richmond, VA. Drainage area is 66.6 sq. miles. This gage started taking data in 1936 and is still taking data. A canal diverts water from the James River 1,200 ft upstream at Bosher Dam and discharges into the river at several points downstream from this gaging station, near Richmond. The average daily discharge error between the model and gage data for the 20 year timespan was 50.4%, with 89.6% of its rolling three month time spans above 20% error.

**Table 1: Monthly Low Flows**

| | USGS Gage | Model | Pct. Error |
|---|---|---|---|
| Jan. Low Flow | 20 | 14.5 | -27.5 |
| Feb. Low Flow | 11 | 21.4 | 94.5 |
| Mar. Low Flow | 11 | 36.7 | 234 |
| Apr. Low Flow | 12 | 46.7 | 289 |
| May Low Flow | 18 | 59.4 | 230 |
| Jun. Low Flow | 16 | 58.9 | 268 |
| Jul. Low Flow | 20 | 45.5 | 127 |
| Aug. Low Flow | 39 | 35.5 | -8.97 |
| Sep. Low Flow | 53.1 | 24 | -54.8 |
| Oct. Low Flow | 146 | 15 | -89.7 |
| Nov. Low Flow | 82 | 14.3 | -82.6 |
| Dec. Low Flow | 48 | 11.8 | -75.4 |

**Table 2: Monthly Average Flows**

| | USGS Gage | Model | Pct. Error |
|---|---|---|---|
| Overall Mean Flow | 152 | 75.4 | -50.4 |
| Jan. Mean Flow | 94.5 | 93.6 | -0.95 |
| Feb. Mean Flow | 112 | 116 | 3.57 |
| Mar. Mean Flow | 130 | 132 | 1.54 |
| Apr. Mean Flow | 150 | 109 | -27.3 |
| May Mean Flow | 154 | 80.5 | -47.7 |
| Jun. Mean Flow | 207 | 61.5 | -70.3 |
| Jul. Mean Flow | 233 | 39.3 | -83.1 |
| Aug. Mean Flow | 201 | 32 | -84.1 |
| Sep. Mean Flow | 163 | 56.3 | -65.5 |
| Oct. Mean Flow | 137 | 46.4 | -66.1 |
| Nov. Mean Flow | 152 | 68 | -55.3 |
| Dec. Mean Flow | 83.5 | 73.5 | -12 |

**Table 3: Monthly High Flows**

| | USGS Gage | Model | Pct. Error |
|---|---|---|---|
| Jan. High Flow | 169 | 46.3 | -72.6 |
| Feb. High Flow | 238 | 122 | -48.7 |
| Mar. High Flow | 104 | 120 | 15.4 |
| Apr. High Flow | 122 | 166 | 36.1 |
| May High Flow | 149 | 134 | -10.1 |
| Jun. High Flow | 125 | 253 | 102 |
| Jul. High Flow | 177 | 277 | 56.5 |
| Aug. High Flow | 204 | 115 | -43.6 |
| Sep. High Flow | 300 | 99.7 | -66.8 |
| Oct. High Flow | 283 | 51.5 | -81.8 |
| Nov. High Flow | 266 | 35.7 | -86.6 |
| Dec. High Flow | 281 | 35.7 | -87.3 |

**Table 4: Period Low Flows**

| | USGS Gage | Model | Pct. Error |
|---|---|---|---|
| Min. 1 Day Min | 0.00 | 4.27 | Inf |
| Med. 1 Day Min | 3.10 | 9.31 | 2.00e+02 |
| Min. 3 Day Min | 0.00 | 4.28 | -1.81e+17 |
| Med. 3 Day Min | 4.33 | 9.66 | 1.23e+02 |
| Min. 7 Day Min | 0.00 | 4.30 | Inf |
| Med. 7 Day Min | 5.17 | 9.75 | 8.86e+01 |
| Min. 30 Day Min | 0.00 | 4.82 | -3.98e+15 |
| Med. 30 Day Min | 1.03e+01 | 1.45e+01 | 4.08e+01 |
| Min. 90 Day Min | 0.00 | 9.33 | Inf |
| Med. 90 Day Min | 4.37e+01 | 2.33e+01 | -4.67e+01 |
| 7Q10 | 0.00 | 5.55 | 5.61e+06 |
| Year of 90-Day Min. Flow | 2.00e+03 | 2.00e+03 | 1.00e+02 |
| Drought Year Mean | 5.01e+01 | 7.86e+01 | 5.69e+01 |
| Mean Baseflow | 1.10e+02 | 4.68e+01 | -5.75e+01 |

**Table 5: Period High Flows**

| | USGS Gage | Model | Pct. Error |
|---|---|---|---|
| Max. 1 Day Max | 2540 | 1550 | -39 |
| Med. 1 Day Max | 459 | 524 | 14.2 |
| Max. 3 Day Max | 2510 | 1330 | -47 |
| Med. 3 Day Max | 422 | 457 | 8.29 |
| Max. 7 Day Max | 1640 | 874 | -46.7 |
| Med. 7 Day Max | 315 | 331 | 5.08 |
| Max. 30 Day Max | 832 | 377 | -54.7 |
| Med. 30 Day Max | 278 | 190 | -31.7 |
| Max. 90 Day Max | 778 | 280 | -64 |
| Med. 90 Day Max | 244 | 139 | -43 |

**Table 6: Non-Exceedance Flows**

| | USGS Gage | Model | Pct. Error |
|---|---|---|---|
| 1% Non-Exceedance | 0 | 5.96 | Inf |
| 5% Non-Exceedance | 0.82 | 9.06 | 1000 |
| 50% Non-Exceedance | 99 | 50 | -49.5 |
| 95% Non-Exceedance | 452 | 232 | -48.7 |
| 99% Non-Exceedance | 808 | 458 | -43.3 |
| Sept. 10% Non-Exceedance | 5.43 | 9.25 | 70.3 |

**Fig. 1: Hydrograph**

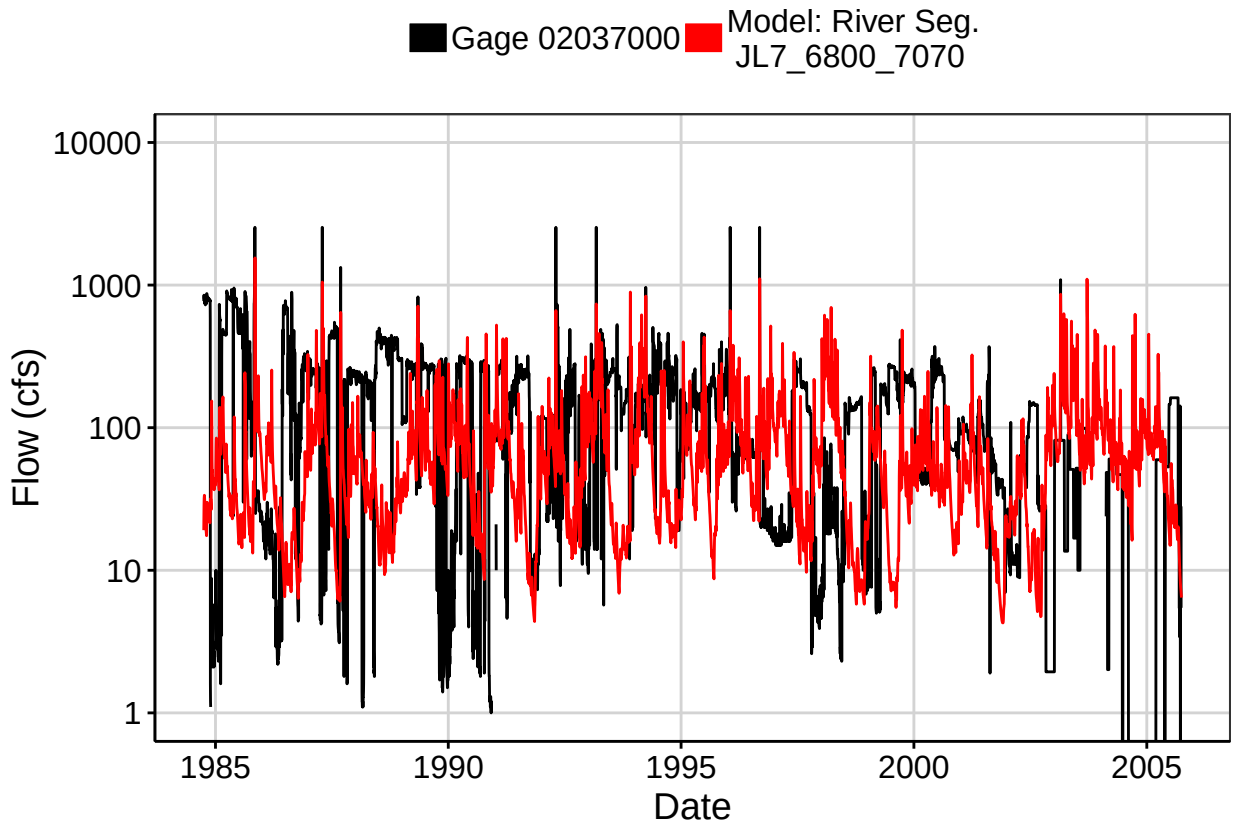


**Fig. 2: Zoomed Hydrograph**

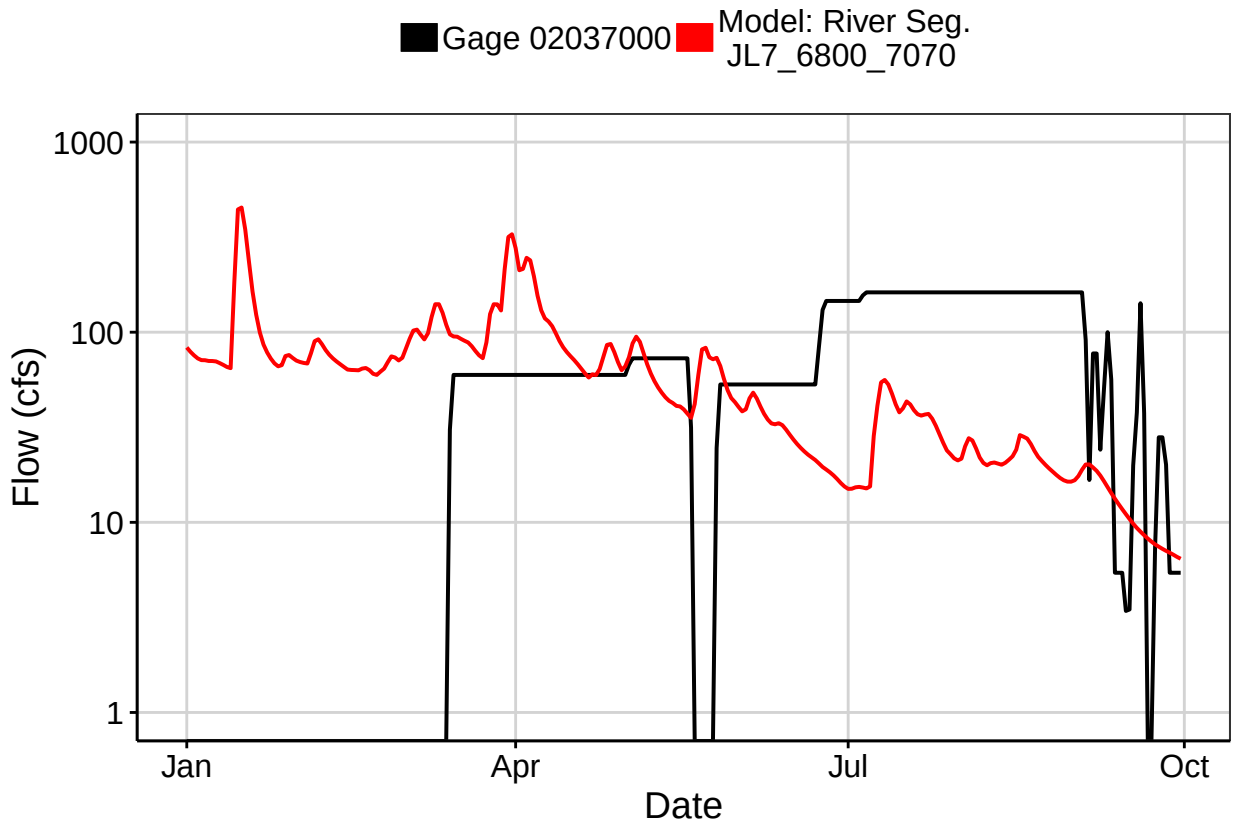


**Fig. 3: Flow Exceedance**

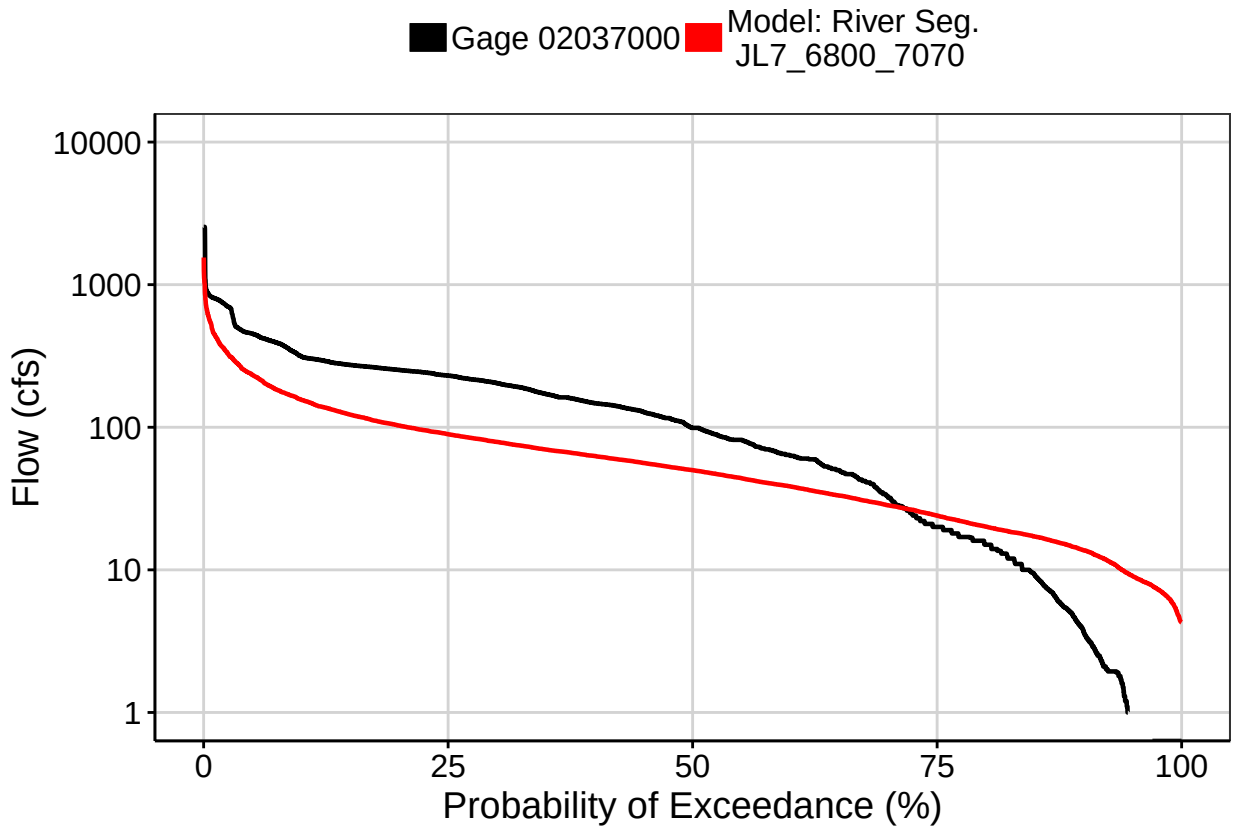


**Fig. 4: Baseflow**

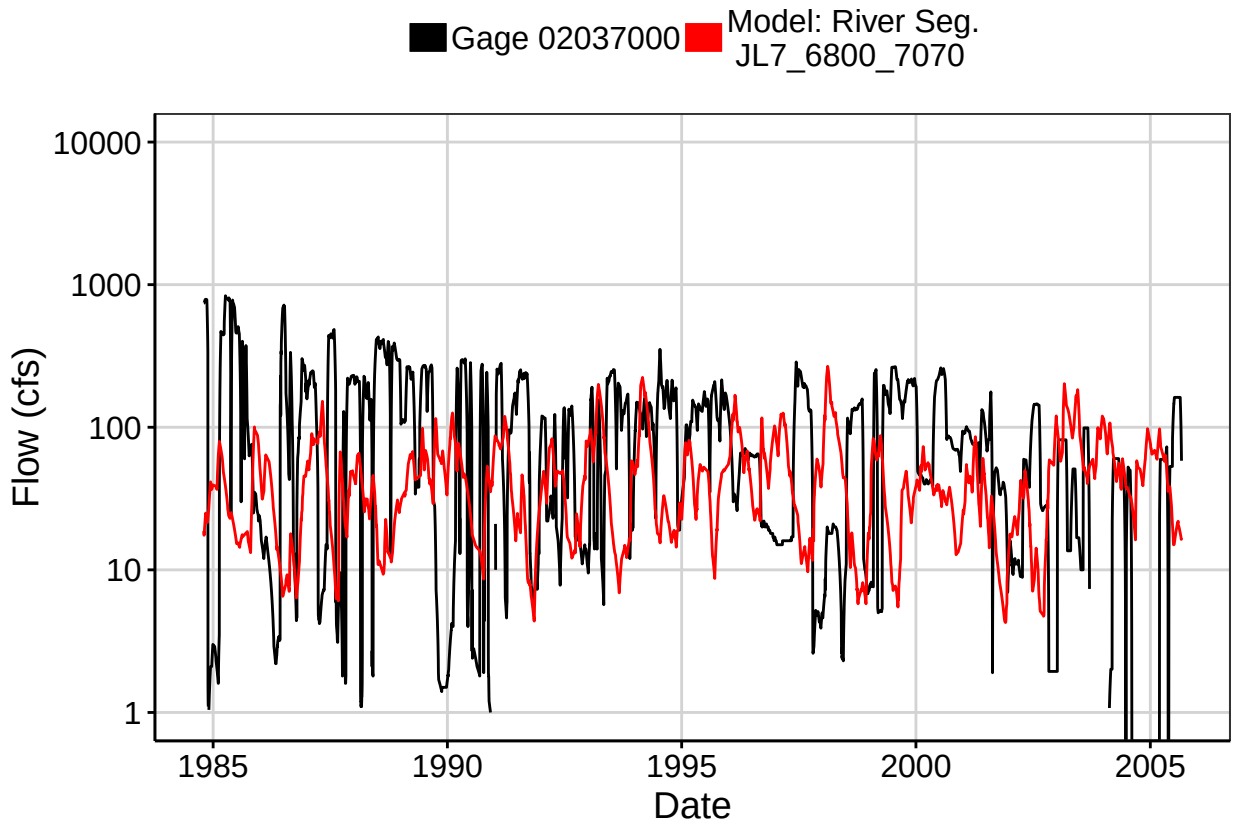


**Fig. 5: Combined Baseflow**

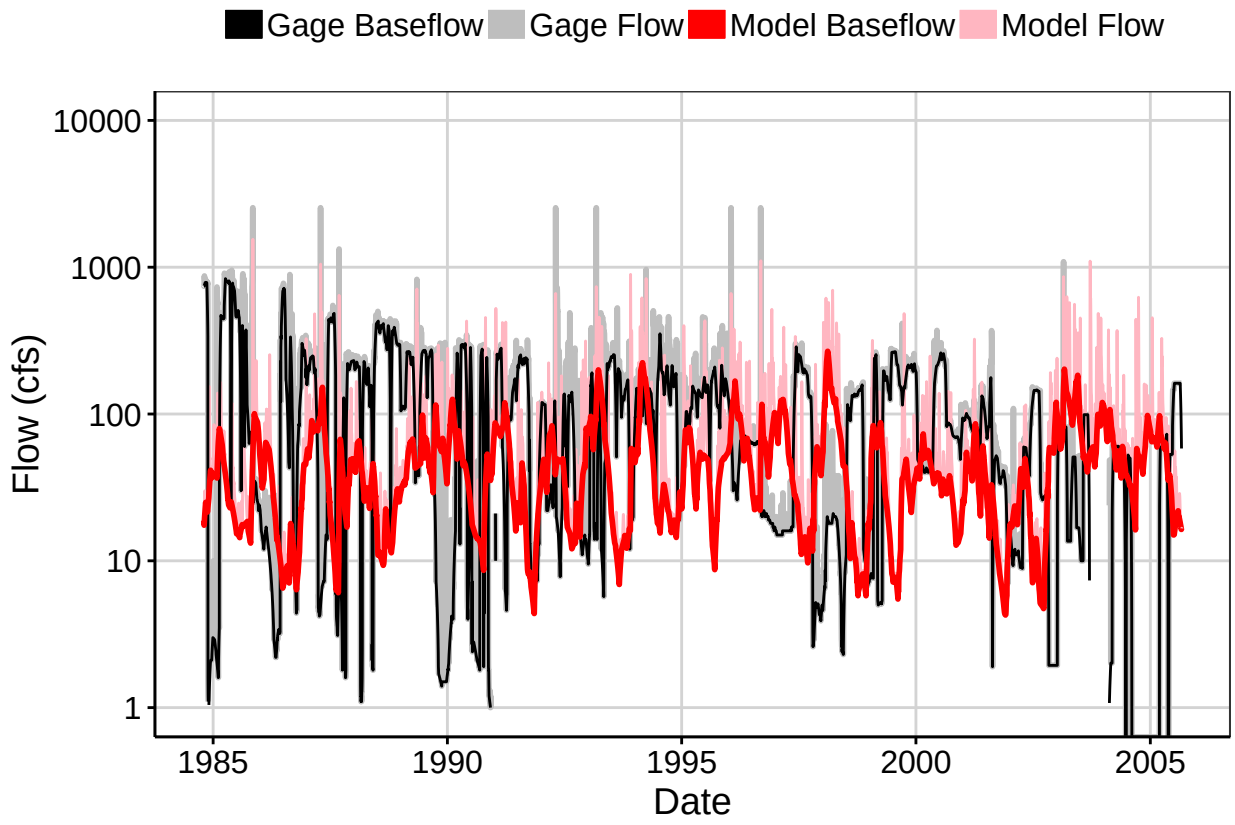


**Fig. 6: Largest Error Segment**

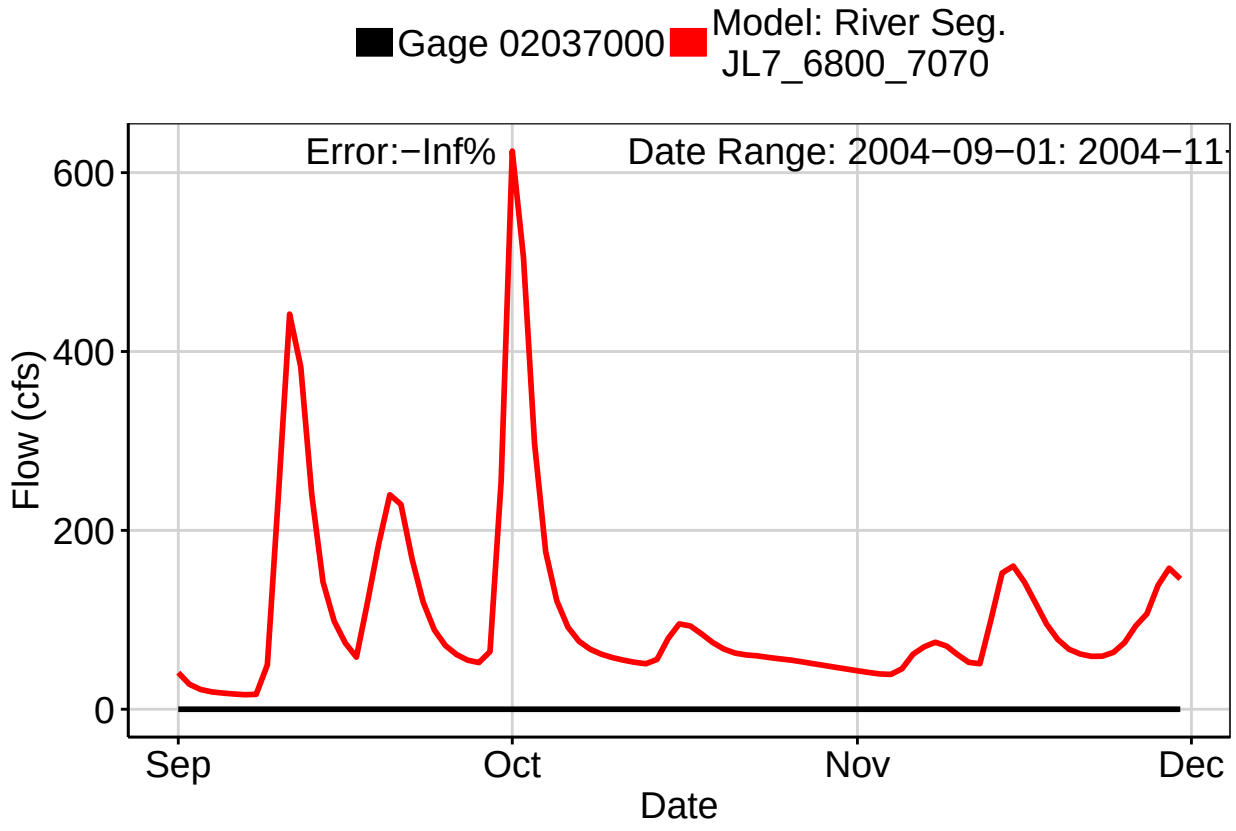


**Fig. 7: Second Largest Error Segment**

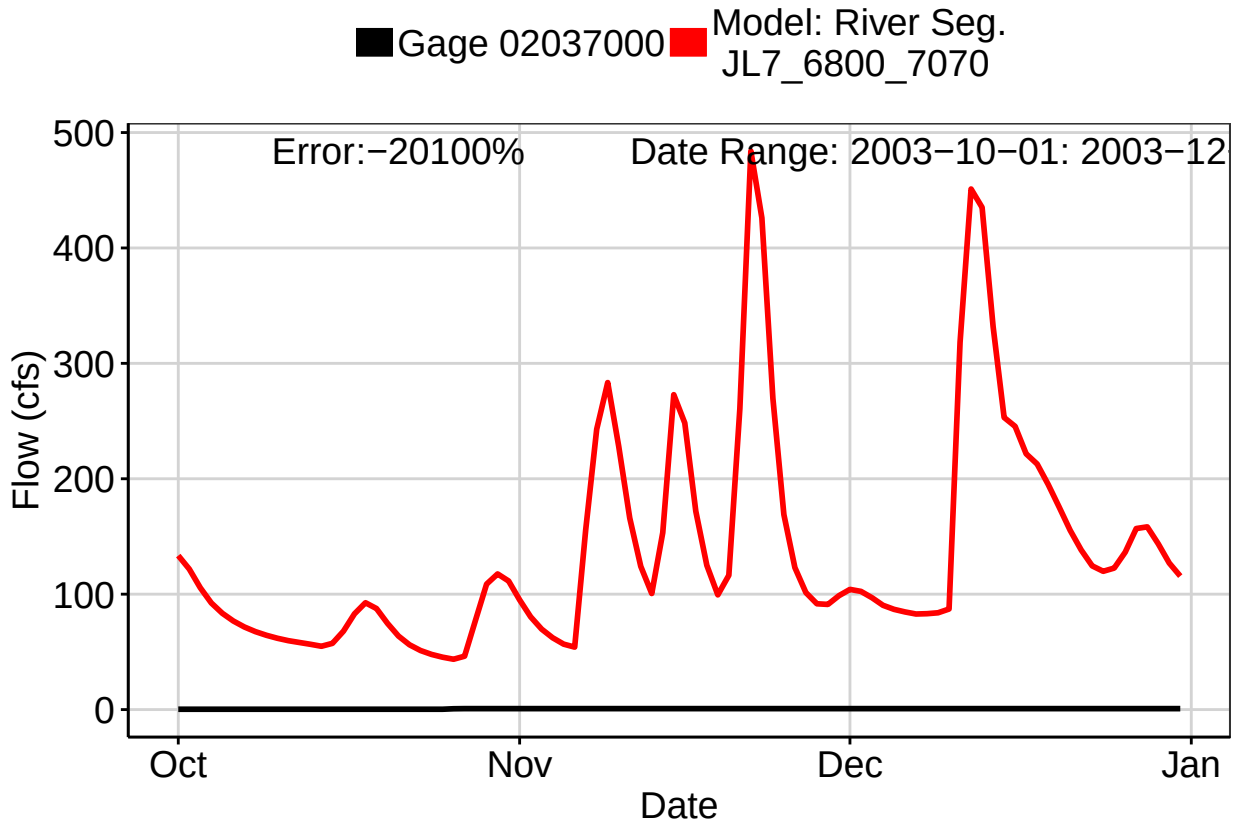


**Fig. 8: Third Largest Error Segment**

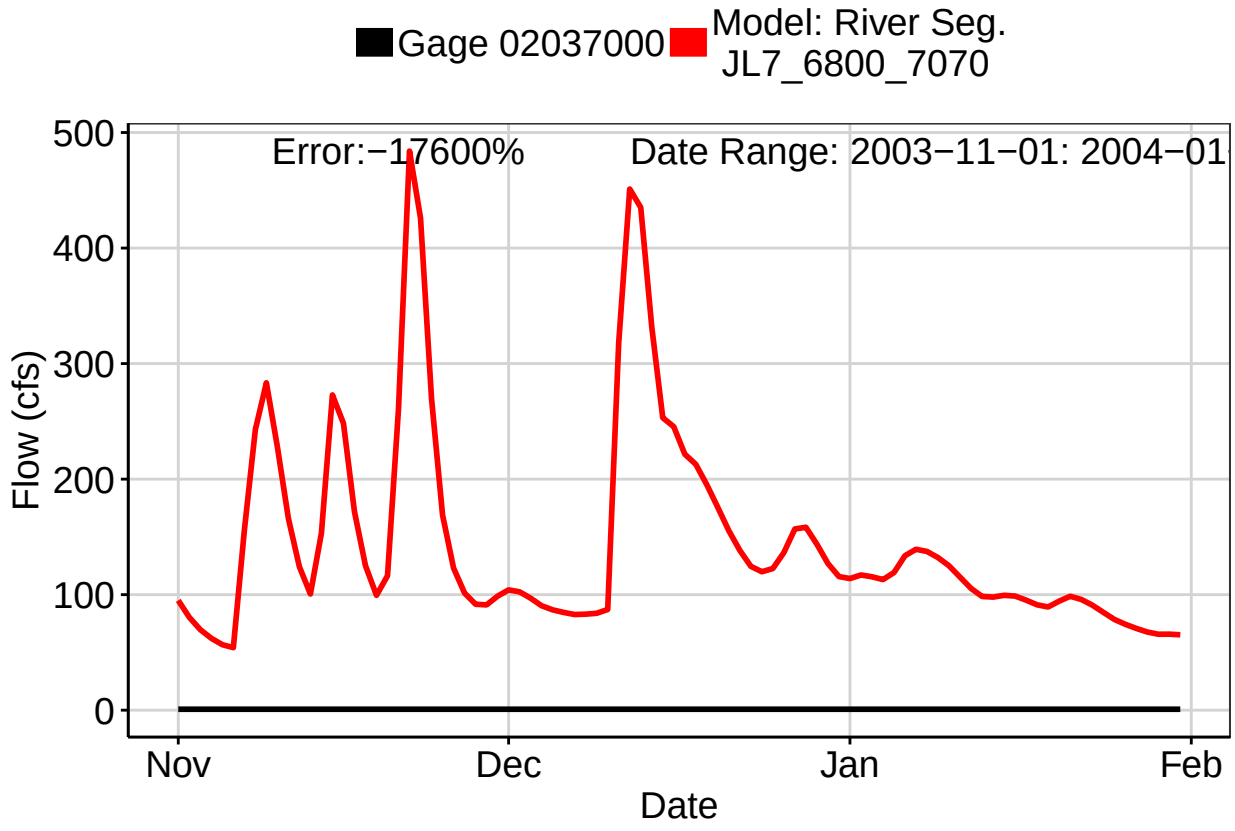


**Fig. 9: Residuals Plot**