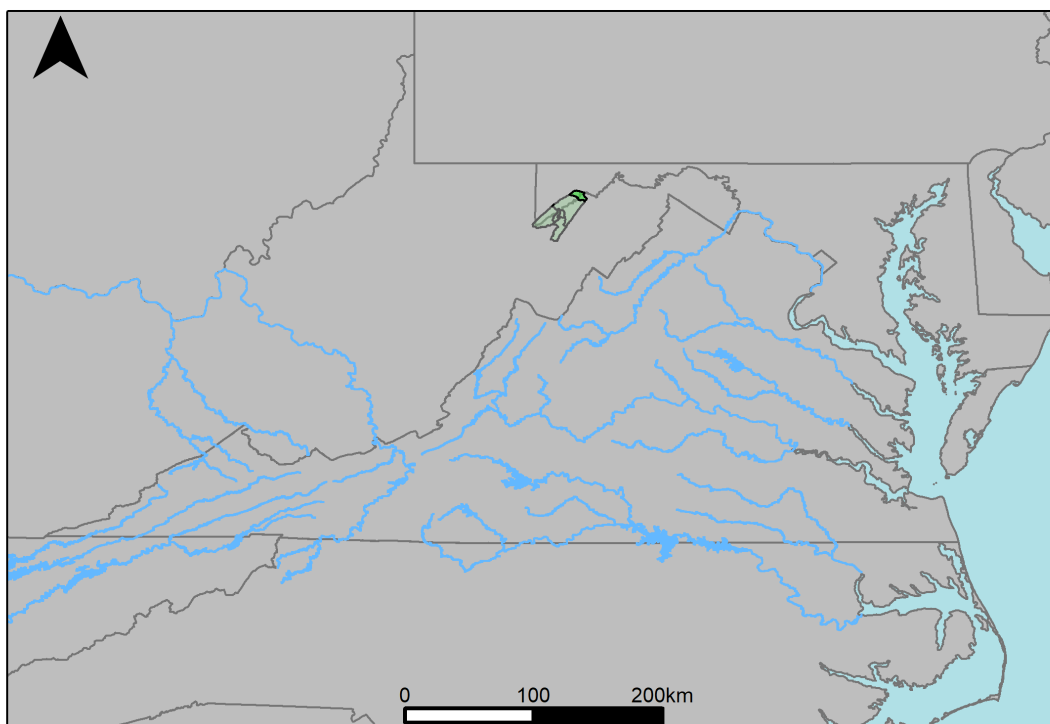


River Segment YP3_6700_6670: USGS Gage 01671020 vs. VA Hydro Run 120



This river segment follows part of the flow of the North Anna River at Hart Corner near Doswell, VA. Gage 01671020 is located in Hanover County, VA (Lat 37° 51' 00", Long 77° 25' 41") approximately 2.1 miles east of Doswell, VA. Drainage area is 462 sq. miles. This gage started taking data in 1979 and has been taking data periodically until now. Diversion at a point 0.8 mi upstream from station since 1973. Maximum discharge, 12,000 cfs, from rating curve extended above 10,100 cfs. The average daily discharge change between scenario 1 and scenario 2 for the 20 year timespan was -22.1123%, with 63.5% of its rolling three month time spans above 20% difference. The Nash-Sutcliffe Efficiency of the model, calculated between the gage and scenario data, was found to be 0.192.

Table 1: Monthly Low Flows

	Scen. 1	Scen. 2	Pct. Difference
Jan. Low Flow	51.7	43.9	-15
Feb. Low Flow	65	51.4	-20.9
Mar. Low Flow	94	67.1	-28.6
Apr. Low Flow	143	131	-8.71
May Low Flow	190	163	-14.1
Jun. Low Flow	221	120	-45.6
Jul. Low Flow	141	84.5	-40.1
Aug. Low Flow	93.5	75.7	-19
Sep. Low Flow	70.2	60.9	-13.4
Oct. Low Flow	53.6	49.9	-6.77
Nov. Low Flow	48.5	47	-3.04
Dec. Low Flow	46	39	-15.2

Table 2: Monthly Average Flows

	Scen. 1	Scen. 2	Pct. Difference
Overall Mean Flow	366	285	-22.1
Jan. Mean Flow	495	442	-10.6
Feb. Mean Flow	569	520	-8.73
Mar. Mean Flow	698	593	-15.1
Apr. Mean Flow	506	444	-12.4
May Mean Flow	458	304	-33.5
Jun. Mean Flow	273	162	-40.6
Jul. Mean Flow	139	88.2	-36.7
Aug. Mean Flow	120	69	-42.6
Sep. Mean Flow	192	131	-31.8
Oct. Mean Flow	163	112	-31.2
Nov. Mean Flow	339	206	-39.3
Dec. Mean Flow	451	363	-19.5

Table 3: Monthly High Flows

	Scen. 1	Scen. 2	Pct. Difference
Jan. High Flow	239	156	-34.5
Feb. High Flow	799	235	-70.6
Mar. High Flow	877	532	-39.3
Apr. High Flow	1600	758	-52.8
May High Flow	1440	759	-47.4
Jun. High Flow	2470	872	-64.7
Jul. High Flow	1680	1070	-35.9
Aug. High Flow	1010	486	-51.8
Sep. High Flow	720	178	-75.3
Oct. High Flow	234	104	-55.6
Nov. High Flow	142	93.9	-33.9
Dec. High Flow	128	85.3	-33.4

Table 4: Period Low Flows

	Scen. 1	Scen. 2	Pct. Difference
Min. 1 Day Min	7.58	15	98
Med. 1 Day Min	41.6	23	-44.7
Min. 3 Day Min	9.01	15.1	67.1
Med. 3 Day Min	42.4	23.7	-44.2
Min. 7 Day Min	12.7	15.2	19.1
Med. 7 Day Min	43.1	25.3	-41.4
Min. 30 Day Min	17.3	16.4	-5.17
Med. 30 Day Min	48.7	38.7	-20.5
Min. 90 Day Min	30.4	23.3	-23.4
Med. 90 Day Min	71	58.5	-17.7
7Q10	27.9	17.6	-37
Year of 90-Day Min. Flow	2010	2000	-0.3
Drought Year Mean	201	34.8	-82.7
Mean Baseflow	150	126	-16

Table 5: Period High Flows

	Scen. 1	Scen. 2	Pct. Difference
Max. 1 Day Max	10900	9640	-11.6
Med. 1 Day Max	4670	3130	-33
Max. 3 Day Max	9350	7470	-20.2
Med. 3 Day Max	3920	2570	-34.3
Max. 7 Day Max	5690	5050	-11.1
Med. 7 Day Max	2540	2000	-21.2
Max. 30 Day Max	3130	3030	-3.17
Med. 30 Day Max	1170	974	-16.5
Max. 90 Day Max	2060	1980	-4.25
Med. 90 Day Max	732	530	-27.6

Table 6: Non-Exceedance Flows

	Scen. 1	Scen. 2	Pct. Difference
1% Non-Exceedance	32.3	18.7	-42.2
5% Non-Exceedance	40.3	28.2	-30
50% Non-Exceedance	145	98.2	-32.3
95% Non-Exceedance	1360	1110	-18.3
99% Non-Exceedance	3380	2800	-17.2
Sept. 10% Non-Exceedance	39	24.1	-38.3

Additional Tables: Land-River Segment Flow Metrics

tab.cbp6_N51033_YP3_6700_6670.means.by.flow

	Mean Unit Flow (cfs/sq. mi)
SURface Outflow	0.00145
InterFloW Outflow	0.000253
Active GroundWater Outflow	0.000553

tab.cbp6_N51033_YP3_6700_6670.means.by.land.use

	Mean Unit Flow (cfs/sq. mi)
aop	0.000473
cch	0.000683
cci	0.00121
ccn	0.000701
cfr	0.00041
cir	0.00121
cmo	0.000425
cnr	0.00121
ctg	0.000683
dbl	0.000499
fnp	0.00121
for	0.00041
fsp	0.00121
gom	0.000499
gwm	0.000499
hfr	0.000542
lhy	0.000472
mch	0.000683
mci	0.00121
mcn	0.000701
mir	0.00121
mnr	0.00121
mtg	0.000683
nch	0.000683
nci	0.00121
nir	0.00121
nnr	0.00121
ntg	0.000683
oac	0.000499
ohy	0.000472
osp	0.000425
pas	0.000472
sch	0.000499
scl	0.000499
sgg	0.000499
sho	0.00121
som	0.000499
soy	0.000499
stb	0.00121
stf	0.00121
swm	0.000499
wfp	0.00041
wto	0.000161

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	Mean Unit Flow (cfs/sq. mi)
SURface Outflow	0.00137
InterFloW Outflow	0.000196
Active GroundWater Outflow	0.000654

tab.cbp6_N51085_YP3_6700_6670.means.by.land.use

	Mean Unit Flow (cfs/sq. mi)
aop	4.49e-04
cch	6.61e-04
cci	1.23e-03
ccn	6.71e-04
cfr	3.80e-04
cir	1.23e-03
cmo	3.95e-04
cnr	1.23e-03
ctg	6.61e-04
dbl	4.76e-04
fnp	1.23e-03
for	3.80e-04
fsp	1.23e-03
gom	4.76e-04
gwm	4.76e-04
hfr	5.27e-04
lhy	4.49e-04
mch	6.61e-04
mci	1.23e-03
mcn	6.71e-04
mir	1.23e-03
mnr	1.23e-03
mtg	6.61e-04
nch	6.61e-04
nci	1.23e-03
nir	1.23e-03
nnr	1.23e-03
ntg	6.61e-04
oac	4.76e-04
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osp	3.95e-04
pas	4.49e-04
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scl	4.76e-04
sgg	4.76e-04
sho	1.23e-03
som	4.76e-04
soy	4.76e-04
stb	1.23e-03
stf	1.23e-03
swm	4.76e-04
wfp	3.80e-04
wto	8.51e-05

Fig. 1: Hydrograph

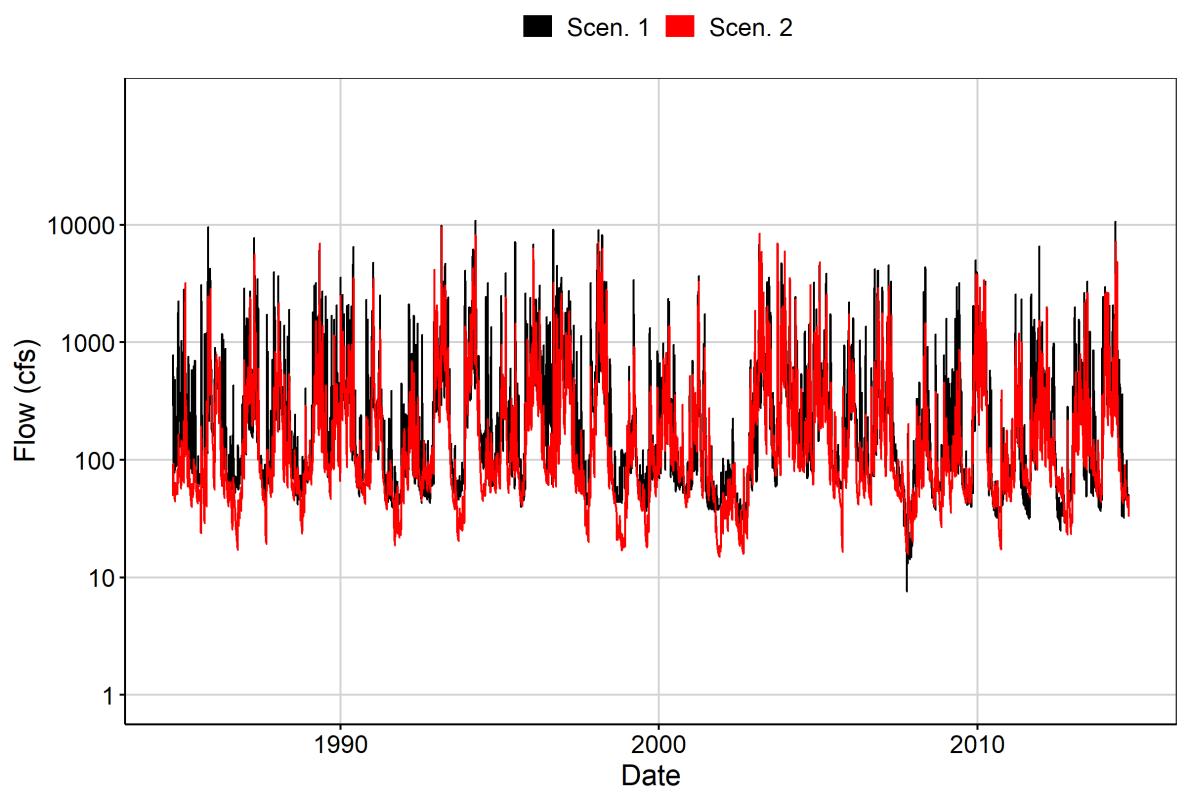


Fig. 2: Zoomed Hydrograph

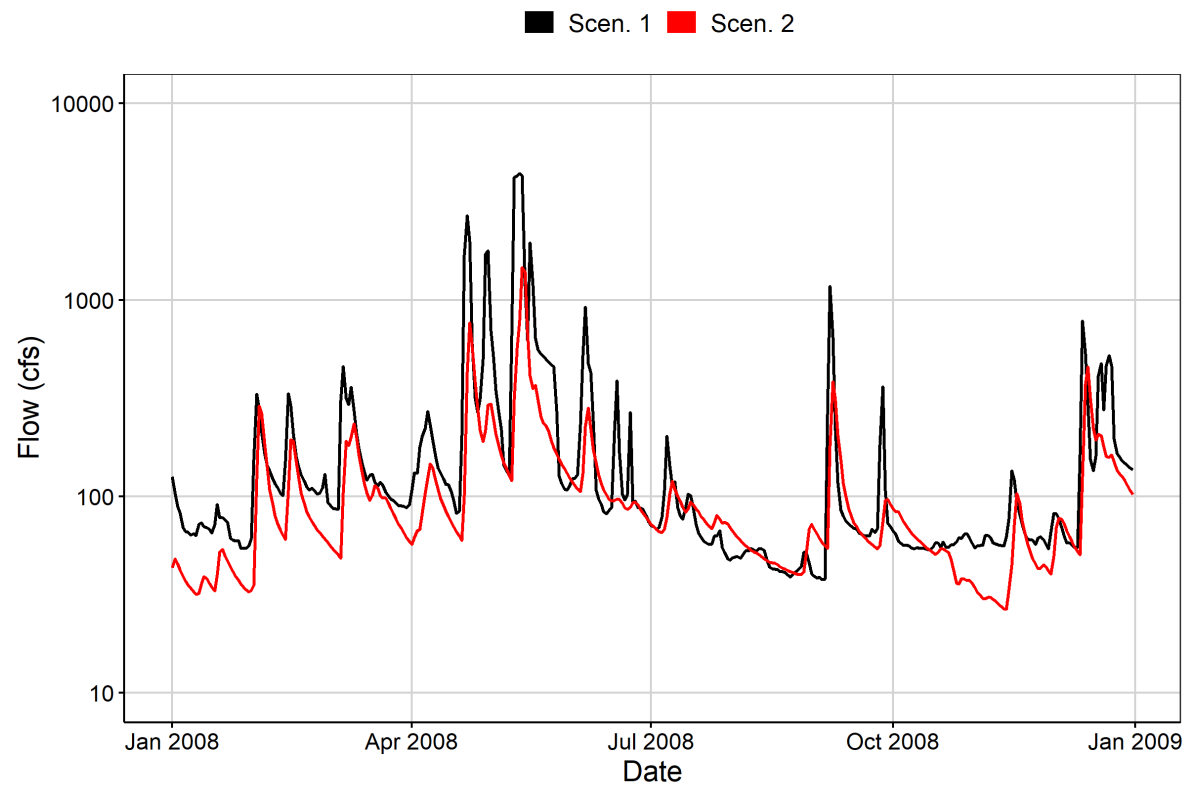


Fig. 3: Flow Exceedance

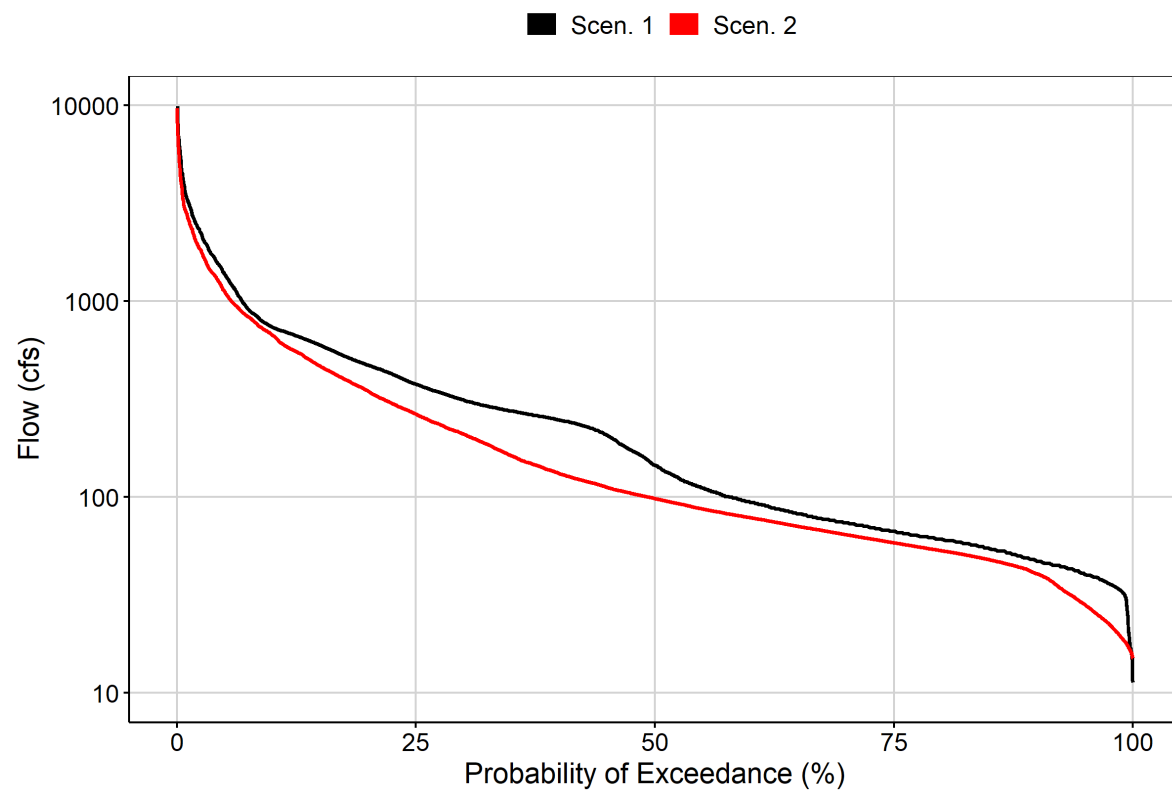


Fig. 4: Baseflow

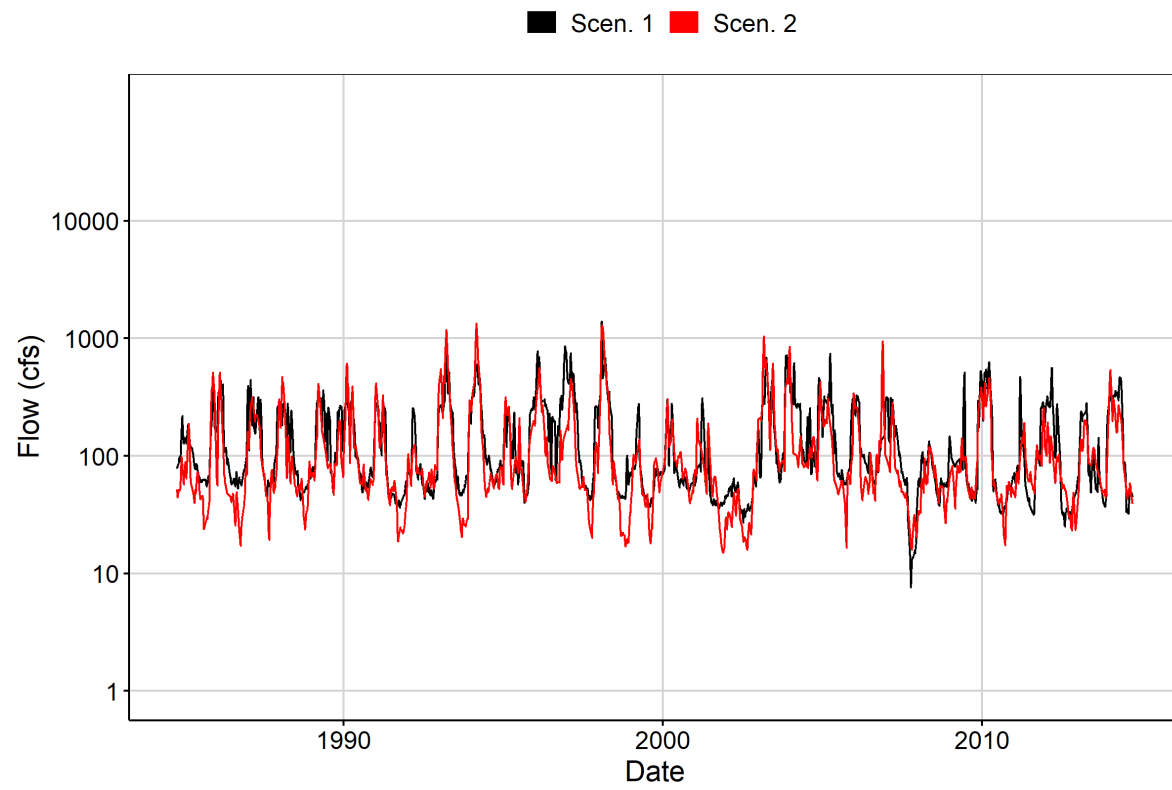


Fig. 5: Combined Baseflow

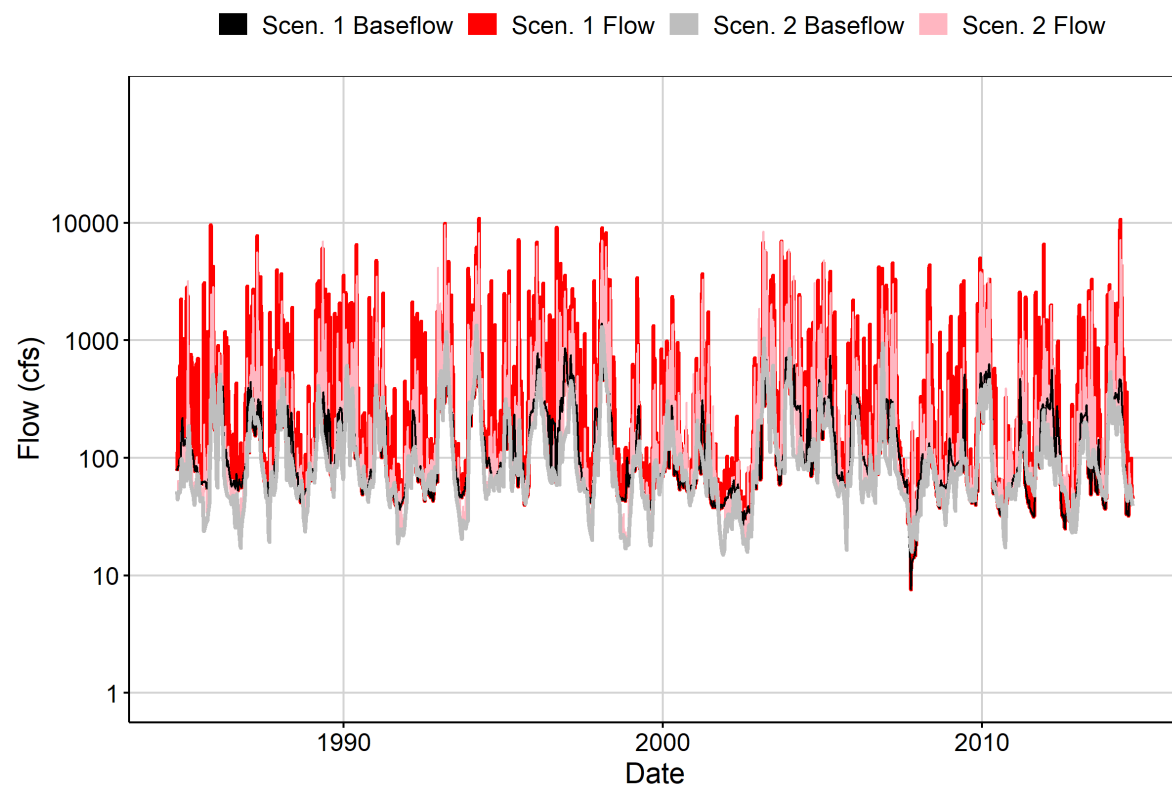


Fig. 6: Largest Difference Period

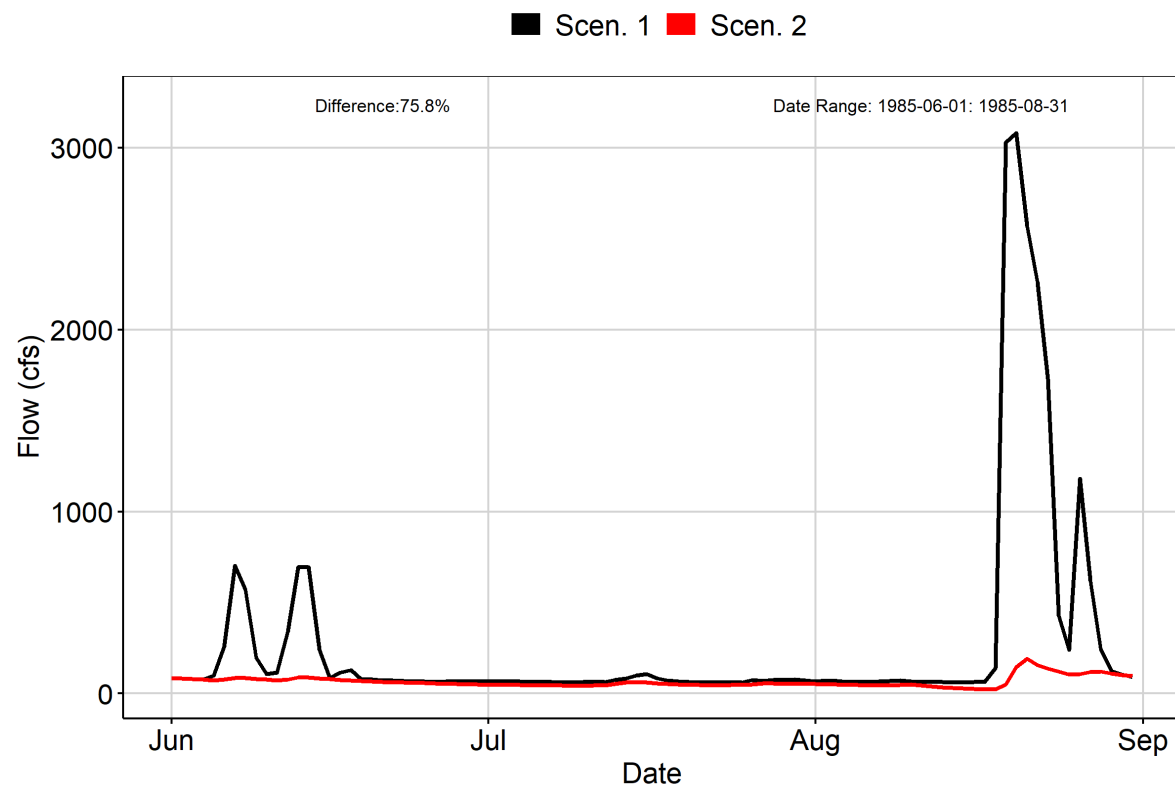


Fig. 7: Second Largest Difference Period

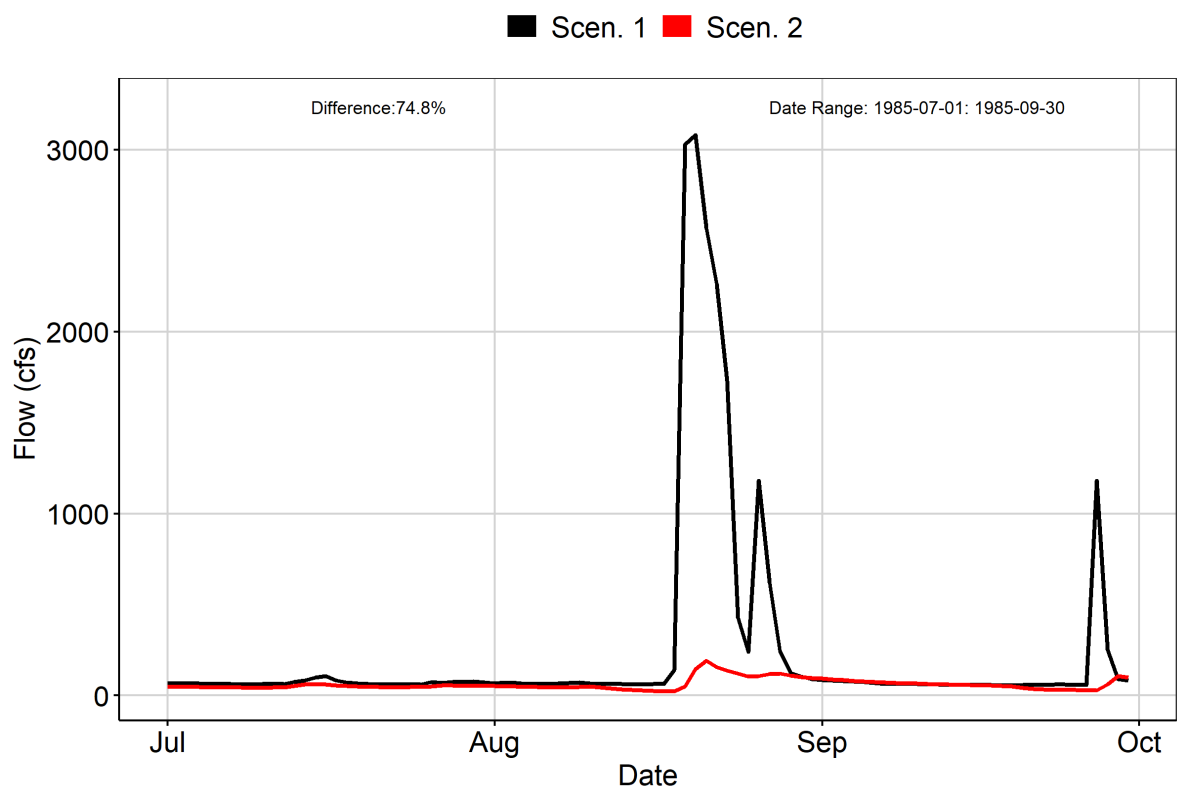


Fig. 8: Third Largest Difference Period

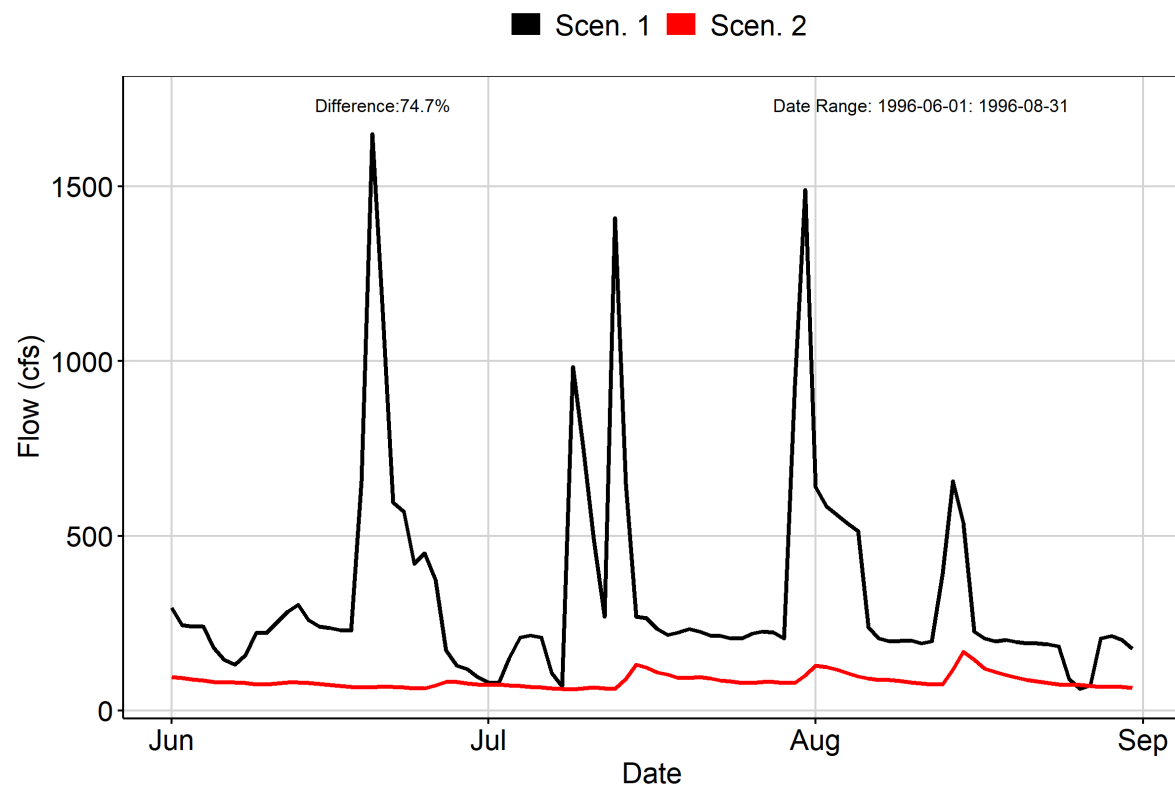


Fig. 9A: Residuals Plot

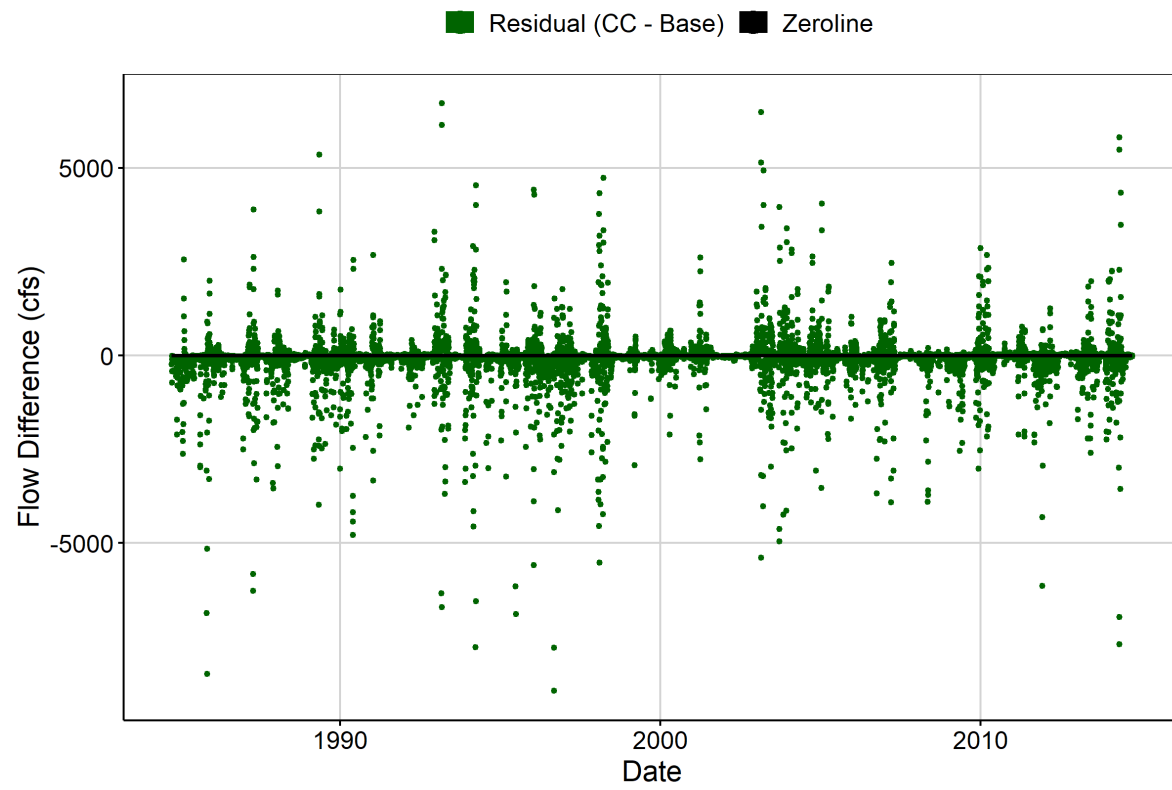


Fig. 9B: Area Weighted Residuals Plot

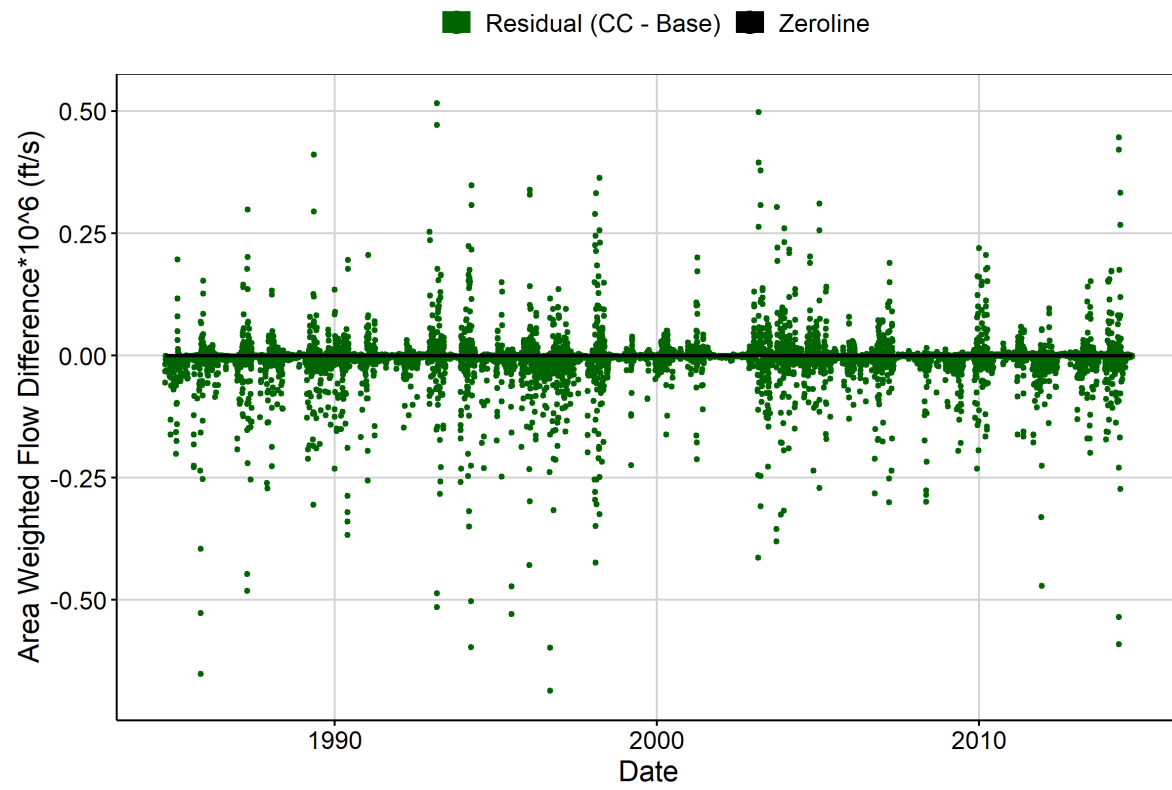


Fig. 10: VA Hydro Scen. 1 Runit Values (Outliers Excluded)

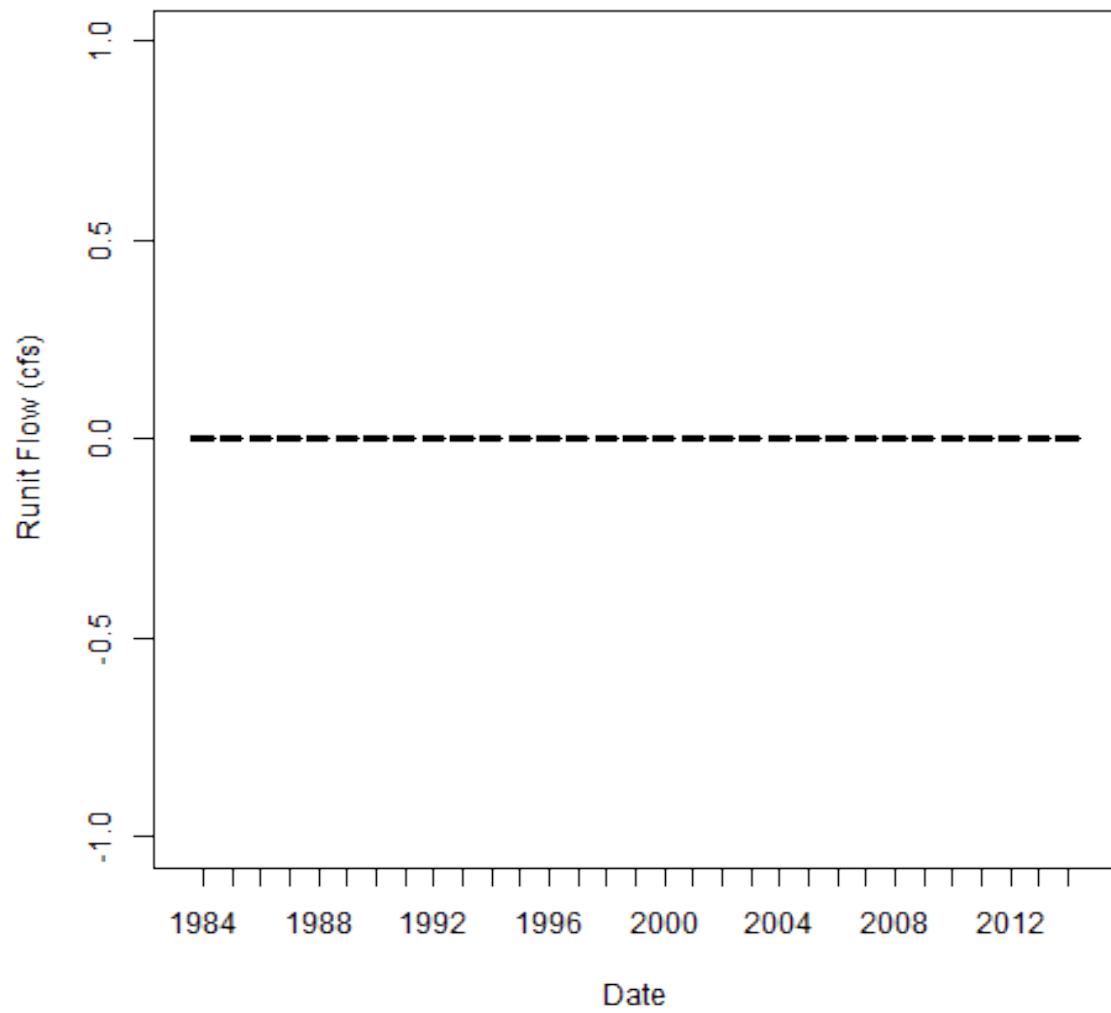


Fig. 11: Smallest Difference Period

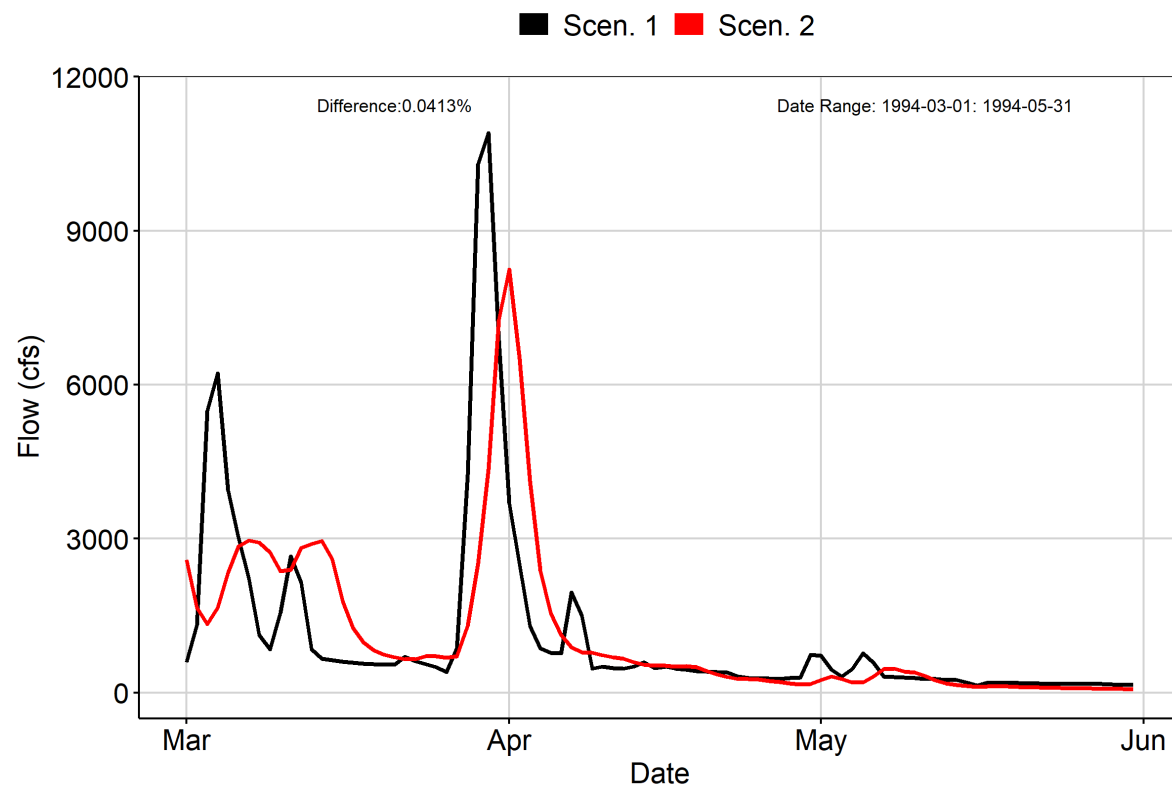


Fig. 12: Second Smallest Difference Period

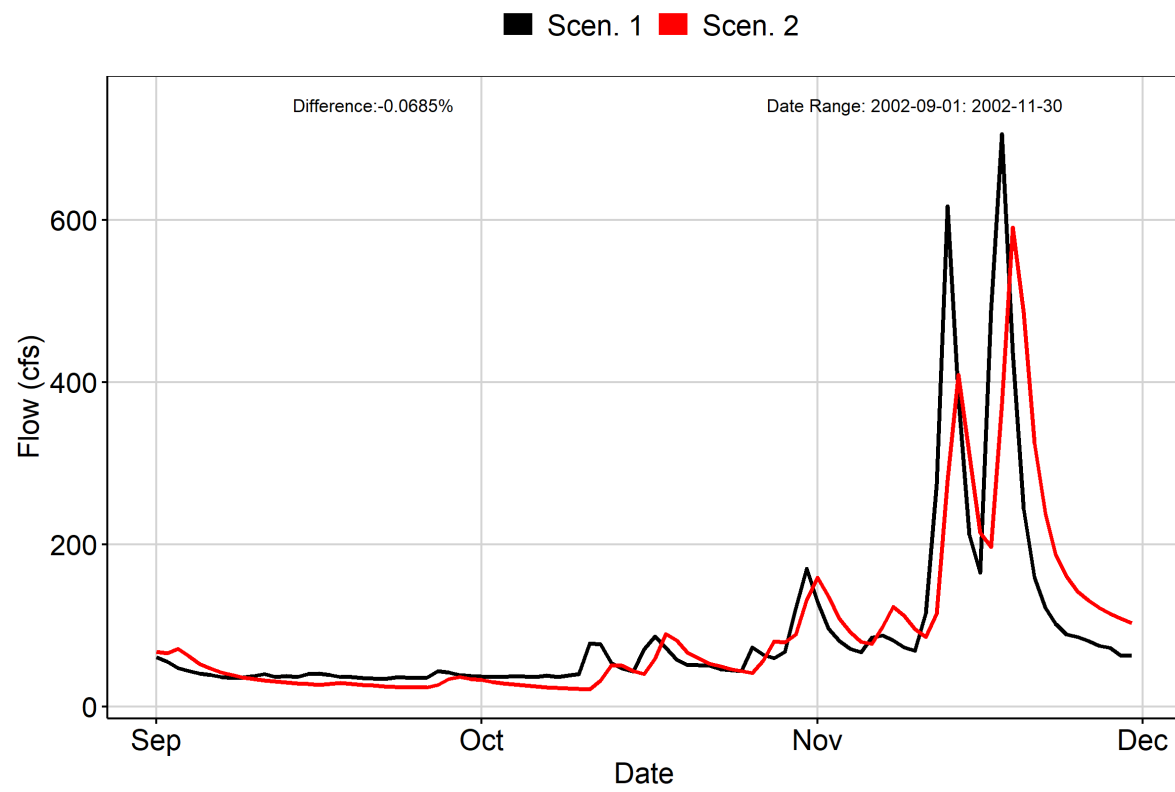


Fig. 13: Third Smallest Difference Period

