Appendix X
Scenario Results for the Five Pilot Watersheds

Apalachicola-Chattahoochee-Flint Basin, HSPF Model 3
Apalachicola-Chattahoochee-Flint Basin, SWAT Model 20
Verde-Salt-San Pedro Basins, HSPF Model.....37
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Minnesota River (Upper Mississippi Basin), HSPF Model 74
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Apalachicola-Chattahoochee-Flint Basin, HSPF Model Results at Downstream Station

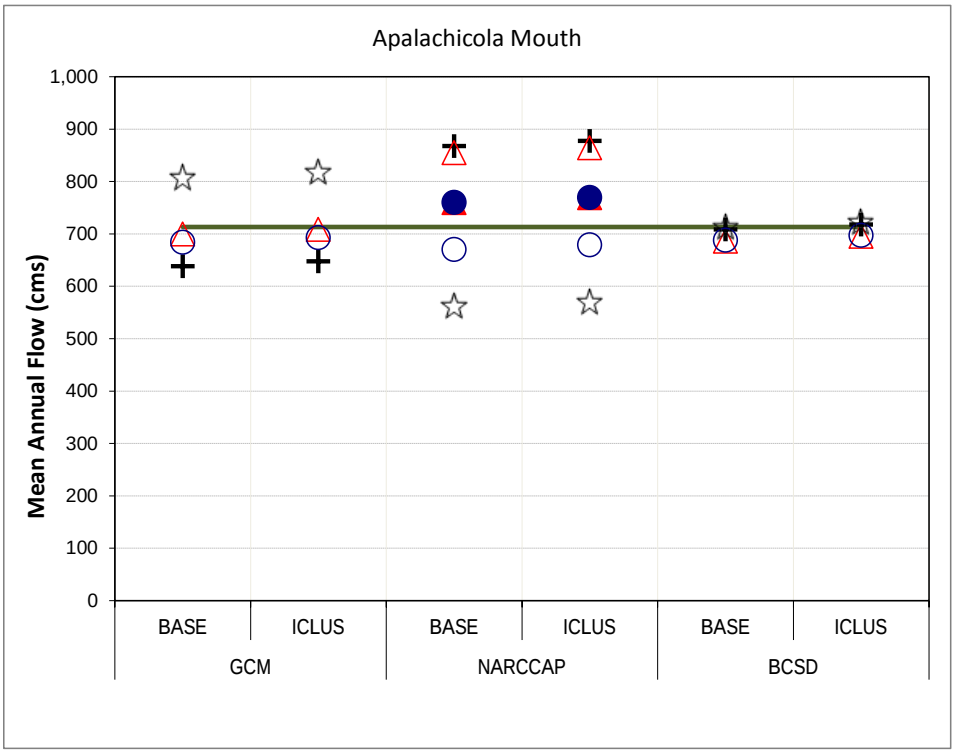

Figure 1. Mean Annual Flow (cms), Apalachicola River at Mouth (HSPF)

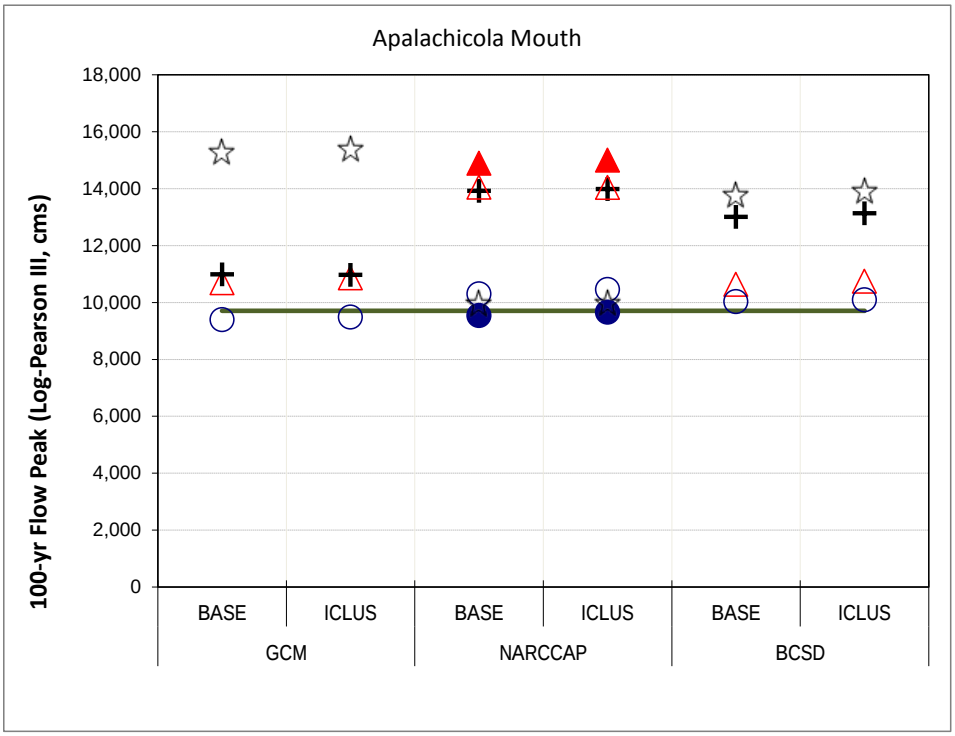

Figure 2. 100-yr Flow Peak (Log-Pearson III, cms), Apalachicola River at Mouth (HSPF)

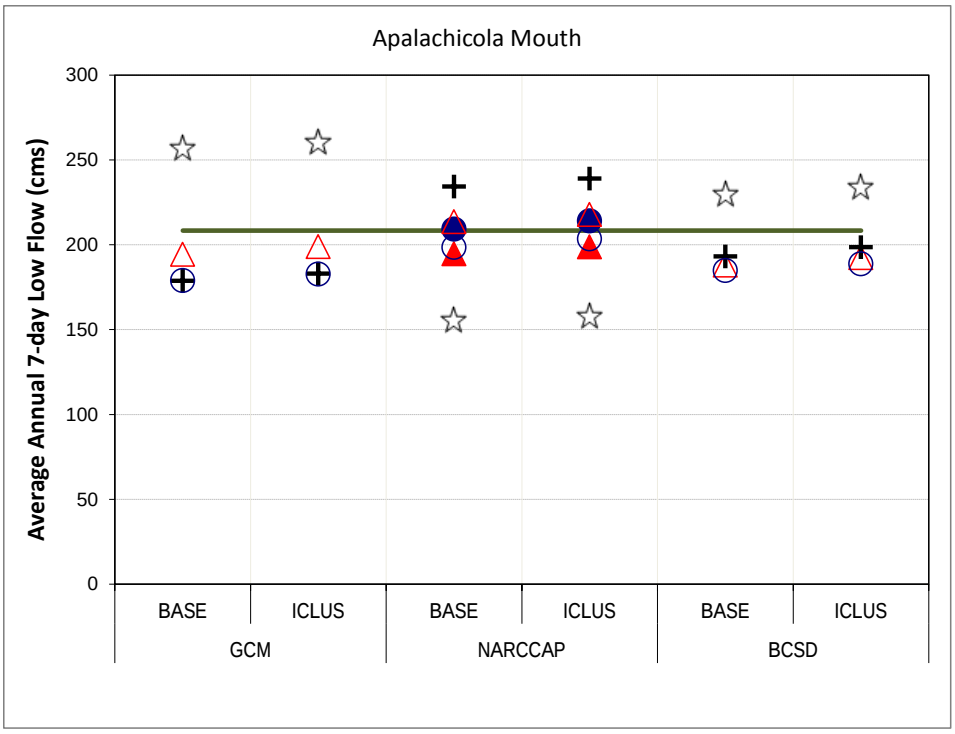

Figure 3. Average Annual 7-day Low Flow (cms), Apalachicola River at Mouth (HSPF)

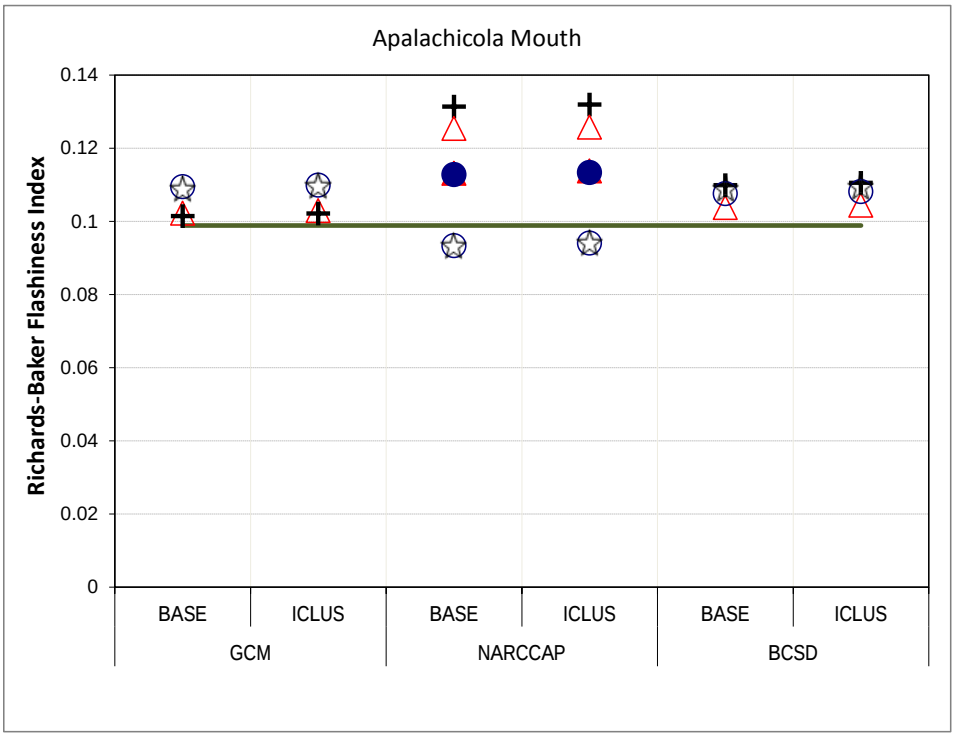

Figure 4. Richards-Baker Flashiness Index, Average Annual 7-day Low Flow (cms), Apalachicola River at Mouth (HSPF)

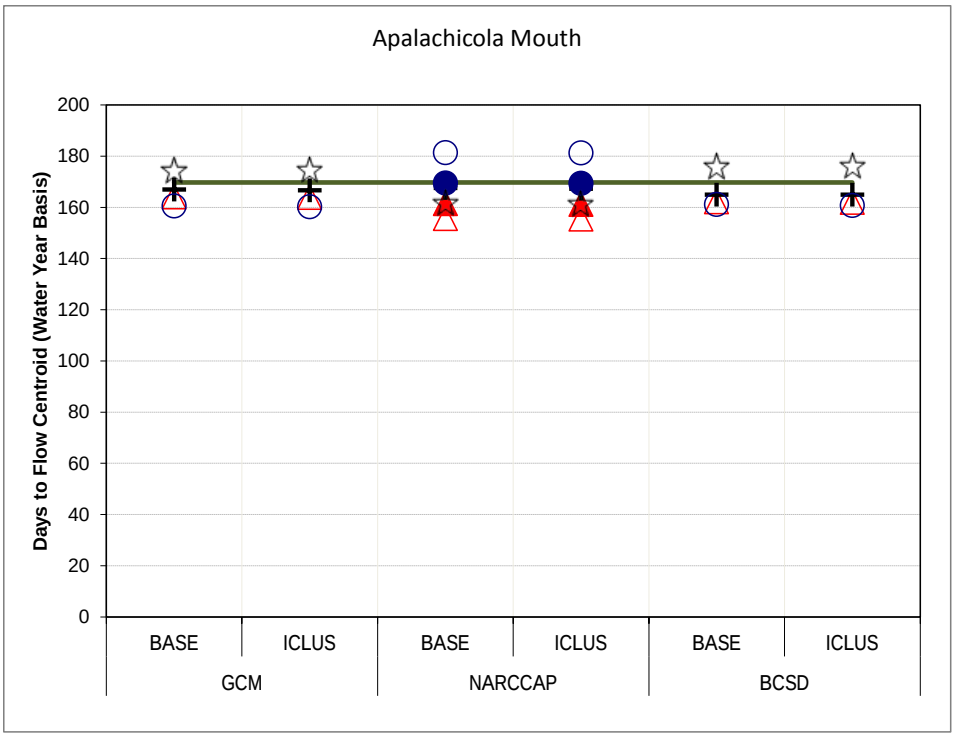

Figure 5. Days to Flow Centroid (Water Year Basis), Apalachicola River at Mouth (HSPF)

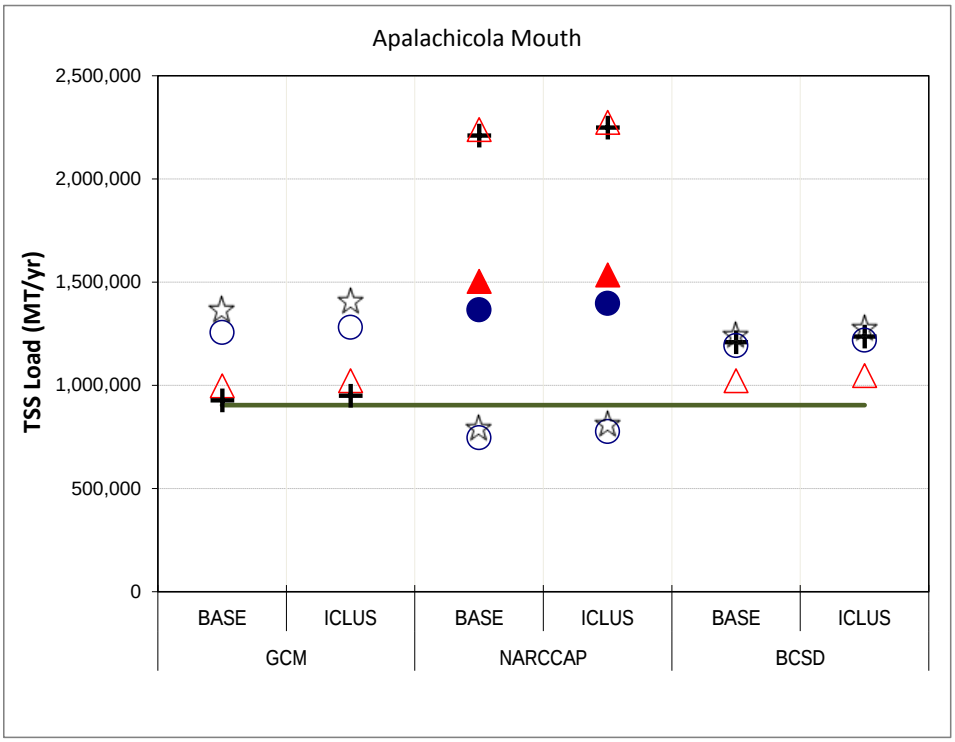

Figure 6. TSS Load (MT/yr), Apalachicola River at Mouth (HSPF)

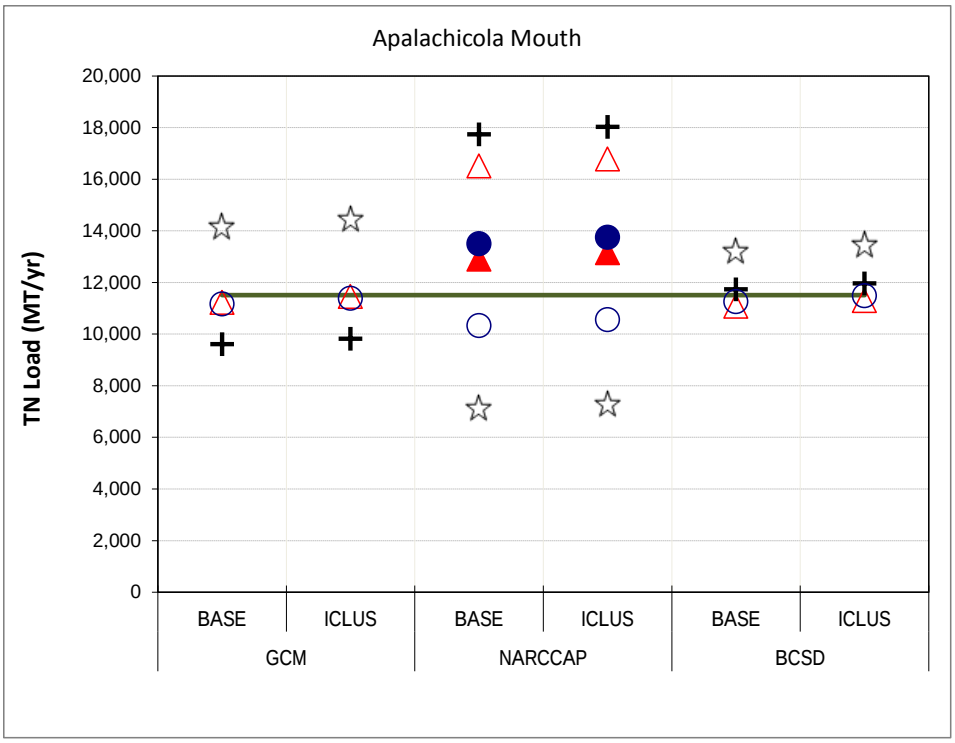

Figure 7. TN Load (MT/yr), Apalachicola River at Mouth (HSPF)

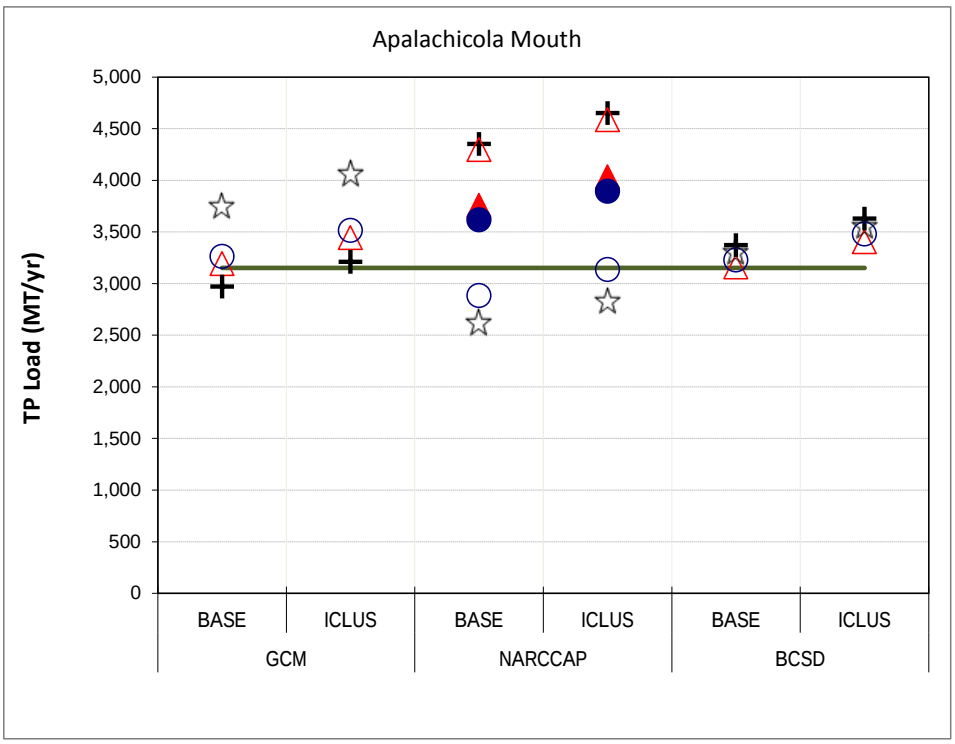

Figure 8. TP Load (MT/yr), Apalachicola River at Mouth (HSPF)

Results at Multiple Stations

Table 1. Summary of Range of Change Relative to Existing Conditions for NARCCAP Dynamically Downscaled Scenarios, Apalachicola-Chattahoochee-Flint Basin HSPF Model

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Flint River near Montezuma (gage 02349605)								
Flow	-18.62%	8.70%	6.49%	20.02%	-18.44%	8.67%	6.47%	19.92%
TSS	-13.15%	40.66%	41.77%	94.31%	-15.22%	32.89%	33.16%	76.35%
TN	-23.92%	17.08%	14.35%	36.43%	-23.37%	16.27%	13.57%	34.78%
TP	-15.02%	21.84%	18.58%	41.91%	-14.72%	19.58%	16.26%	37.40%
Chattahoochee River near Cornelia (gage 02331600)								
Flow	-5.84%	5.18%	4.56%	11.13%	-5.82%	5.19%	4.56%	11.11%
TSS	20.99%	51.30%	56.56%	99.56%	20.06%	47.02%	51.73%	90.90%
TN	-3.45%	11.31%	11.24%	21.95%	-3.52%	11.00%	10.91%	21.35%
TP	3.50%	19.70%	18.22%	32.21%	2.87%	18.66%	17.19%	30.49%
Peachtree Creek (gage 02336300)								
Flow	-11.06%	6.31%	5.58%	14.40%	-10.62%	6.32%	5.59%	14.24%
TSS	-6.08%	17.47%	14.88%	27.63%	-6.21%	16.92%	14.10%	25.95%
TN	-8.98%	6.82%	5.84%	13.47%	-8.76%	6.48%	5.39%	12.48%
TP	-9.95%	12.15%	9.31%	18.03%	-9.98%	11.86%	9.02%	17.51%
Chattahoochee at Atlanta (gage 02336000)								
Flow	-13.84%	0.51%	0.07%	8.41%	-13.36%	0.89%	0.41%	8.65%
TSS	-9.66%	22.22%	21.98%	47.03%	-10.37%	19.29%	17.43%	36.75%
TN	-8.27%	3.57%	3.35%	10.66%	-8.55%	3.37%	3.06%	9.91%
TP	-9.55%	10.03%	7.95%	19.82%	-10.73%	8.98%	6.77%	17.76%
Ichawaynochaway Creek (gage 02353500)								
Flow	-18.49%	9.21%	5.64%	23.80%	-18.48%	9.21%	5.64%	23.80%
TSS	-0.63%	138.28%	140.22%	282.06%	-0.64%	137.95%	139.86%	281.35%
TN	-25.45%	20.94%	14.52%	45.86%	-25.45%	20.93%	14.51%	45.85%
TP	-15.16%	38.74%	33.16%	77.57%	-15.16%	38.72%	33.14%	77.51%
Chattahoochee River at West Point (gage 02339500)								
Flow	-14.64%	2.82%	1.71%	11.46%	-14.26%	3.00%	1.90%	11.54%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TSS	-11.13%	32.90%	31.91%	72.52%	-13.41%	26.00%	25.48%	58.86%
TN	-14.38%	6.47%	5.20%	18.35%	-14.34%	6.24%	4.96%	17.66%
TP	-10.14%	10.65%	8.03%	20.33%	-11.18%	10.21%	7.43%	19.53%
Chattahoochee River near Columbia (gage 02343801)								
Flow	-17.57%	5.35%	3.73%	16.78%	-17.30%	5.40%	3.79%	16.72%
TSS	-7.19%	55.37%	57.84%	127.37%	-6.08%	53.44%	55.81%	122.70%
TN	-25.53%	13.71%	11.00%	36.63%	-25.29%	13.47%	10.77%	35.95%
TP	-12.29%	11.02%	8.54%	23.25%	-12.62%	10.86%	8.29%	22.77%
Flint River at Newton (gage 02353000)								
Flow	-17.76%	9.62%	6.69%	21.63%	-17.66%	9.60%	6.68%	21.56%
TSS	-1.54%	61.44%	59.67%	131.16%	-3.84%	56.79%	54.98%	121.31%
TN	-22.22%	19.43%	15.16%	40.01%	-22.16%	19.16%	14.91%	39.49%
TP	-12.51%	24.78%	20.68%	46.91%	-12.75%	23.48%	19.40%	44.40%
Apalachicola River at Seminole (gage 02358000)								
Flow	-18.57%	7.23%	4.89%	19.75%	-18.38%	7.24%	4.91%	19.68%
TSS	-8.60%	68.64%	70.10%	150.58%	-7.25%	65.74%	67.07%	144.64%
TN	-26.90%	18.07%	14.00%	43.52%	-26.77%	17.86%	13.81%	43.01%
TP	-13.60%	16.94%	13.63%	34.81%	-13.77%	16.36%	13.03%	33.52%
Apalachicola Mouth								
Flow	-20.76%	6.58%	4.66%	21.68%	-20.57%	6.60%	4.68%	21.59%
TSS	-17.46%	58.76%	63.45%	147.71%	-16.56%	57.62%	62.15%	144.58%
TN	-37.64%	14.70%	13.18%	54.13%	-37.39%	14.64%	13.09%	53.65%
TP	-16.43%	16.96%	13.90%	38.06%	-16.39%	16.47%	13.37%	36.72%

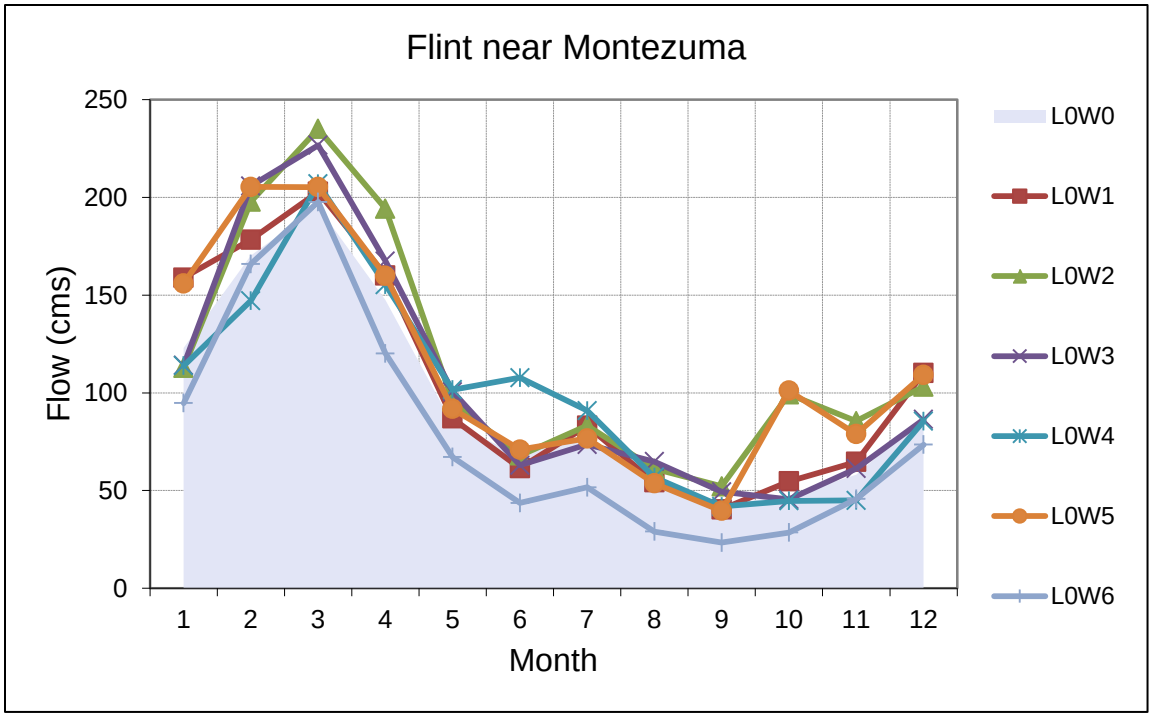

Figure 9. Monthly Average Flows, Flint River near Montezuma (HSPF)

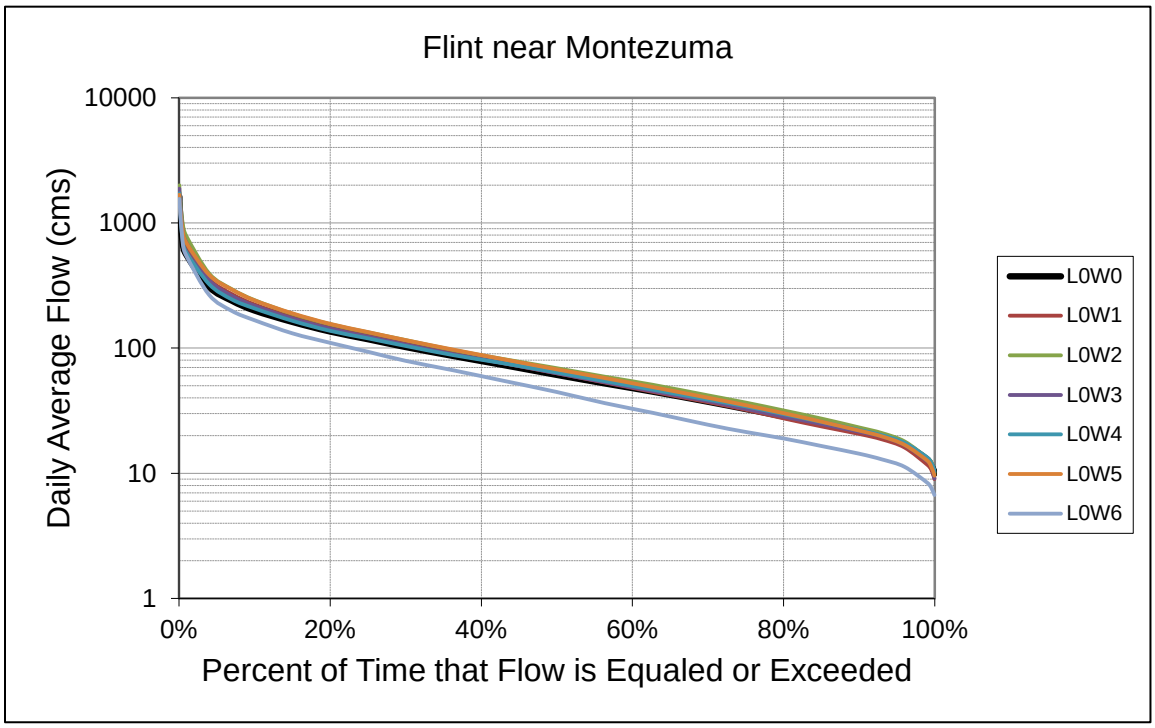

Figure 10. Flow Duration, Flint River near Montezuma (HSPF)

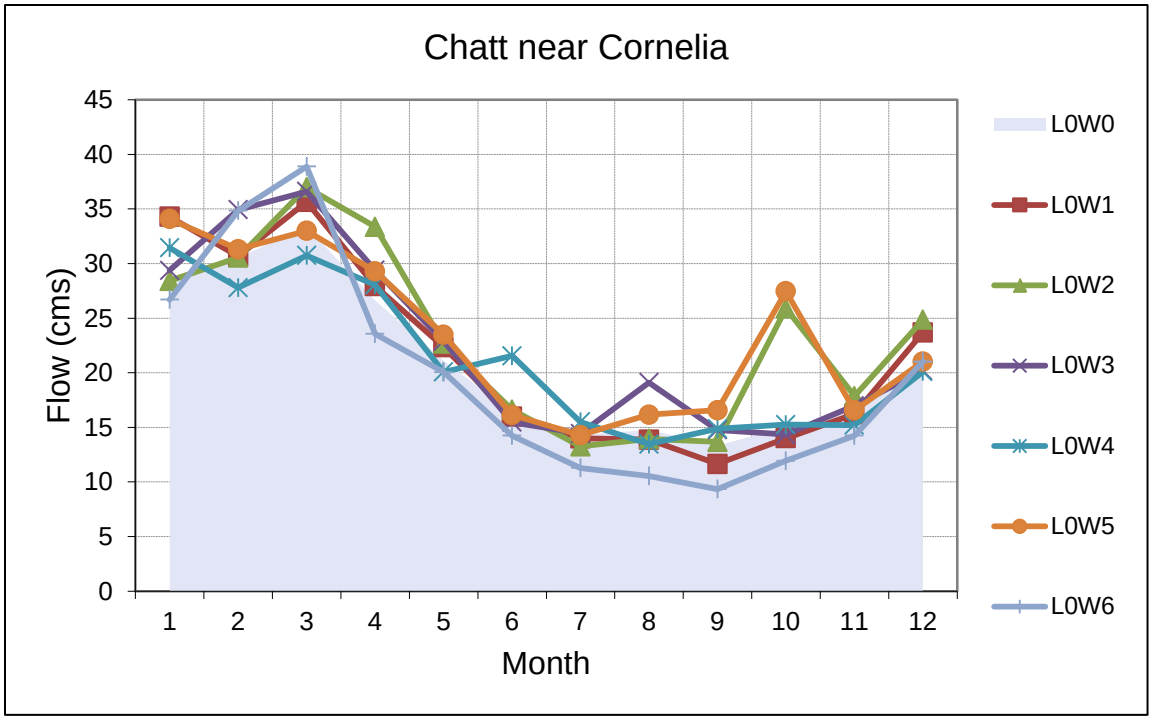

Figure 11. Monthly Average Flows, Chattahoochee River near Cornelia (HSPF)

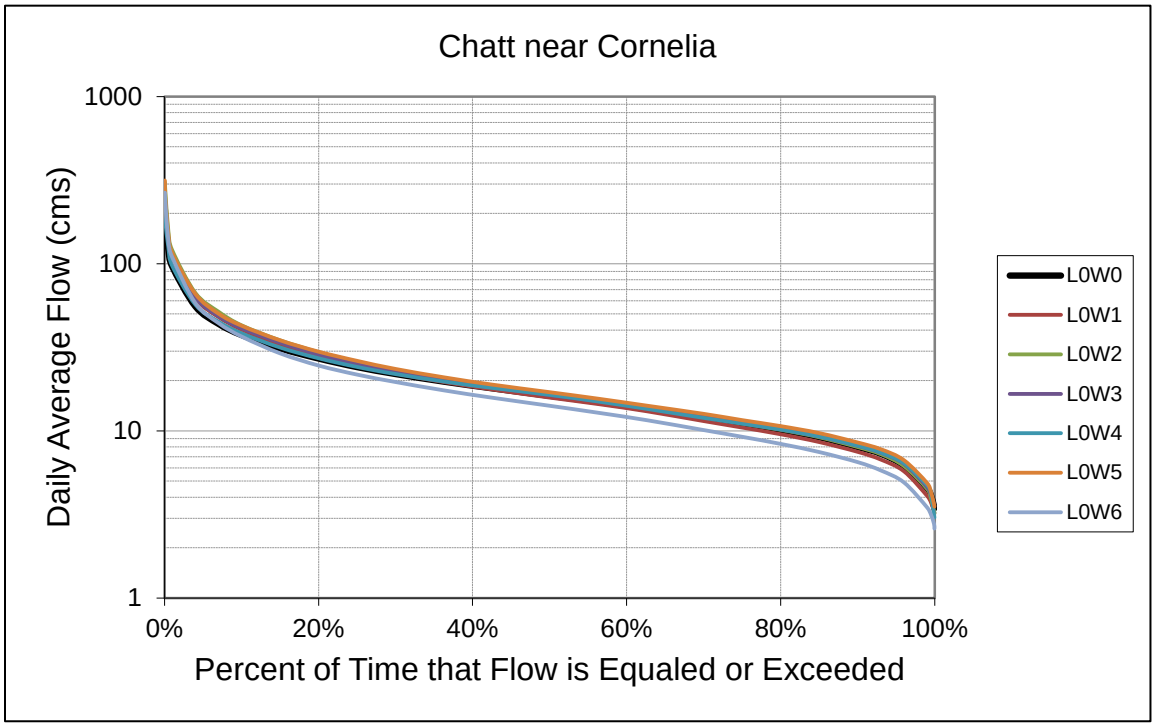

Figure 12. Flow Duration, Chattahoochee River near Cornelia (HSPF)

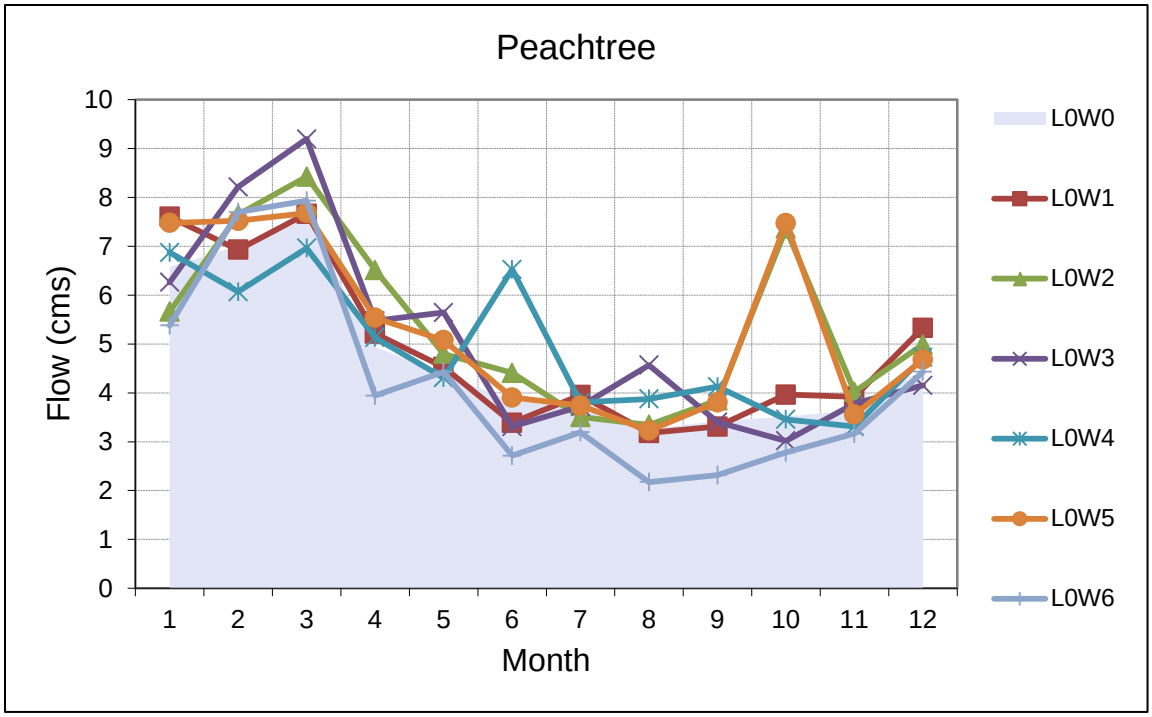

Figure 13. Monthly Average Flows, Peachtree Creek (HSPF)

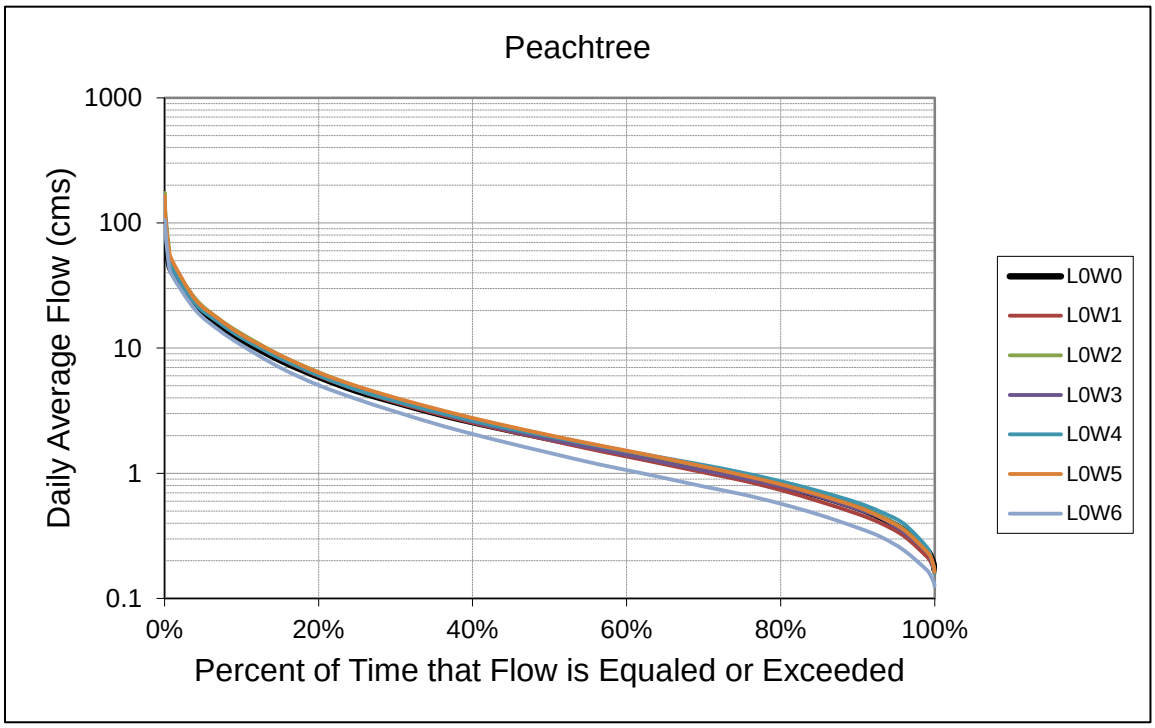

Figure 14. Flow Duration, Peachtree Creek (HSPF)

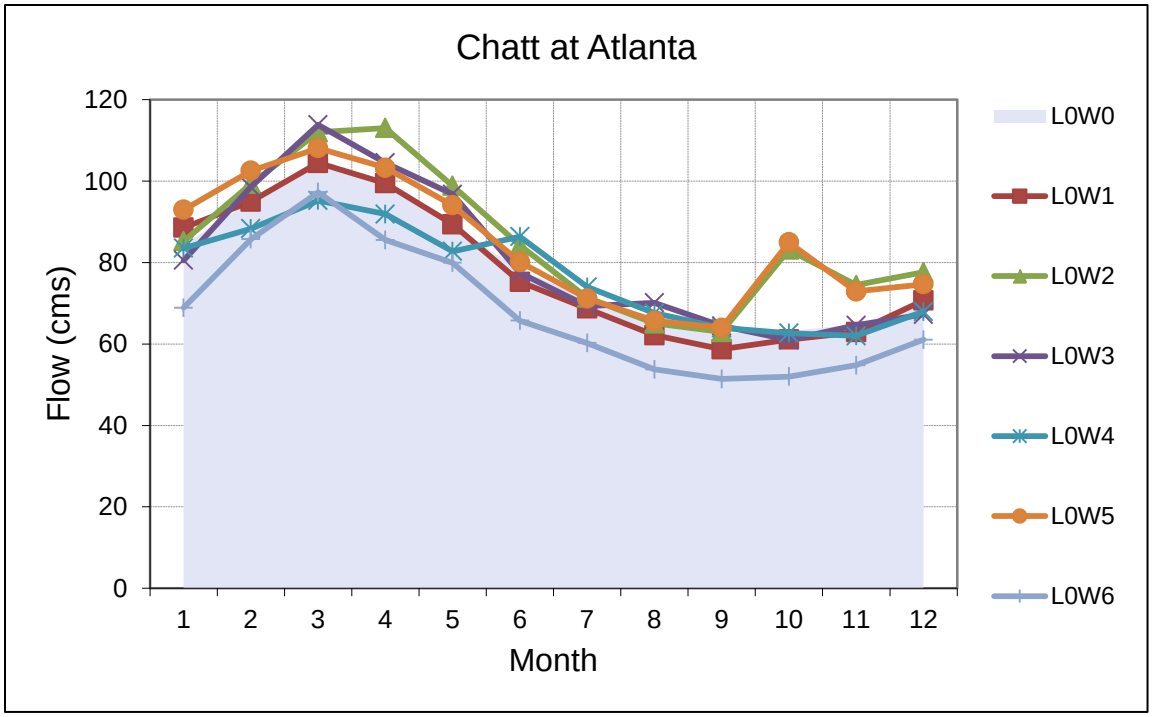

Figure 15. Monthly Average Flows, Chattahoochee River at Atlanta (HSPF)

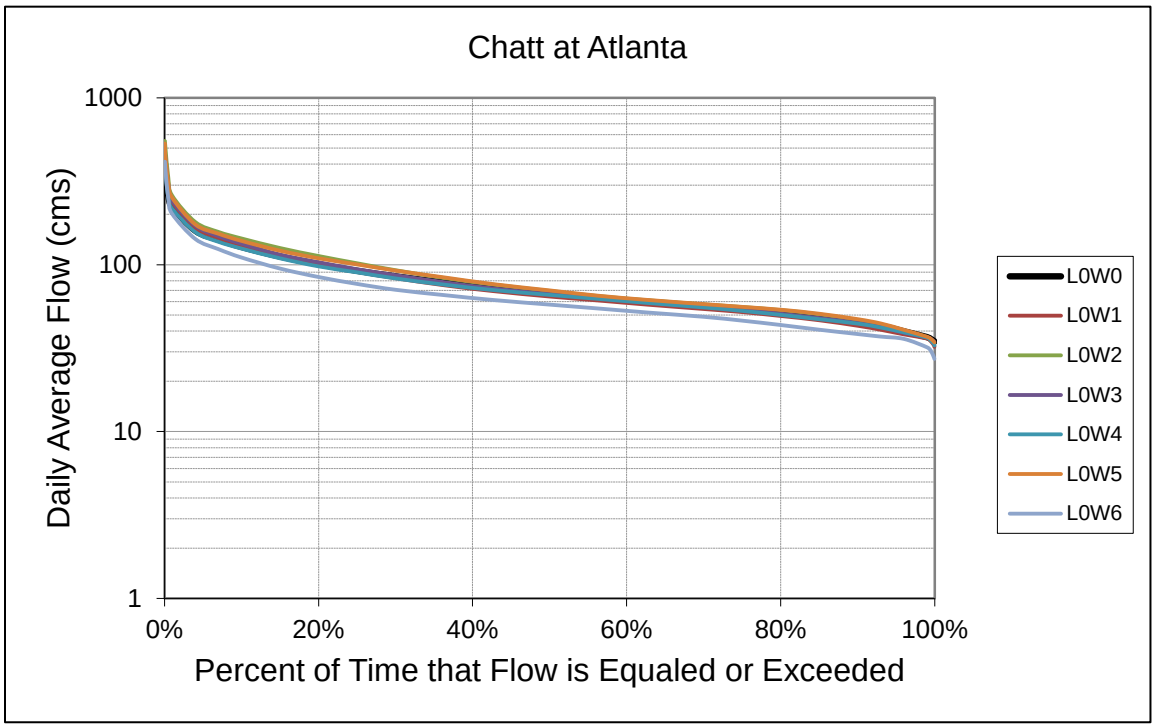

Figure 16. Flow Duration, Chattahoochee River at Atlanta (HSPF)

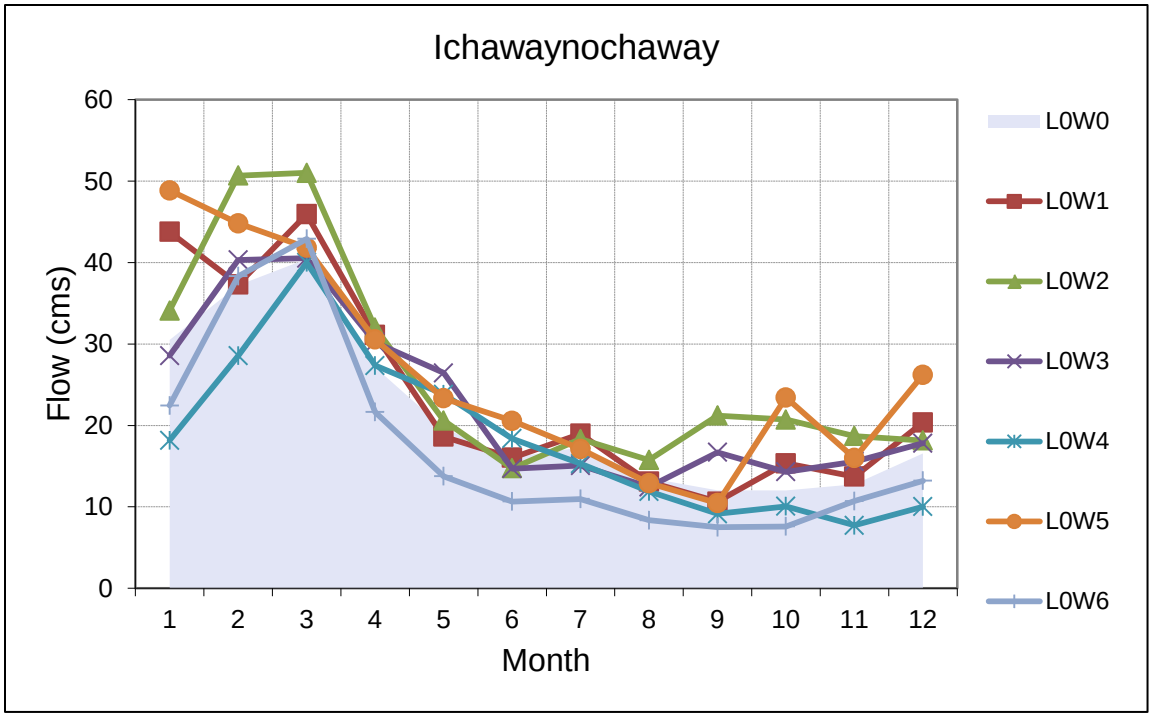

Figure 17. Monthly Average Flows, Ichawaynochaway Creek (HSPF)

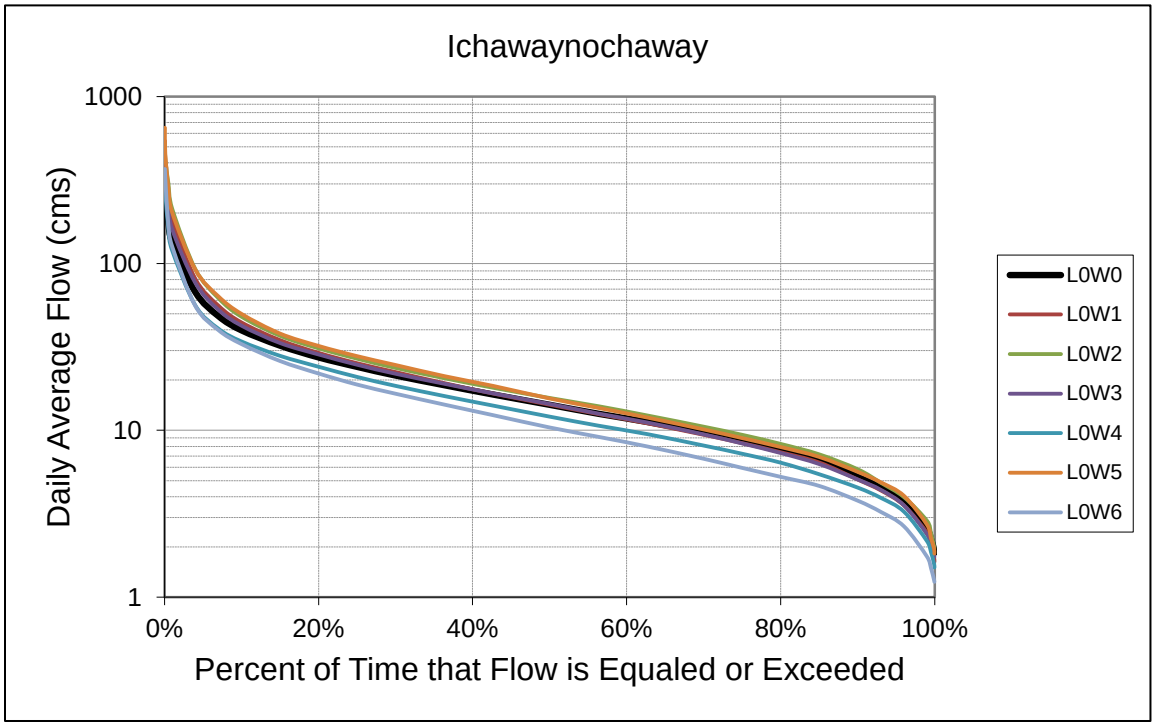

Figure 18. Flow Duration, Ichawaynochaway Creek (HSPF)

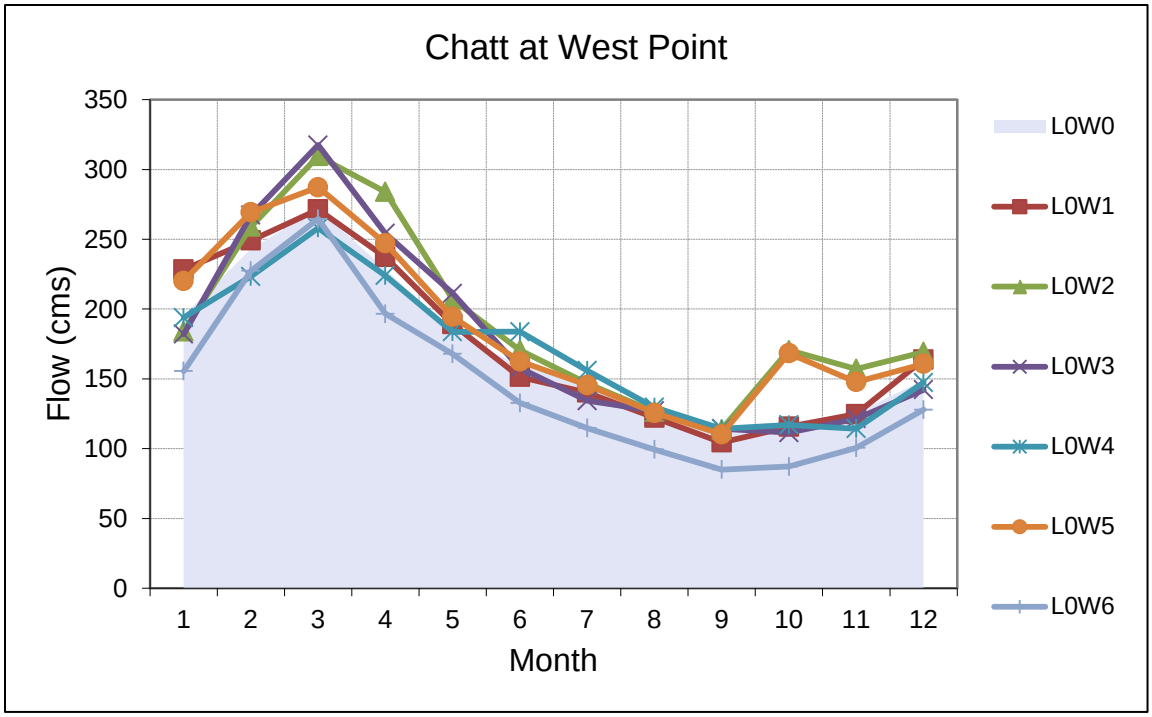

Figure 19. Monthly Average Flows, Chattahoochee River at West Point (HSPF)

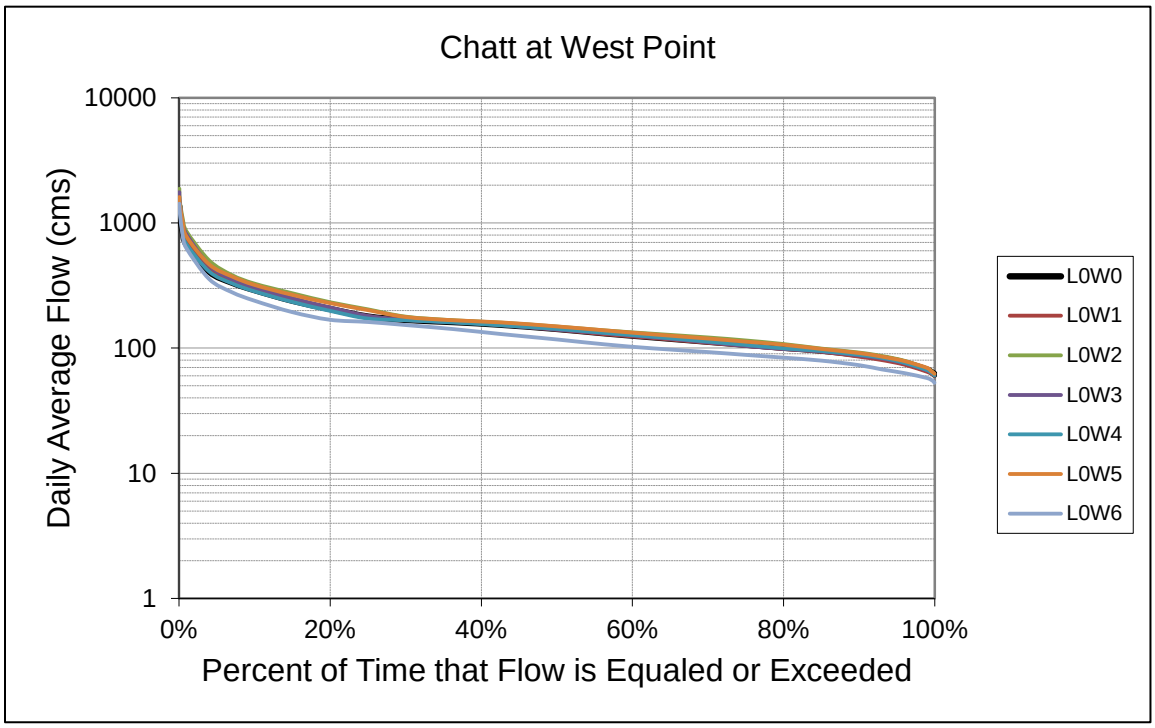

Figure 20. Flow Duration, Chattahoochee River at West Point (HSPF)

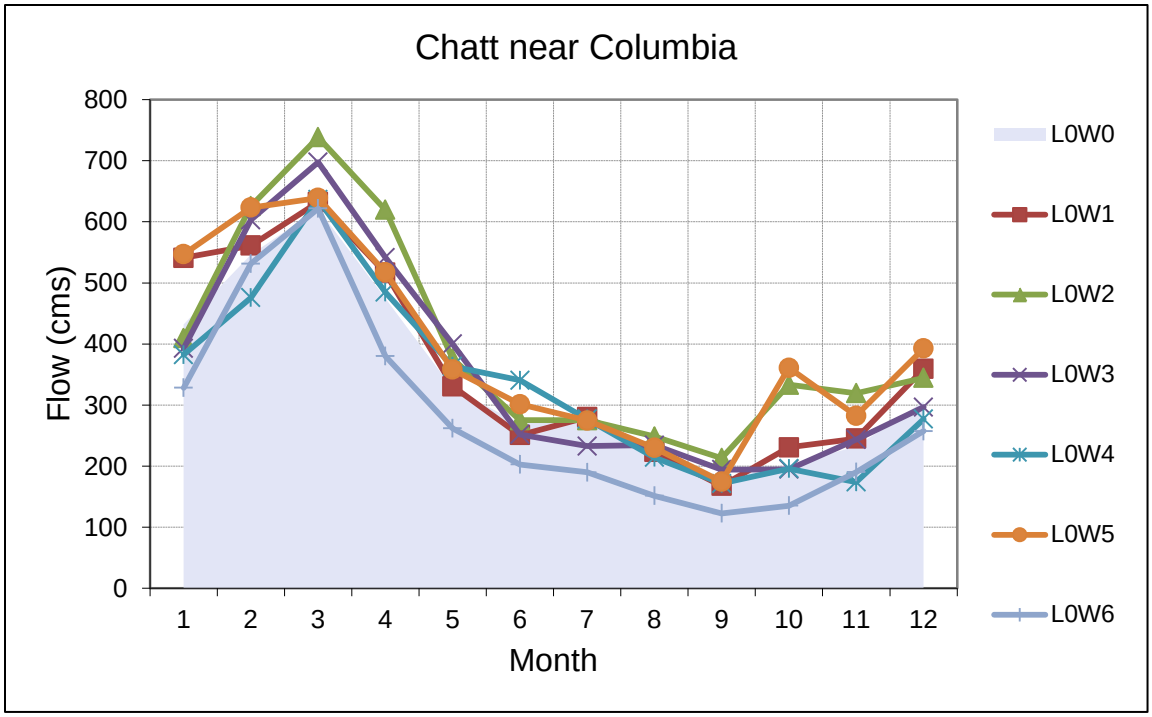

Figure 21. Monthly Average Flows, Chattahoochee River near Columbia (HSPF)

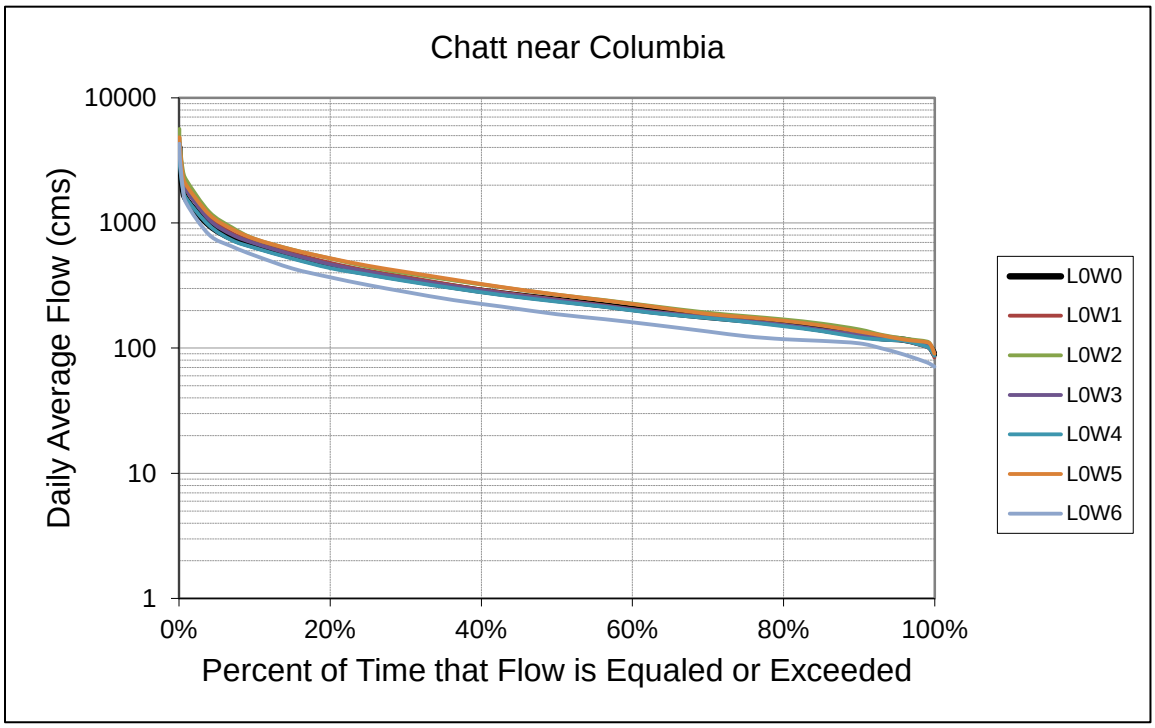

Figure 22. Flow Duration, Chattahoochee River near Columbia (HSPF)

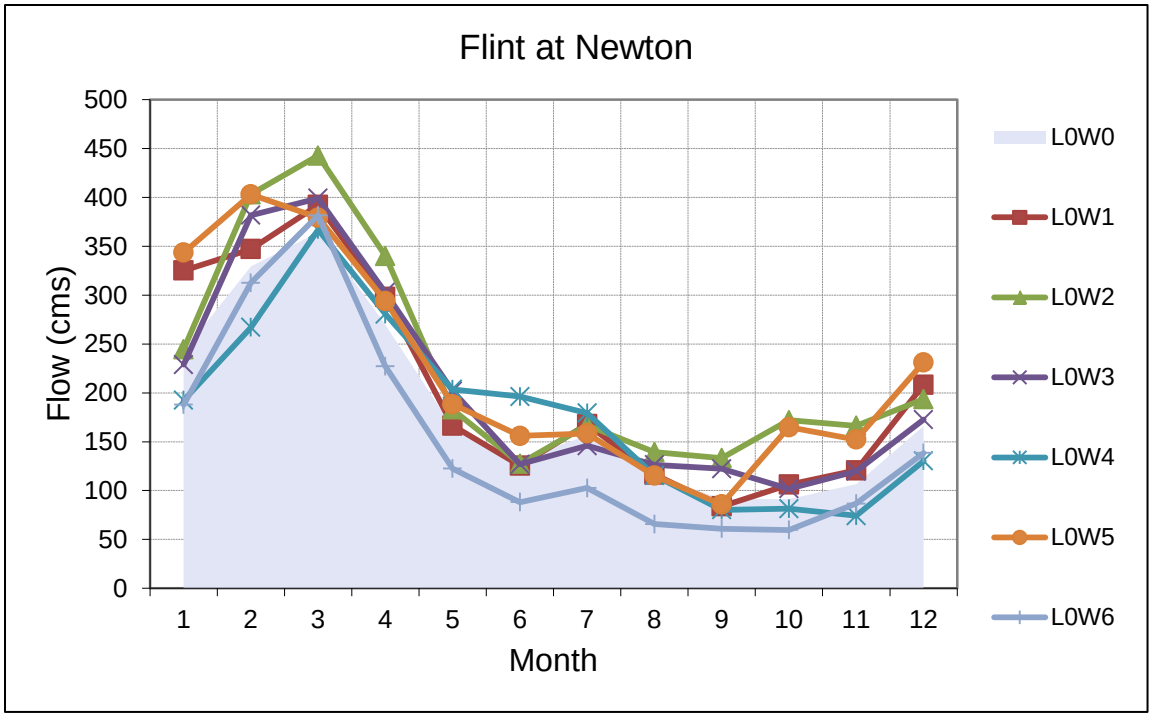

Figure 23. Monthly Average Flows, Flint River at Newton (HSPF)

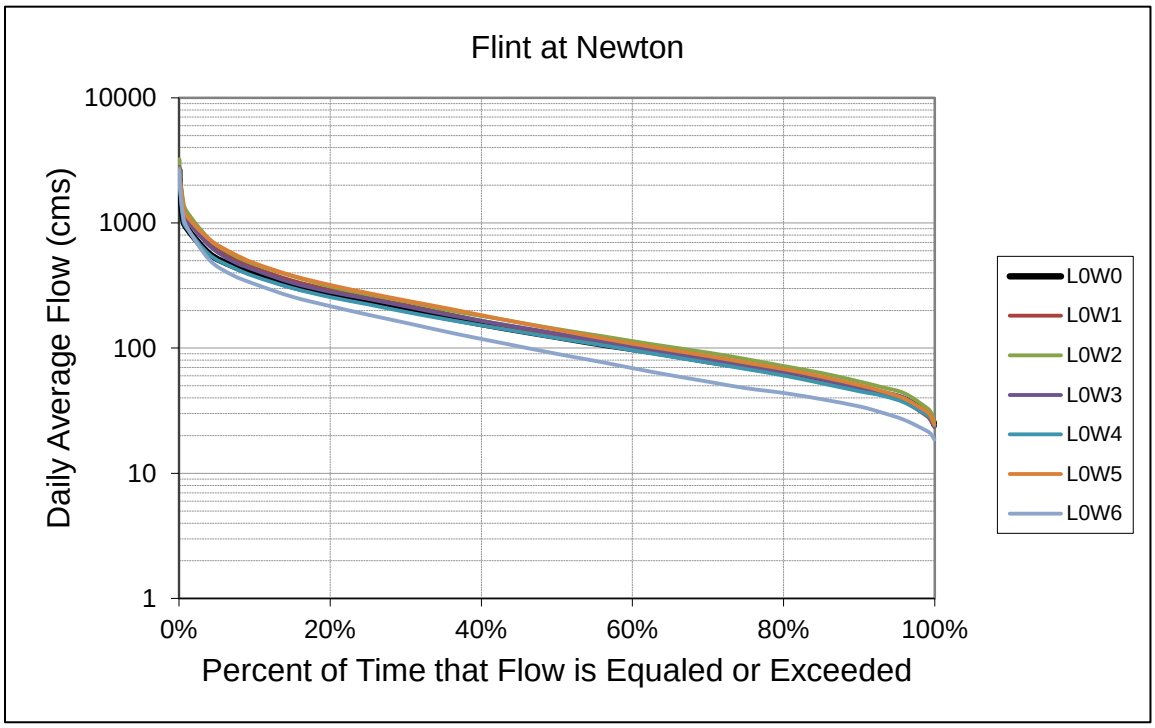

Figure 24. Flow Duration, Flint River at Newton (HSPF)

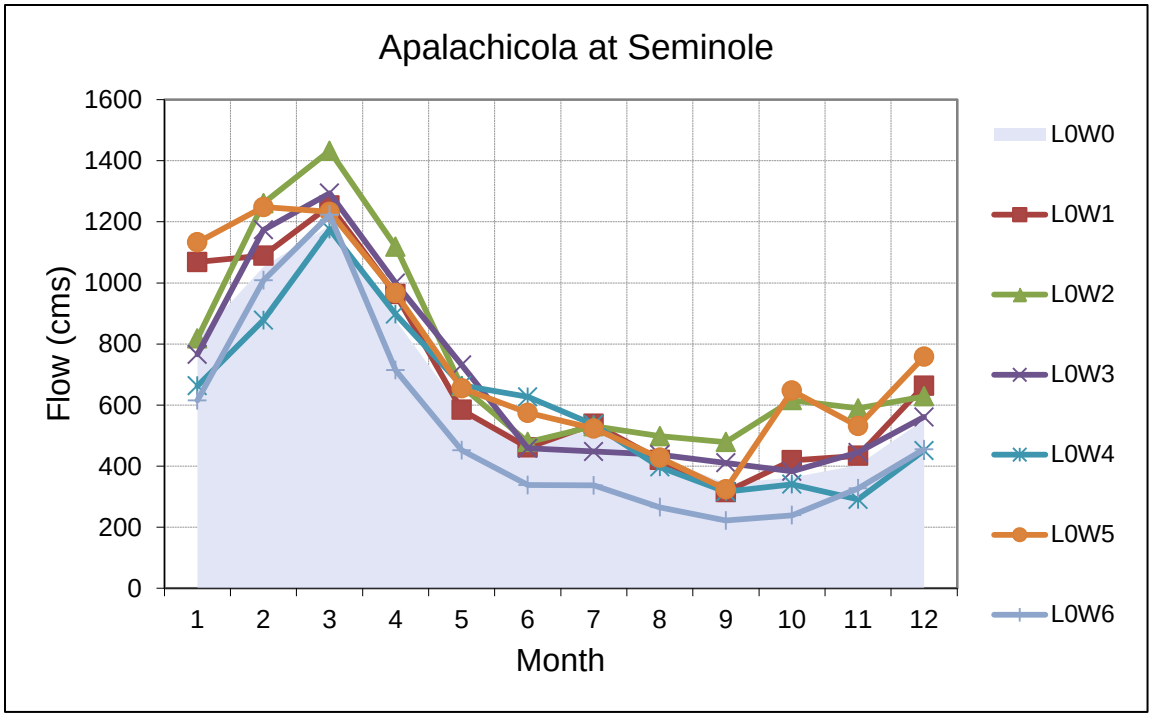

Figure 25. Monthly Average Flows, Apalachicola River at Seminole (HSPF)

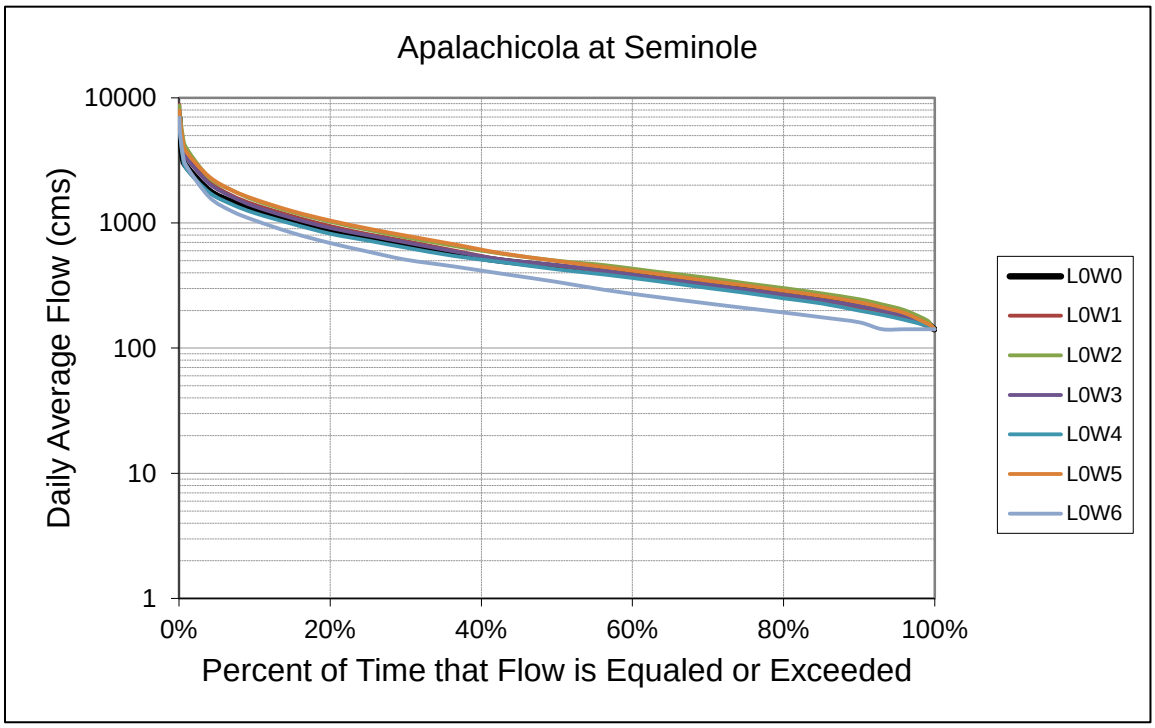

Figure 26. Flow Duration, Apalachicola River at Seminole (HSPF)

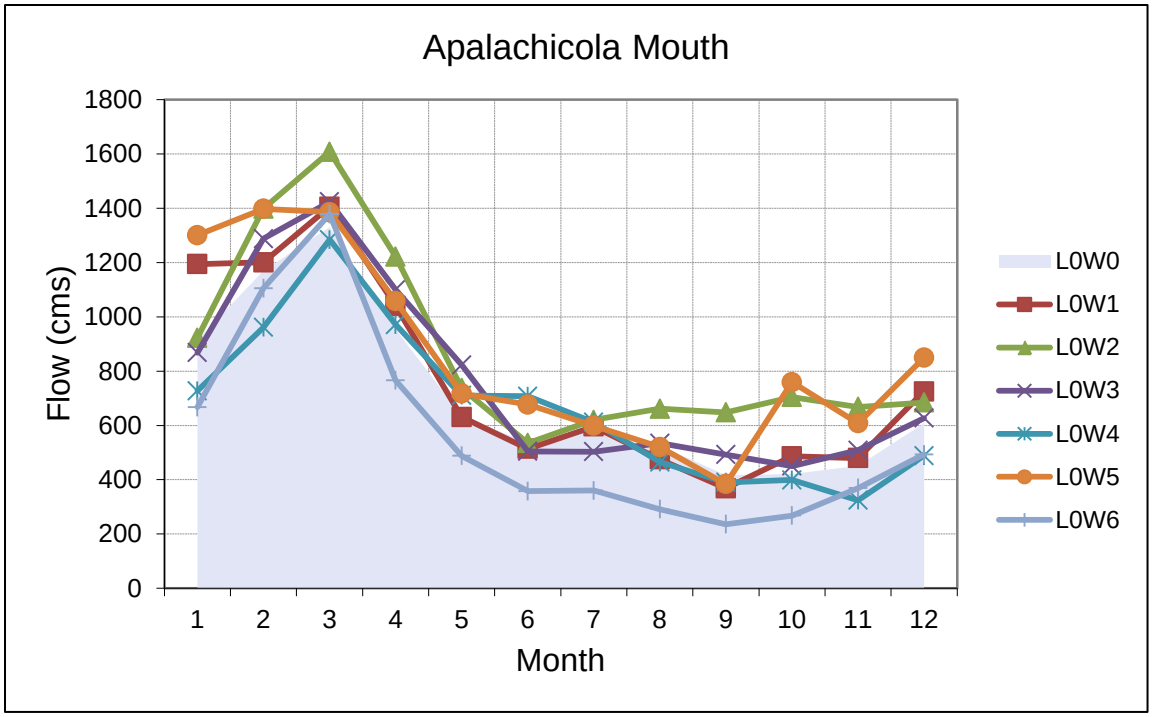

Figure 27. Monthly Average Flows, Apalachicola River at Mouth (HSPF)

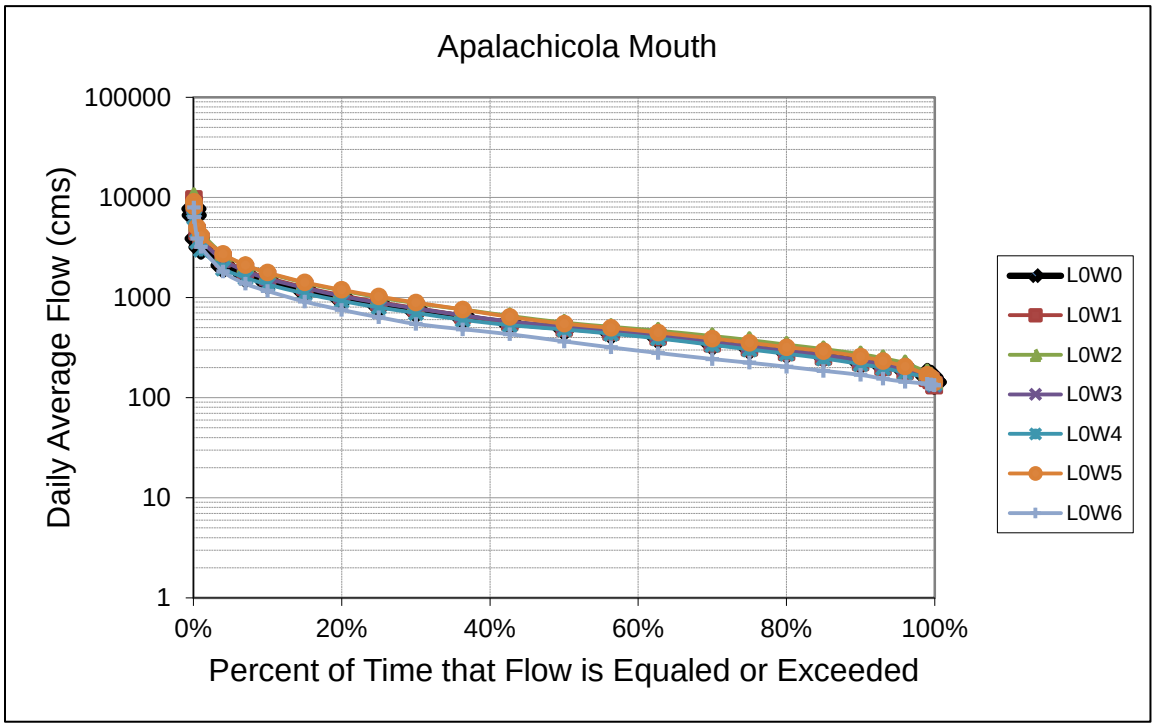

Figure 28. Flow Duration, Apalachicola River at Mouth (HSPF)

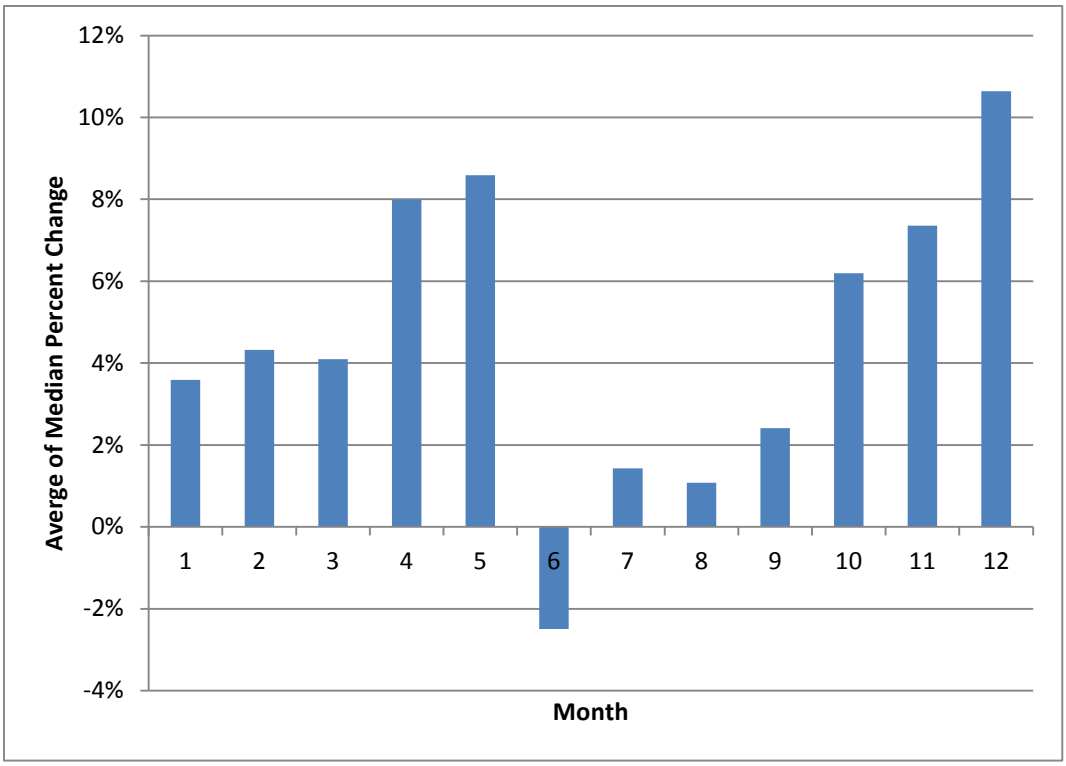

Figure 29. Average of Median Percent Change in Flow; NARCCAP Scenarios W1-W6 at all Stations, Apalachicola-Chattahoochee-Flint Basin (HSPF)

Apalachicola-Chattahoochee-Flint Basin, SWAT Model Results at Downstream Station

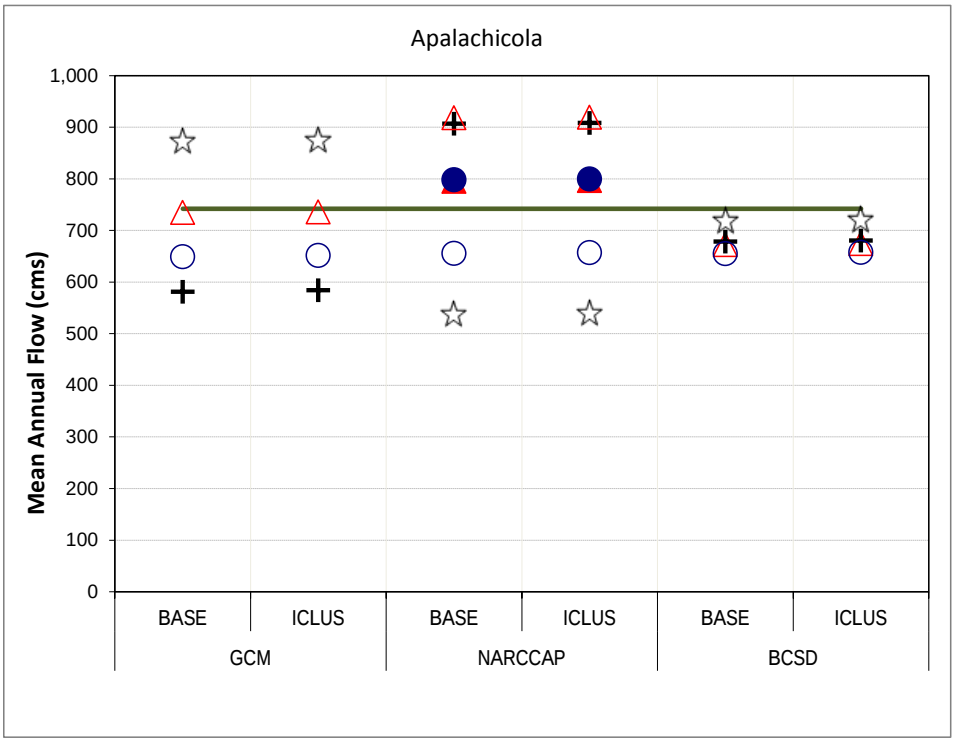

Figure 30. Mean Annual Flow, Apalachicola River at Mouth (SWAT)

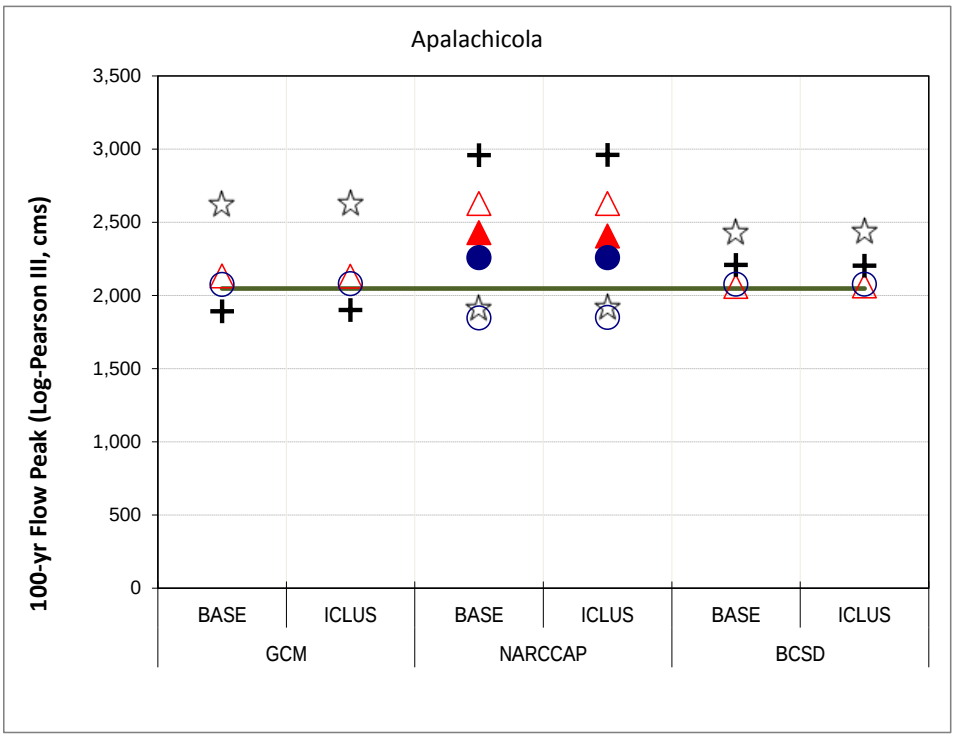

Figure 31. 100-yr flow Peak (Log-Pearson III), Apalachicola River at Mouth (SWAT)

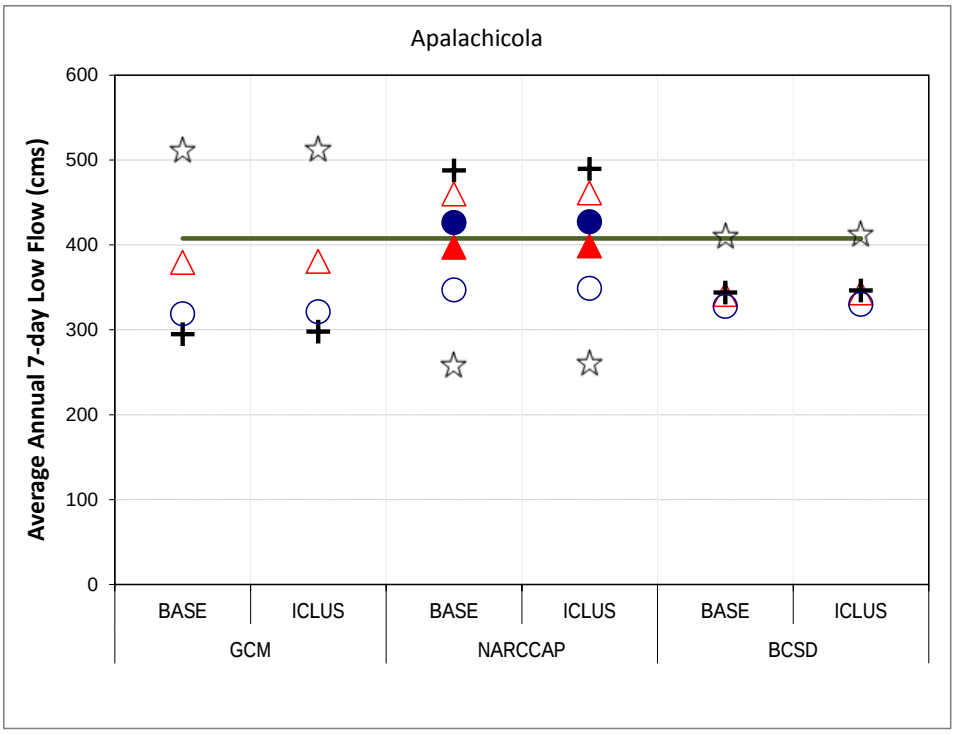

Figure 32. Average Annual 7-day Low Flow, Apalachicola River at Mouth (SWAT)

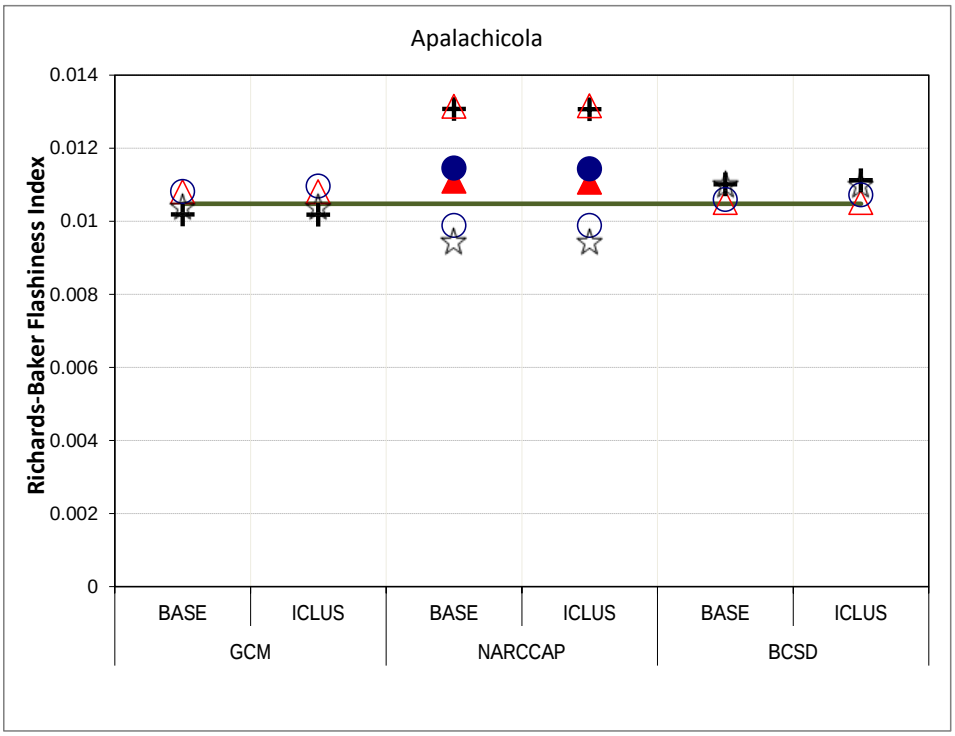

Figure 33. Richards-Baker Flashiness Index, Apalachicola River at Mouth (SWAT)

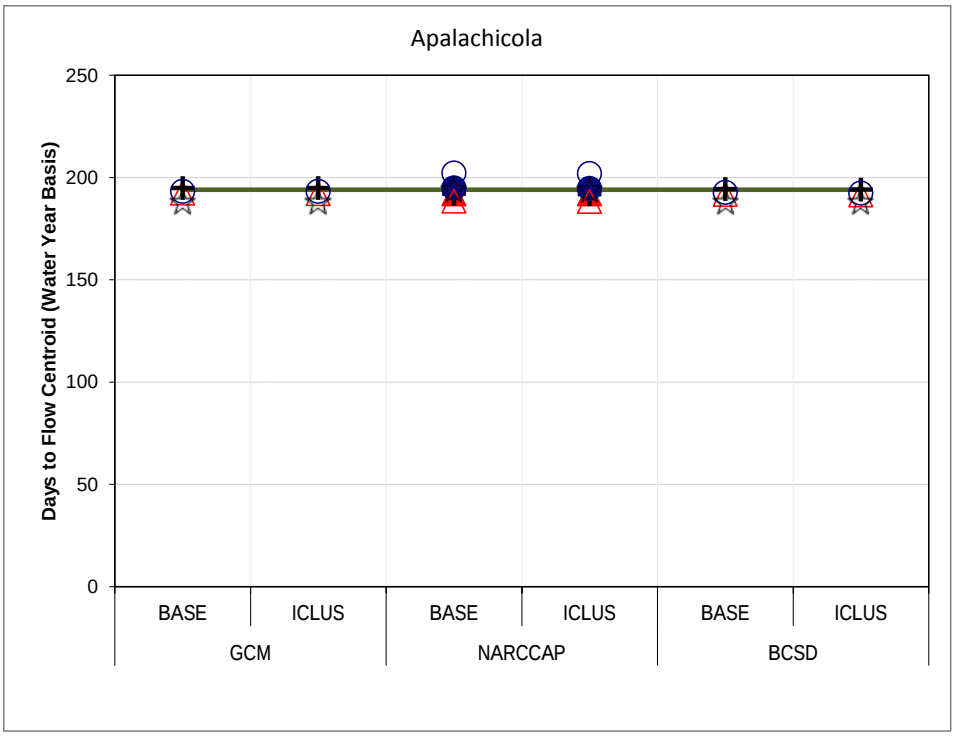

Figure 34. Days to Flow Centroid, Apalachicola River at Mouth (SWAT)

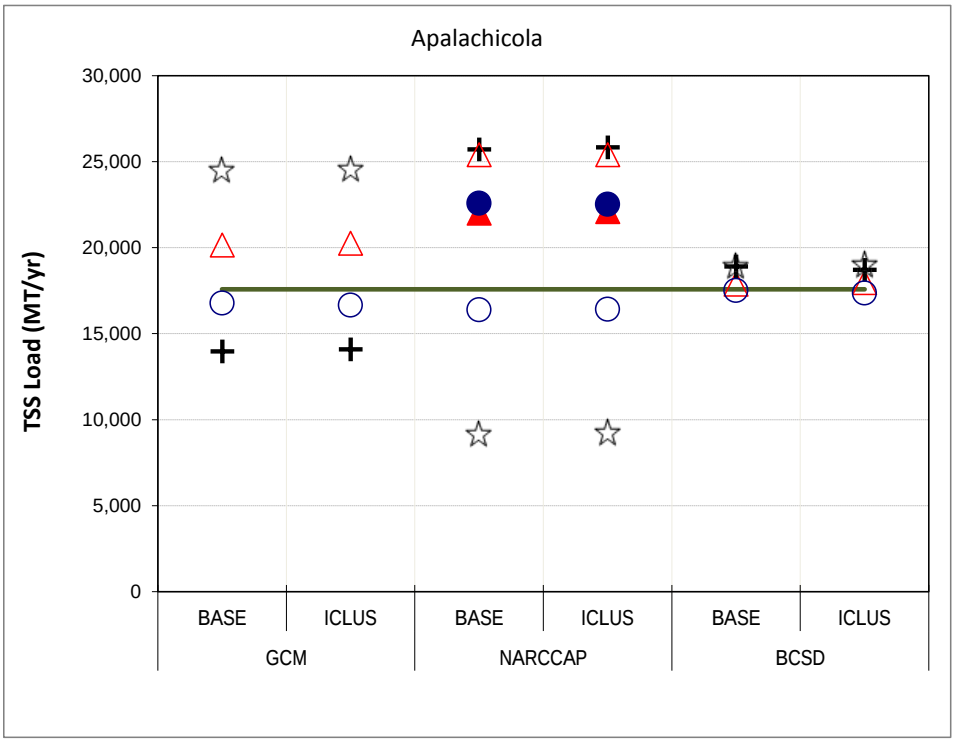

Figure 35. TSS Load, Apalachicola River at Mouth (SWAT)

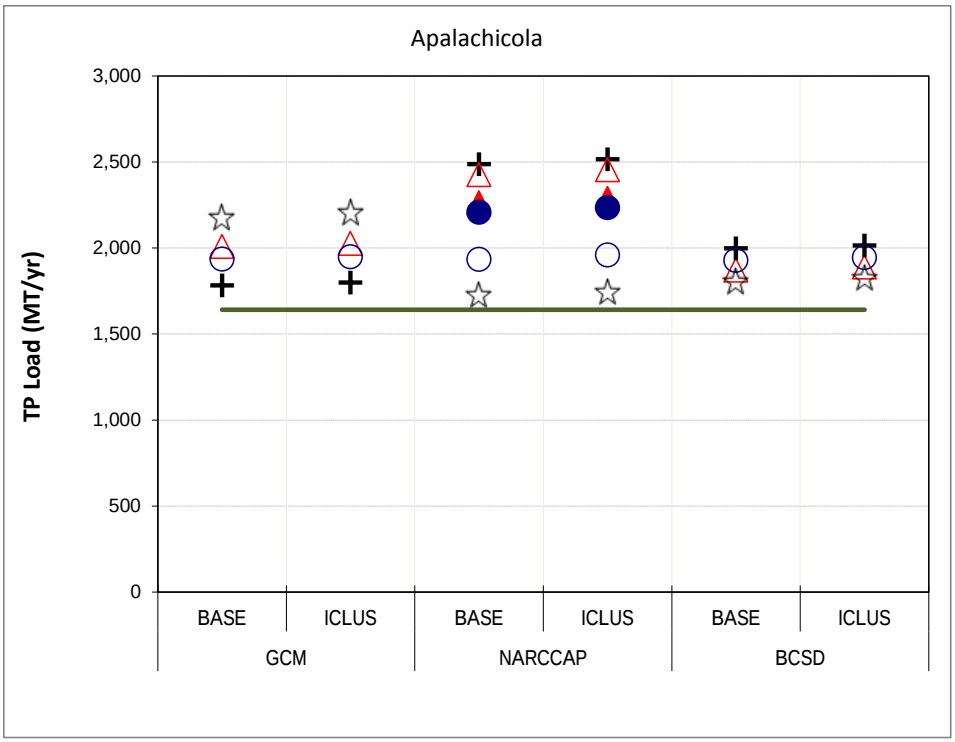

Figure 36. TP Load, Apalachicola River at Mouth (SWAT)

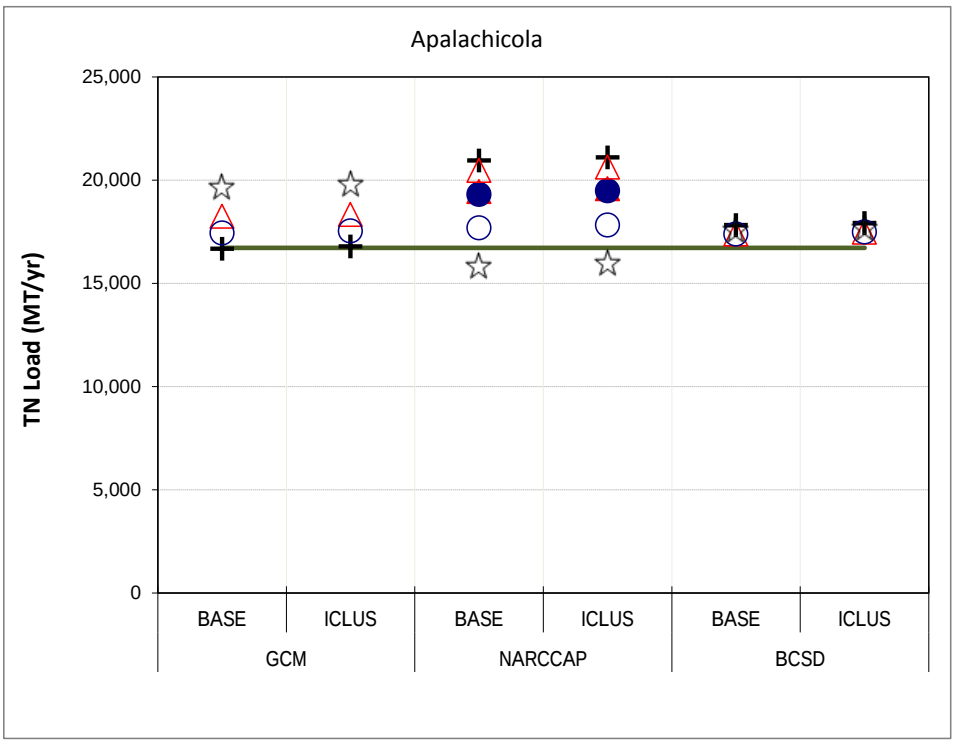

Figure 37. TN Load, Apalachicola River at Mouth (SWAT)

Results at Multiple Stations

Table 2. Summary of Range of Change Relative to Existing Conditions for NARCCAP Dynamically Downscaled Scenarios, Apalachicola-Chattahoochee-Flint Basin SWAT Model

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Chattahoochee at Atlanta HUC 03130001								
Flow	-4.97%	15.45%	14.11%	23.72%	-4.52%	15.17%	13.98%	23.28%
TSS	5.73%	40.72%	34.45%	49.87%	7.02%	35.31%	31.78%	46.32%
TN	3.07%	11.73%	10.27%	12.43%	5.05%	14.50%	13.06%	15.71%
TP	19.25%	35.55%	33.73%	38.87%	18.55%	37.32%	35.00%	41.04%
Middle Chattahoochee – Lake Harding HUC 03130002								
Flow	-14.55%	14.78%	11.98%	24.84%	-14.15%	14.49%	11.81%	24.58%
TSS	-16.80%	49.05%	44.01%	77.45%	-15.78%	48.57%	43.61%	76.55%
TN	-2.12%	5.91%	5.11%	7.86%	-1.84%	6.30%	5.49%	8.28%
TP	8.33%	26.99%	24.78%	31.90%	7.72%	27.42%	25.08%	32.49%
Middle Chattahoochee – WF George HUC 03130003								
Flow	-18.68%	12.52%	9.37%	24.24%	-18.37%	12.34%	9.28%	23.94%
TSS	-14.99%	59.60%	52.46%	92.84%	-14.31%	59.50%	52.32%	92.49%
TN	-1.24%	9.81%	8.61%	12.95%	-0.98%	10.20%	8.99%	13.35%
TP	8.01%	29.42%	26.82%	36.55%	7.66%	29.68%	27.02%	36.92%
Lower Chattahoochee HUC 03130004								
Flow	-19.63%	11.89%	8.52%	24.74%	-19.35%	11.74%	8.44%	24.48%
TSS	-30.48%	26.43%	21.16%	55.50%	-29.74%	27.07%	21.83%	56.08%
TN	-1.48%	10.33%	9.07%	14.40%	-1.22%	10.68%	9.41%	14.77%
TP	9.76%	29.85%	27.41%	37.97%	9.47%	30.05%	27.57%	38.25%
Peachtree Creek (gage 02336300)								
Flow	-7.54%	17.56%	16.16%	27.69%	-7.00%	16.48%	15.25%	26.39%
TSS	-5.41%	31.74%	27.21%	43.52%	-2.24%	30.58%	26.46%	41.69%
TN	20.49%	32.31%	33.30%	49.14%	25.31%	38.46%	40.42%	59.42%
TP	32.59%	45.86%	48.09%	64.21%	35.39%	51.13%	53.11%	72.85%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Upper Flint HUC 03130005								
Flow	-21.50%	11.78%	8.12%	22.24%	-21.32%	11.44%	7.86%	21.87%
TSS	-20.29%	33.66%	27.97%	50.19%	-20.18%	33.00%	27.52%	49.49%
TN	8.28%	38.60%	32.62%	41.83%	8.72%	39.65%	33.73%	42.82%
TP	19.70%	62.54%	54.68%	66.95%	18.54%	61.28%	53.50%	66.48%
Middle Flint HUC 03130006								
Flow	-23.41%	11.34%	6.51%	23.31%	-23.28%	11.20%	6.41%	23.10%
TSS	-24.04%	29.06%	21.37%	50.70%	-23.84%	28.81%	21.26%	50.79%
TN	1.80%	39.97%	31.73%	45.52%	2.33%	41.64%	32.75%	46.13%
TP	8.52%	50.28%	42.57%	59.55%	8.42%	50.47%	42.62%	59.46%
Kinchafonee-Muckalee HUC 03130007								
Flow	-23.90%	10.90%	5.58%	24.80%	-23.75%	10.99%	5.69%	24.88%
TSS	-27.37%	16.78%	8.52%	29.04%	-27.09%	16.63%	8.42%	28.94%
TN	-2.98%	37.39%	31.24%	48.55%	-1.72%	40.15%	33.23%	50.51%
TP	0.10%	39.40%	34.00%	51.33%	0.79%	41.44%	35.46%	53.06%
Lower Flint HUC 03130008								
Flow	-25.22%	10.59%	4.96%	24.78%	-25.12%	10.50%	4.90%	24.64%
TSS	-26.70%	23.36%	15.83%	46.79%	-26.59%	23.20%	15.78%	46.57%
TN	-1.07%	35.94%	28.43%	45.00%	-0.82%	36.87%	28.99%	45.39%
TP	7.81%	44.98%	38.40%	56.09%	7.71%	45.09%	38.44%	56.16%
Ichawaynochaway HUC 03130009								
Flow	-30.02%	6.79%	0.18%	22.33%	-30.02%	6.79%	0.19%	22.33%
TSS	-28.90%	12.70%	5.06%	31.45%	-28.89%	12.70%	5.07%	31.51%
TN	-3.74%	31.14%	26.85%	52.16%	-3.86%	31.19%	26.84%	52.19%
TP	8.37%	39.07%	34.88%	55.22%	8.28%	39.13%	34.89%	55.27%
Spring HUC 03130010								
Flow	-31.06%	3.87%	-1.58%	22.04%	-31.05%	3.88%	-1.57%	22.05%
TSS	-31.24%	8.99%	3.96%	33.14%	-31.26%	8.98%	3.95%	33.11%
TN	-11.68%	27.23%	19.99%	45.46%	-11.61%	27.33%	20.12%	45.70%
TP	2.54%	35.05%	29.00%	49.26%	2.56%	35.06%	29.07%	49.43%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Apalachicola HUC 03130011								
Flow	-27.10%	7.37%	3.66%	23.75%	-26.92%	7.28%	3.62%	23.58%
TSS	-47.39%	26.84%	15.07%	46.35%	-47.25%	26.16%	14.63%	46.09%
TN	-4.82%	15.84%	13.38%	25.28%	-4.56%	16.26%	13.74%	25.62%
TP	5.56%	36.17%	32.51%	51.52%	5.41%	36.25%	32.58%	51.62%
Chipola HUC 03130012								
Flow	-45.73%	-8.86%	-8.70%	22.72%	-45.71%	-8.84%	-8.69%	22.73%
TSS	-46.43%	1.58%	7.65%	62.14%	-46.52%	1.58%	7.63%	62.12%
TN	-20.99%	13.68%	16.33%	63.05%	-21.17%	13.55%	16.34%	63.38%
TP	-6.27%	28.47%	29.53%	72.78%	-6.62%	28.23%	29.46%	73.13%

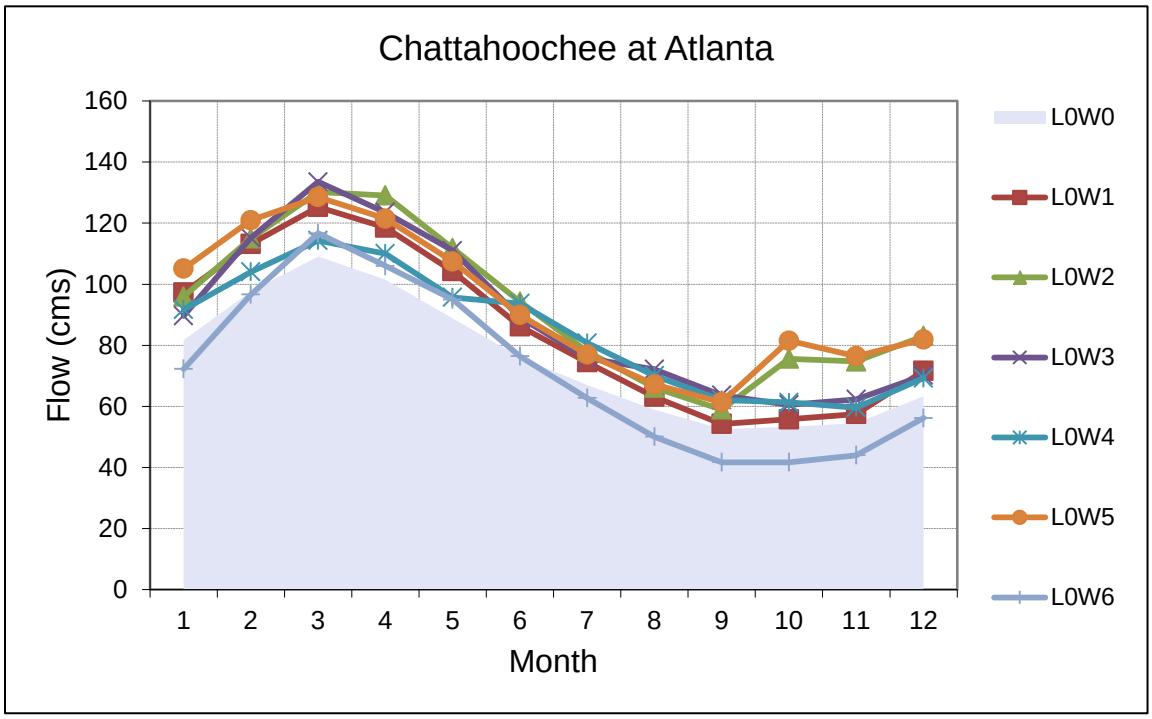

Figure 38. Monthly Average Flows, Chattahoochee River at Atlanta (SWAT)

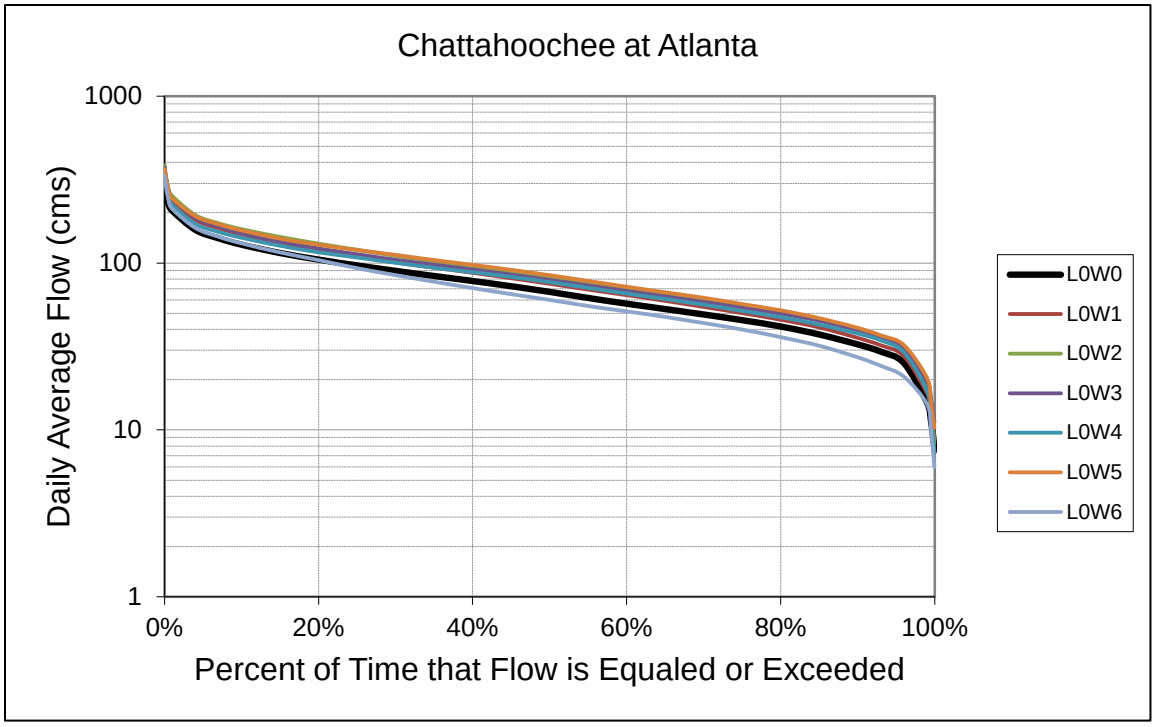

Figure 39. Flow Duration, Chattahoochee River at Atlanta (SWAT)

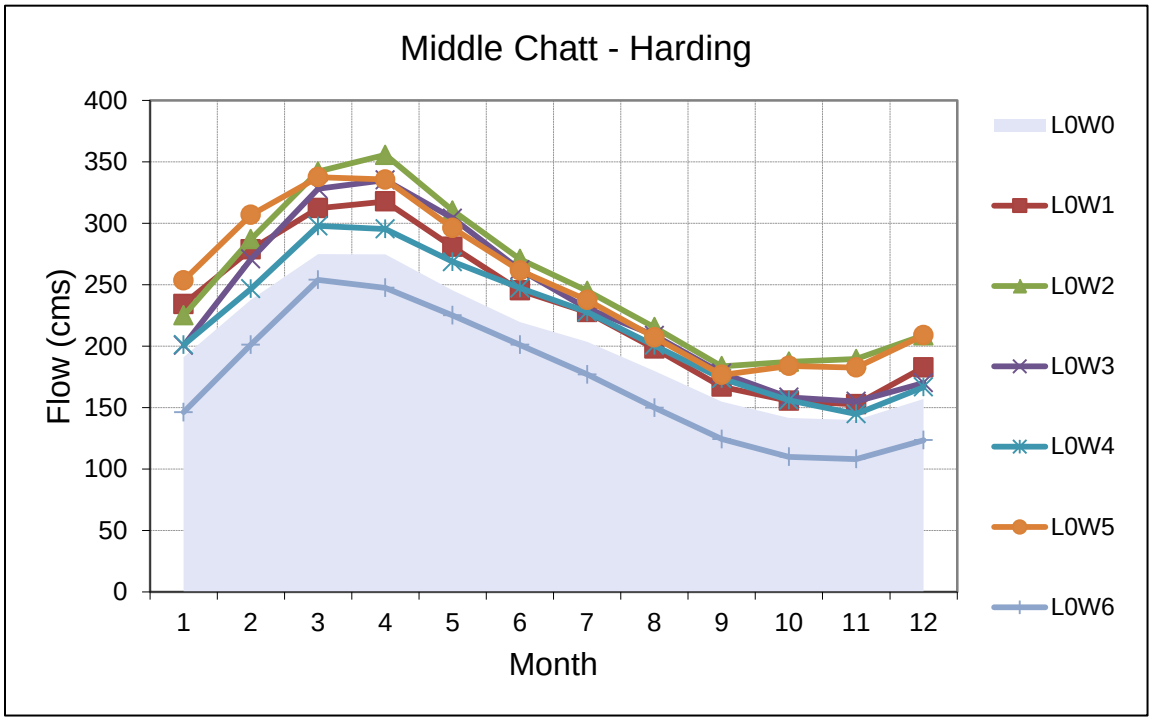

Figure 40. Monthly Average Flows, Middle Chattahoochee River at Harding (SWAT)

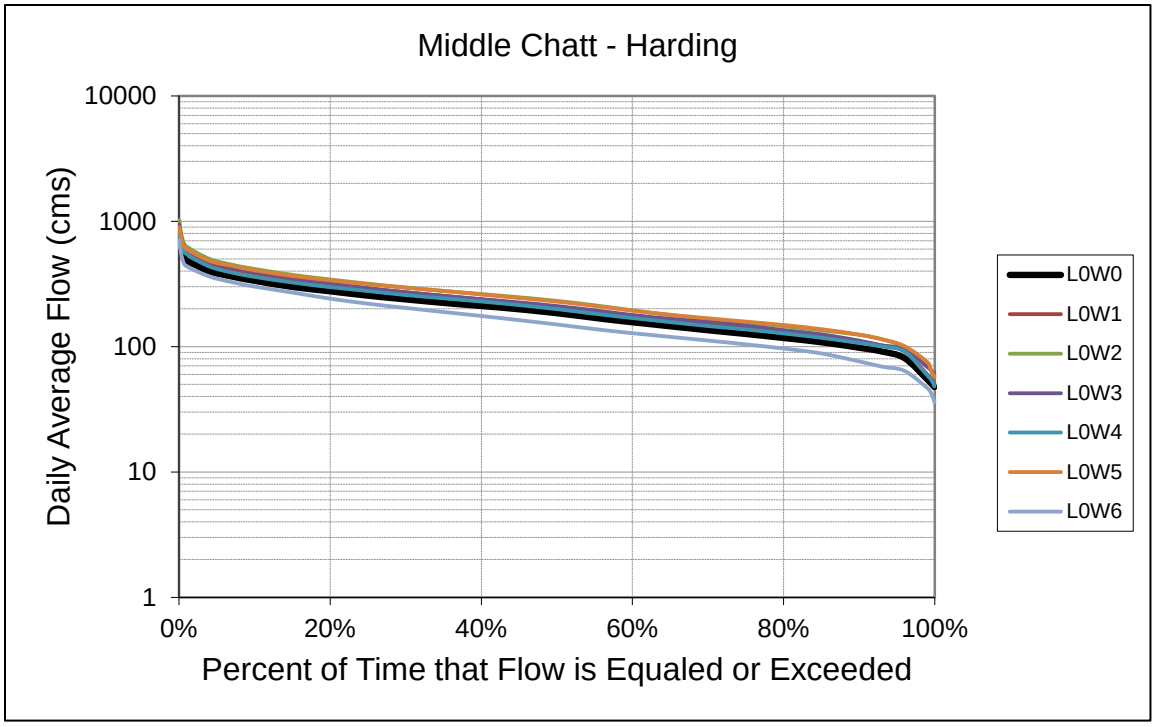

Figure 41. Flow Duration, Middle Chattahoochee River at Harding (SWAT)

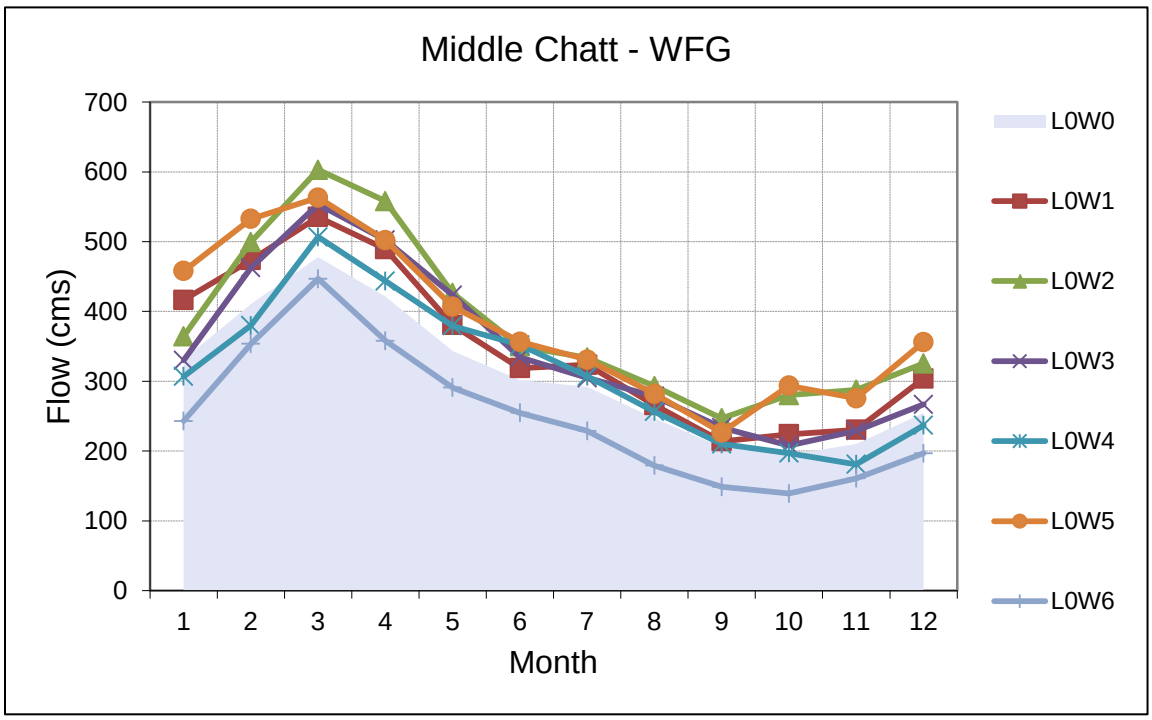

Figure 42. Monthly Average Flows, Middle Chattahoochee River at WF Geroge (SWAT)

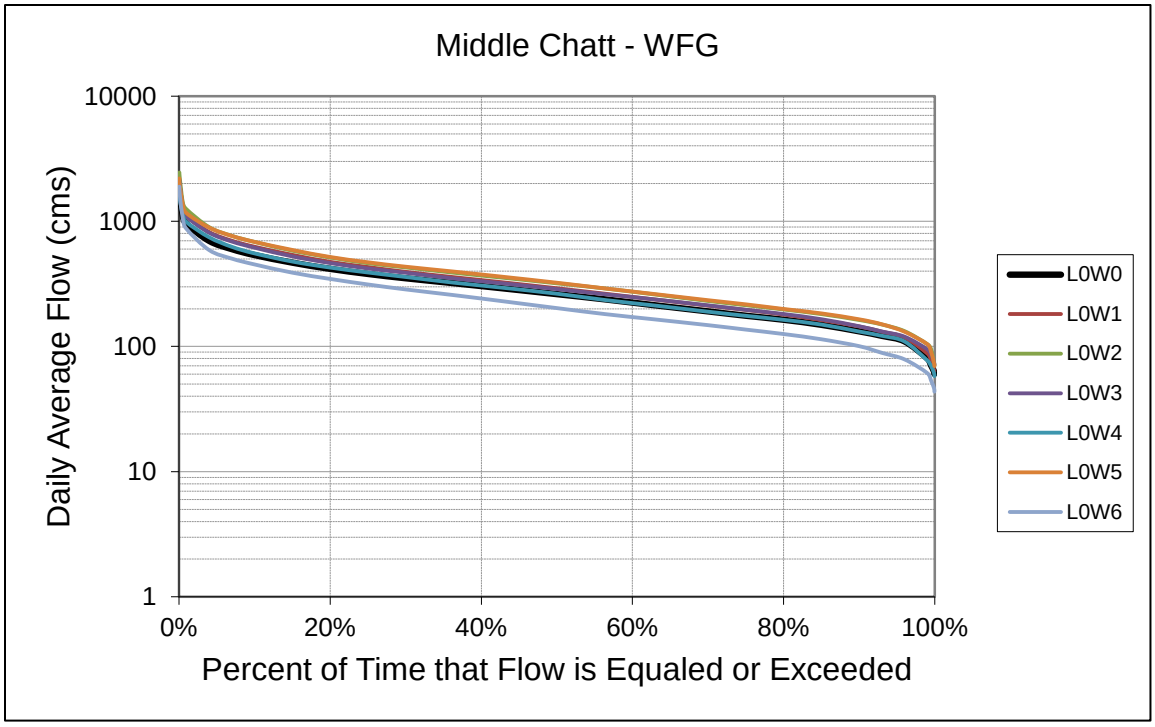

Figure 43. Flow Duration, Middle Chattahoochee River at WF George (SWAT)

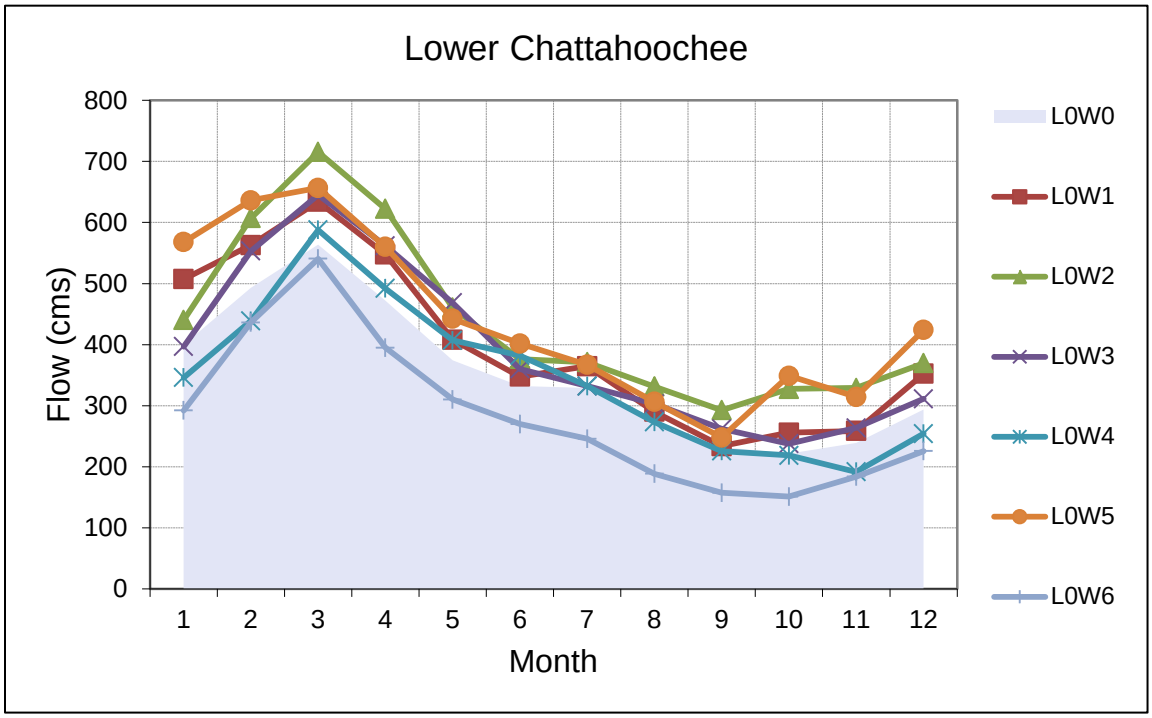

Figure 44. Monthly Average Flows, Lower Chattahoochee River (SWAT)

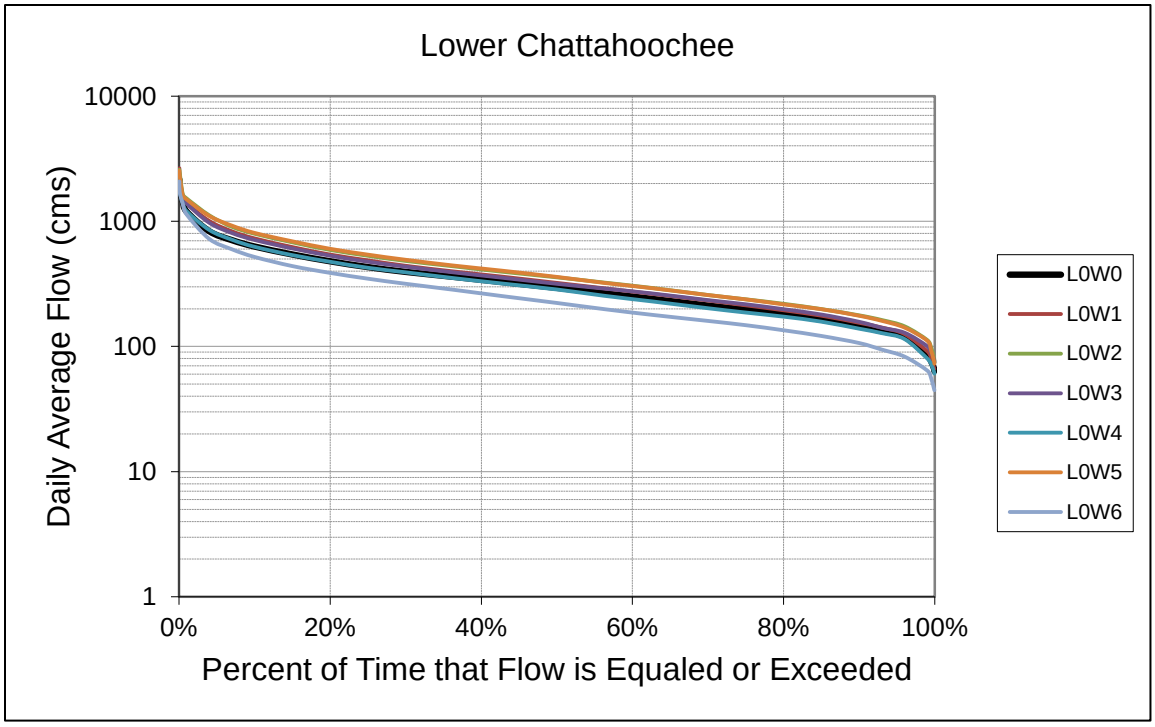

Figure 45. Flow Duration, Lower Chattahoochee River (SWAT)

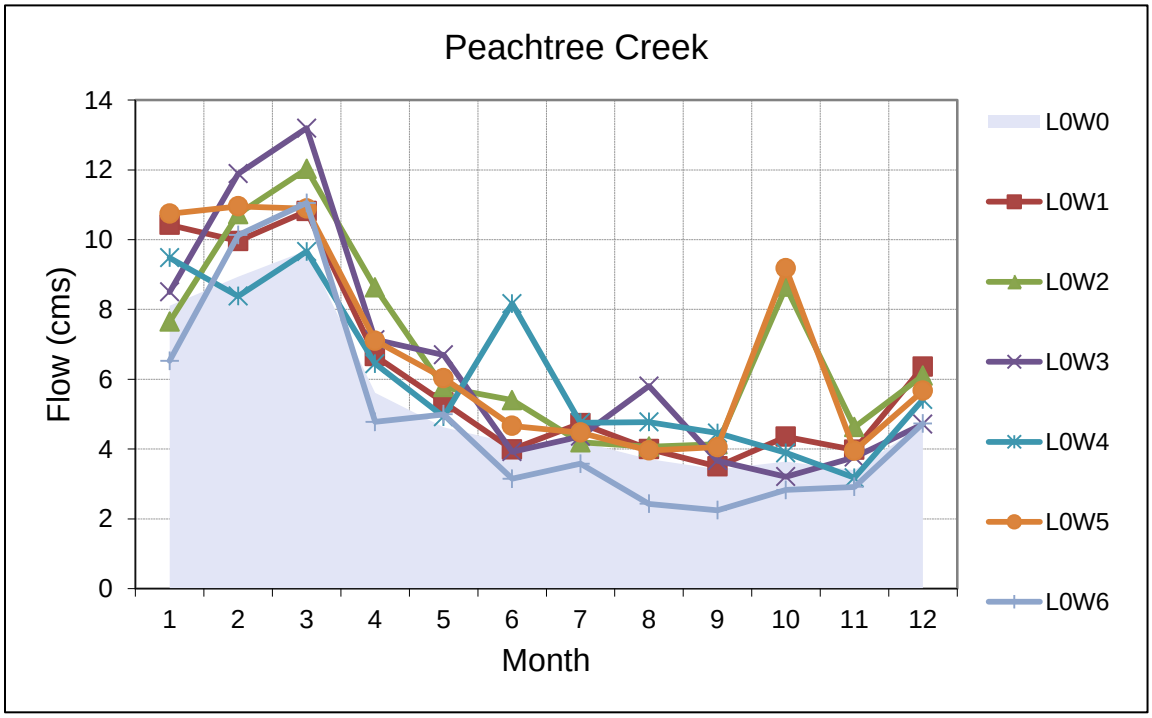

Figure 46. Monthly Average Flows, Peachtree Creek (SWAT)

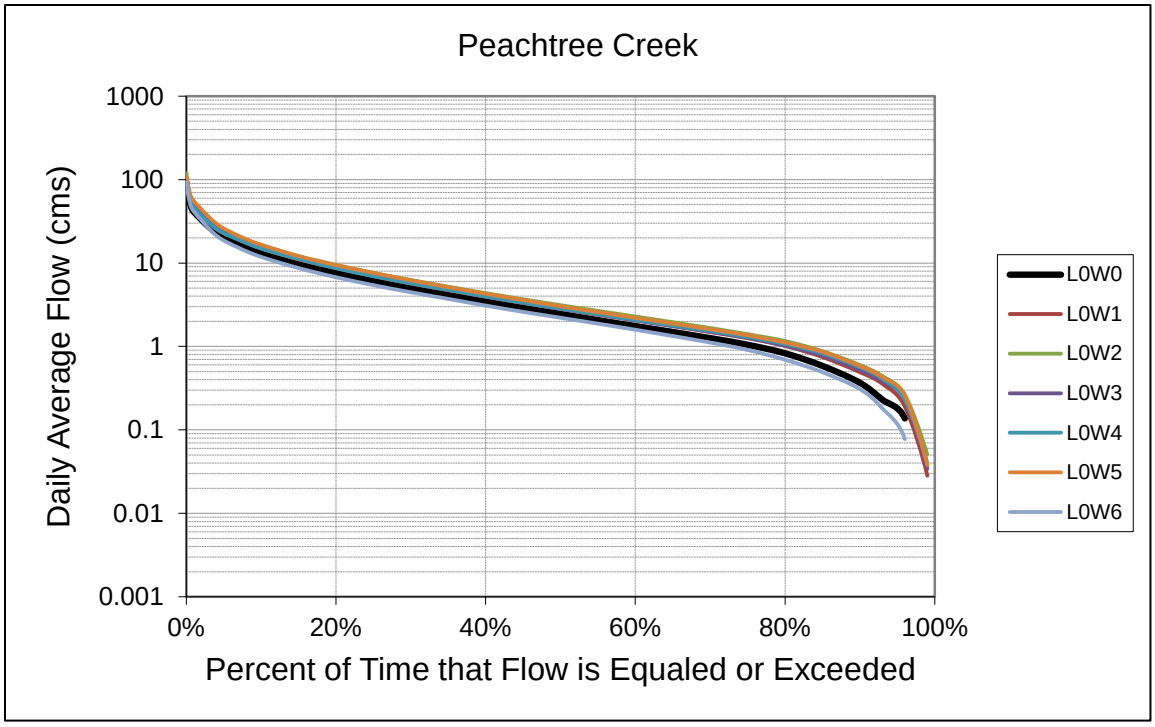

Figure 47. Flow Duration, Peachtree Creek (SWAT)

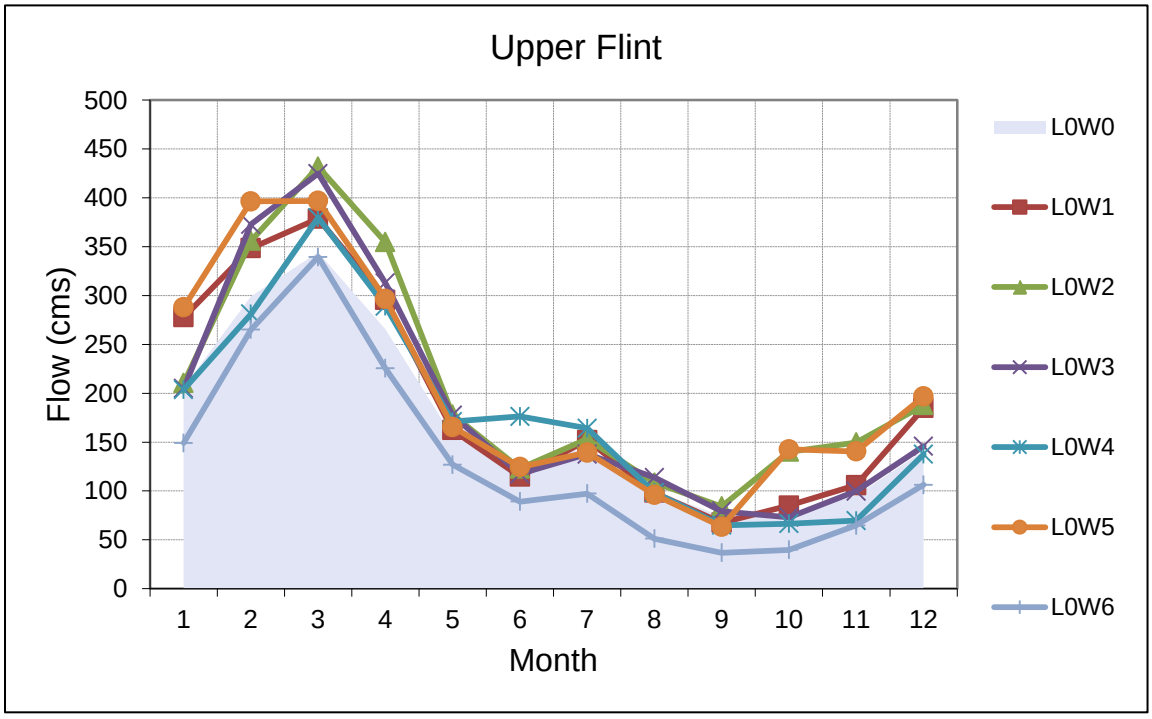

Figure 48. Monthly Average Flows, Upper Flint River (SWAT)

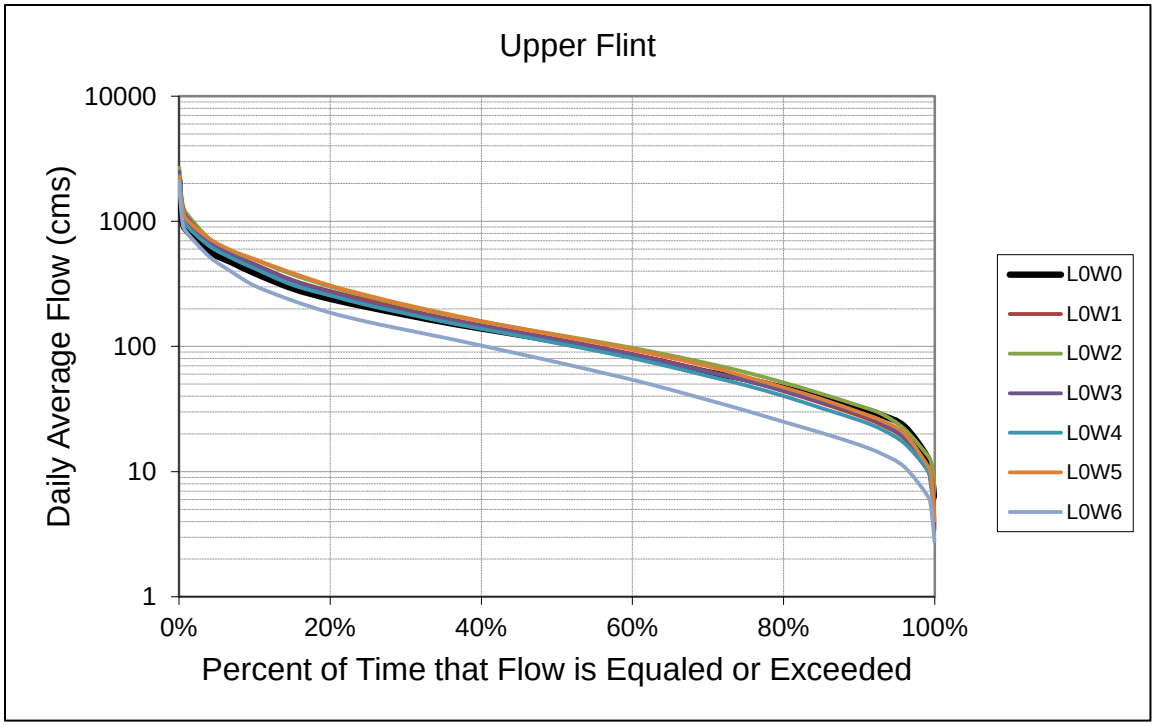

Figure 49. Flow Duration, Upper Flint River (SWAT)

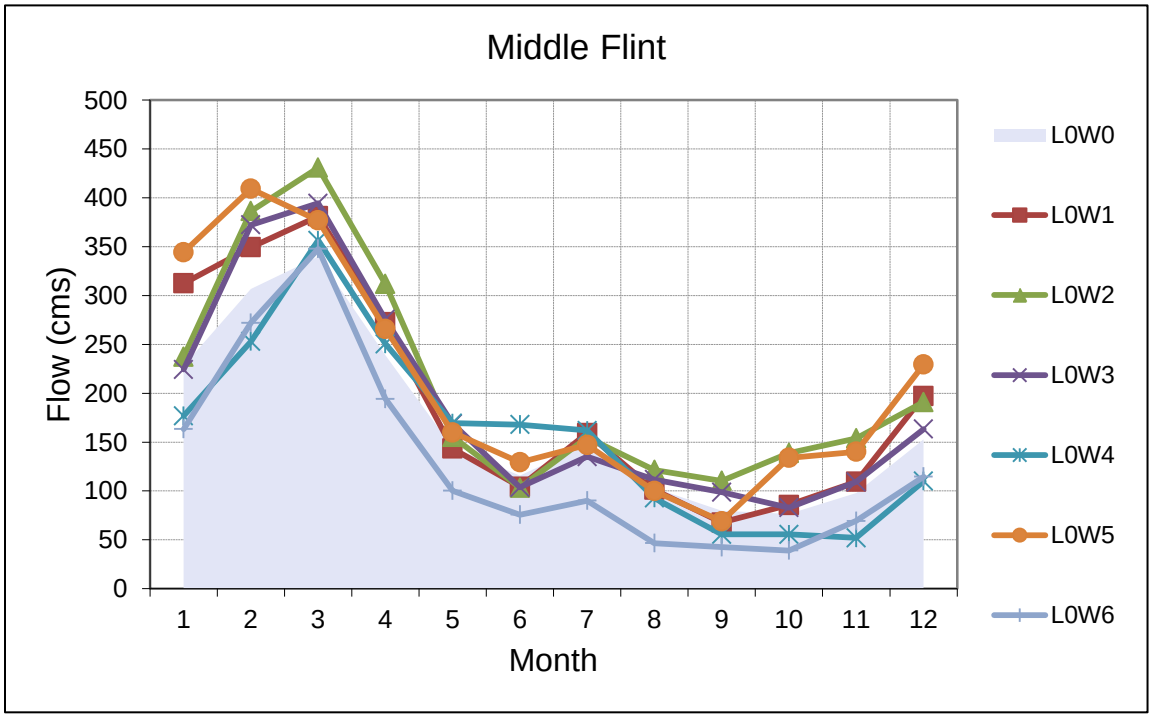

Figure 50. Monthly Average Flows, Middle Flint River (SWAT)

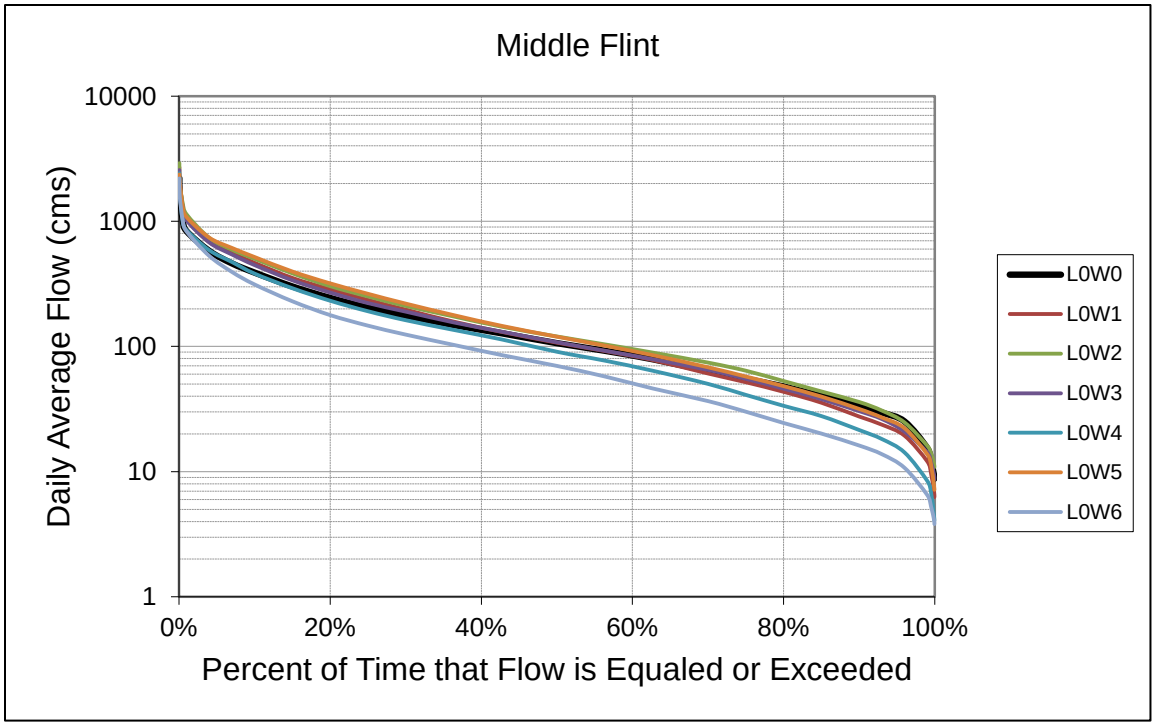

Figure 51. Flow Duration, Middle Flint River (SWAT)

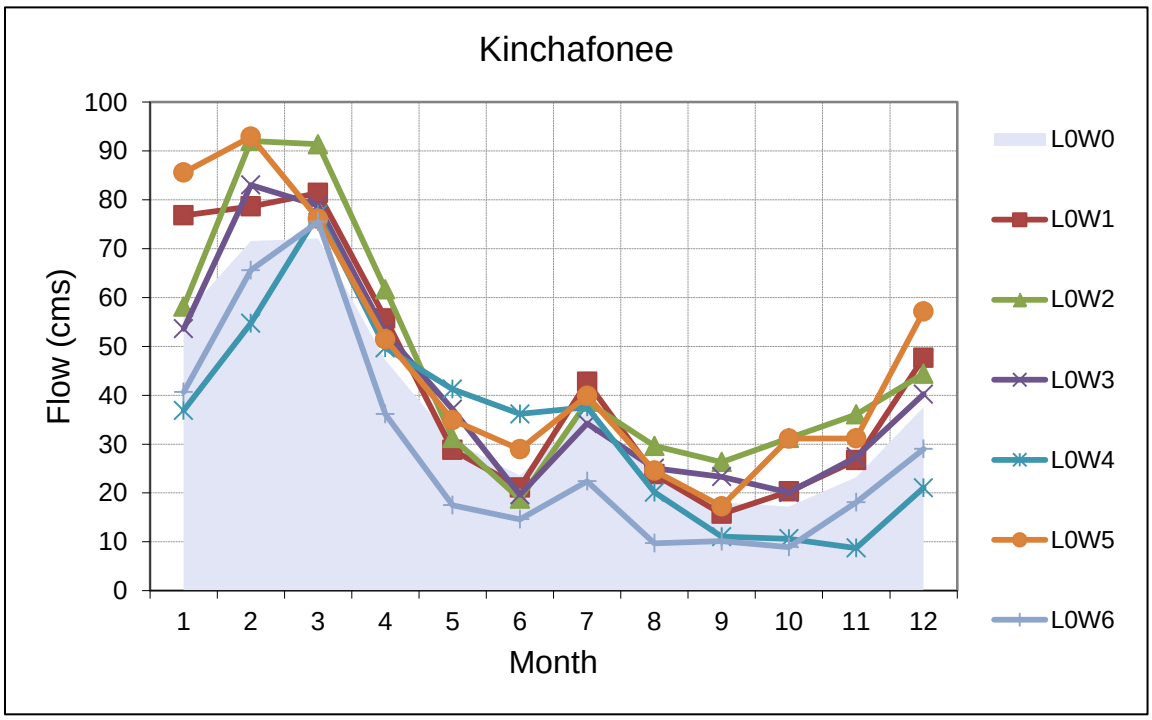

Figure 52. Monthly Average Flows, Kinchafonee River (SWAT)

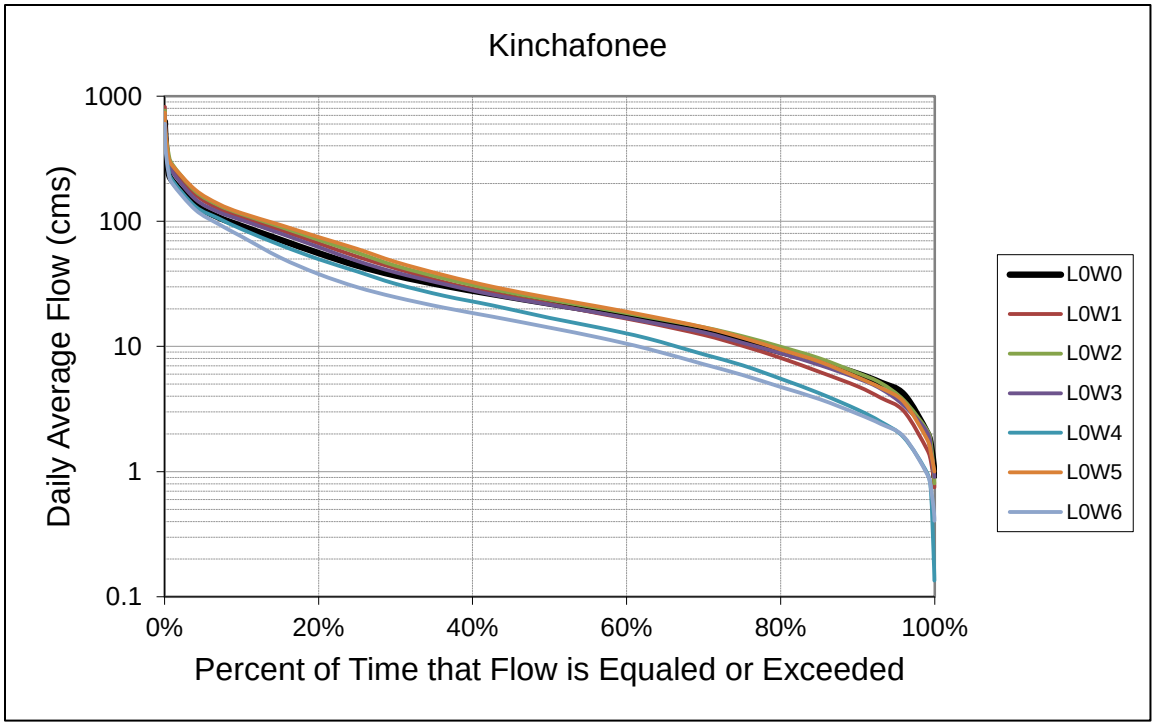

Figure 53. Flow Duration, Kinchafonee River (SWAT)

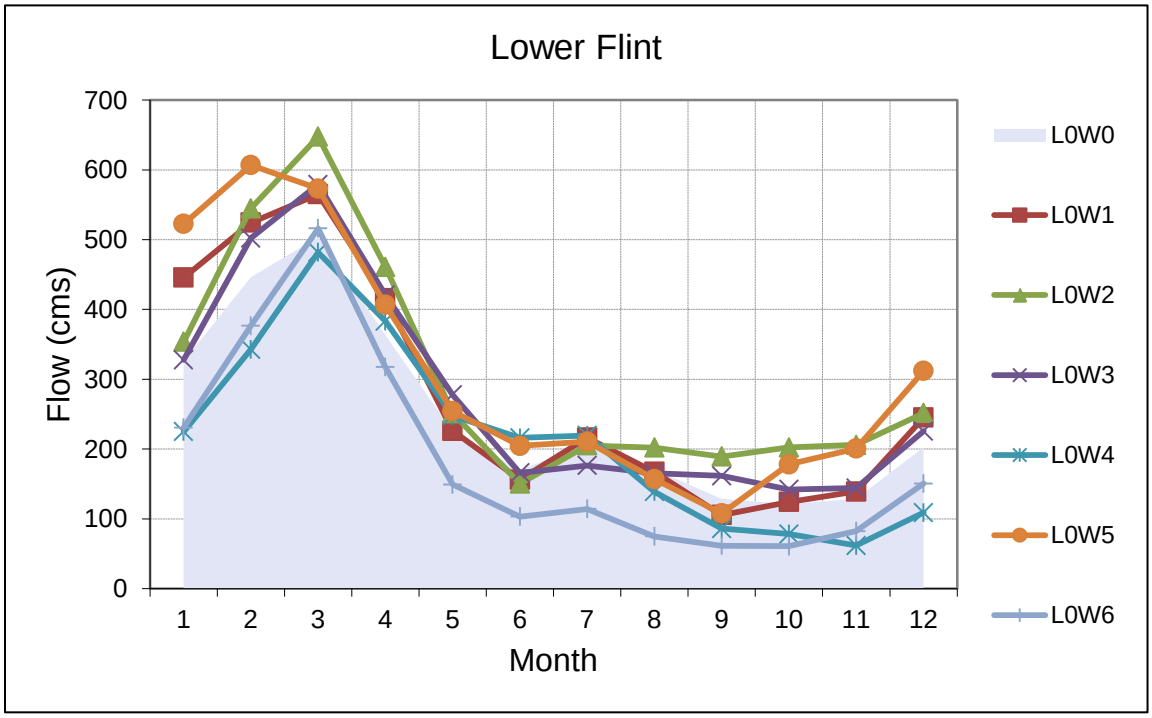

Figure 54. Monthly Average Flows, Lower Flint River (SWAT)

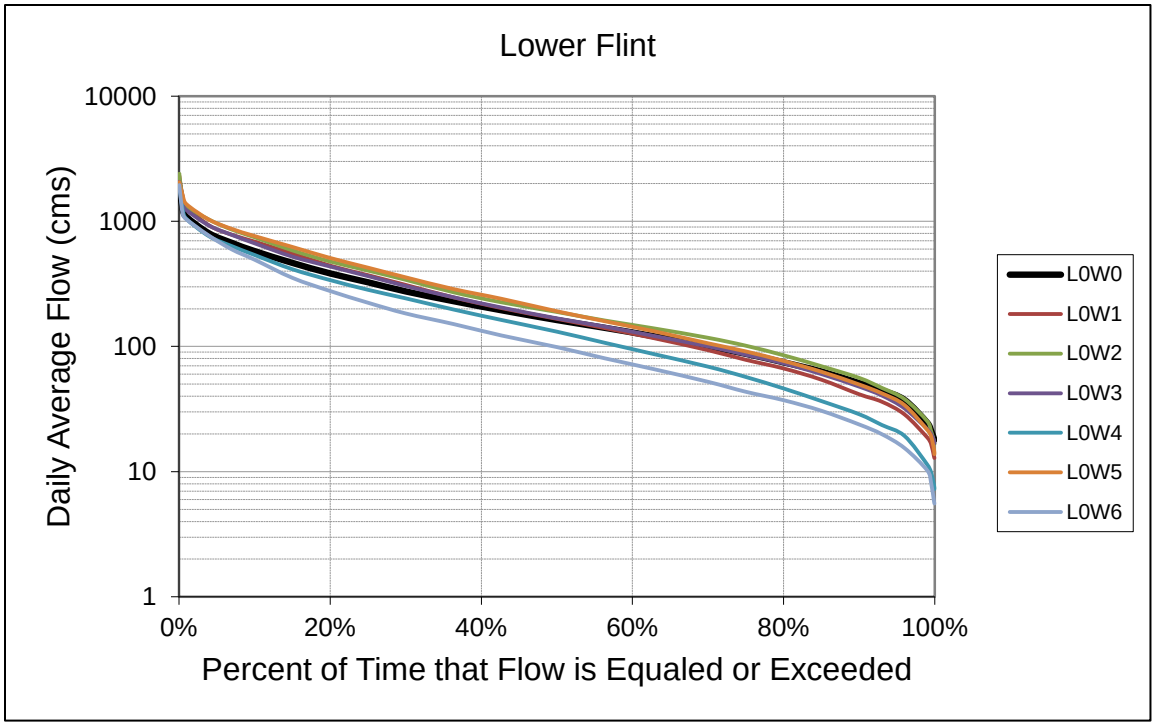

Figure 55. Flow Duration, Lower Flint River (SWAT)

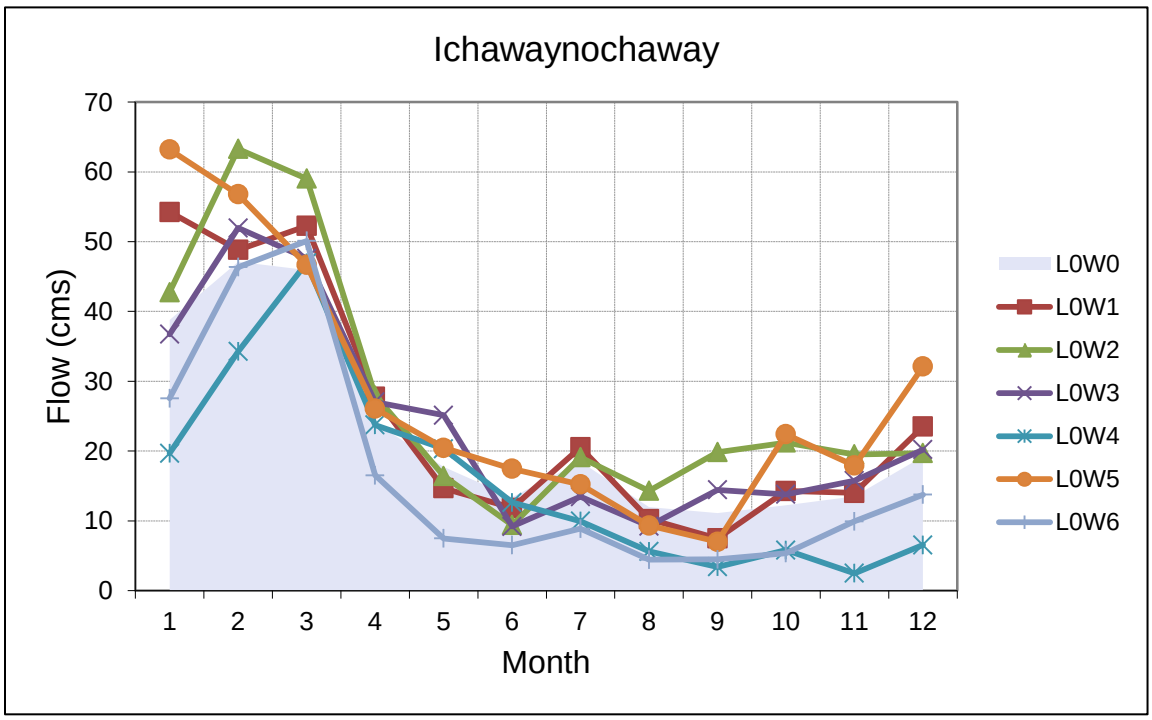

Figure 56. Monthly Average Flows, Ichawaynochaway Creek (SWAT)

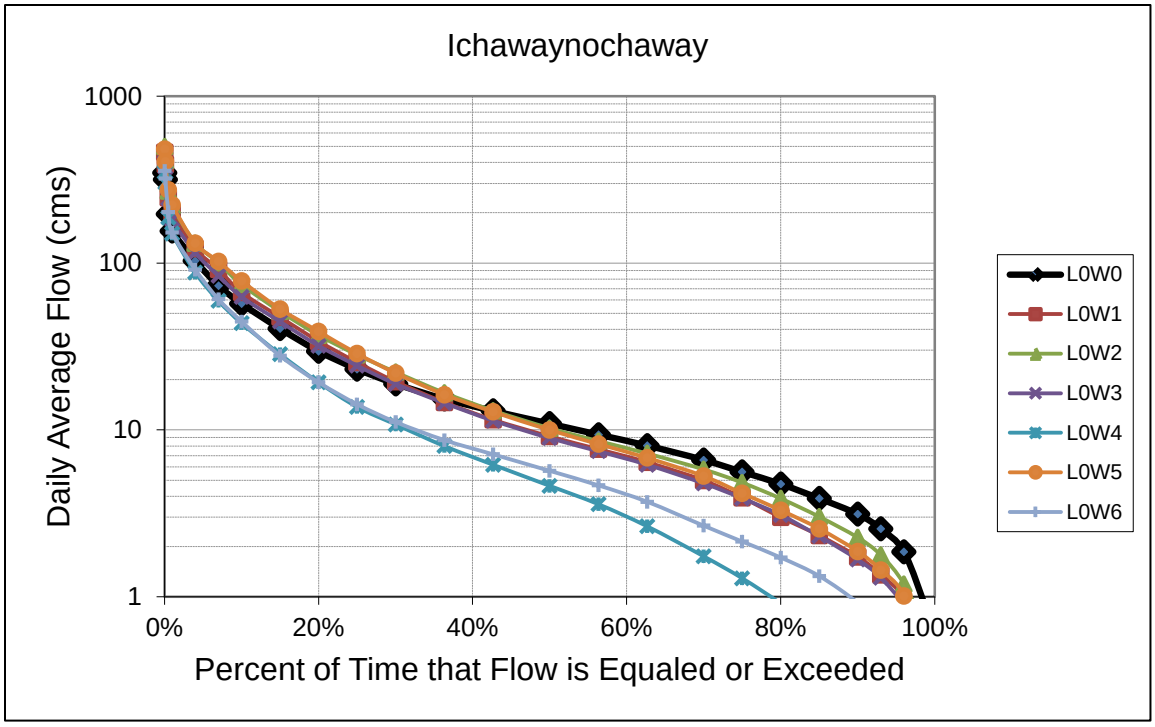

Figure 57. Flow Duration, Ichawaynochaway Creek (SWAT)

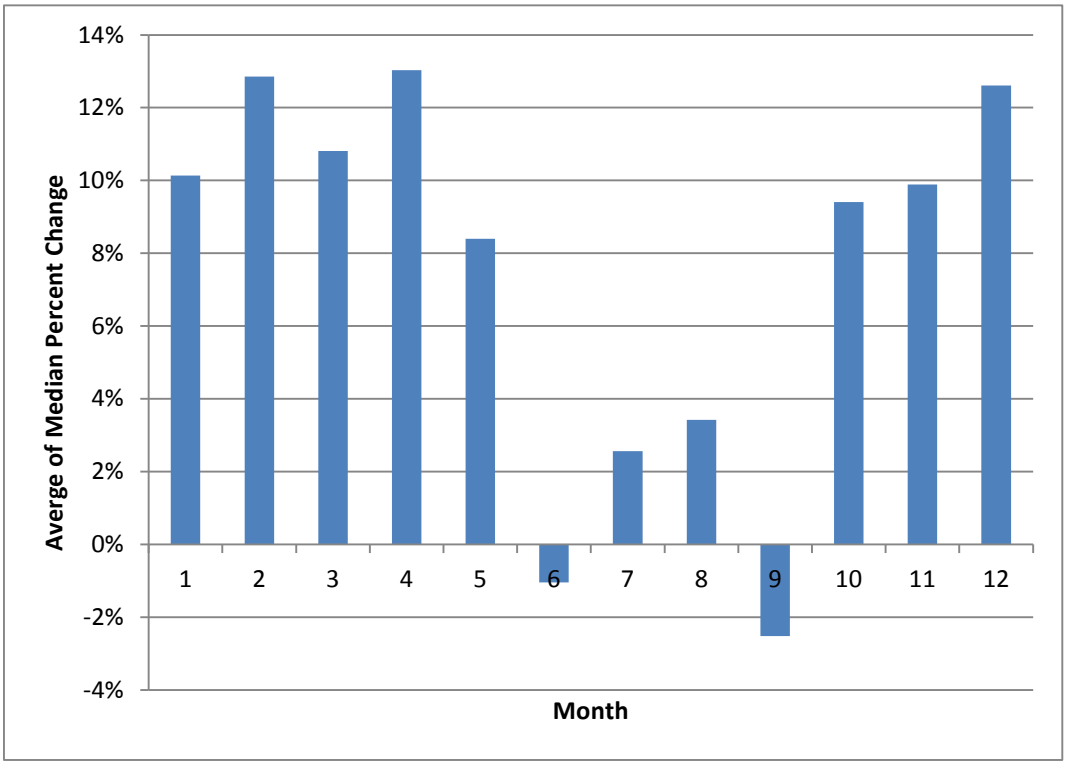

Figure 58. Average of Median Percent Change in Flow; NARCCAP Scenarios W1-W6 at all Stations, Apalachicola-Chattahoochee-Flint Basin (SWAT)

Verde-Salt-San Pedro Basins, HSPF Model
Results at Downstream Station

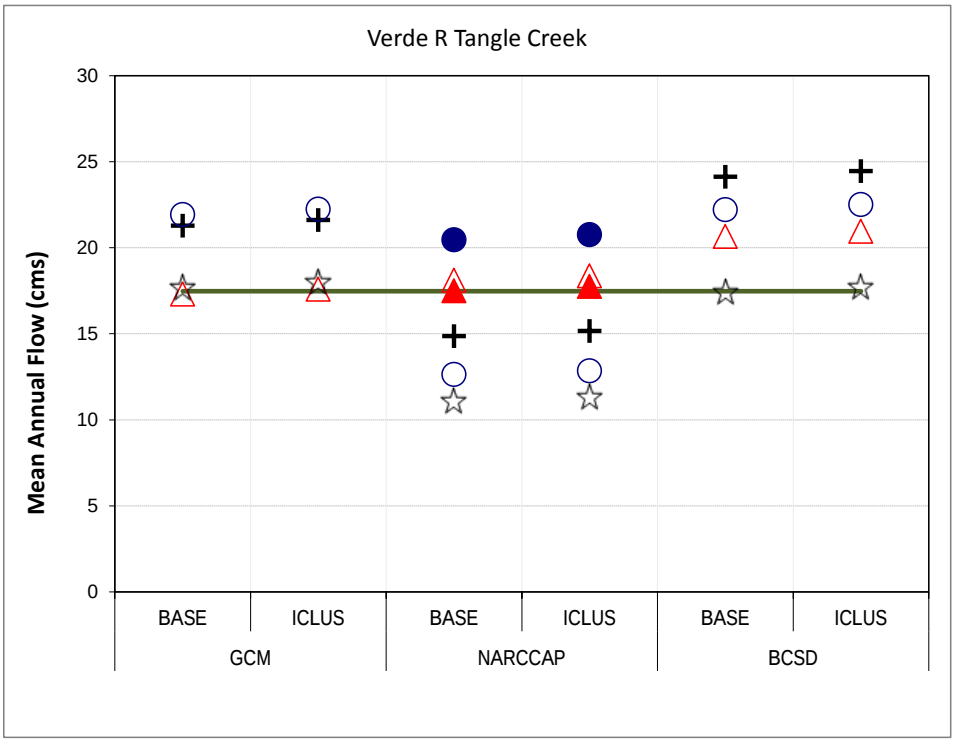

Figure 59. Mean Annual Flow, Verde River below Tangle Creek (HSPF)

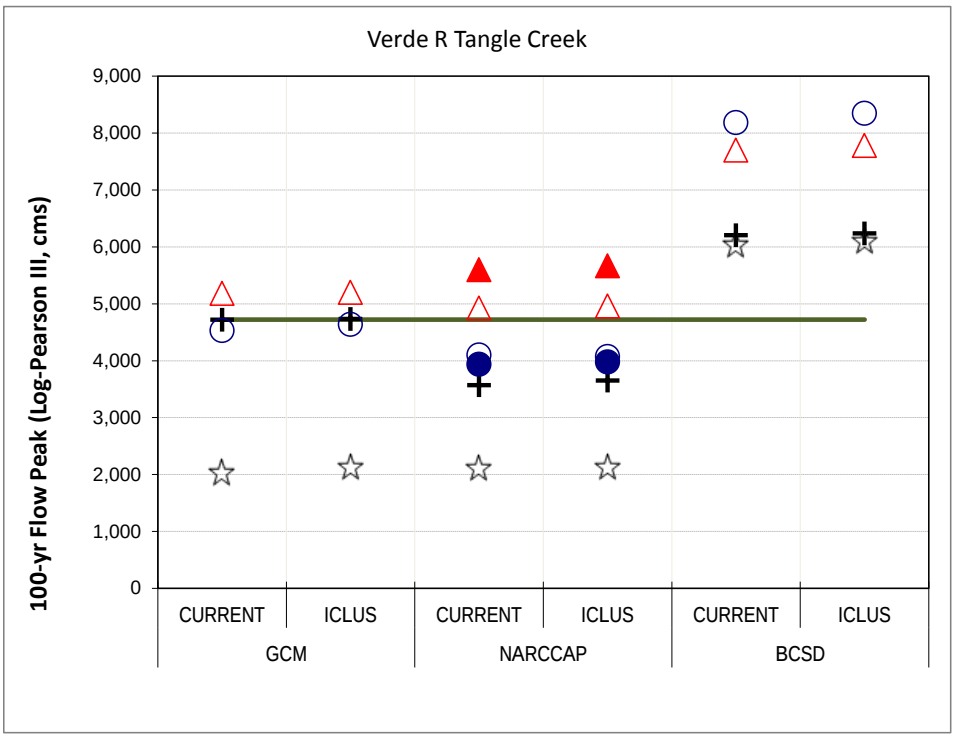

Figure 60. 100-yr Flow Peak, Verde River below Tangle Creek (HSPF)

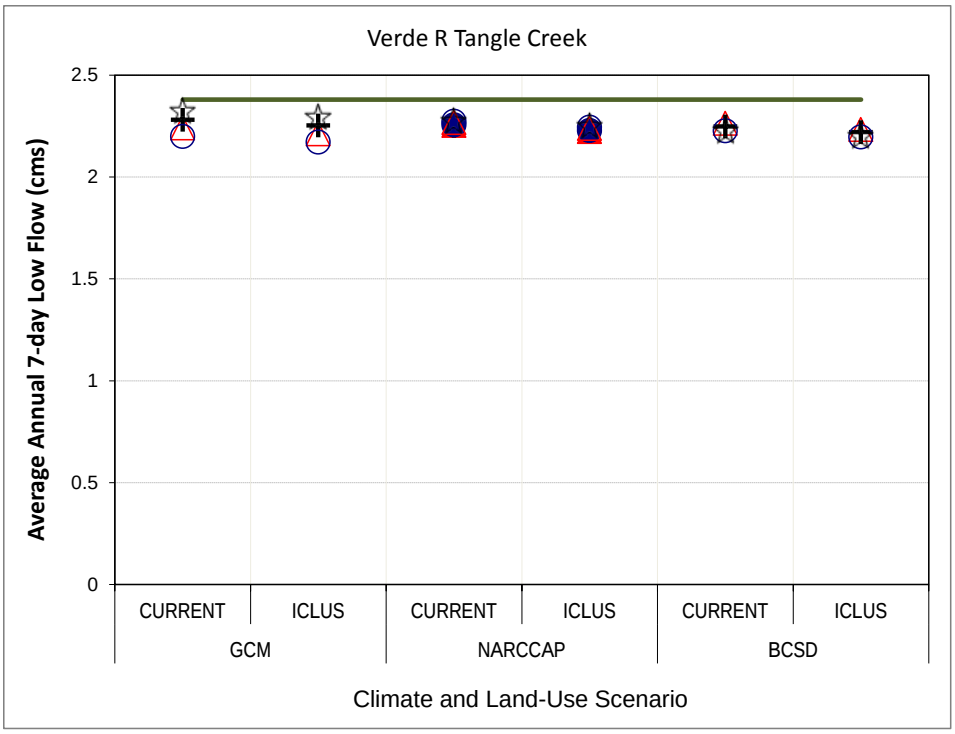

Figure 61. Average Annual 7-day Low Flow, Verde River below Tangle Creek (HSPF)

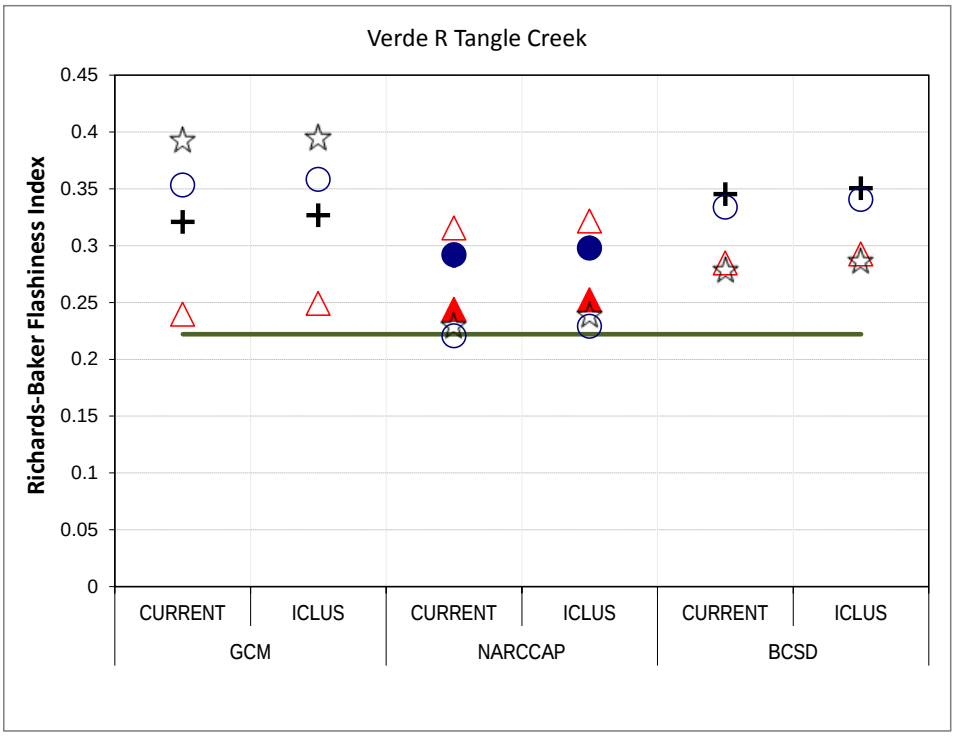

Figure 62. Richards-Baker Flashiness Index, Verde River below Tangle Creek (HSPF)

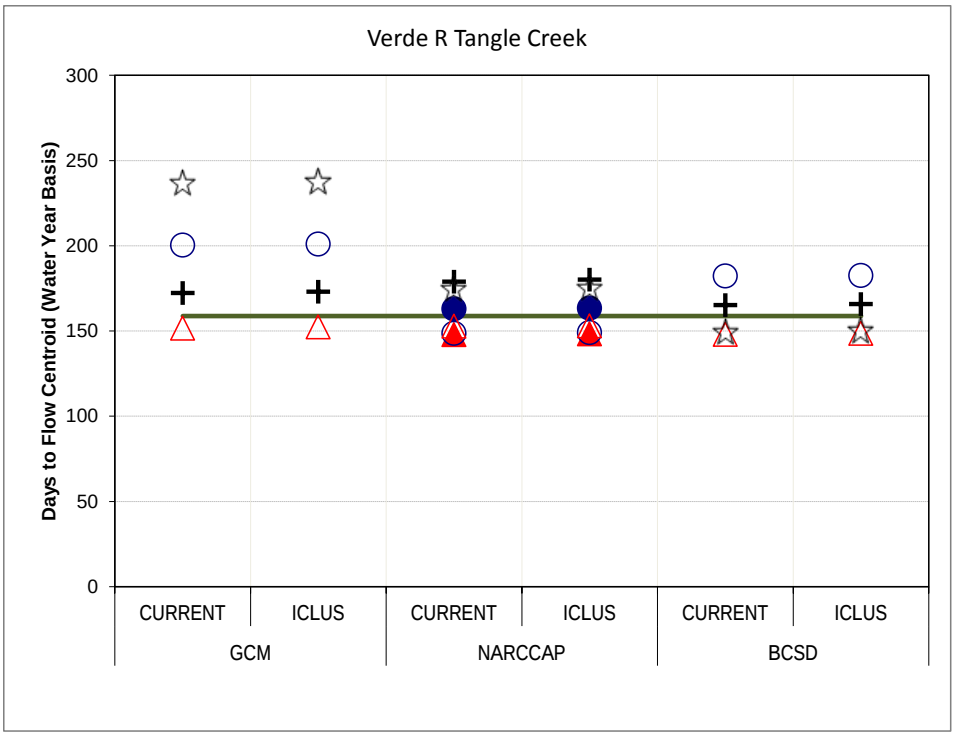

Figure 63. Days to flow Centroid, Verde River below Tangle Creek (HSPF)

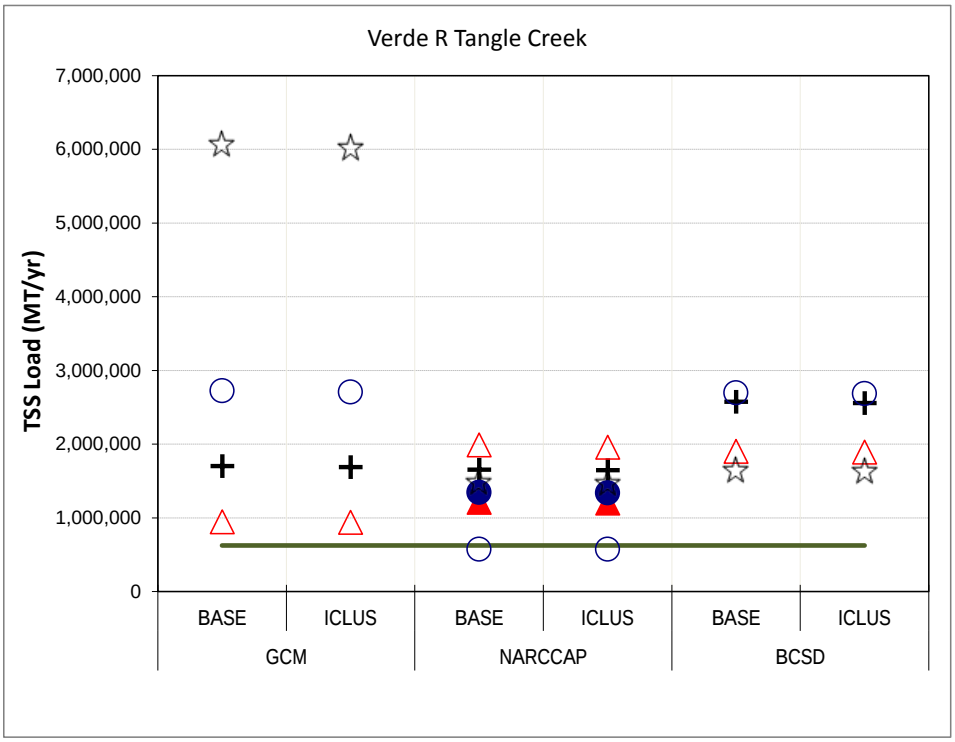

Figure 64. TSS Load, Verde River below Tangle Creek (HSPF)

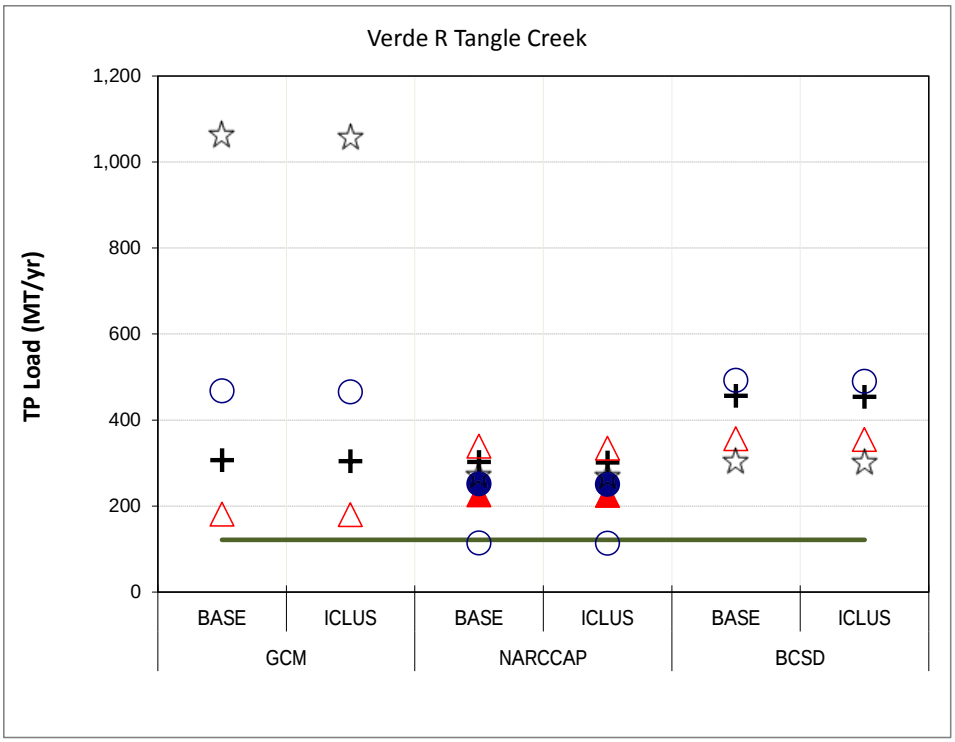

Figure 65. TP Load, Verde River below Tangle Creek (HSPF)

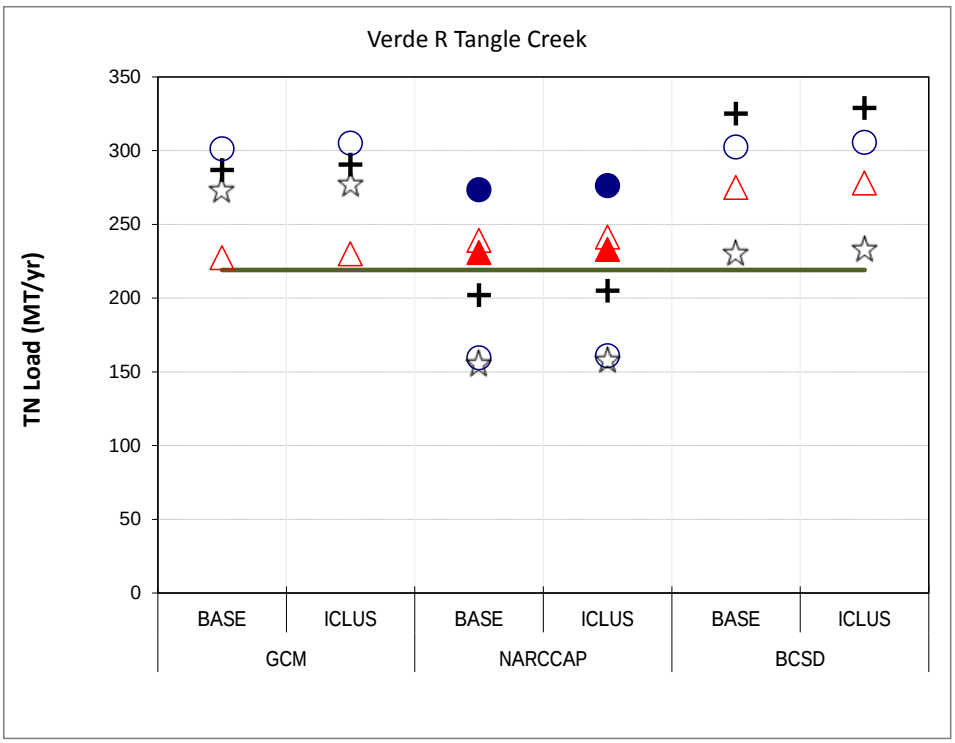

Figure 66. TN Load, Verde River below Tangle Creek (HSPF)

Results at Multiple Stations

Table 3. Summary of Range of Change Relative to Existing Conditions for NARCCAP Dynamically Downscaled Scenarios, Verde-Salt-San Pedro Basins (HSPF)

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Verde River nr Paulden (gage 09503700)								
Flow	-19.22%	13.20%	4.35%	21.91%	-19.77%	11.36%	2.87%	20.01%
TSS	-46.64%	279.87%	325.08%	921.15%	-46.06%	264.17%	308.86%	890.16%
TN	-24.46%	17.02%	6.57%	24.87%	-26.72%	15.54%	6.06%	23.92%
TP	-35.96%	215.57%	248.32%	702.29%	-35.51%	210.93%	244.42%	702.04%
Verde River nr Clarkdale (gage 09504000)								
Flow	-28.25%	-3.86%	-6.28%	16.58%	-28.44%	-3.93%	-6.39%	16.14%
TSS	-54.11%	117.39%	154.81%	443.83%	-53.86%	113.80%	152.75%	439.42%
TN	-31.46%	2.79%	-1.53%	26.70%	-32.01%	2.92%	-1.43%	26.45%
TP	-50.03%	82.97%	115.72%	349.54%	-49.86%	81.08%	115.16%	348.35%
Oak Creek at Sedona (gage 09504430)								
Flow	-38.15%	-19.65%	-18.62%	14.90%	-37.84%	-19.53%	-18.48%	14.93%
TSS	-61.24%	-22.59%	11.14%	164.74%	-61.06%	-21.83%	11.97%	167.07%
TN	-35.08%	-11.82%	-10.35%	33.10%	-35.14%	-11.77%	-10.23%	33.35%
TP	-56.30%	-21.87%	8.85%	146.41%	-56.16%	-21.22%	9.58%	148.54%
Oak Creek at Cornville (gage 09504500)								
Flow	-37.33%	-18.41%	-17.40%	15.51%	-36.86%	-18.22%	-17.19%	15.51%
TSS	-61.08%	-23.51%	11.98%	164.82%	-60.86%	-22.75%	12.66%	166.85%
TN	-28.75%	-9.49%	-8.30%	26.81%	-28.89%	-9.43%	-8.15%	27.18%
TP	-52.97%	-22.59%	7.87%	135.13%	-52.89%	-21.97%	8.55%	137.46%
West Clear Creek at Camp Verde (gage 09505800)								
Flow	-43.20%	-18.41%	-16.72%	10.66%	-43.12%	-18.37%	-16.70%	10.65%
TSS	-44.58%	73.76%	63.12%	161.47%	-44.63%	73.64%	62.98%	161.31%
TN	-43.49%	-16.25%	-13.93%	18.10%	-43.41%	-16.20%	-13.90%	18.13%
TP	-41.20%	58.84%	51.02%	135.70%	-41.22%	58.66%	50.85%	135.47%
Verde River at Camp Verde (gage 09506000)								
Flow	-39.47%	-10.71%	-12.65%	17.18%	-38.81%	-10.51%	-12.50%	16.91%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TSS	-37.08%	97.58%	107.27%	280.92%	-36.84%	96.97%	105.74%	275.63%
TN	-33.23%	-3.95%	-6.35%	26.09%	-32.66%	-3.65%	-6.14%	26.13%
TP	-34.75%	79.98%	87.03%	222.59%	-34.52%	79.70%	86.04%	218.97%
East Verde River nr Childs (gage 09507980)								
Flow	-34.22%	-9.91%	-9.06%	11.98%	-34.20%	-9.91%	-9.06%	11.98%
TSS	60.12%	202.10%	219.40%	478.93%	60.11%	202.07%	219.38%	478.93%
TN	-19.93%	-7.00%	-5.28%	16.29%	-19.91%	-7.00%	-5.27%	16.29%
TP	54.92%	189.14%	205.77%	451.05%	54.92%	189.12%	205.75%	451.05%
Verde River below Tangle Creek (gage 09508500)								
Flow	-36.24%	-7.44%	-9.71%	17.07%	-35.83%	-7.36%	-9.65%	16.89%
TSS	-8.29%	127.73%	120.35%	217.62%	-8.01%	127.01%	119.53%	214.23%
TN	-28.54%	-1.20%	-4.04%	24.81%	-28.17%	-1.01%	-3.91%	24.85%
TP	-6.45%	116.26%	106.51%	178.54%	-6.17%	115.84%	106.05%	176.27%
Salt River nr Roosevelt (gage 09498500)								
Flow	-39.83%	-27.83%	-20.06%	25.58%	-39.80%	-27.83%	-20.06%	25.51%
TSS	-0.96%	142.09%	930.13%	4839.81 %	-1.01%	141.98%	929.57%	4836.98 %
TN	-33.90%	-20.75%	-10.78%	35.77%	-33.89%	-20.79%	-10.82%	35.70%
TP	4.11%	145.45%	962.01%	5023.14 %	4.05%	145.33%	961.41%	5020.12 %
Salt River Outlet								
Flow	-38.23%	-22.22%	-16.28%	24.37%	-38.21%	-22.23%	-16.29%	24.33%
TSS	14.29%	218.77%	865.40%	4239.97 %	14.27%	218.68%	865.08%	4238.43 %
TN	-34.80%	-18.63%	-10.07%	31.43%	-34.79%	-18.66%	-10.09%	31.39%
TP	15.63%	225.65%	899.44%	4422.64 %	15.61%	225.54%	899.09%	4420.97 %
San Pedro River nr Redington (gage 09472000)								
Flow	-33.37%	-1.82%	19.76%	87.15%	-33.37%	-1.83%	19.76%	87.13%
TSS	-63.44%	447.10%	647.37%	1888.65 %	-63.43%	447.01%	647.19%	1888.12 %

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TN	-53.16%	295.85%	429.27%	1268.83 %	-53.14%	295.76%	429.10%	1268.31 %
TP	-28.80%	-13.76%	5.12%	56.11%	-28.79%	-13.77%	5.12%	56.10%
Aravaipa Crk nr Mammoth (gage 09473000)								
Flow	-1.83%	5.17%	12.10%	36.57%	-1.99%	4.52%	11.57%	36.08%
TSS	-0.17%	6.59%	69.35%	338.59%	-0.22%	6.70%	69.41%	338.36%
TN	-0.15%	20.28%	171.24%	814.29%	-0.42%	20.85%	170.75%	809.21%
TP	-0.30%	-0.06%	0.87%	3.28%	-0.35%	-0.09%	0.84%	3.29%
San Pedro River Outlet								
Flow	-15.97%	2.69%	18.78%	70.25%	-16.15%	2.32%	18.36%	69.40%
TSS	-9.43%	72.40%	176.29%	672.54%	-9.46%	72.38%	176.10%	671.55%
TN	-19.88%	129.84%	312.06%	1179.94 %	-19.86%	129.61%	310.88%	1174.21 %
TP	-2.32%	-0.88%	1.66%	8.51%	-2.41%	-0.96%	1.62%	8.51%

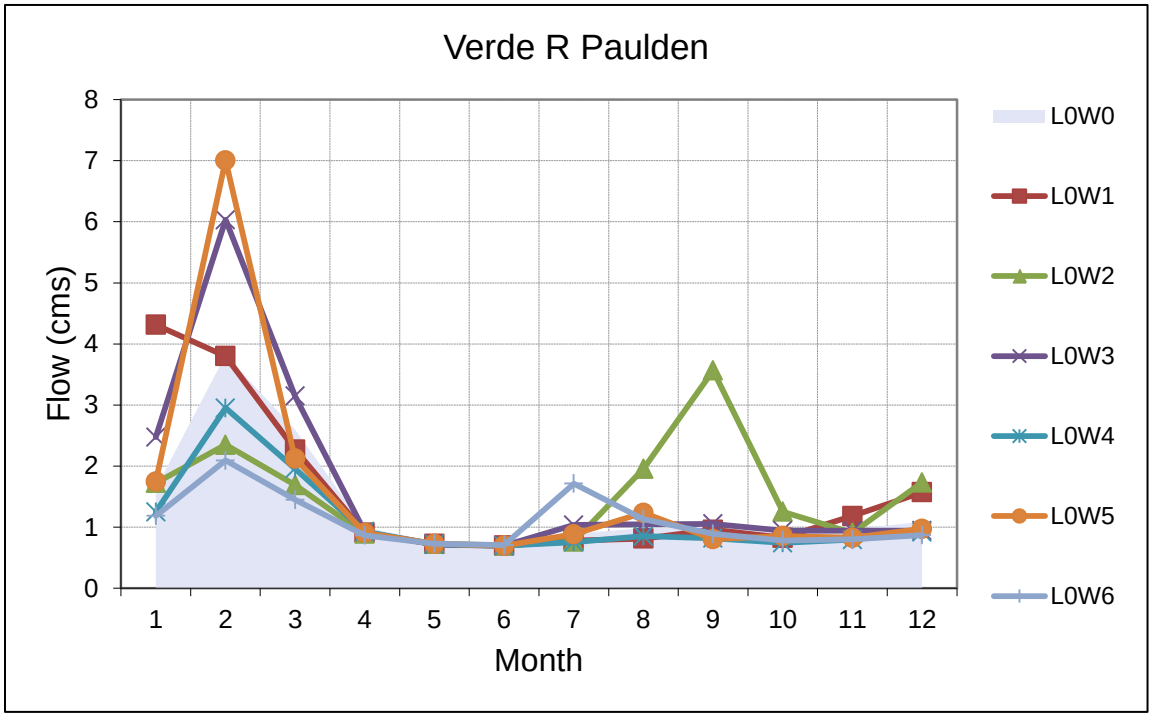

Figure 67. Monthly Average Flows, Verde River near Paulden (HSPF)

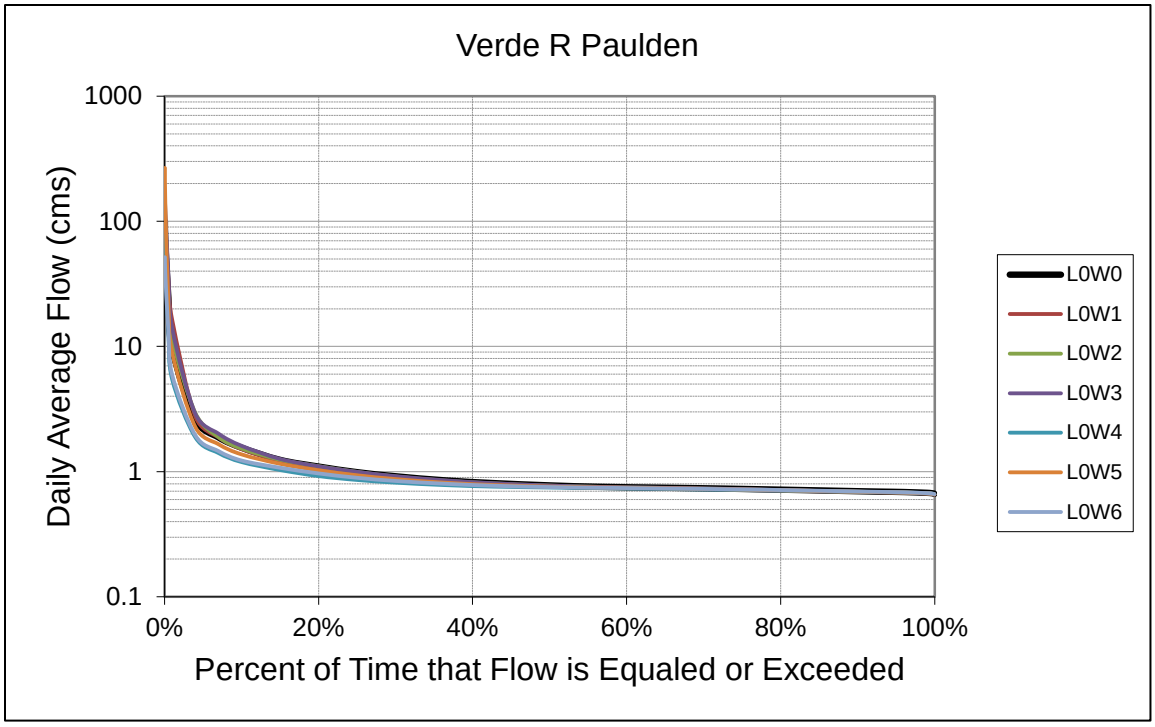

Figure 68. Flow Duration, Verde River near Paulden (HSPF)

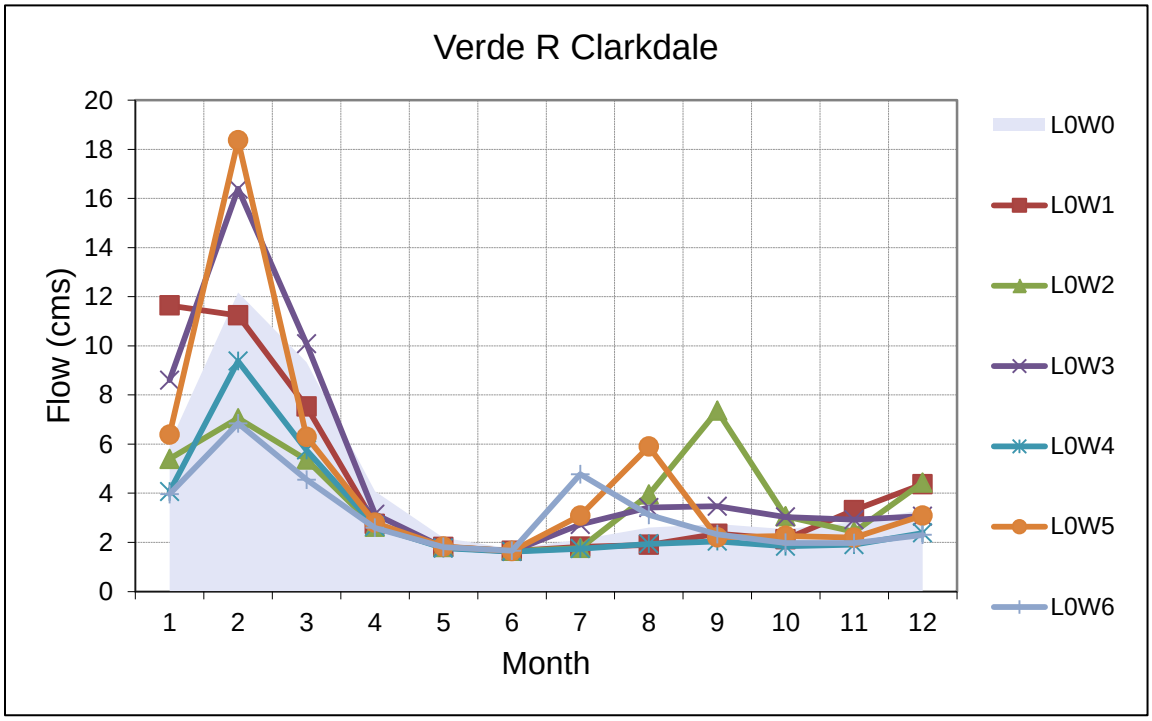

Figure 69. Monthly Average Flows, Verde River near Clarkdale (HSPF)

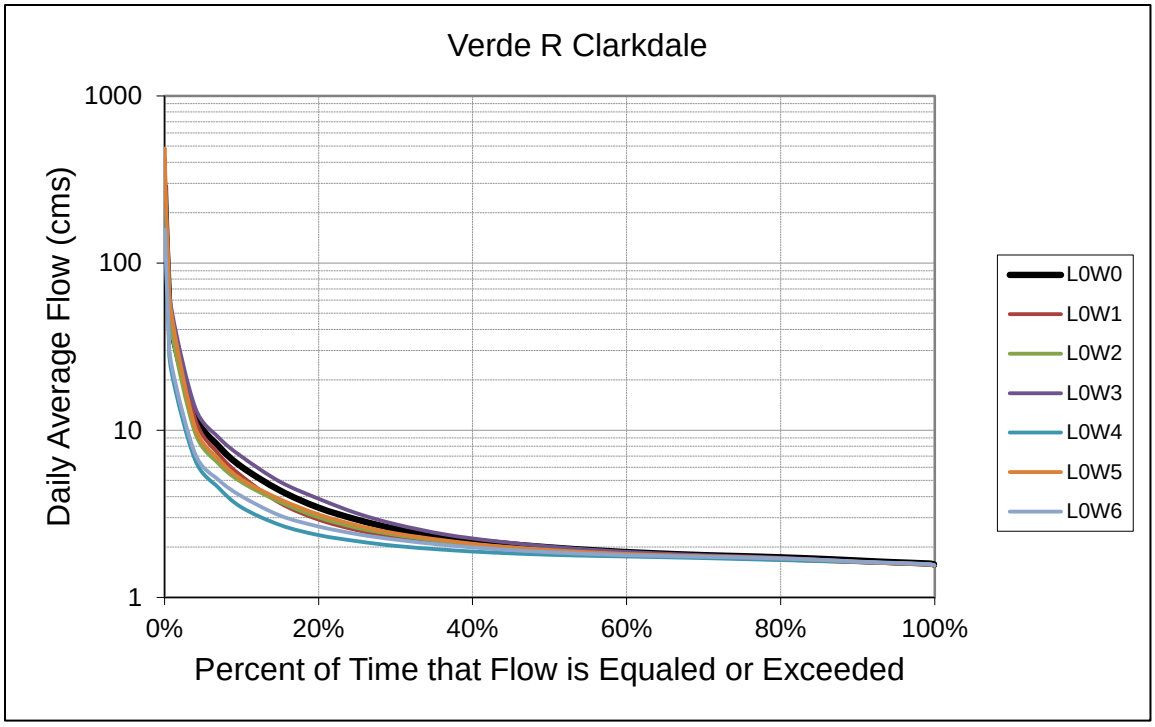

Figure 70. Flow Duration, Verde River near Clarkdale (HSPF)

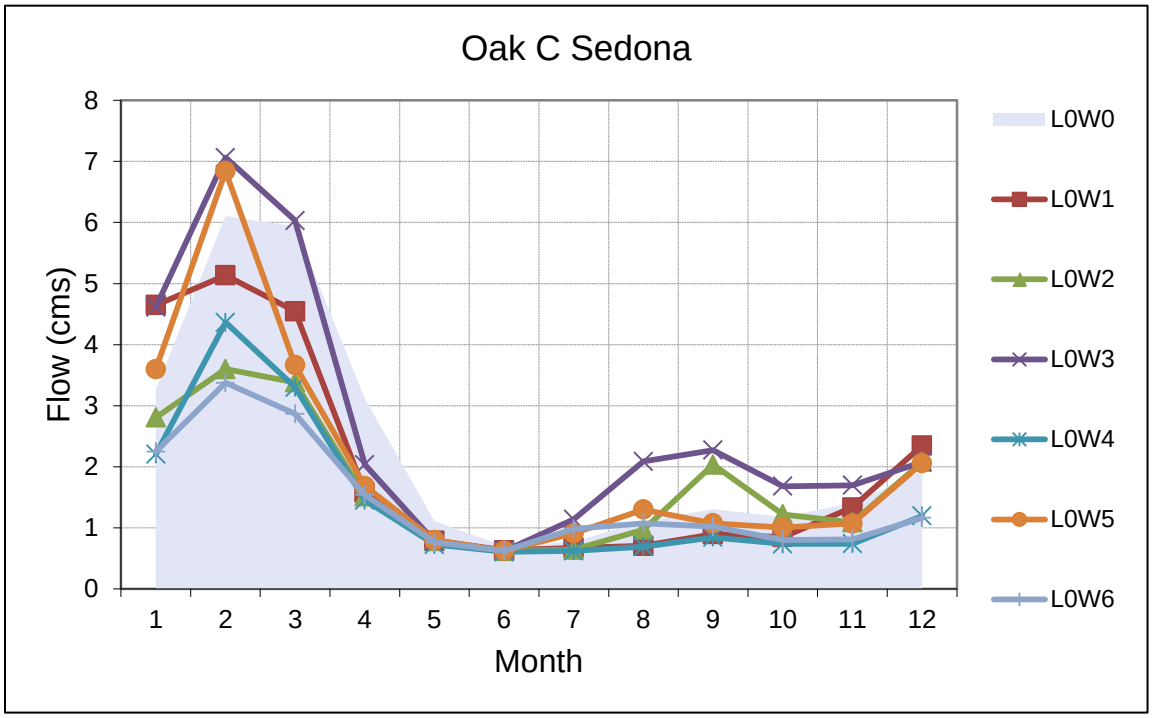

Figure 71. Monthly Average Flows, Oak Creek at Sedona (HSPF)

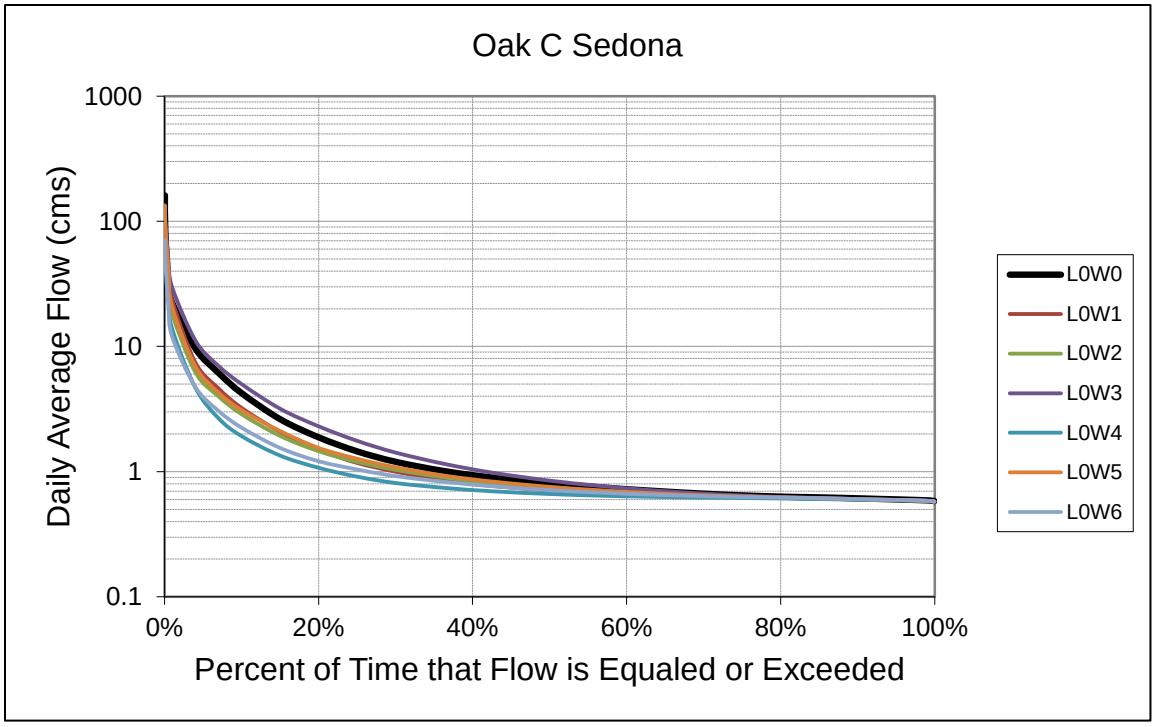

Figure 72. Flow Duration, Oak Creek at Sedona (HSPF)

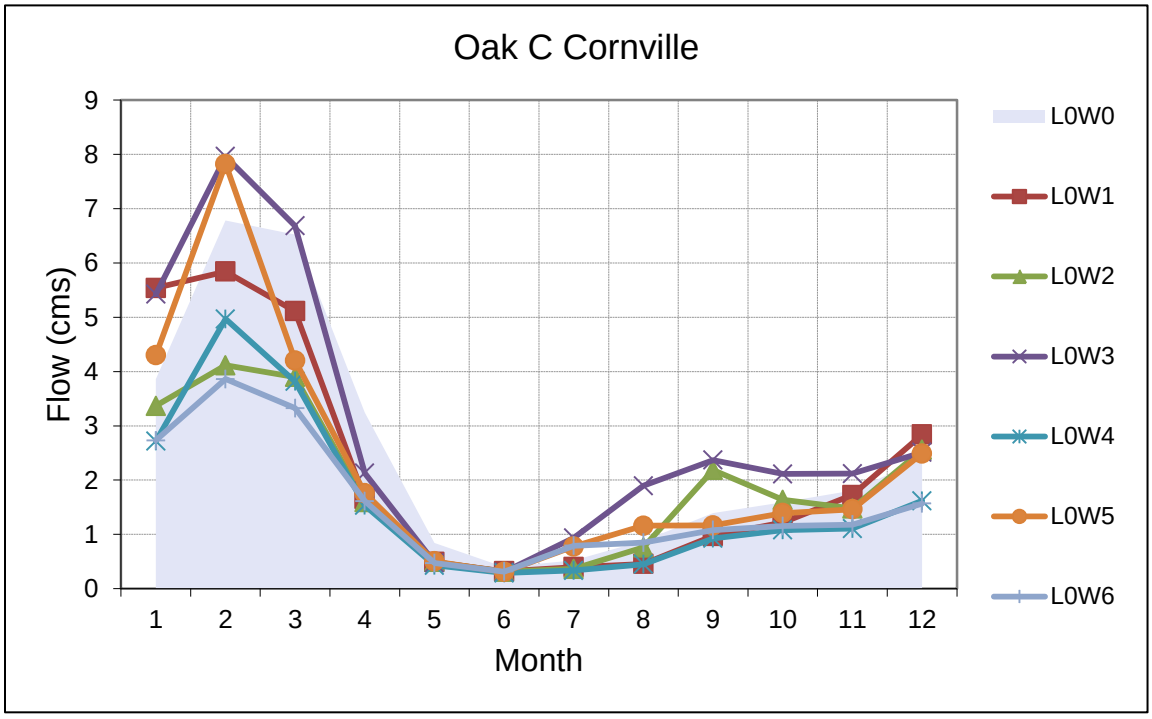

Figure 73. Monthly Average Flows, Oak Creek at Cornville (HSPF)

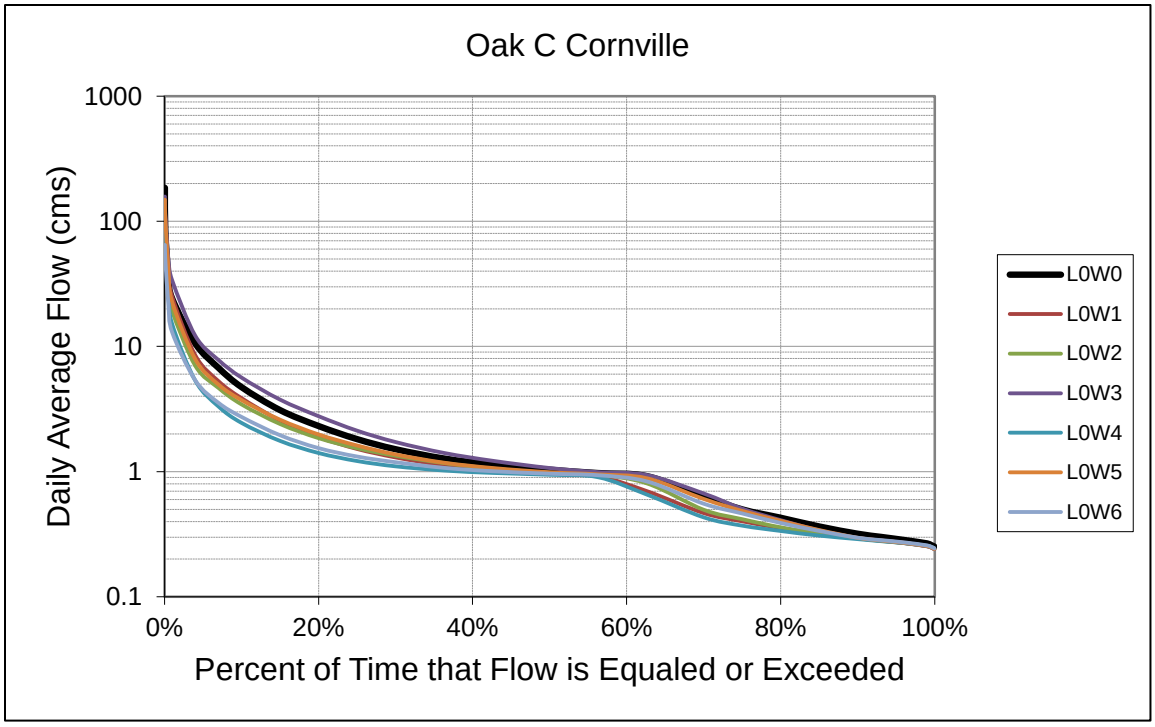

Figure 74. Flow Duration, Oak Creek at Cornville (HSPF)

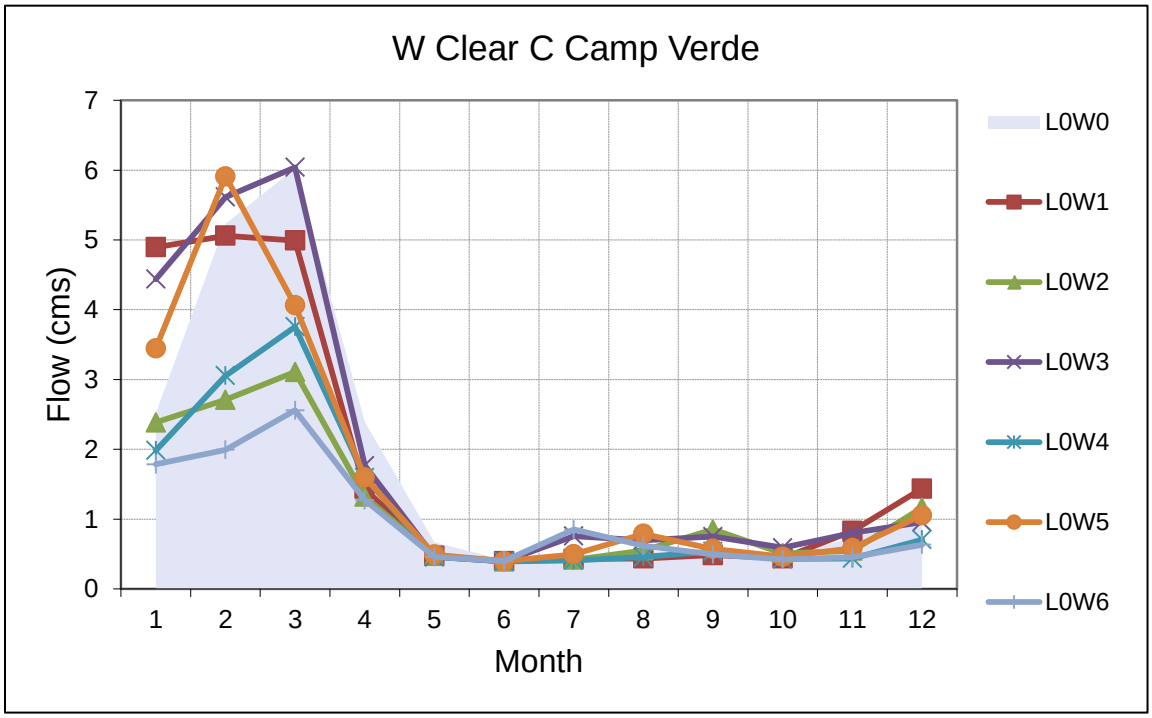

Figure 75. Monthly Average Flows, West Clear Creek at Camp Verde (HSPF)

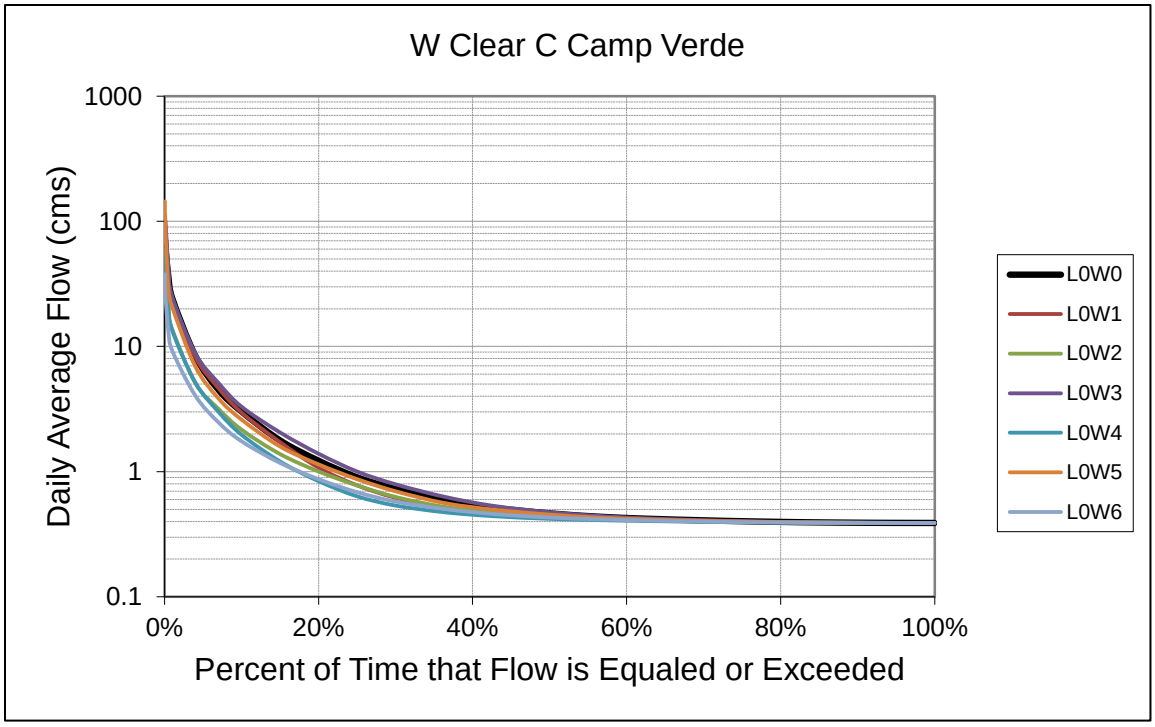

Figure 76. Flow Duration, West Clear Creek at Camp Verde (HSPF)

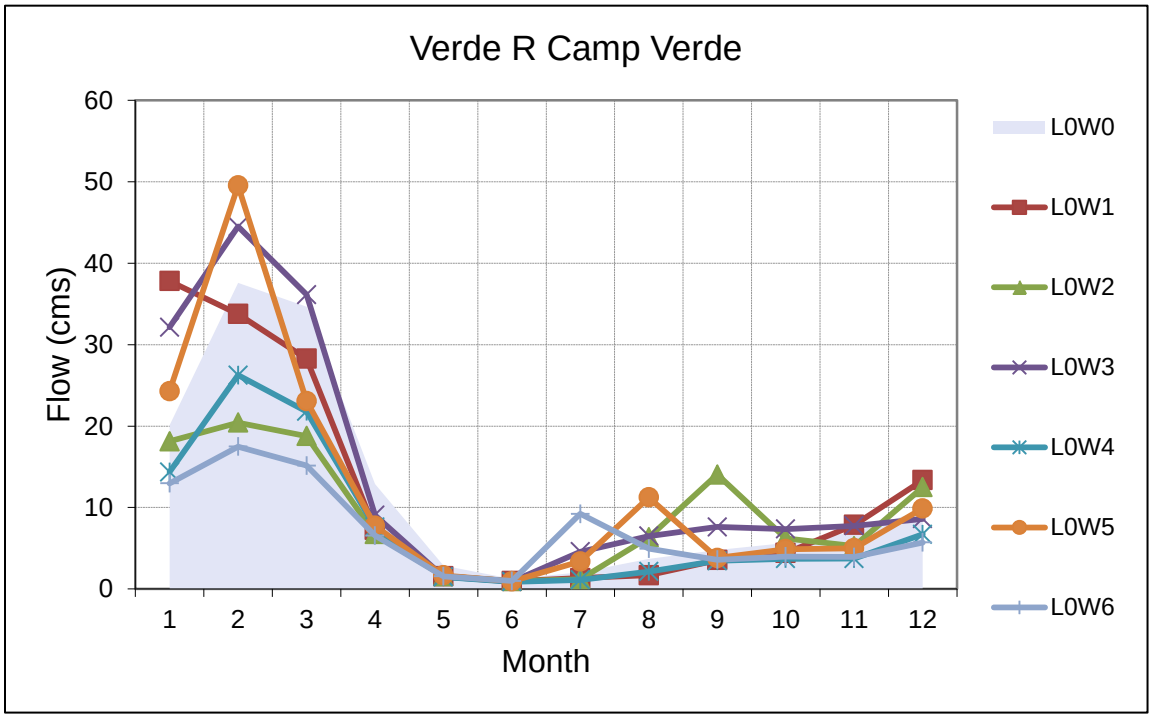

Figure 77. Monthly Average Flows, Verde River at Camp Verde (HSPF)

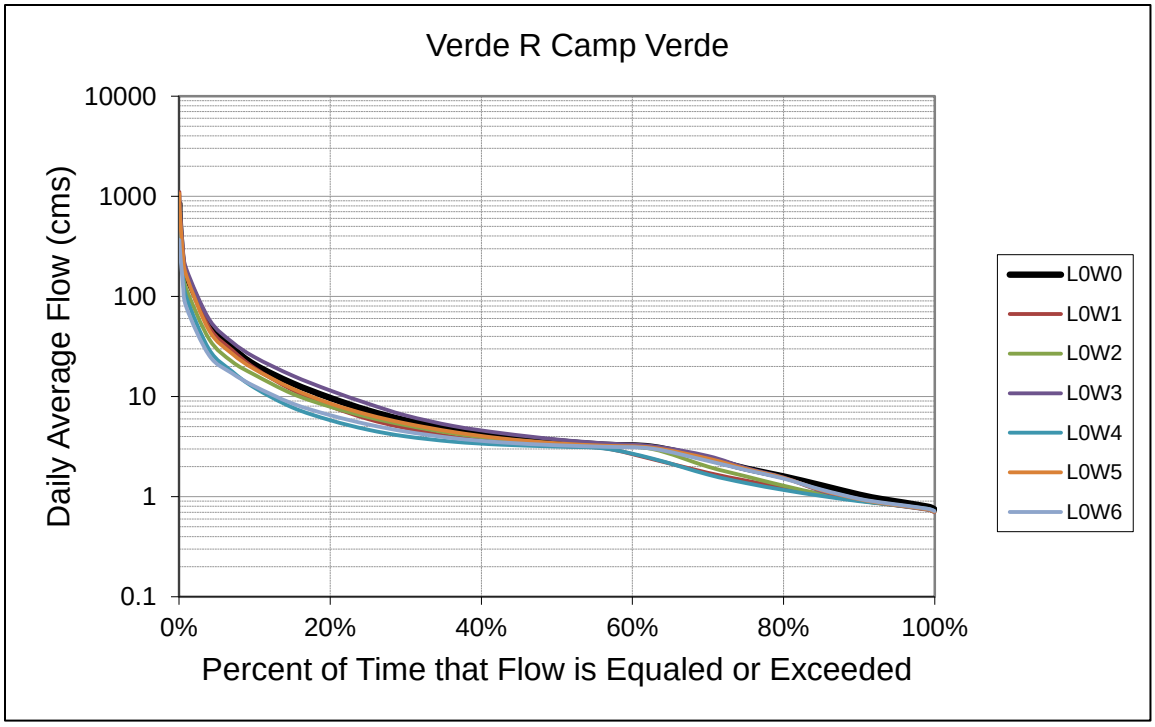

Figure 78. Flow Durations, Verde River at Camp Verde (HSPF)

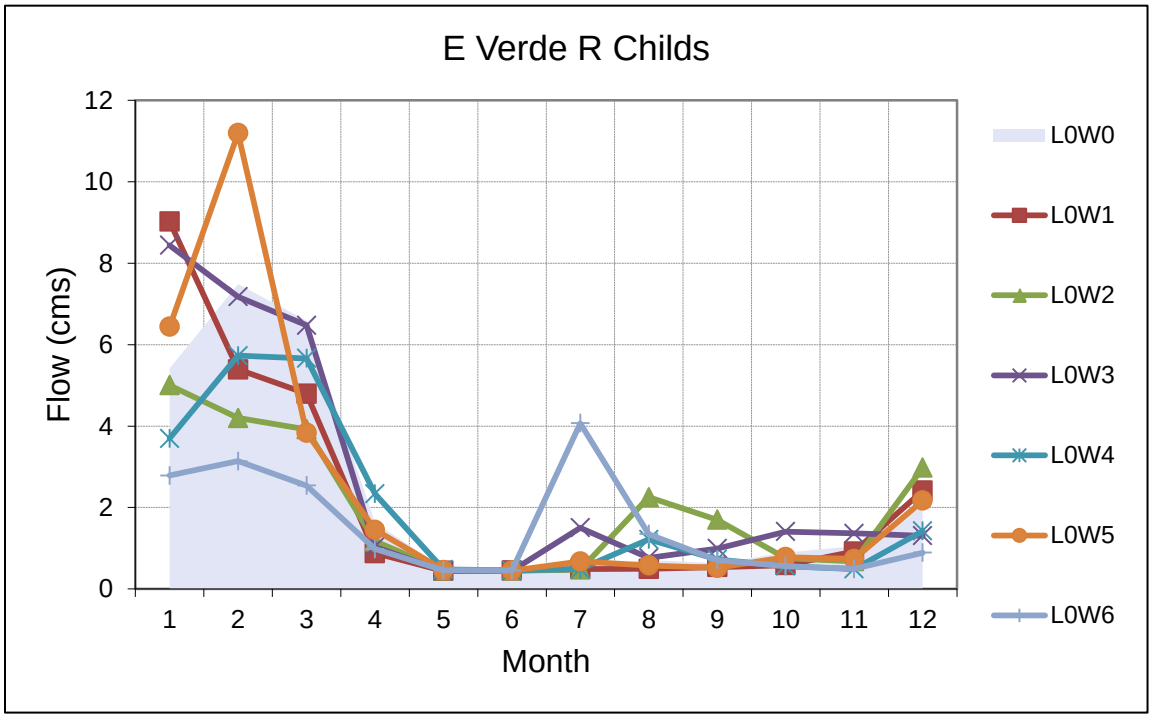

Figure 79. Monthly Average Flows, East Verde River at Childs (HSPF)

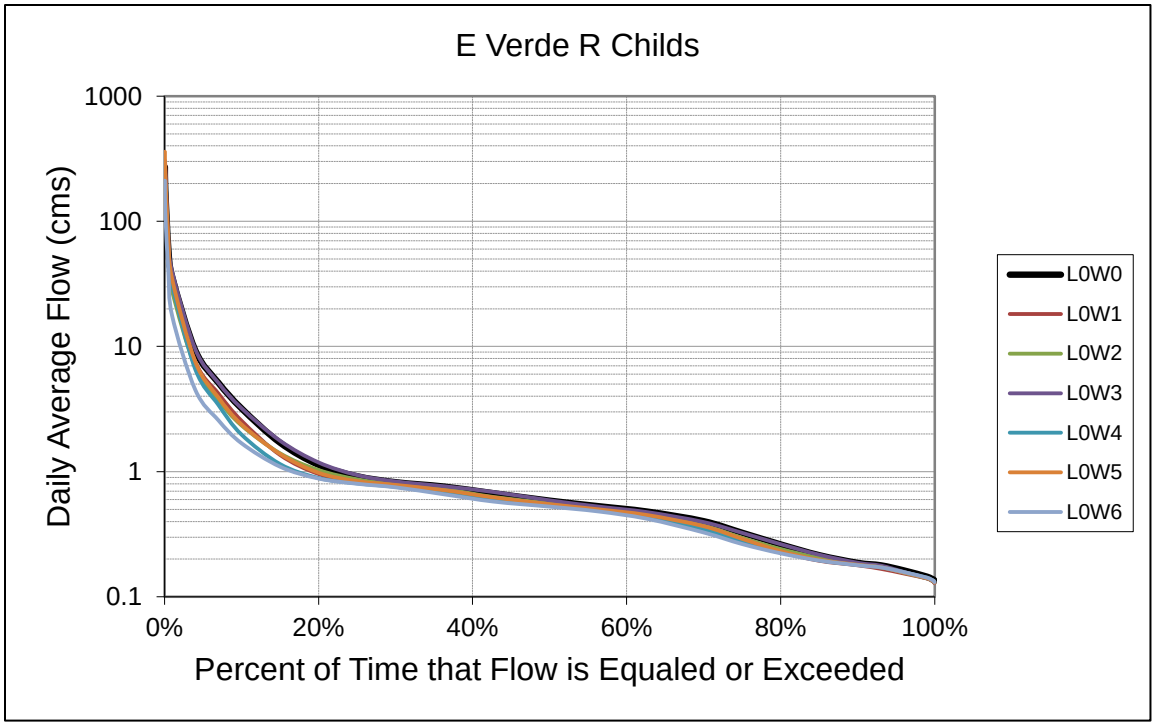

Figure 80. Flow Duration, East Verde River at Childs (HSPF)

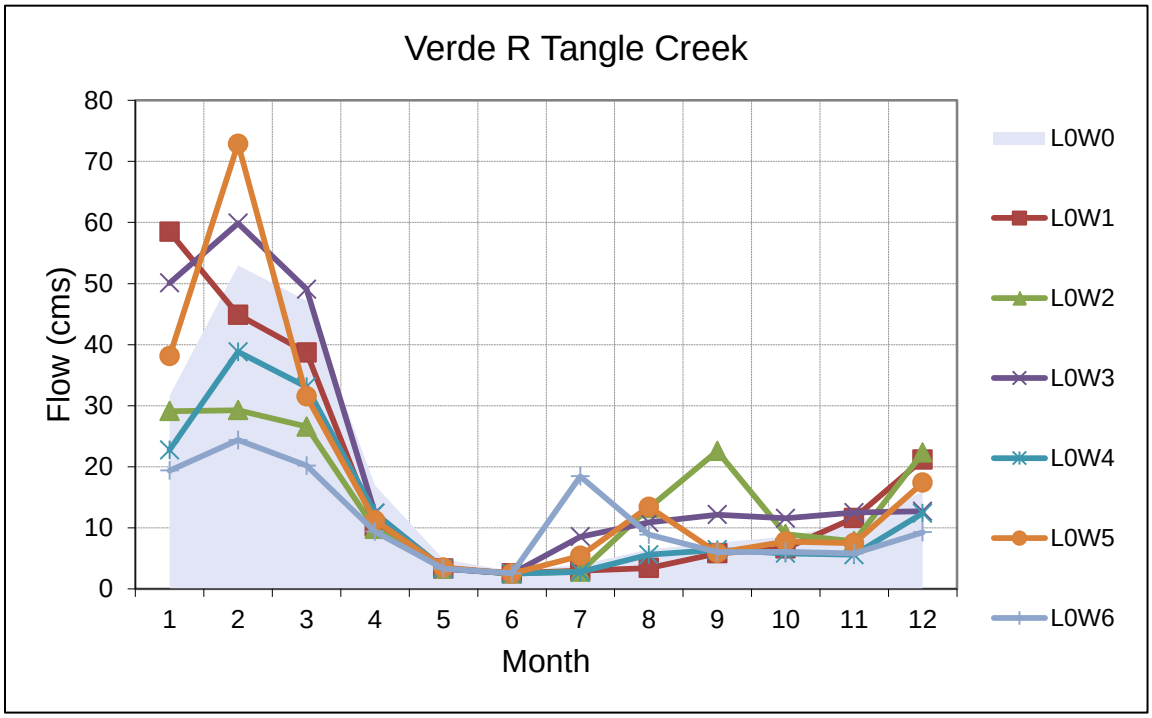

Figure 81. Monthly Average Flows, Verde River at Tangle Creek (HSPF)

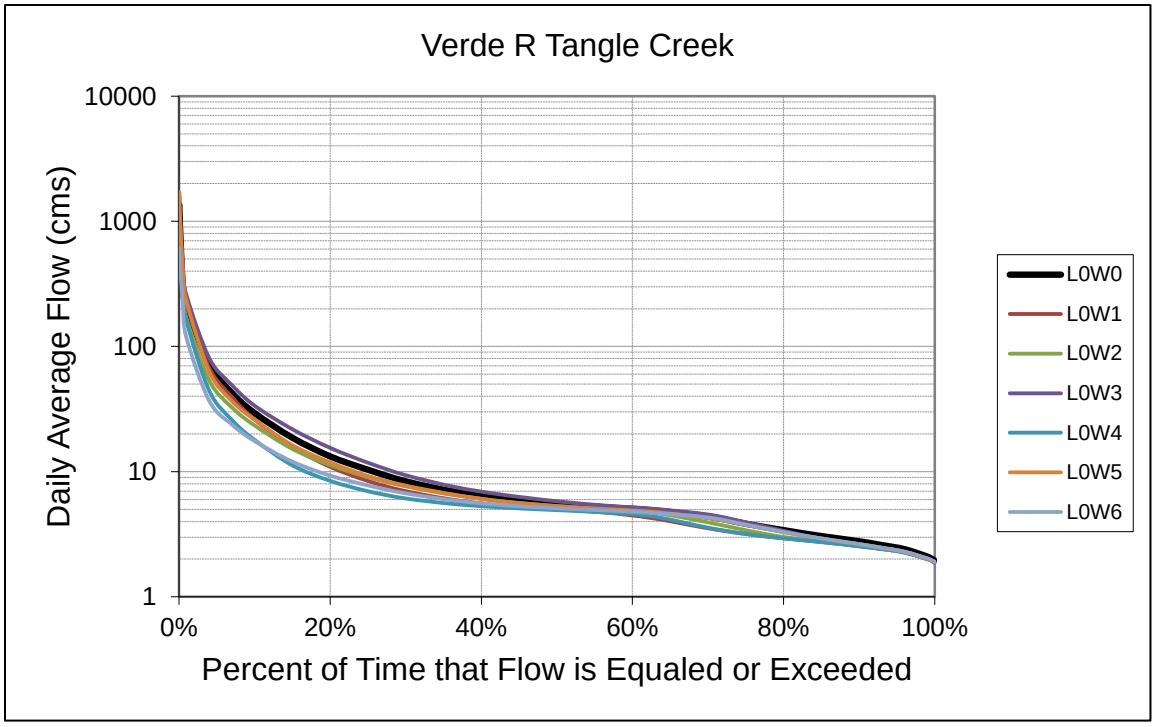

Figure 82. Flow Duration, Verde River at Tangle Creek (HSPF)

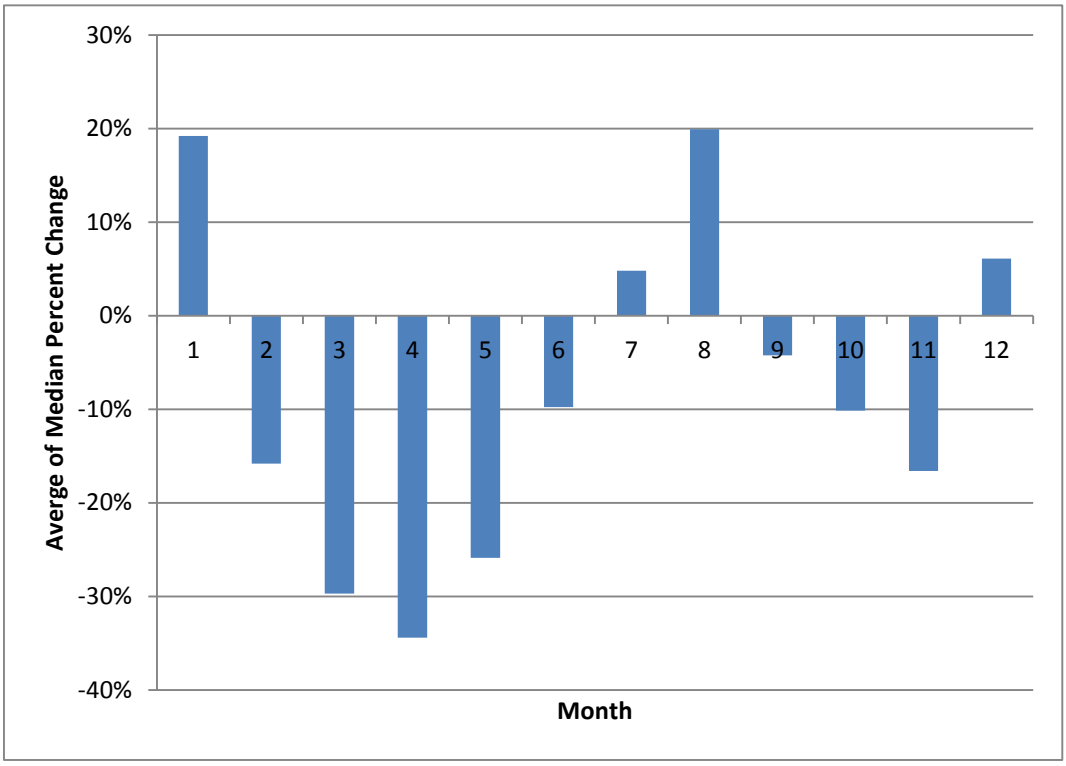

Figure 83. Average of Median Percent Change in Flow; NARCCAP Scenarios W1-W6 at all Stations, Verde-Basin (HSPF)

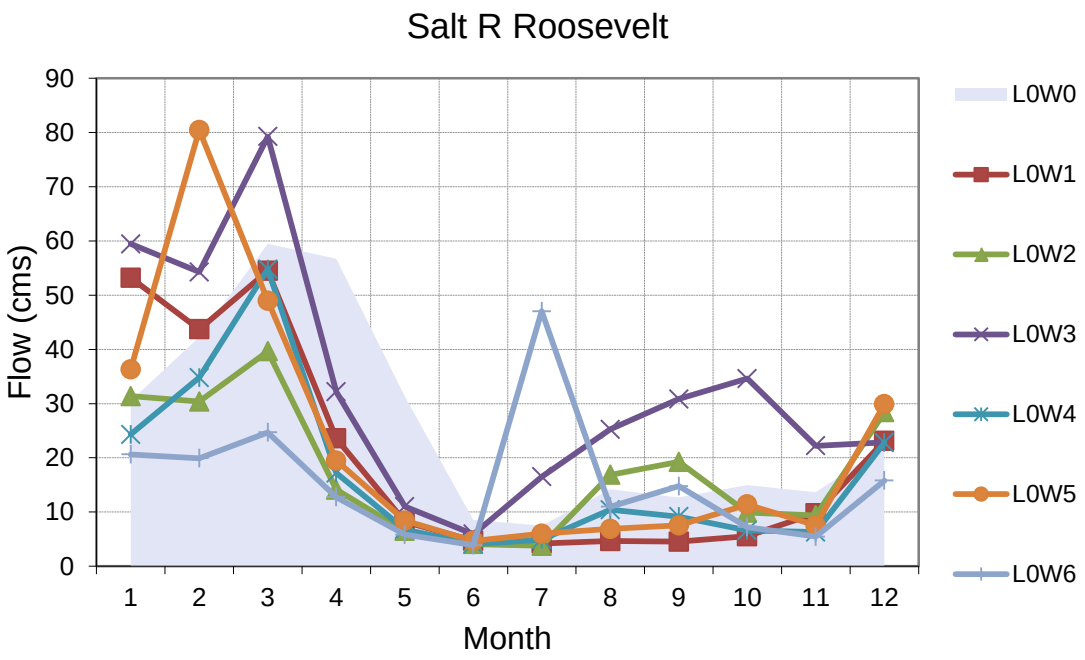

Figure 81. Monthly Average Flows, Salt River nr Roosevelt (HSPF)

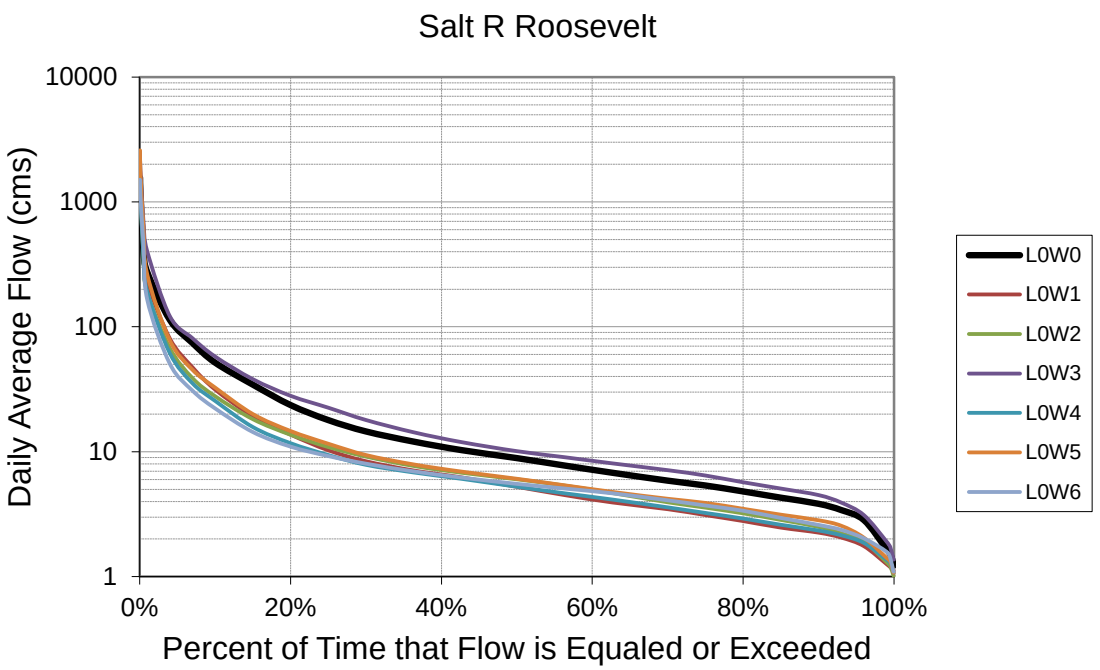

Figure 82. Flow Duration, Salt River nr Roosevelt (HSPF)

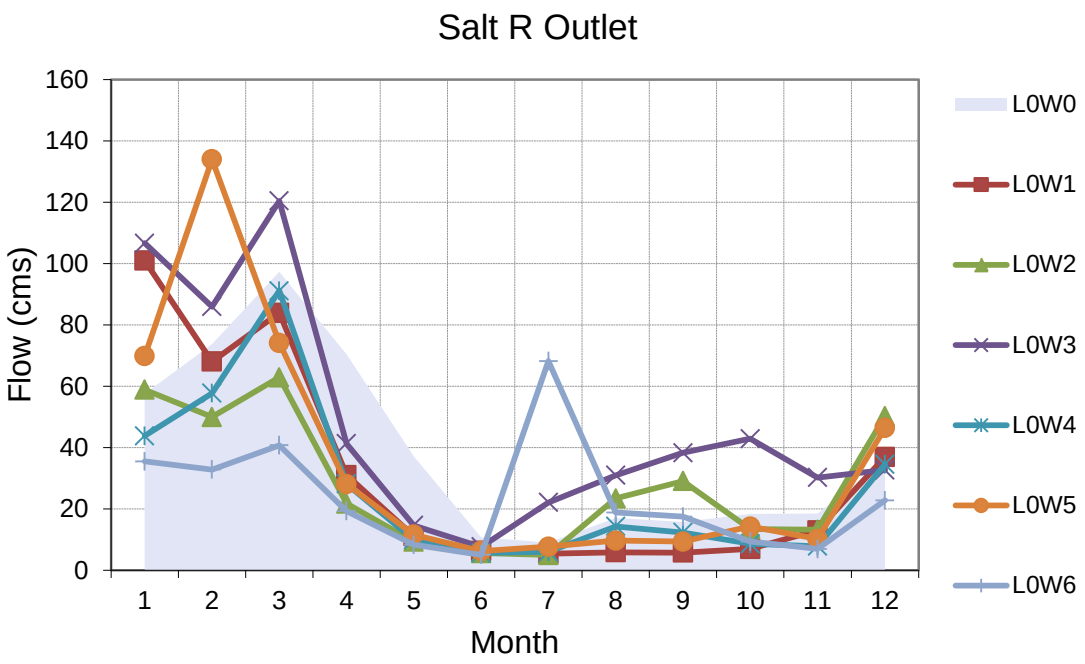

Figure 81. Monthly Average Flows, Salt River at Outlet (HSPF)

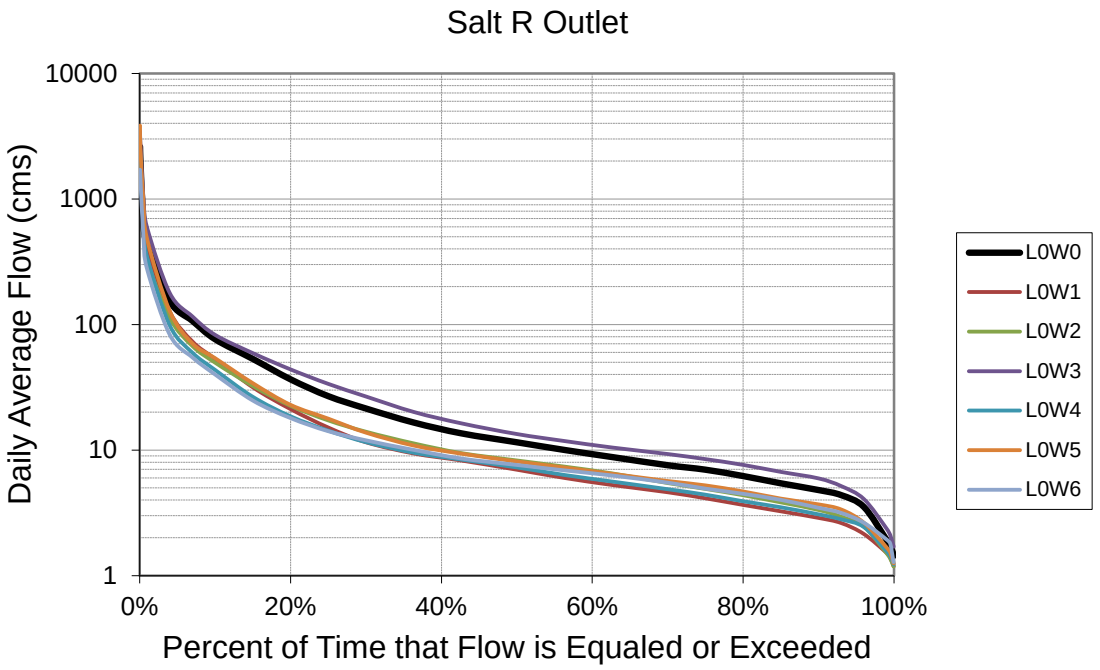

Figure 82. Flow Duration, Salt River at Outlet (HSPF)

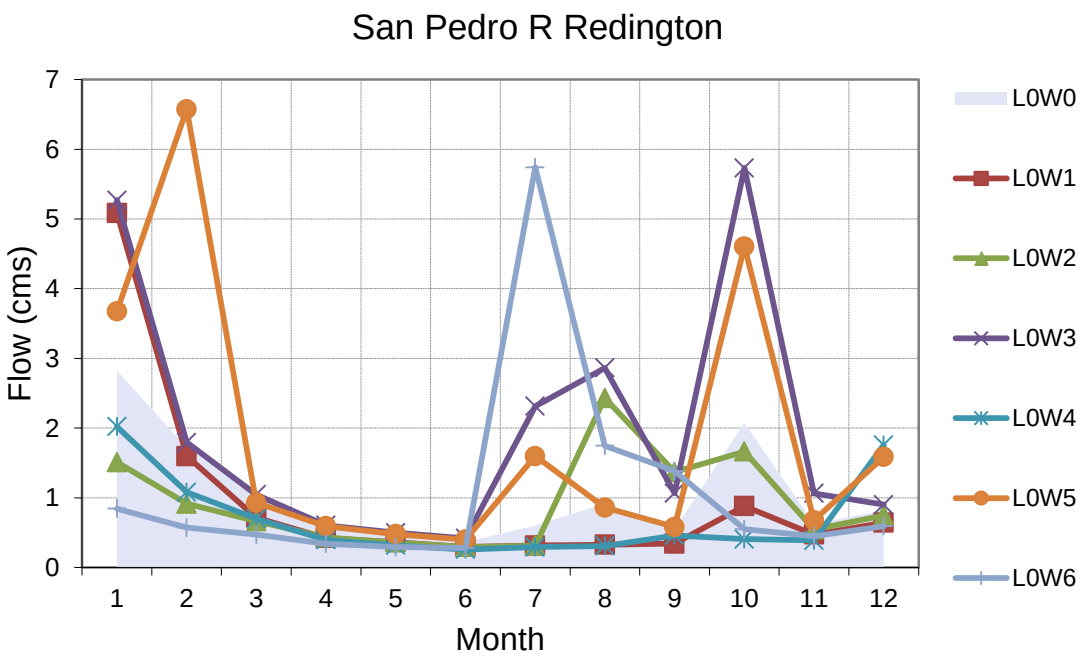

Figure 81. Monthly Average Flows, San Pedro River at Redington (HSPF)

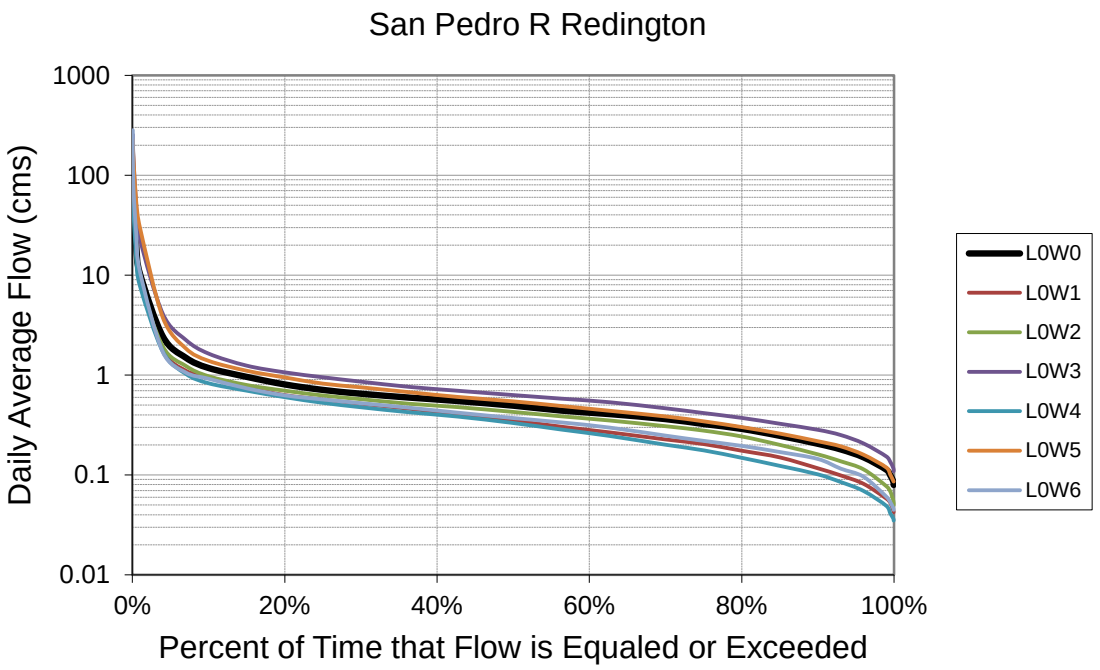

Figure 82. Flow Duration, San Pedro River at Redington (HSPF)

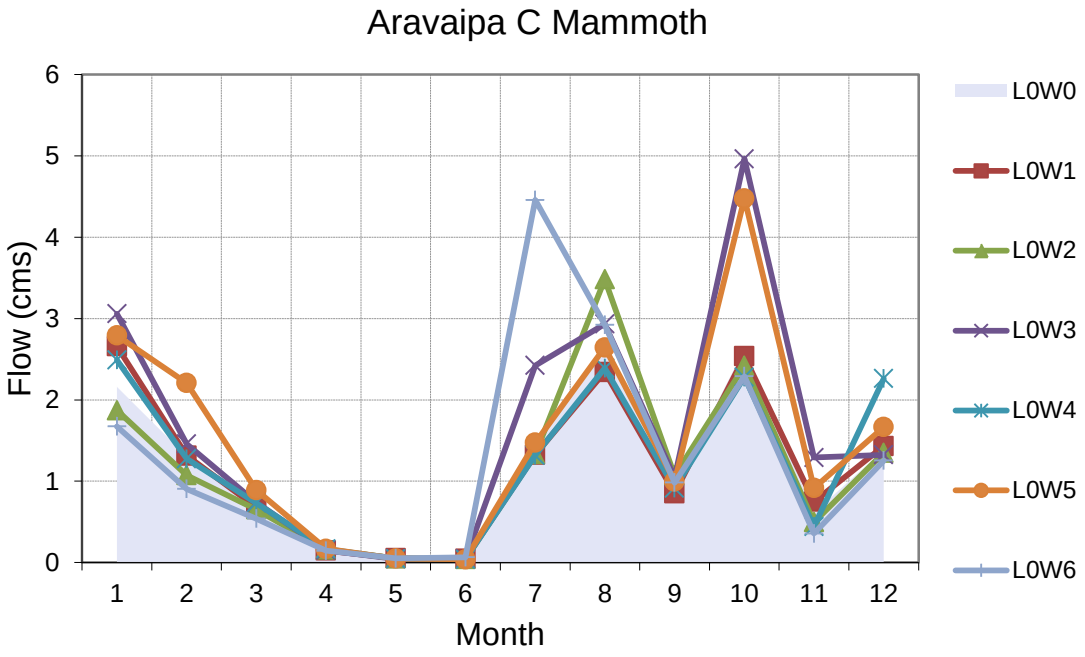

Figure 81. Monthly Average Flows, Aravaipa Creek at Mammoth (HSPF)

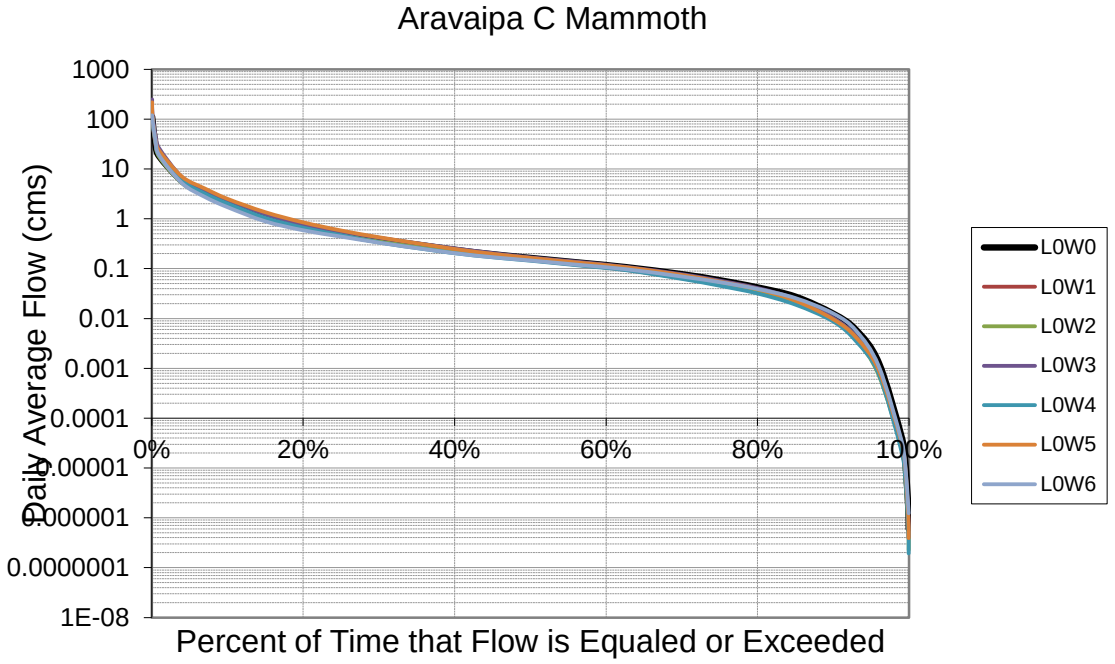

Figure 82. Flow Duration, Aravaipa Creek at Mammoth (HSPF)

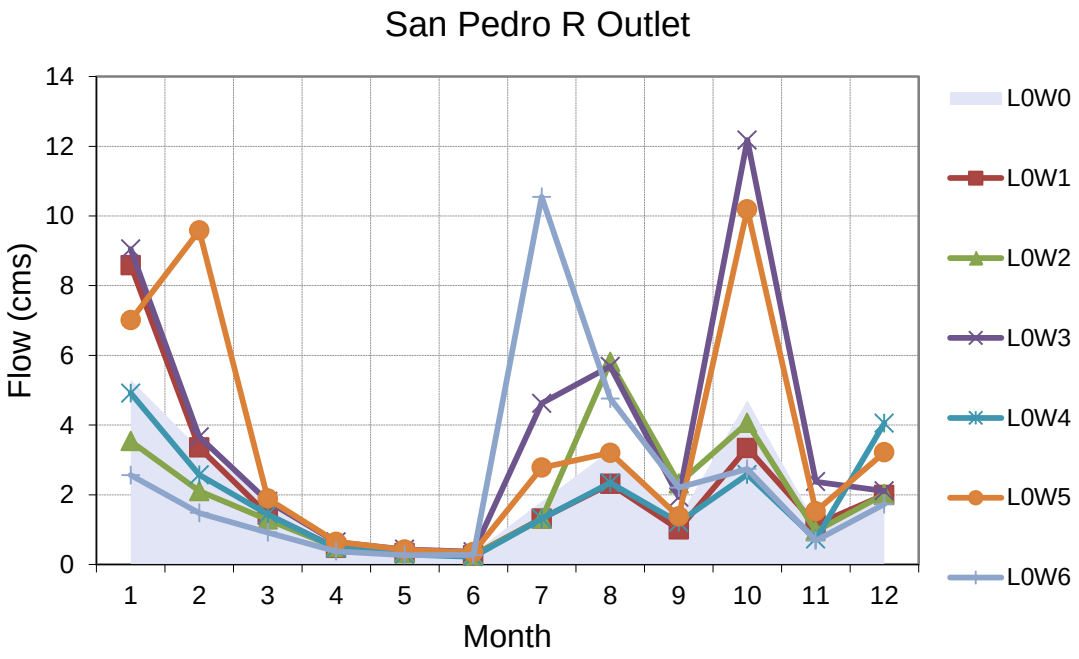

Figure 81. Monthly Average Flows, San Pedro River at Outlet (HSPF)

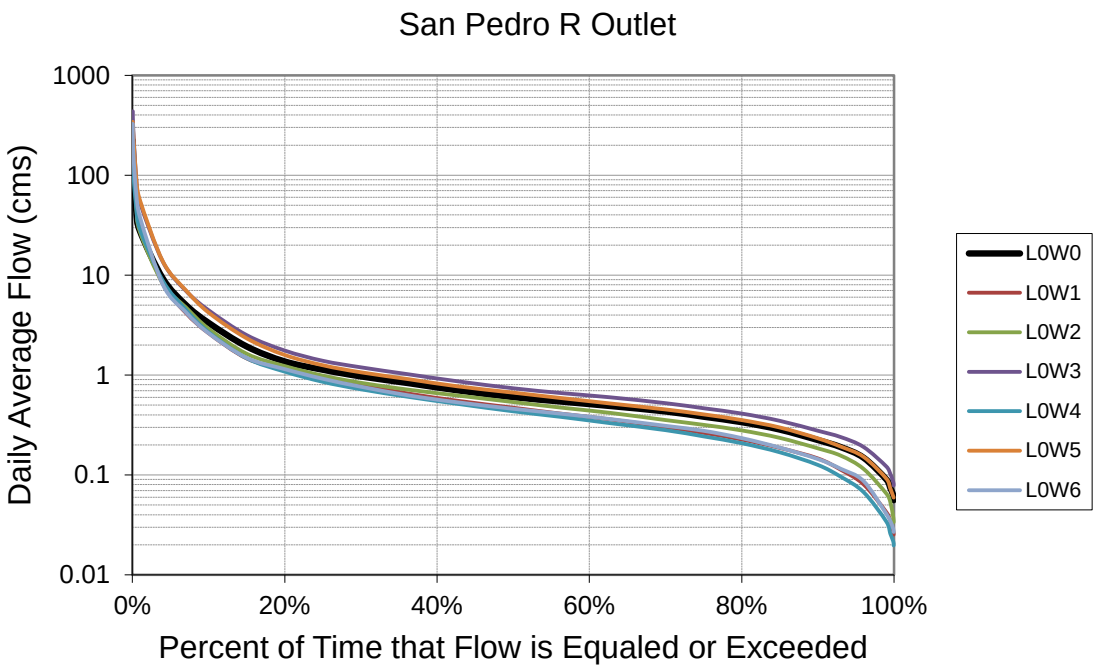

Figure 82. Flow Duration, San Pedro River at Outlet (HSPF)

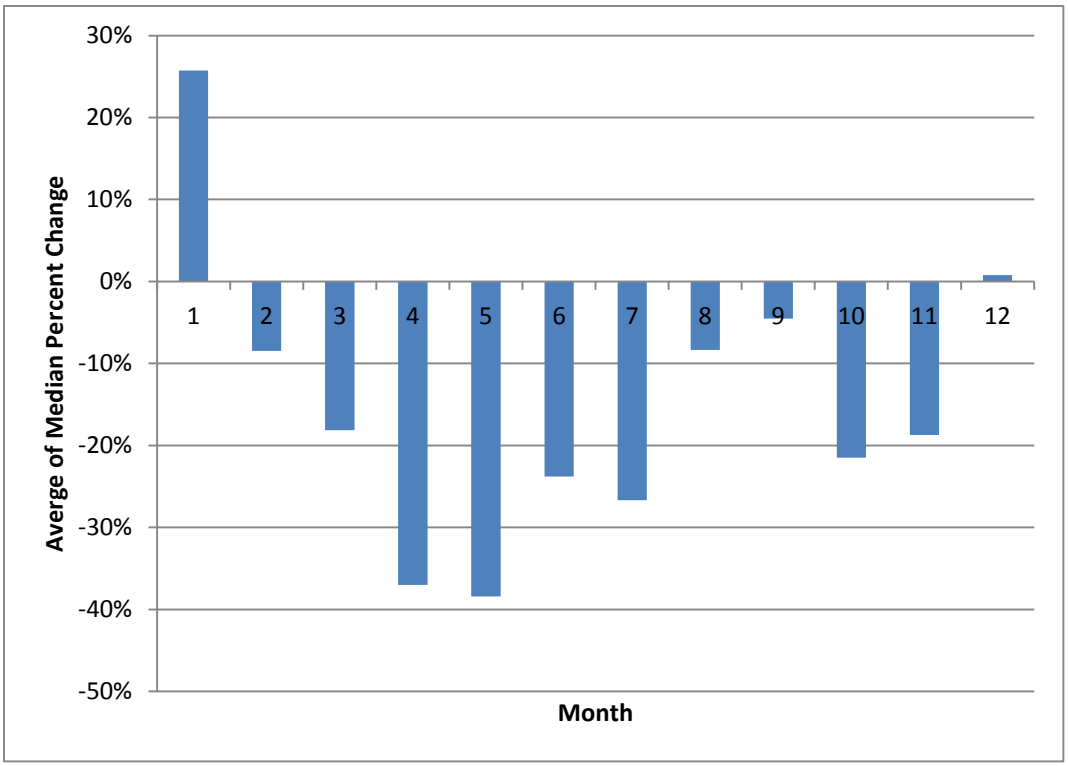

Figure 83. Average of Median Percent Change in Flow; NARCCAP Scenarios W1-W6 at all Stations, Salt and San Pedro Basins (HSPF)

Verde-Salt-San Pedro Basins, SWAT Model Results at Downstream Station

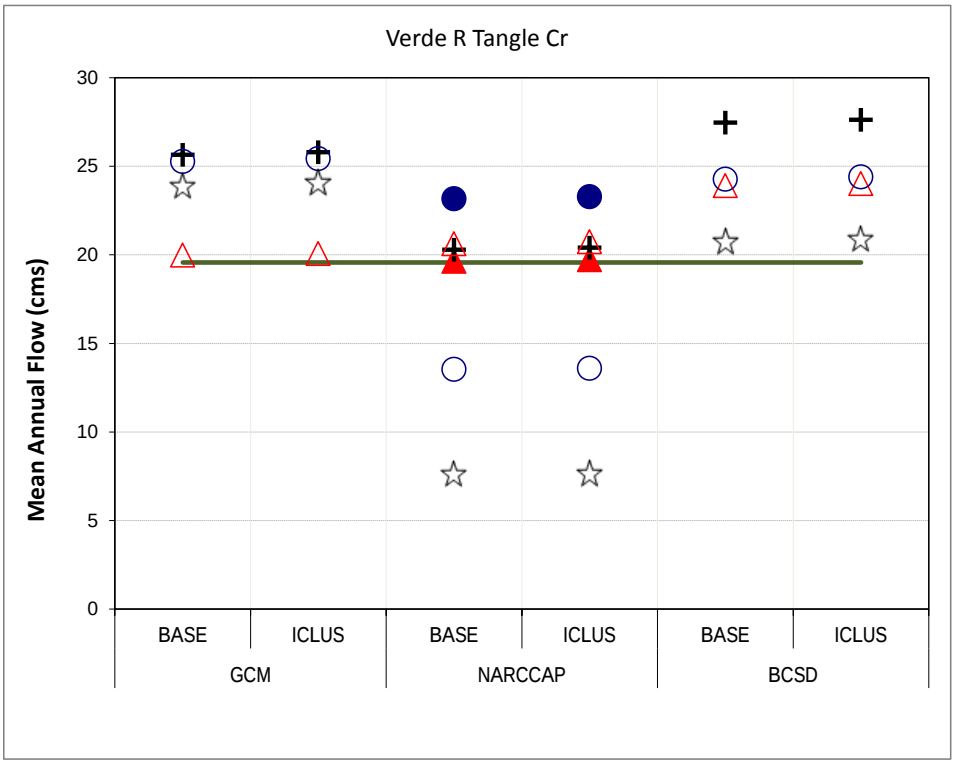

Figure 84. Mean Annual Flow, Verde River below Tangle Creek (SWAT)

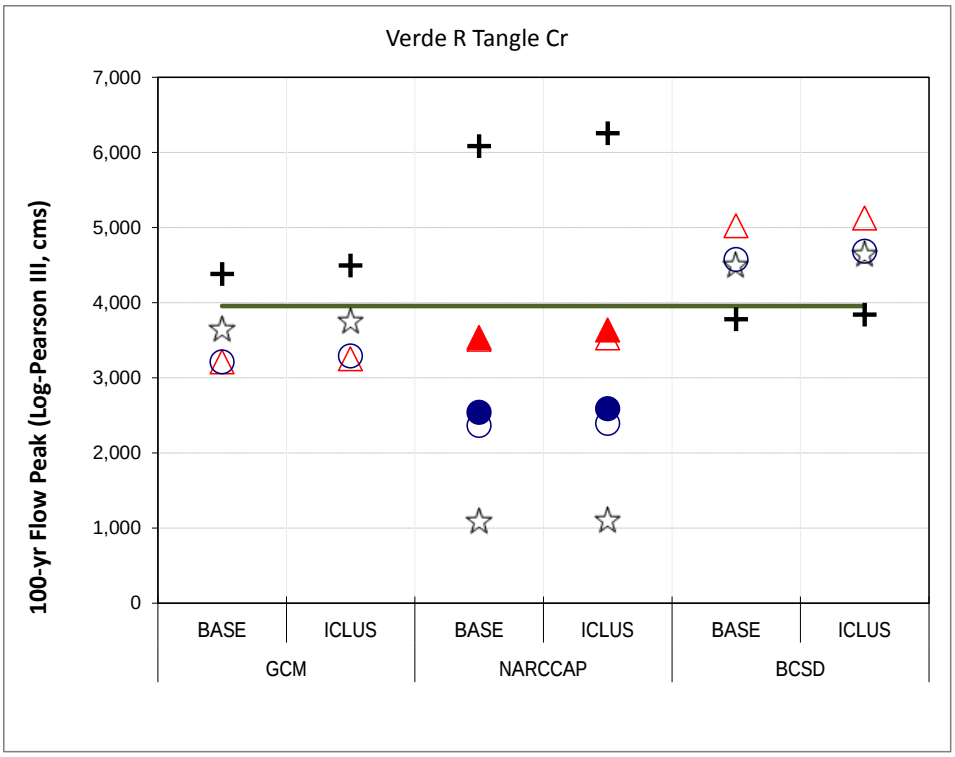

Figure 85. 100-yr Flow Peak, Verde River below Tangle Creek (SWAT)

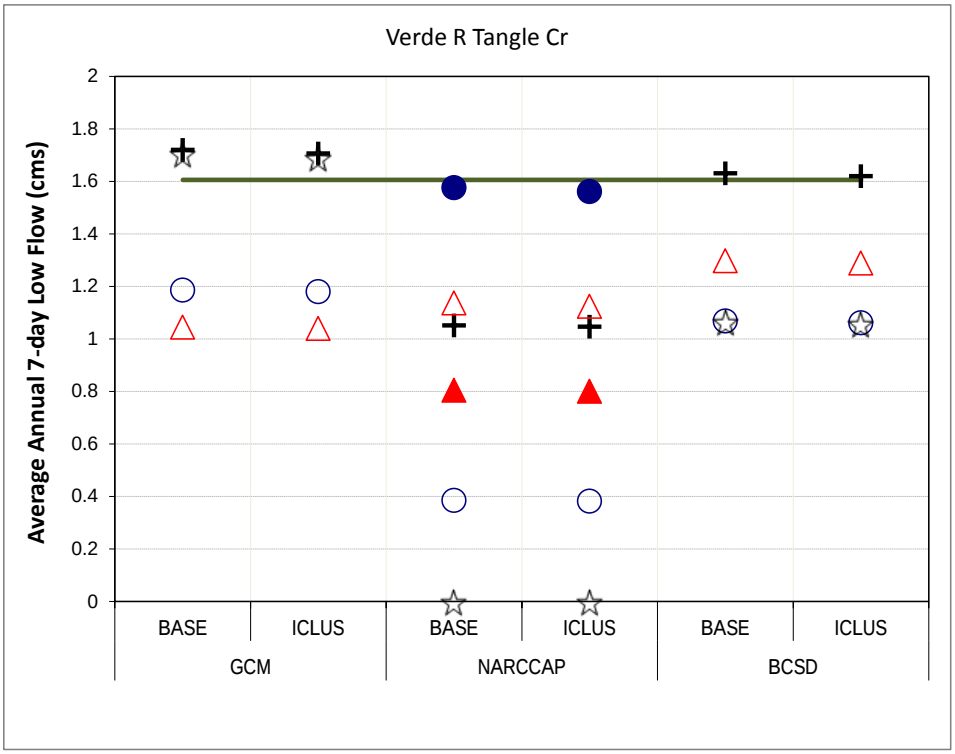

Figure 86. Average Annual 7-day Low Flow, Verde River below Tangle Creek (SWAT)

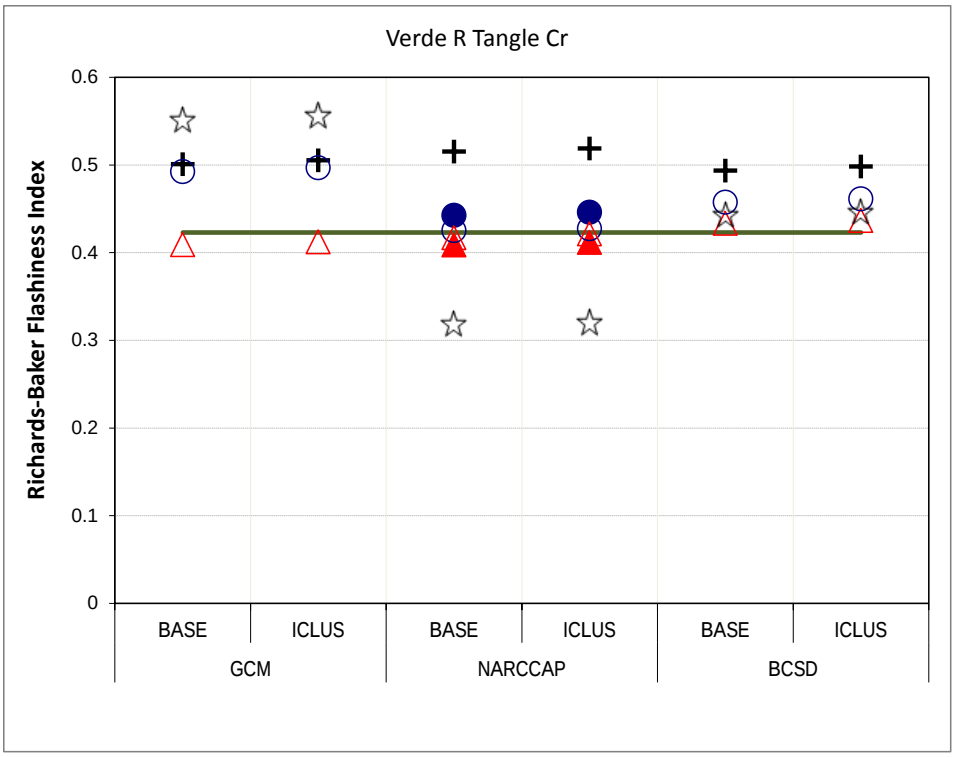

Figure 87. Richards-Baker Flashiness Index, Verde River below Tangle Creek (SWAT)

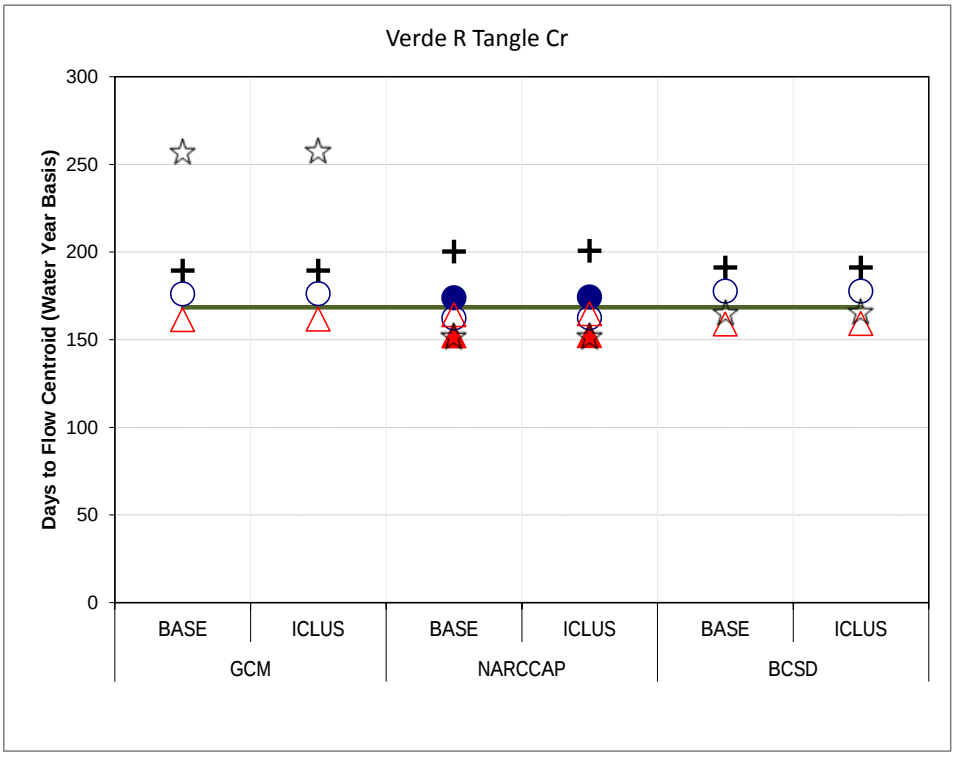

Figure 88. Days to Flow Centroid, Verde River below Tangle Creek (SWAT)

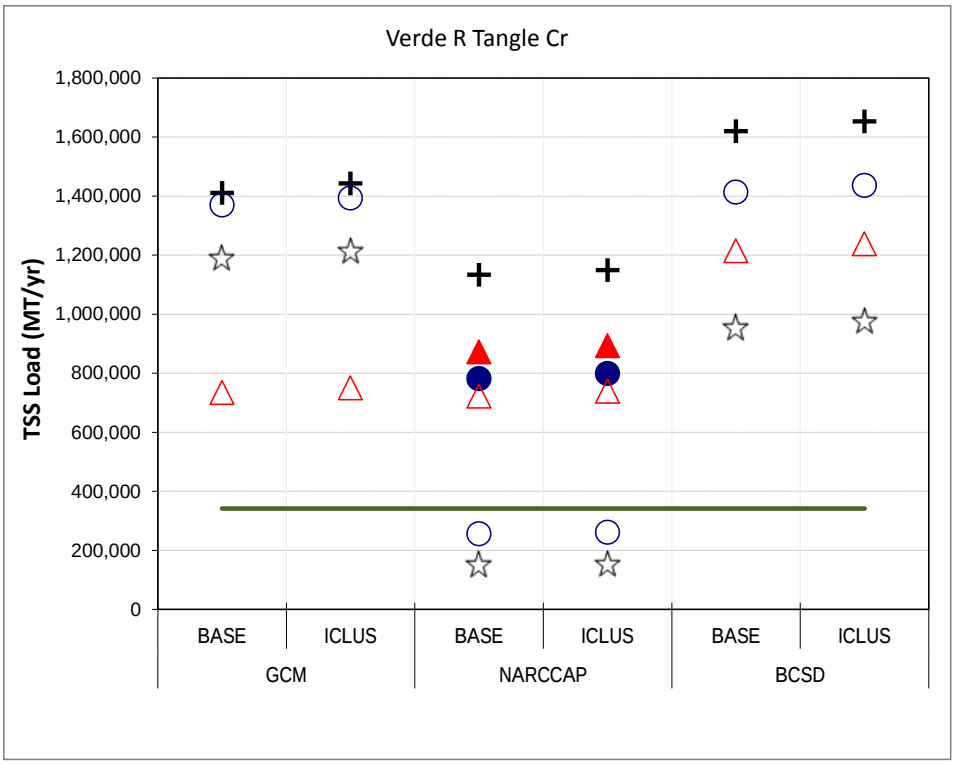

Figure 89. TSS Load, Verde River below Tangle Creek (SWAT)

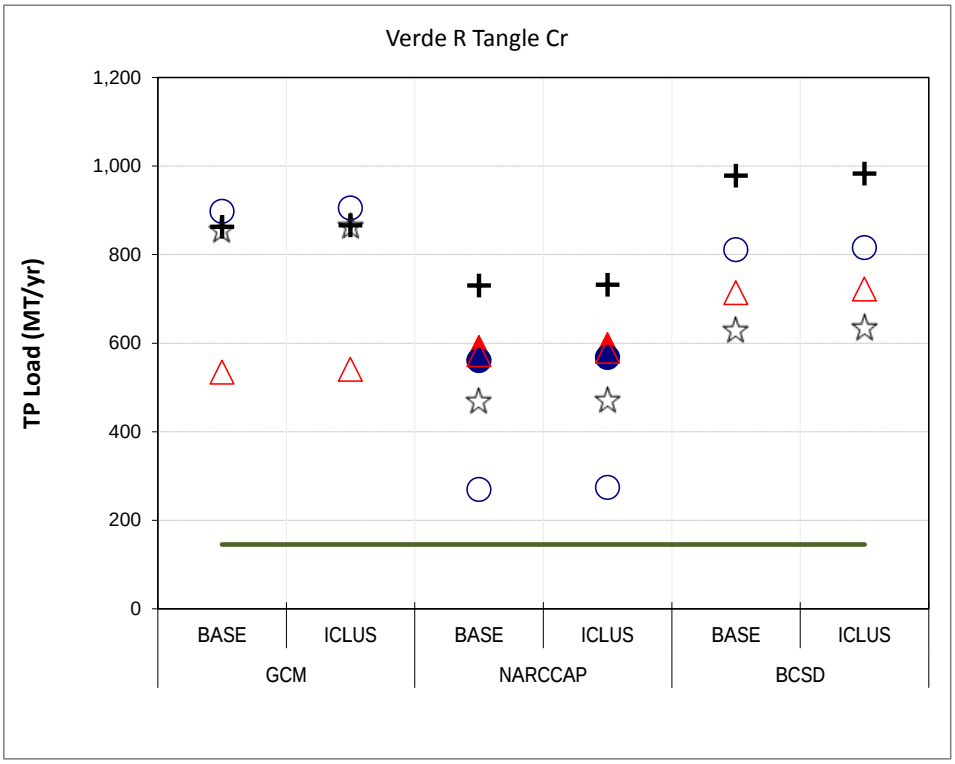

Figure 90. TP Load, Verde River below Tangle Creek (SWAT)

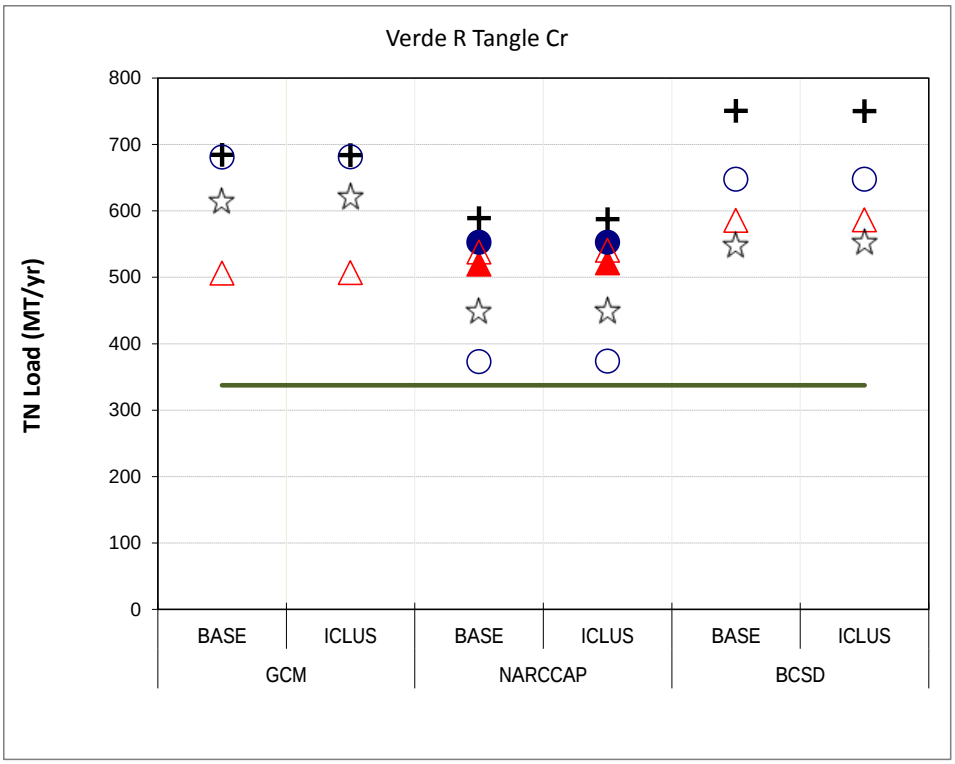

Figure 91. TN Load, Verde River below Tangle Creek (SWAT)

Results at Multiple Stations

Table 4. Summary of Range of Change Relative to Existing Conditions for NARCCAP Dynamically Downscaled Scenarios, Verde-Salt-San Pedro Basins, SWAT Model

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
West Clear Creek (gage 09505800)								
Flow	-87.93%	-68.10%	-69.82%	-54.47%	-87.91%	-68.08%	-69.79%	-54.43%
TSS	543.91%	3311.03%	3021.91 %	5220.10 %	552.58%	3325.16 %	3034.34 %	5235.42 %
TN	21.54%	123.92%	115.04%	190.03%	21.12%	123.31%	114.49%	189.35%
TP	-15.30%	195.72%	169.16%	296.84%	-14.76%	196.78%	170.16%	298.27%
East Verde (gage 09507980)								
Flow	-66.54%	-16.20%	-21.46%	4.52%	-66.54%	-16.21%	-21.47%	4.51%
TSS	-78.88%	-11.01%	-18.43%	15.93%	-78.81%	-11.01%	-18.42%	15.89%
TN	-29.56%	32.19%	24.06%	47.16%	-29.53%	32.12%	24.01%	47.03%
TP	-73.79%	-20.35%	-25.56%	0.91%	-73.77%	-20.22%	-25.48%	0.97%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Oak Creek at Sedona (gage 09504430)								
Flow	-26.58%	25.10%	23.80%	88.54%	-26.55%	24.98%	23.69%	88.29%
TSS	-12.39%	54.46%	54.84%	144.80%	-12.97%	52.63%	52.78%	140.72%
TN	-14.21%	-5.00%	-5.55%	1.10%	-14.16%	-4.96%	-5.46%	1.32%
TP	-10.82%	50.38%	51.52%	128.63%	-11.36%	49.10%	50.05%	125.88%
Verde R nr Camp Verde (gage 09506000)								
Flow	-60.26%	5.11%	-10.05%	18.48%	-60.38%	4.95%	-10.21%	18.22%
TSS	-46.00%	148.54%	108.65%	233.25%	-47.03%	145.93%	106.06%	227.65%
TN	10.21%	72.87%	64.09%	99.87%	11.36%	74.50%	65.57%	100.72%
TP	108.69%	357.05%	327.69%	495.44%	108.58%	354.07%	323.53%	485.56%
Verde R nr Clarkdale (gage 09504000)								
Flow	-41.14%	40.02%	19.88%	51.52%	-41.65%	39.32%	19.19%	50.94%
TSS	40.26%	323.83%	346.55%	855.28%	38.05%	318.14%	336.94%	824.50%
TN	25.20%	111.17%	109.75%	191.14%	27.62%	114.61%	111.88%	191.47%
TP	285.71%	780.15%	831.65%	1480.95 %	275.32%	749.04%	794.13%	1403.92 %
Verde R below Tangle Crk (gage 09508500)								
Flow	-60.72%	1.99%	-10.64%	18.41%	-60.81%	1.89%	-10.75%	18.22%
TSS	-54.22%	119.71%	91.02%	231.21%	-55.24%	117.36%	88.48%	225.00%
TN	10.57%	56.75%	49.38%	74.63%	11.33%	58.16%	50.29%	75.01%
TP	85.59%	290.98%	267.10%	403.13%	85.91%	289.64%	264.76%	396.67%
Salt River nr Roosevelt (gage 09498500)								
Flow	-57.18%	-10.92%	-3.41%	69.62%	-57.18%	-10.95%	-3.43%	69.56%
TSS	-72.06%	-14.60%	-4.17%	100.90%	-72.07%	-14.65%	-4.23%	100.71%
TN	-16.91%	9.14%	19.70%	77.68%	-16.91%	9.21%	19.77%	77.78%
TP	-10.18%	43.82%	59.75%	161.34%	-10.35%	43.58%	59.45%	160.79%
Aravaipa Cr nr Mammoth (gage 09473000)								
Flow	-84.35%	-12.33%	1.99%	90.11%	-84.35%	-12.33%	1.99%	90.11%
TSS	-93.09%	9.80%	44.27%	220.47%	-93.09%	9.77%	44.24%	220.40%
TN	-0.71%	37.01%	44.84%	110.18%	-0.73%	36.82%	44.68%	109.88%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TP	-89.99%	18.57%	56.87%	252.59%	-89.94%	18.54%	56.66%	251.78%
San Pedro R nr Redington (gage 0947200)								
Flow	-70.72%	5.05%	18.43%	118.68%	-70.83%	5.05%	18.40%	118.56%
TSS	-65.76%	11.84%	47.17%	212.38%	-65.93%	11.39%	47.37%	213.42%
TN	-17.50%	68.76%	131.04%	355.31%	-17.86%	68.34%	129.83%	352.89%
TP	-84.13%	57.68%	73.97%	322.07%	-84.06%	57.10%	73.46%	320.27%

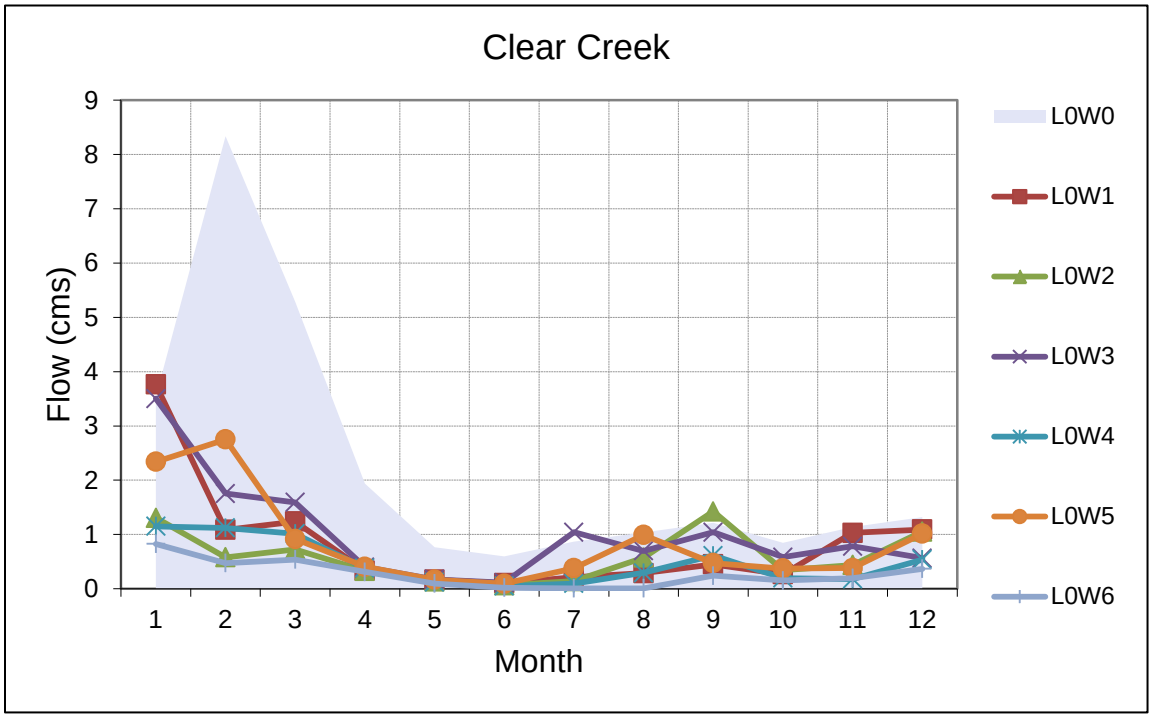

Figure 92. Monthly Average Flows, Clear Creek (SWAT)

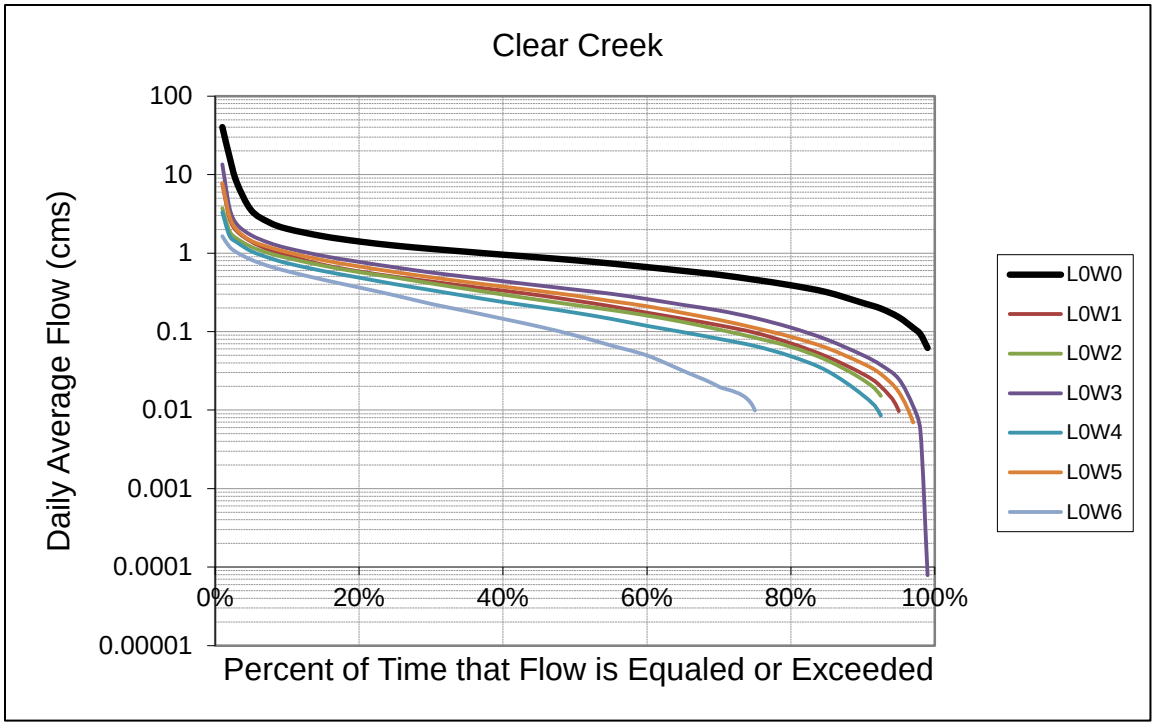

Figure 93. Flow Duration, Clear Creek (SWAT)

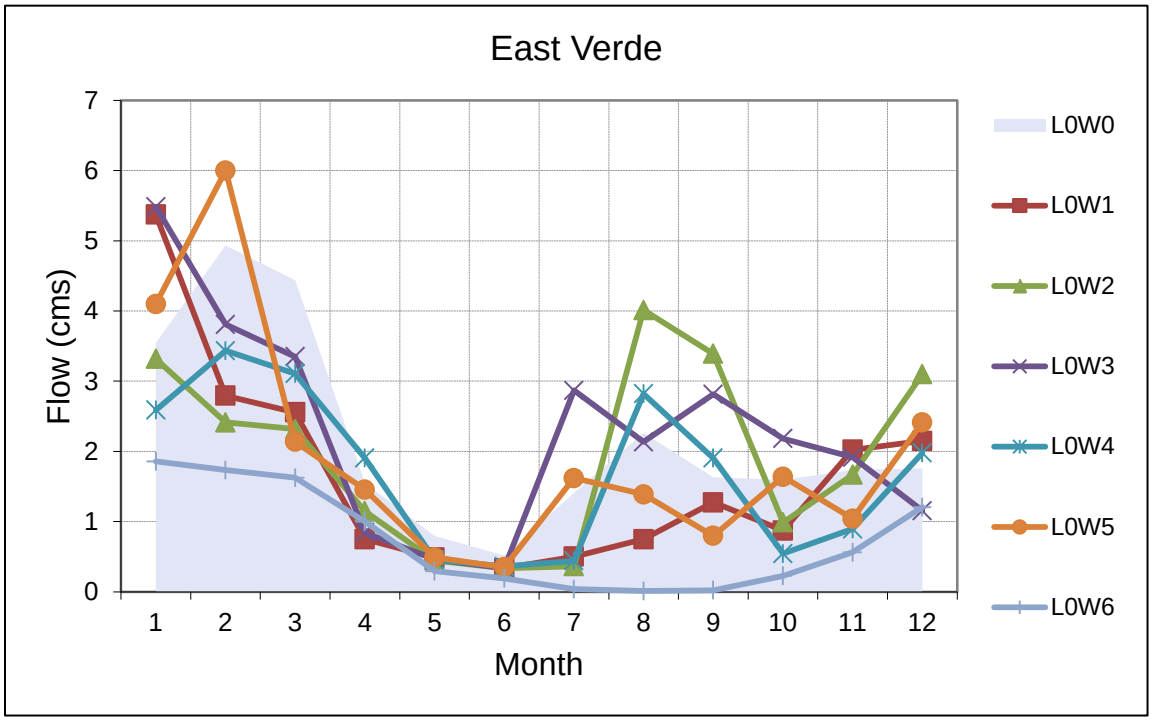

Figure 94. Monthly Average Flows, East Verde River (SWAT)

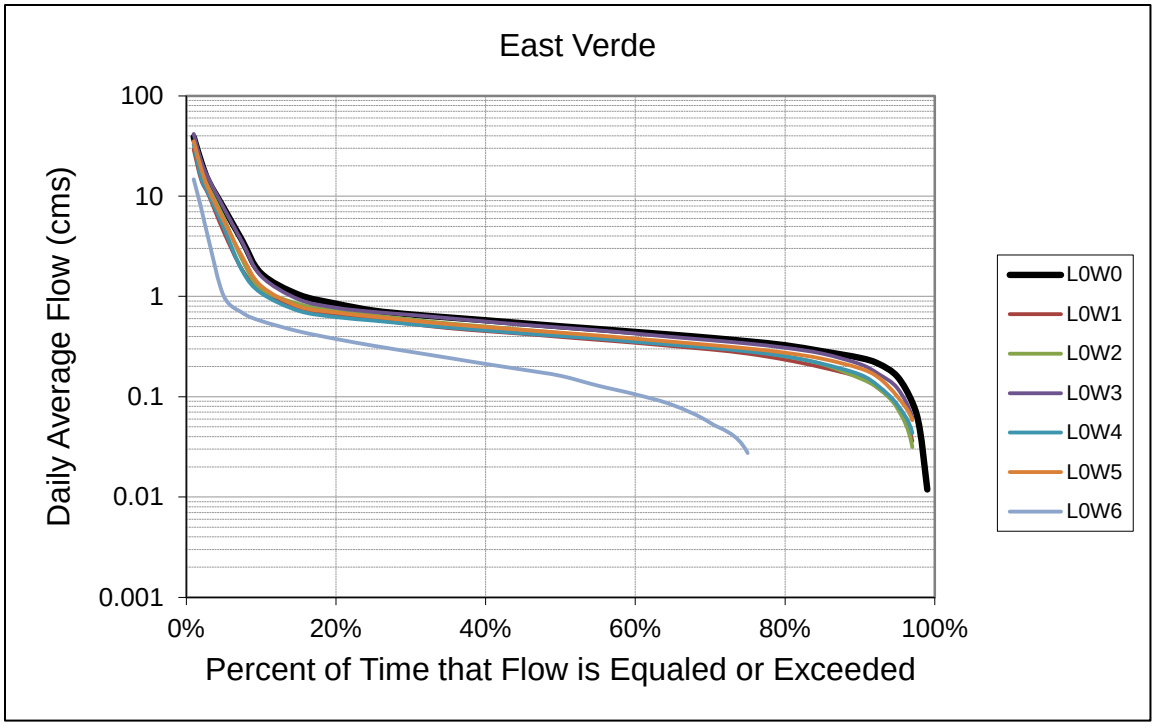

Figure 95. Flow Duration, East Verde River (SWAT)

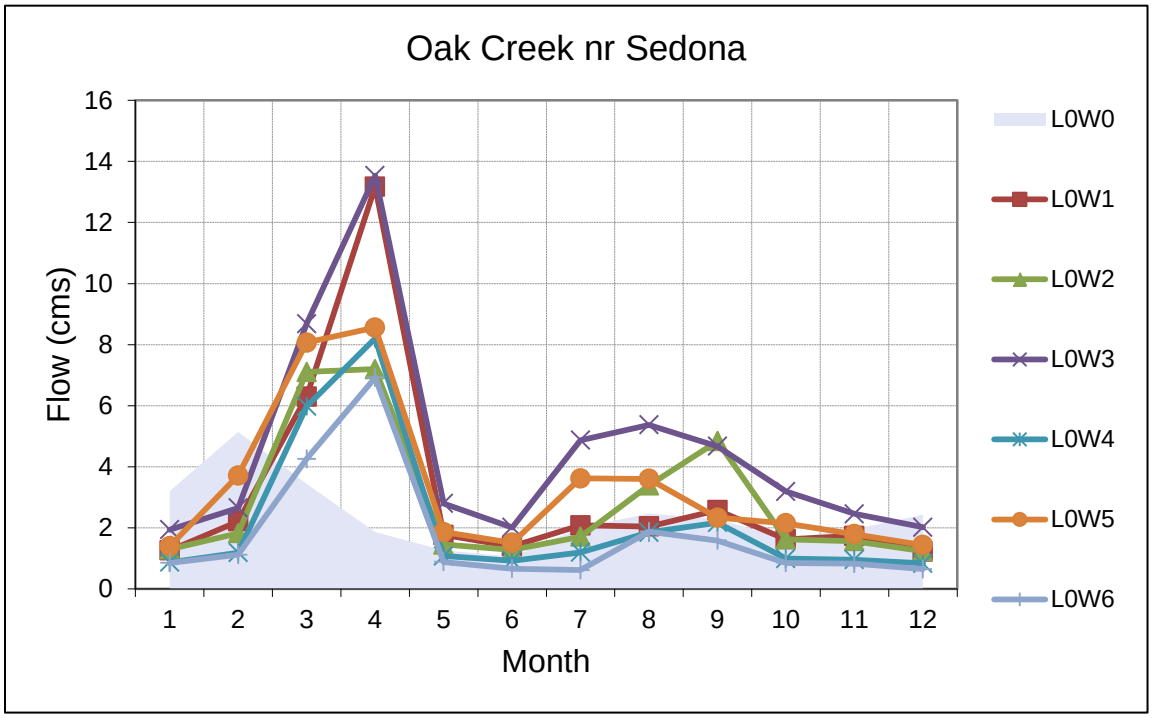

Figure 96. Monthly Average Flows, Oak Creek near Sedona (SWAT)

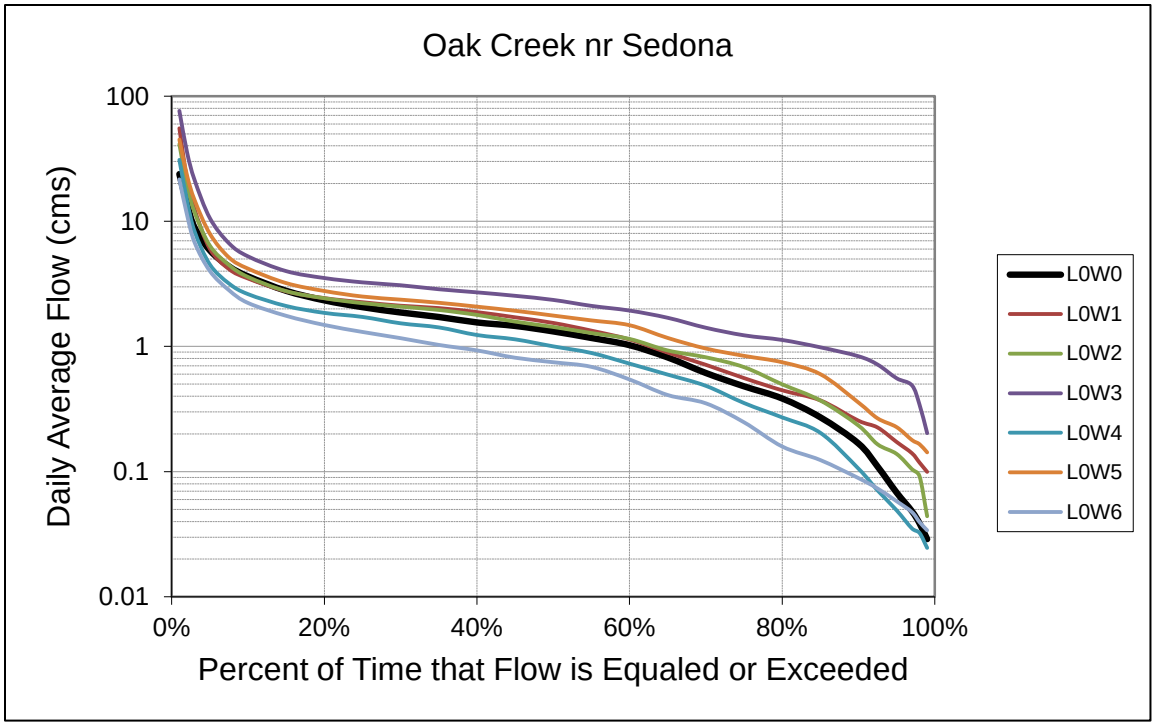

Figure 97. Flow Duration, Oak Creek near Sedona (SWAT)

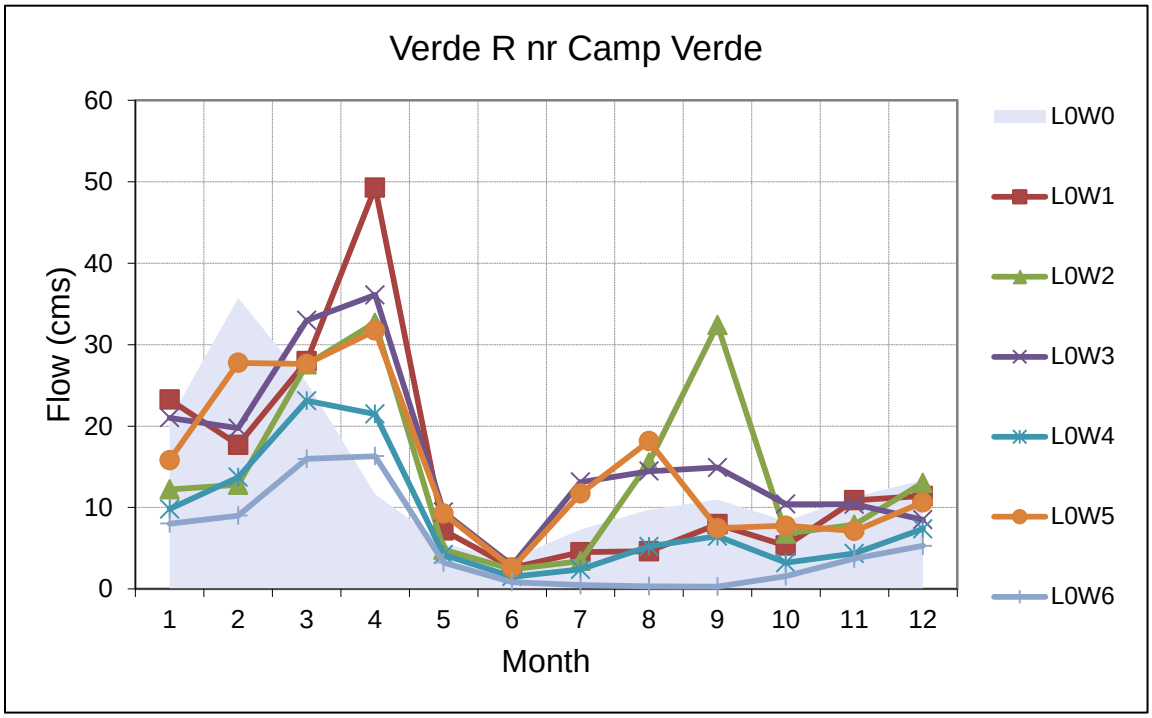

Figure 98. Monthly Average Flows, Verde River near Camp Verde (SWAT)

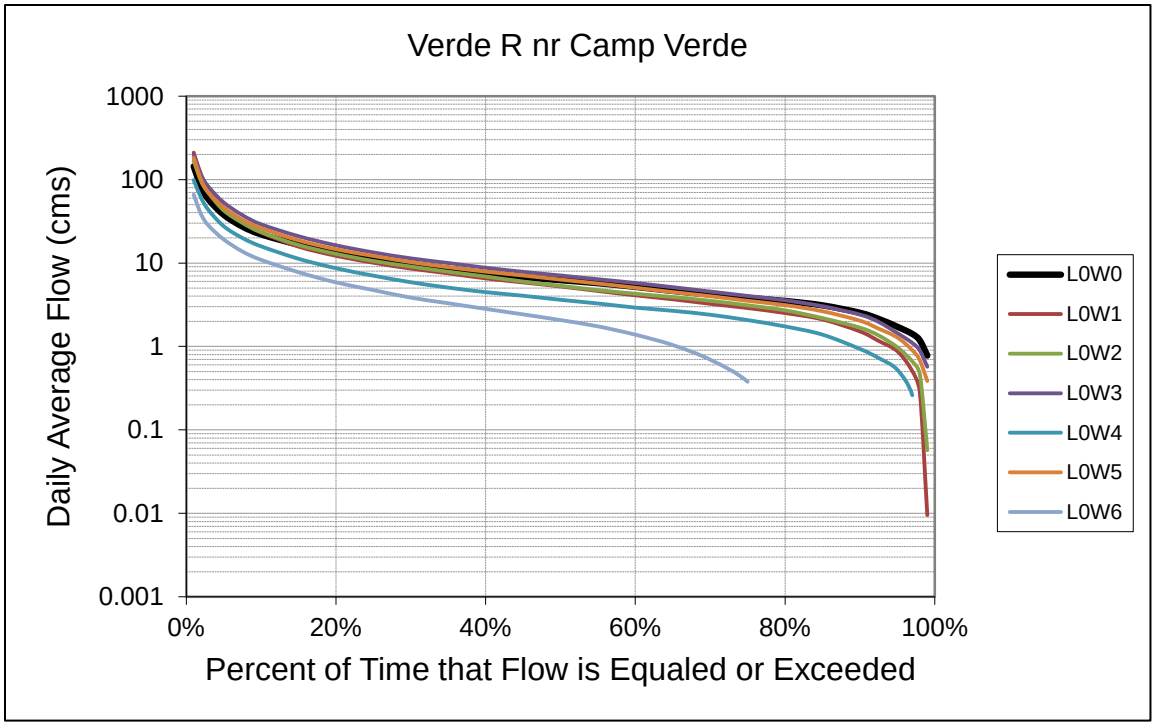

Figure 99. Flow Duration, Verde River near Camp Verde (SWAT)

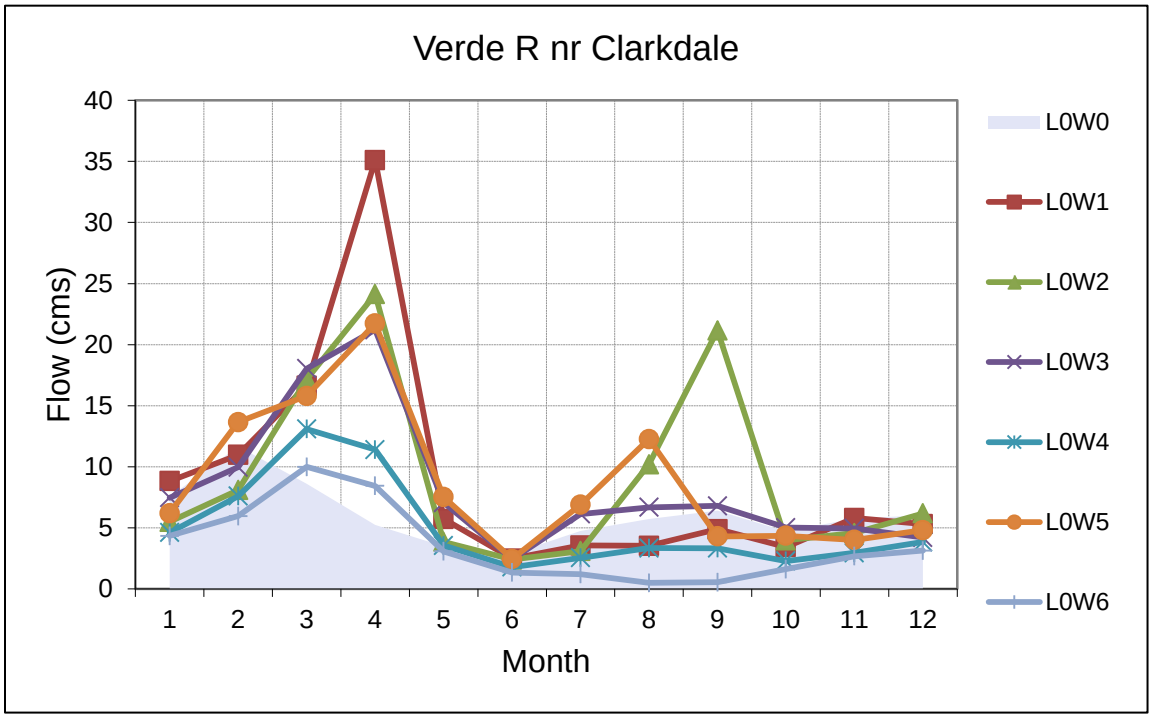

Figure 100. Monthly Average Flows, Verde River near Clarkdale (SWAT)

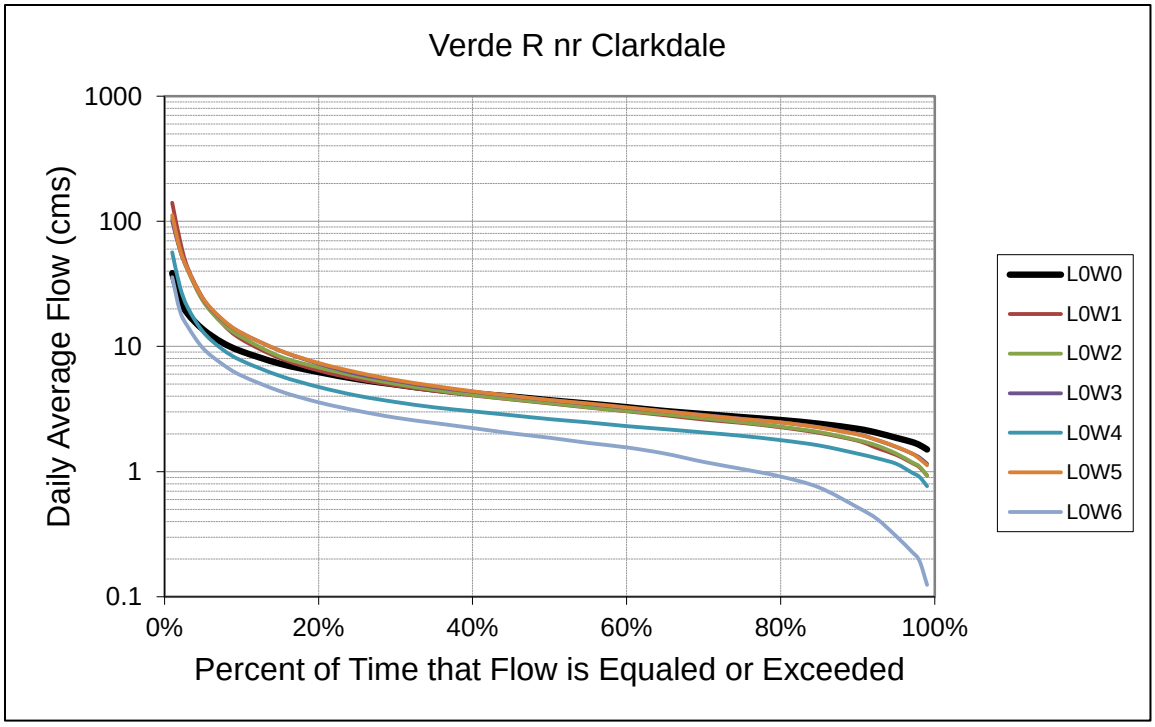

Figure 101. Flow Duration, Verde River near Clarkdale (SWAT)

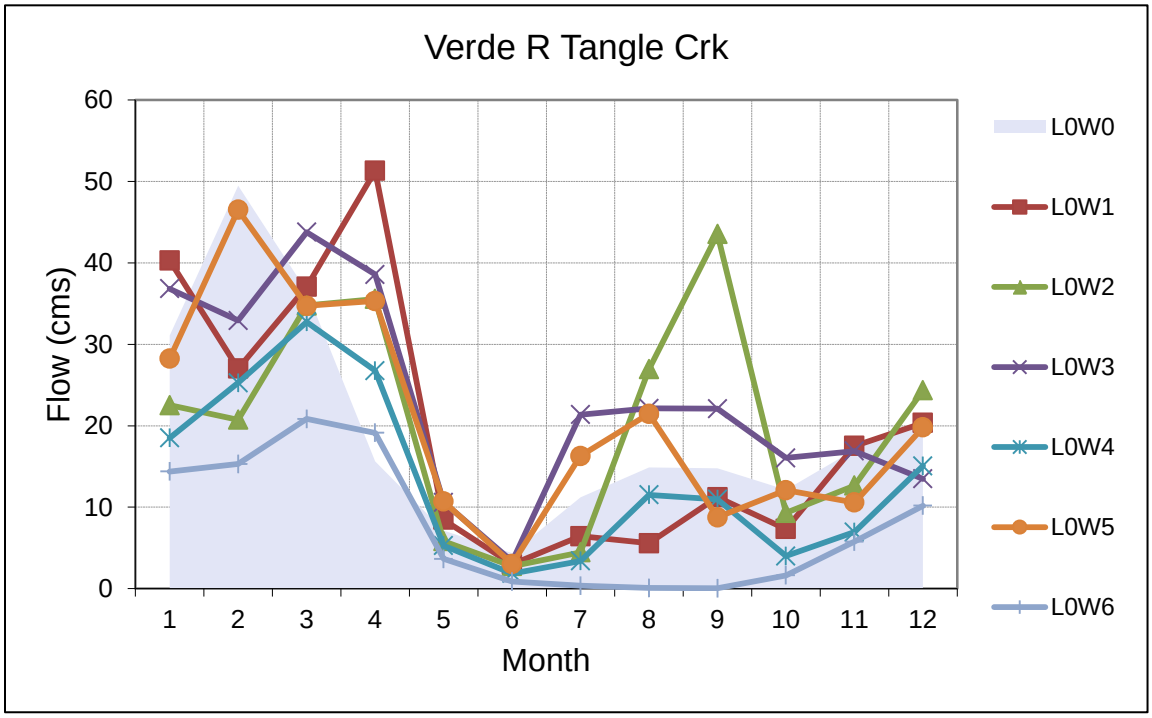

Figure 102. Monthly Average Flows, Verde River below Tangle Creek (SWAT)

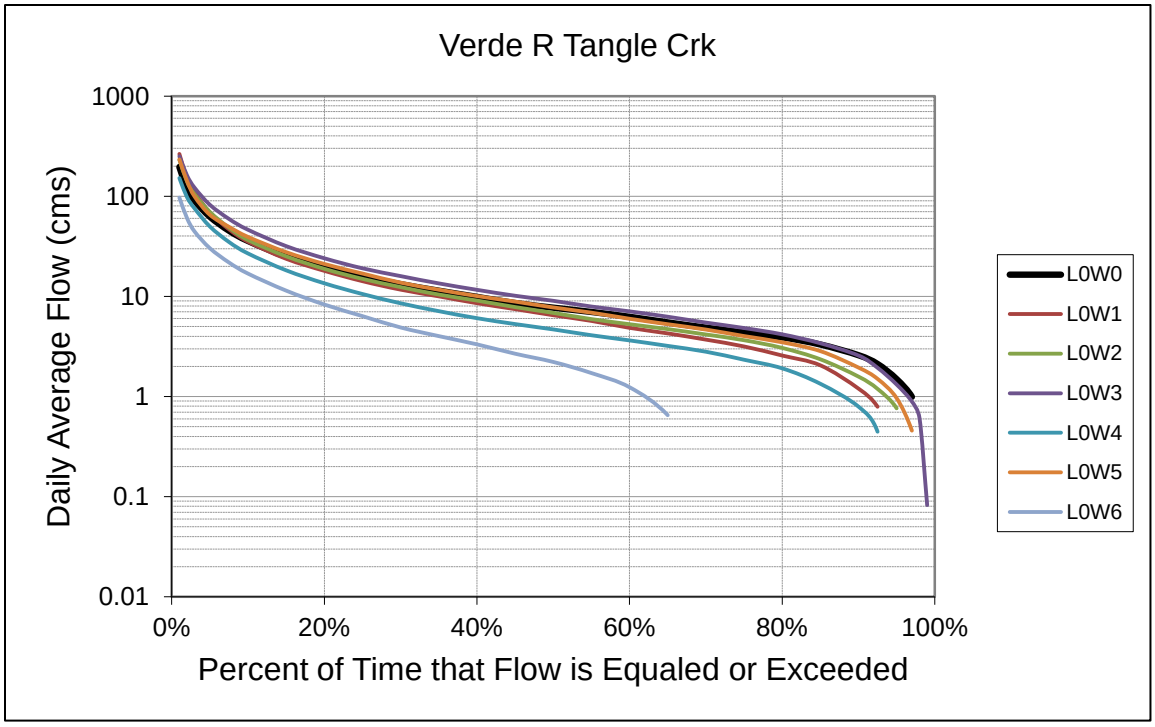

Figure 103. Flow Duration, Verde River below Tangle Creek (SWAT)

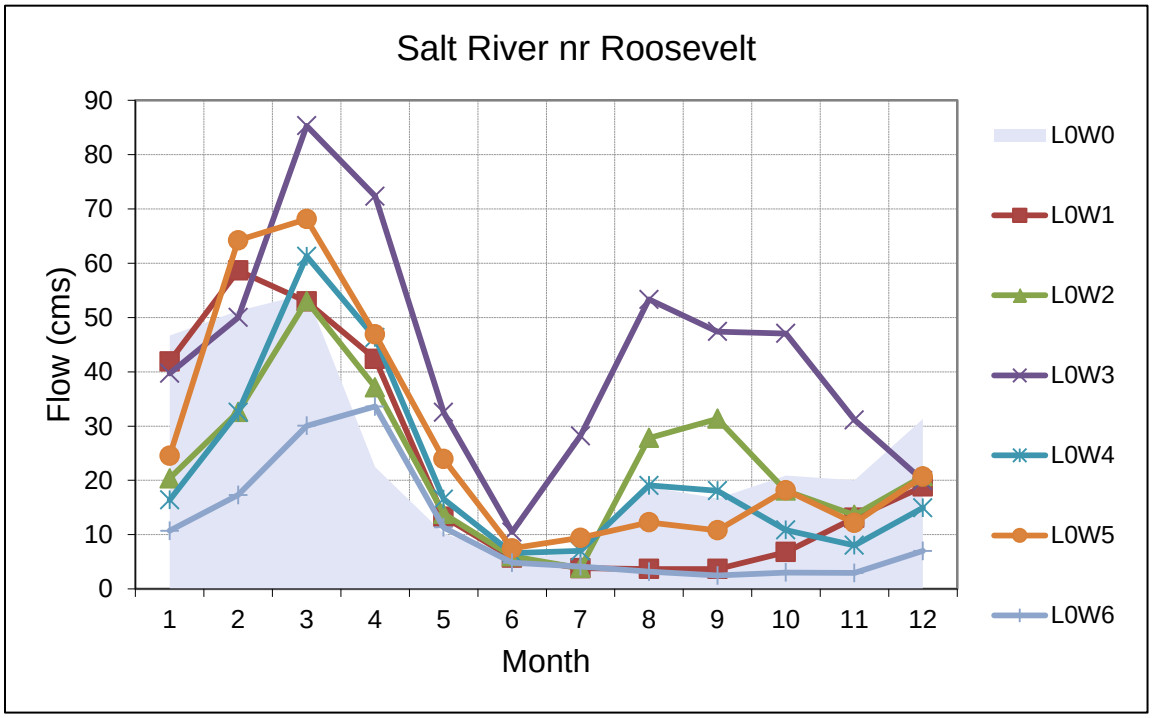

Figure 104. Monthly Average Flows, Salt River near Roosevelt (SWAT)

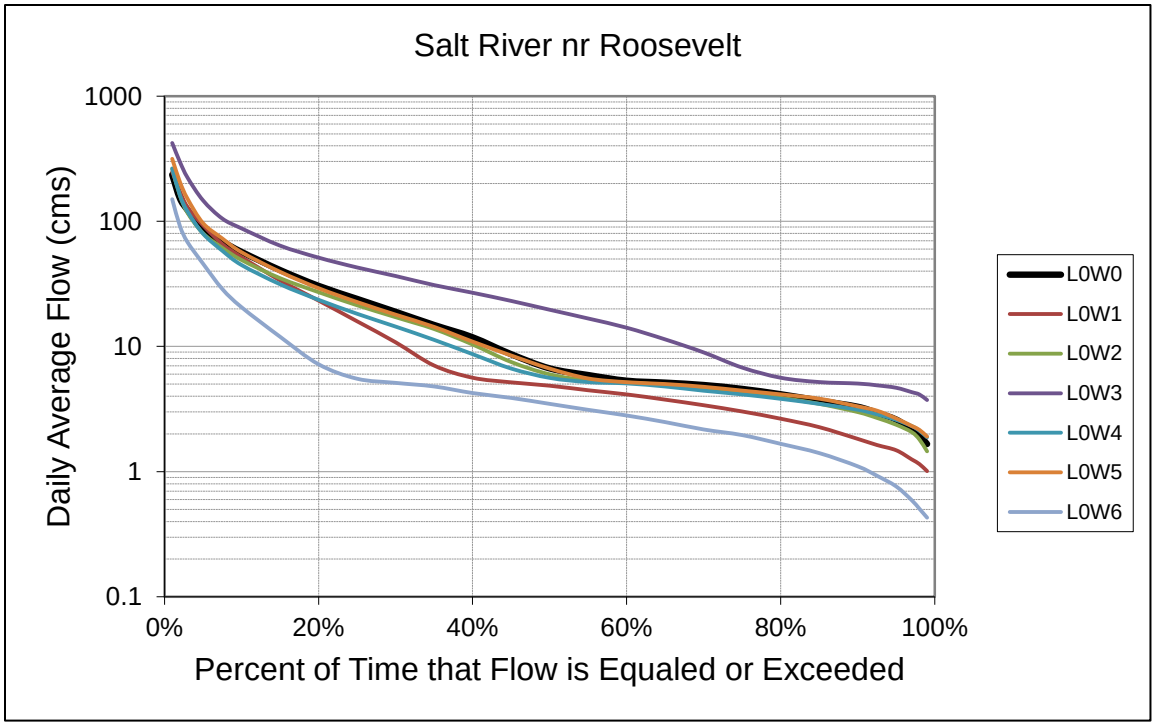

Figure 105. Flow Duration, Salt River near Roosevelt (SWAT)

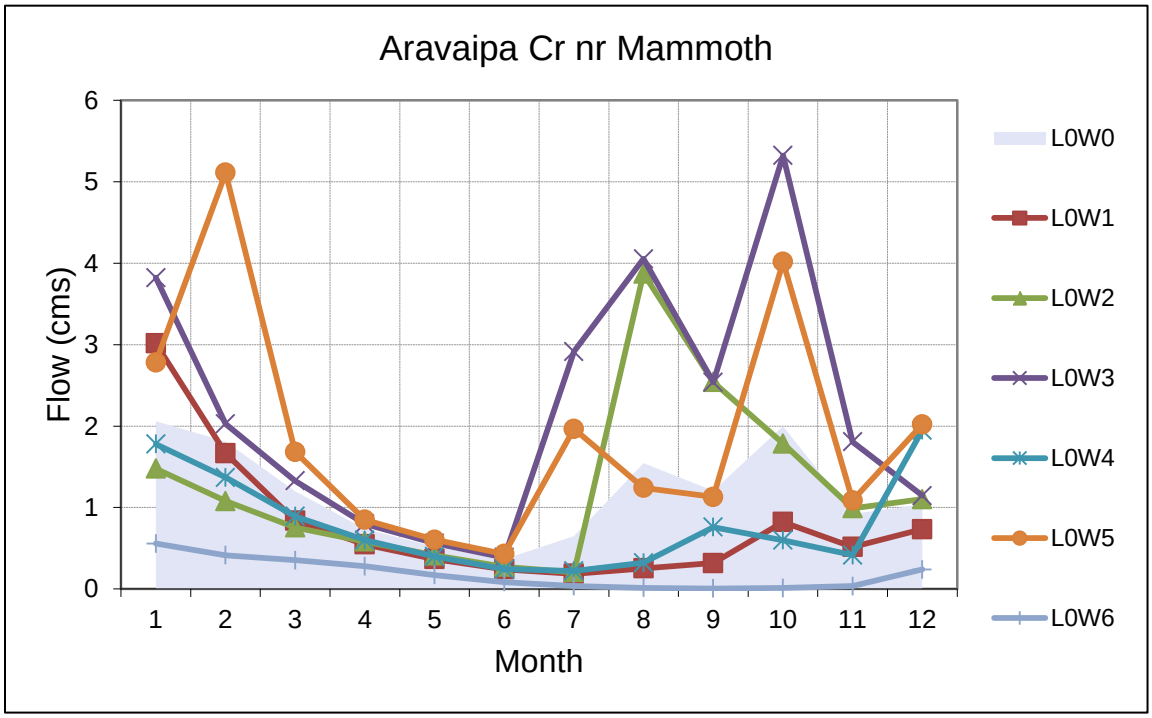

Figure 106. Monthly Average Flows, Aravaipa Creek near Mammoth (SWAT)

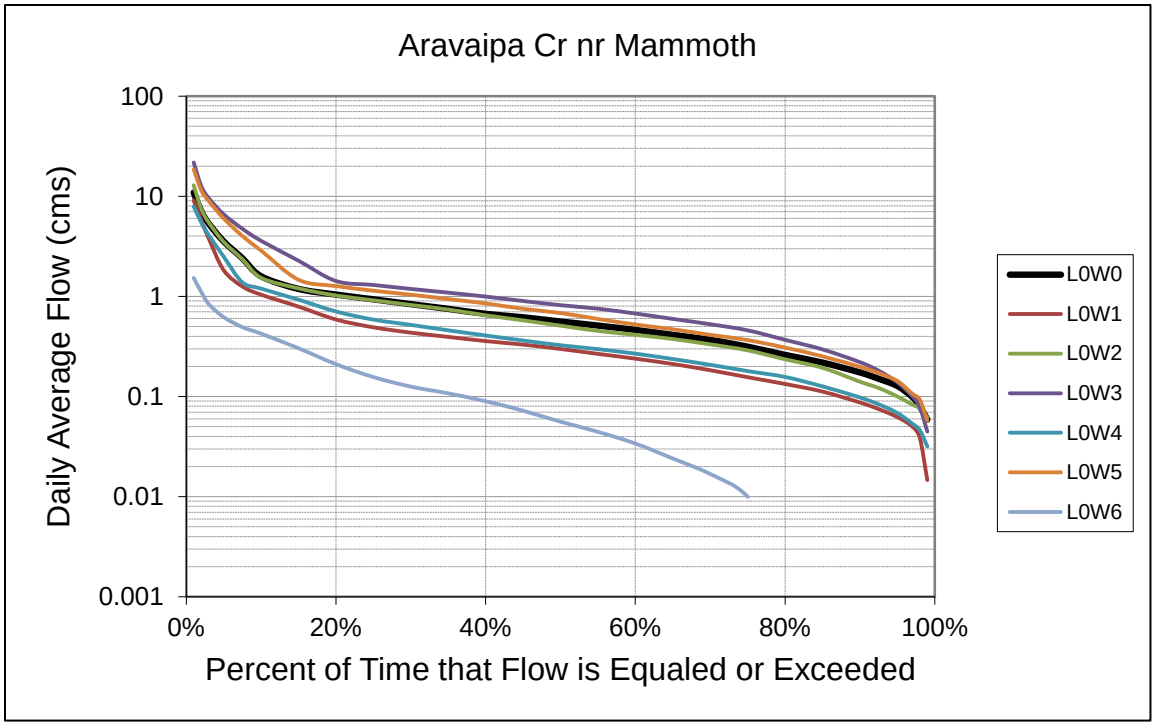

Figure 107. Flow Duration, Aravaipa Creek near Mammoth (SWAT)

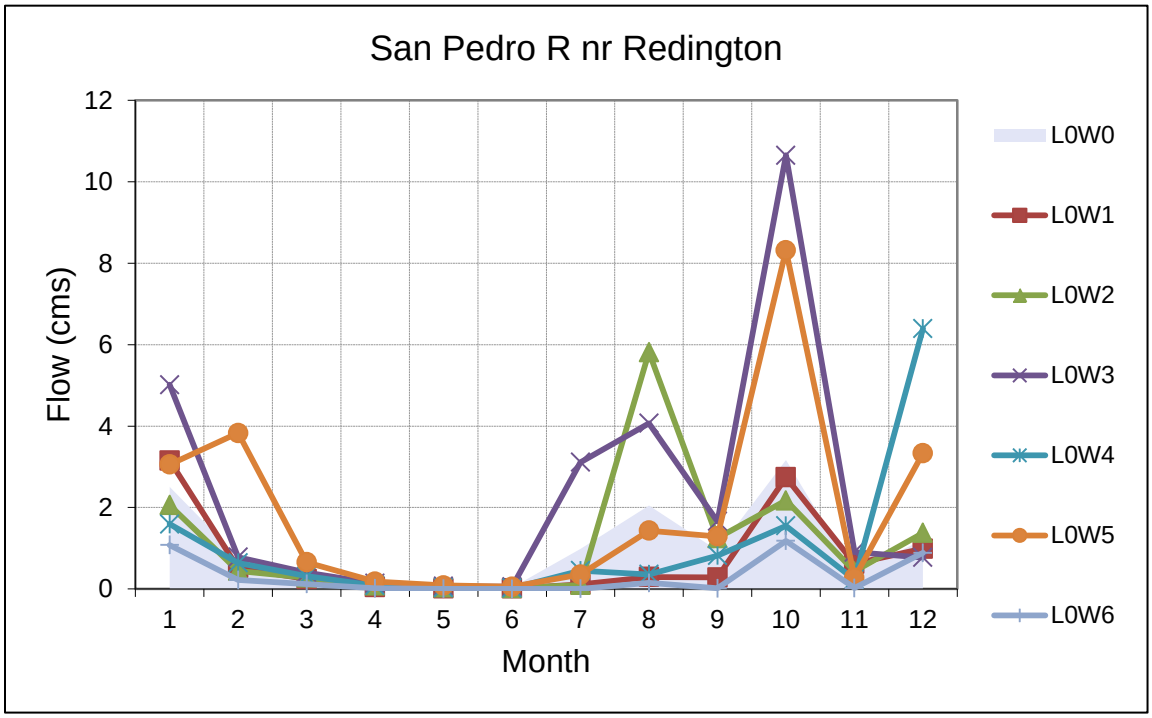

Figure 108. Monthly Average Flows, San Pedro River near Redington (SWAT)

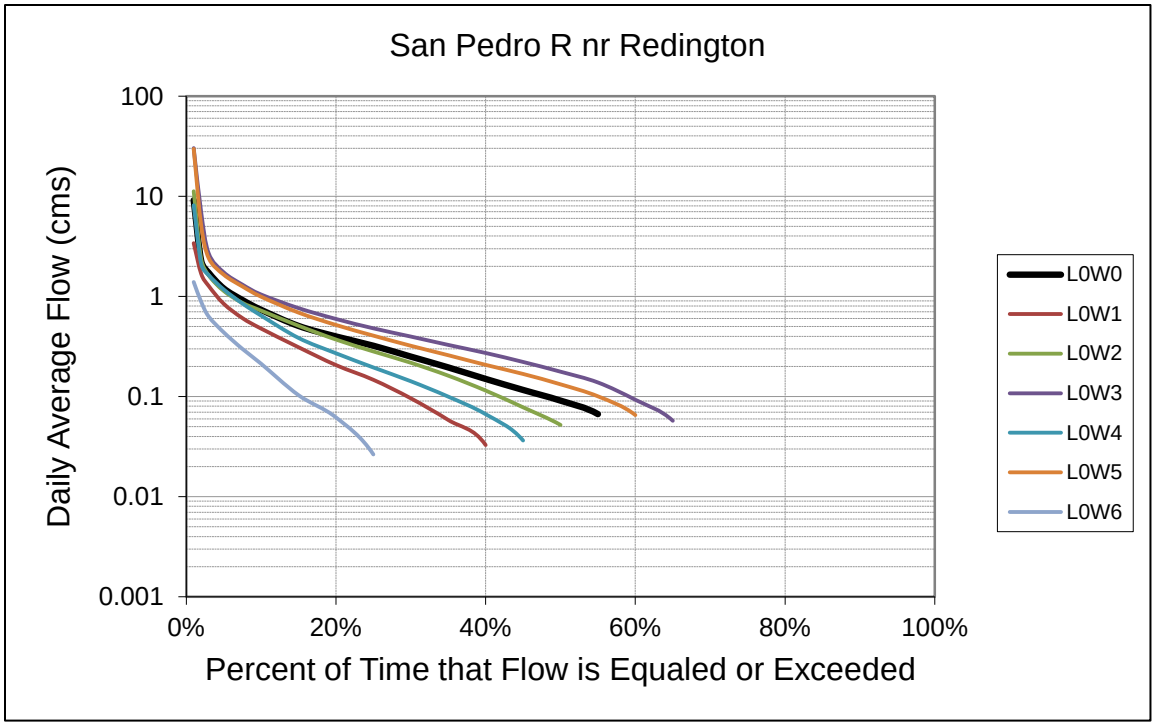

Figure 109. Flow Duration, San Pedro River near Redington (SWAT)

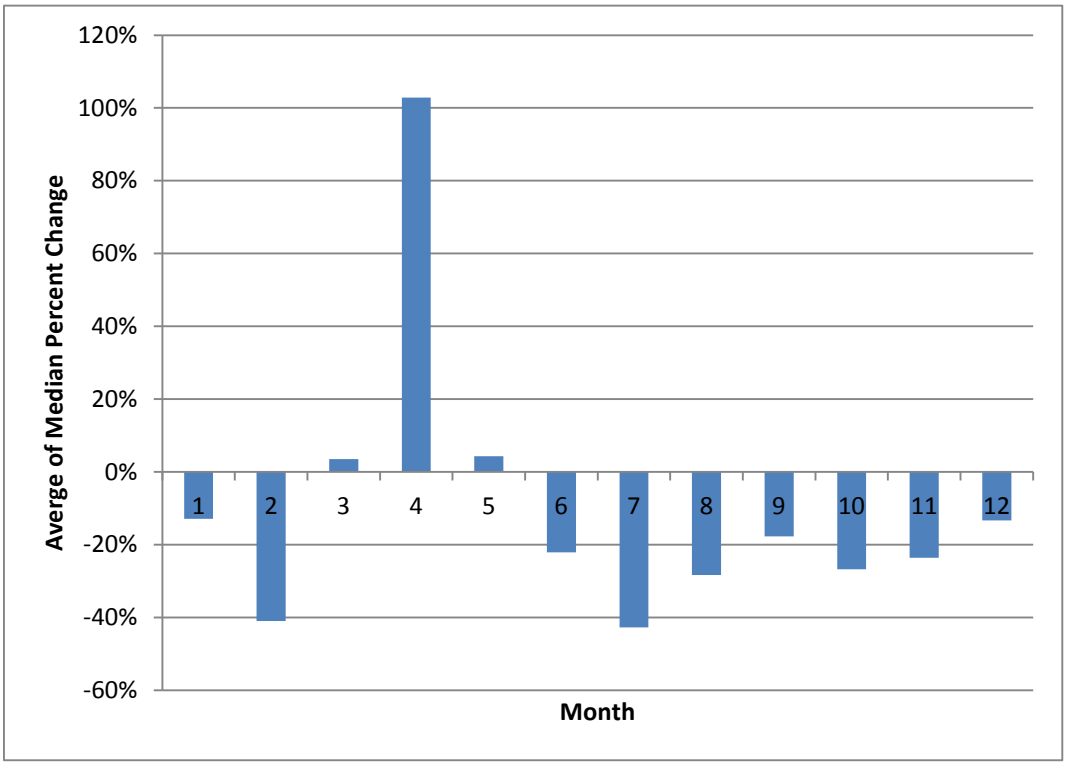

Figure 110. Average of Median Percent Change in Flow; NARCCAP Scenarios W1-W6 at all Stations, Verde-Salt-San Pedro Basins (SWAT)

Minnesota River (Upper Mississippi Basin), HSPF Model Results at Downstream Station

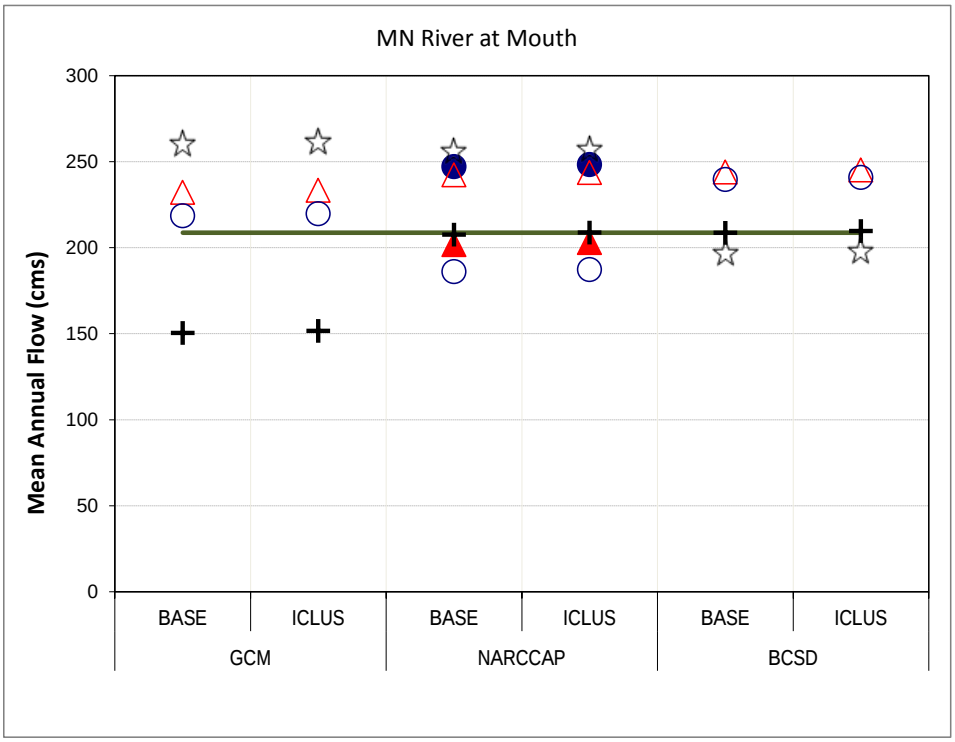

Figure 111. Mean Annual Flow, Minnesota River at Mouth (HSPF)

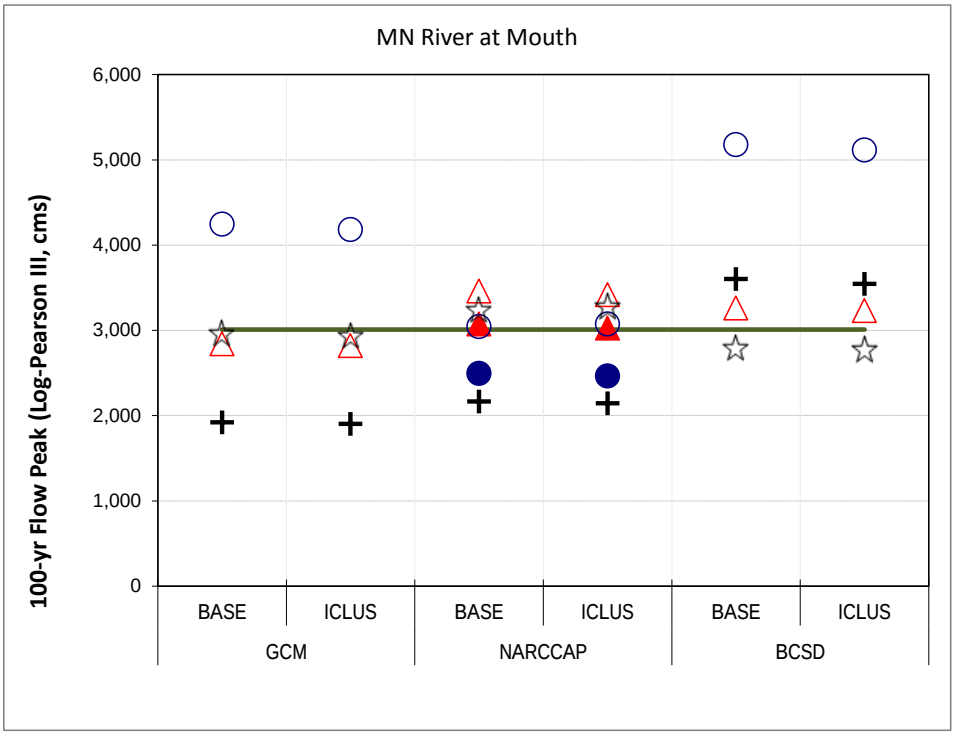

Figure 112. 100-yr Flow Peak, Minnesota River at Mouth (HSPF)

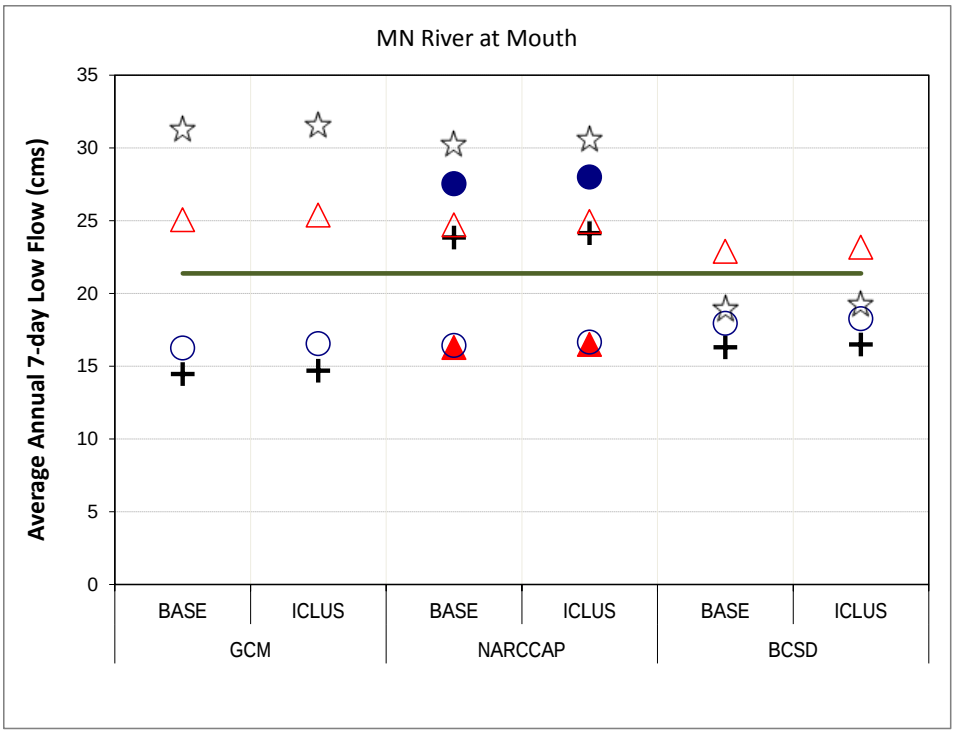

Figure 113. Average Annual 7-day Low Flow, Minnesota River at Mouth (HSPF)

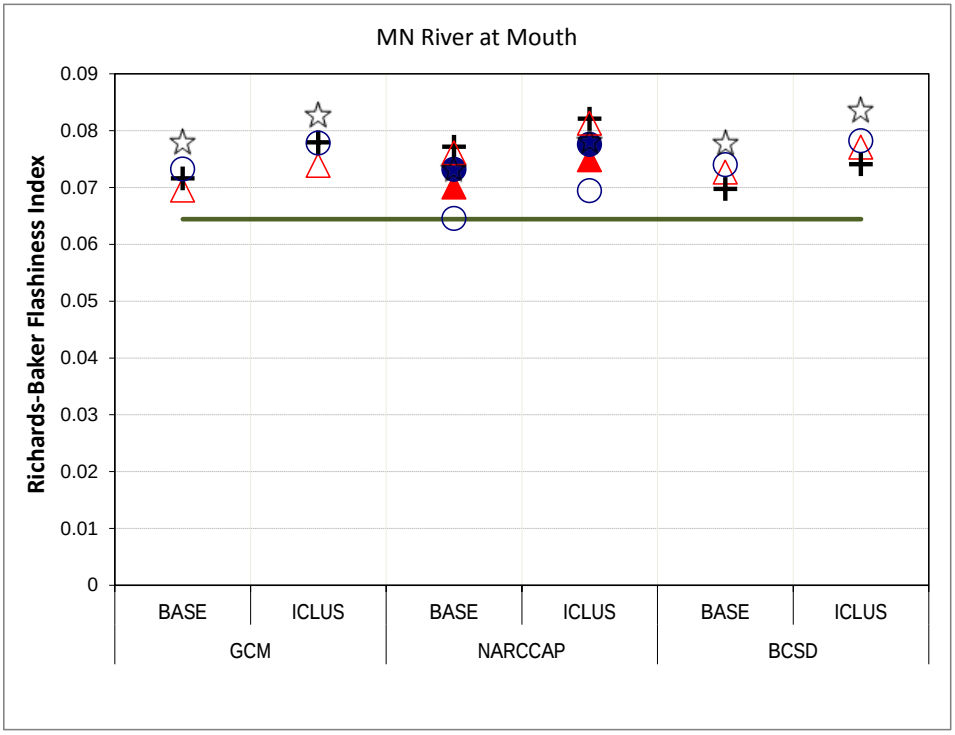

Figure 114. Richards-Baker Flashiness Index, Minnesota River at Mouth (HSPF)

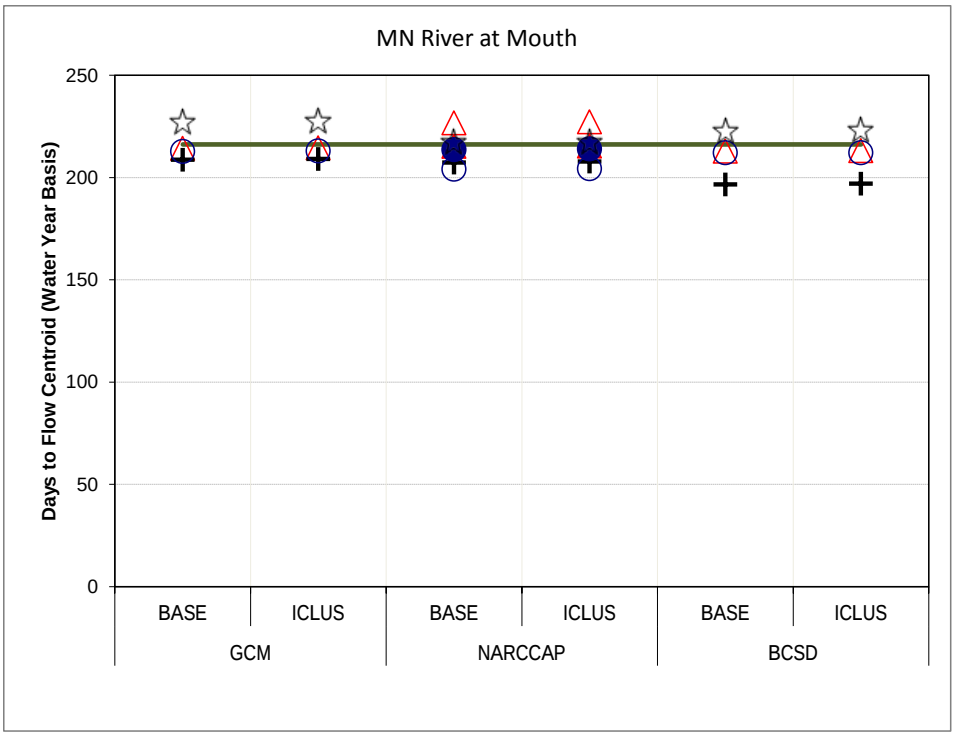

Figure 115. Days Flow to Centroid, Minnesota River at Mouth (HSPF)

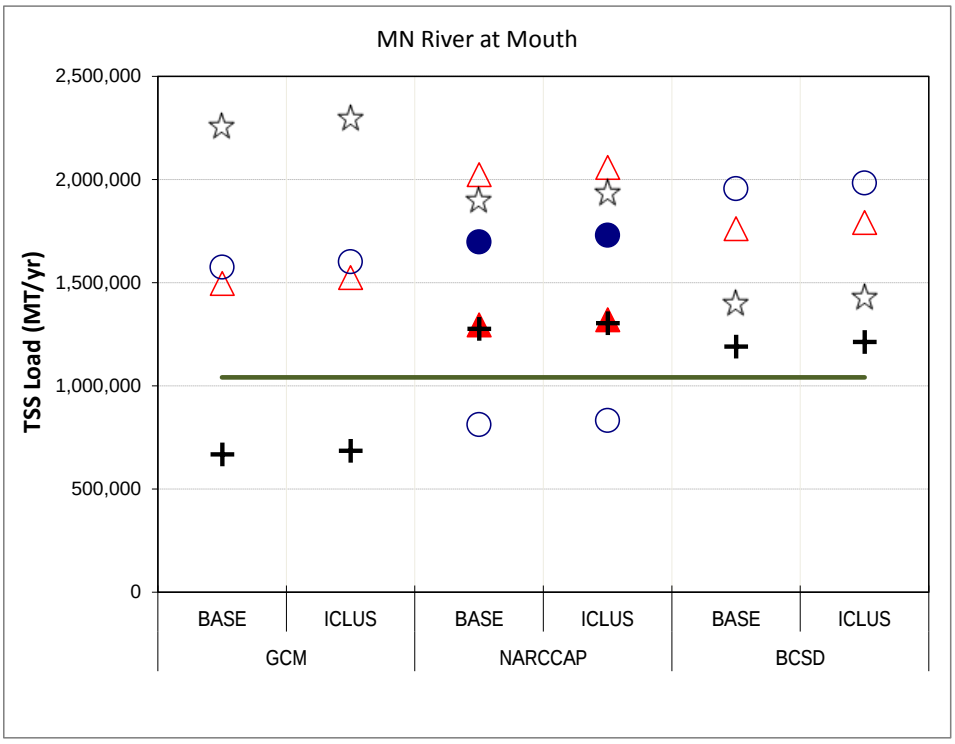

Figure 116. TSS Load, Minnesota River at Mouth (HSPF)

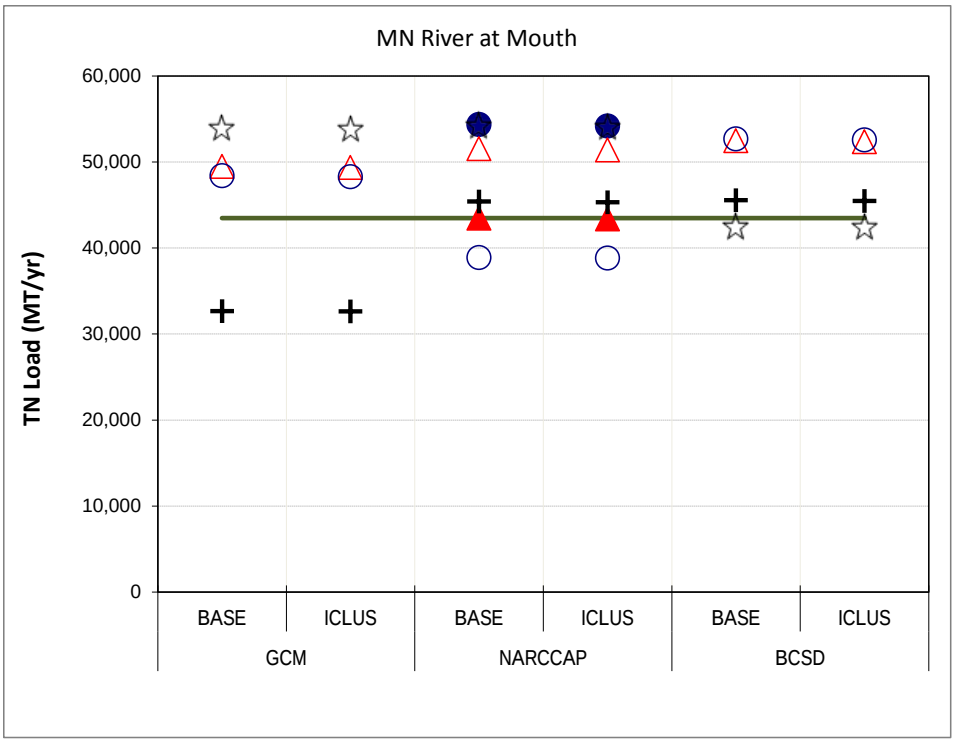

Figure 117. TN Load, Minnesota River at Mouth (HSPF)

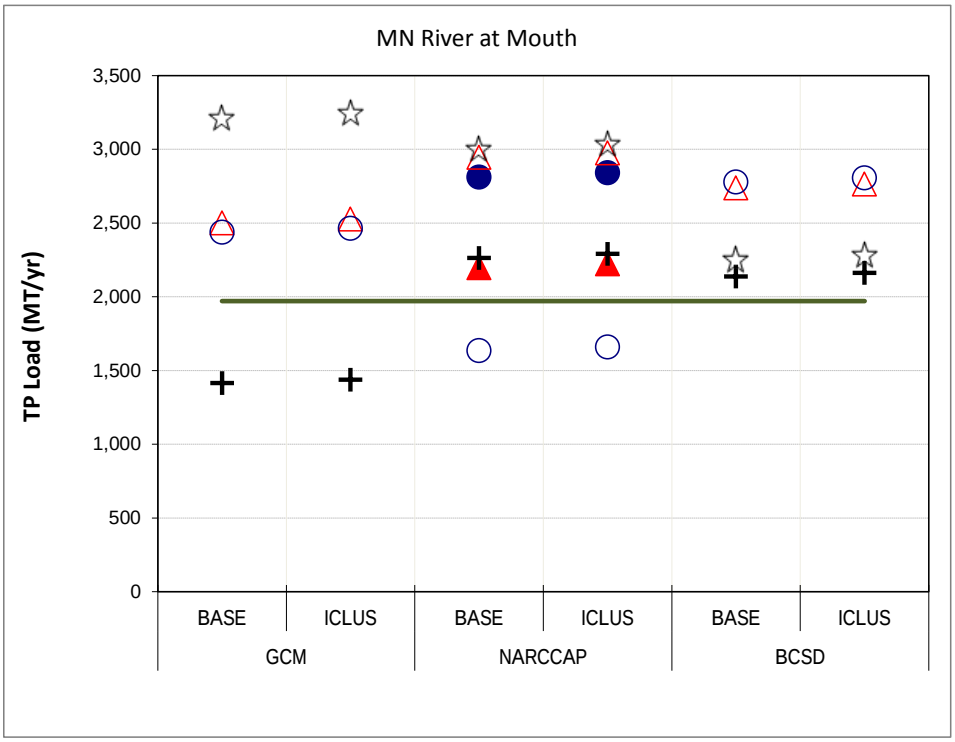

Figure 118. TP Load, Minnesota River at Mouth (HSPF)

Results at Multiple Stations

Table 5. Summary of Range of Change Relative to Existing Conditions for NARCCAP Dynamically Downscaled Scenarios, Minnesota River Basin (HSPF)

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Yellow Medicine River (gage 05313500)								
Flow	-10.06%	9.40%	7.36%	20.56%	-10.06%	9.40%	7.36%	20.56%
TSS	-3.34%	46.70%	35.03%	59.07%	-3.34%	46.70%	35.03%	59.07%
TN	-6.39%	11.21%	9.90%	25.60%	-6.39%	11.21%	9.90%	25.60%
TP	-1.76%	31.49%	24.62%	45.60%	-1.76%	31.49%	24.62%	45.60%
Redwood River (gage 05316500)								
Flow	-4.49%	6.06%	7.85%	19.63%	-4.49%	6.06%	7.85%	19.63%
TSS	16.60%	57.24%	46.60%	60.37%	16.60%	57.23%	46.60%	60.37%
TN	-5.15%	13.05%	11.20%	27.70%	-5.15%	13.05%	11.20%	27.70%
TP	4.81%	27.67%	25.86%	45.04%	4.81%	27.67%	25.86%	45.04%
Cottonwood River (gage 05317000)								
Flow	-6.44%	5.79%	7.01%	20.75%	-6.44%	5.79%	7.01%	20.75%
TSS	-10.25%	52.99%	45.40%	90.03%	-10.25%	52.99%	45.40%	90.03%
TN	-5.65%	11.50%	13.10%	31.28%	-5.65%	11.50%	13.10%	31.28%
TP	-9.23%	42.09%	36.16%	67.39%	-9.23%	42.09%	36.16%	67.39%
Watonwan River (gage 05319500)								
Flow	-14.52%	13.51%	7.94%	24.23%	-14.52%	13.51%	7.94%	24.23%
TSS	-51.07%	75.47%	52.86%	119.88 %	-51.07%	75.46%	52.86%	119.87 %
TN	-12.09%	22.67%	18.00%	39.28%	-12.09%	22.67%	18.00%	39.28%
TP	-30.36%	42.97%	28.82%	59.21%	-30.36%	42.97%	28.82%	59.21%
Blue Earth River (gage 05320000)								
Flow	-17.47%	11.89%	6.06%	19.42%	-17.46%	11.89%	6.06%	19.42%
TSS	-42.34%	70.22%	47.96%	93.08%	-42.34%	70.22%	47.96%	93.08%
TN	-14.64%	14.34%	10.30%	26.52%	-14.64%	14.34%	10.30%	26.52%
TP	-26.44%	35.32%	22.11%	42.29%	-26.44%	35.32%	22.11%	42.29%
LeSueur River (gage 05320500)								

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Flow	-16.91%	14.00%	7.53%	22.37%	-16.91%	14.00%	7.53%	22.36%
TSS	-36.35%	45.96%	29.11%	62.79%	-36.34%	45.95%	29.10%	62.78%
TN	-15.26%	10.17%	5.53%	19.82%	-15.26%	10.17%	5.53%	19.81%
TP	-21.68%	32.09%	20.28%	39.93%	-21.68%	32.09%	20.28%	39.93%
Minnesota River at Mankato (gage 05325000)								
Flow	-10.06%	7.15%	6.94%	21.84%	-10.06%	7.15%	6.94%	21.84%
TSS	-21.39%	43.35%	42.43%	86.59%	-21.39%	43.35%	42.43%	86.58%
TN	-10.65%	10.70%	9.44%	23.23%	-10.65%	10.70%	9.44%	23.23%
TP	-16.40%	28.88%	25.91%	50.99%	-16.40%	28.87%	25.91%	50.99%
Minnesota River nr Jordan (gage 05330000)								
Flow	-10.66%	7.67%	7.15%	22.77%	-10.65%	7.67%	7.15%	22.76%
TSS	-21.05%	46.52%	46.52%	97.42%	-21.04%	46.37%	46.37%	97.12%
TN	-10.80%	11.65%	10.45%	25.23%	-10.79%	11.64%	10.43%	25.19%
TP	-17.31%	29.59%	26.31%	53.21%	-17.29%	29.55%	26.28%	53.16%
Minnesota River at Mouth								
Flow	-10.83%	7.79%	7.16%	23.12%	-10.79%	7.80%	7.15%	23.05%
TSS	-22.00%	43.74%	44.32%	94.35%	-22.04%	42.85%	43.43%	92.79%
TN	-10.57%	11.48%	10.39%	25.07%	-10.54%	11.40%	10.31%	24.88%
TP	-17.10%	28.68%	25.64%	52.72%	-16.95%	28.44%	25.43%	52.40%

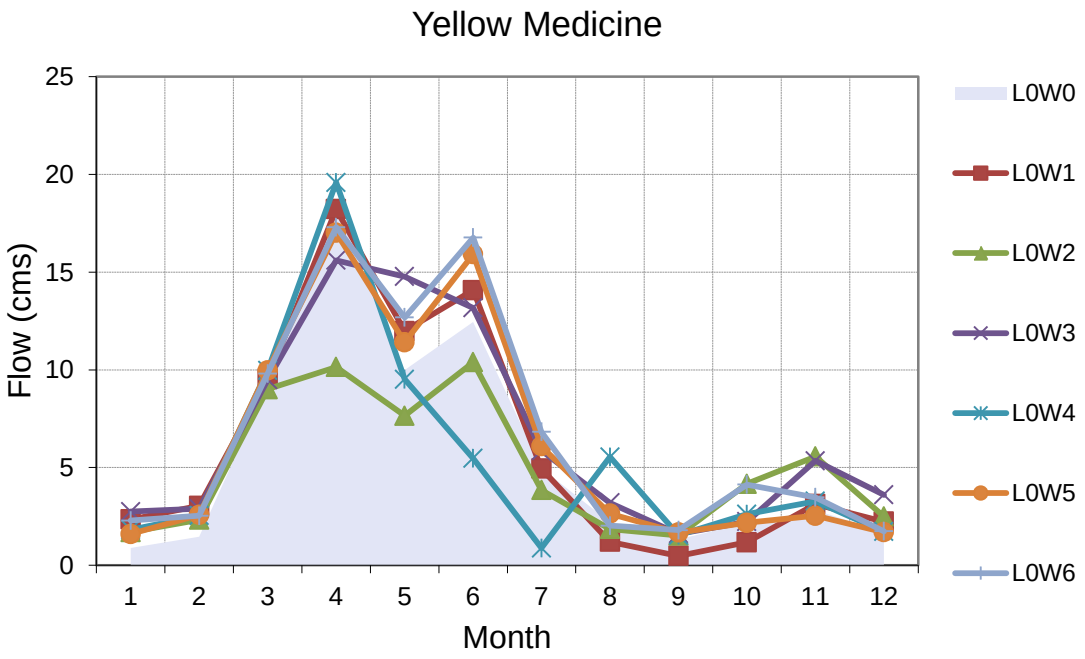

Figure 119. Monthly Average Flows, Yellow Medicine River (HSPF)

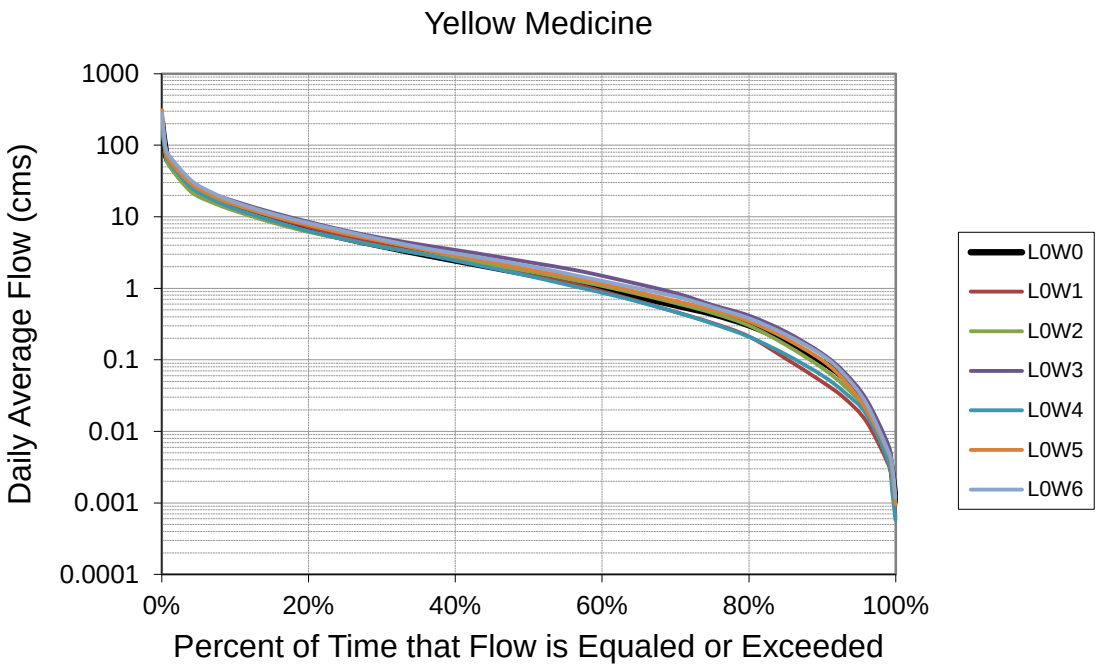

Figure 120. Flow Duration, Yellow Medicine River (HSPF)

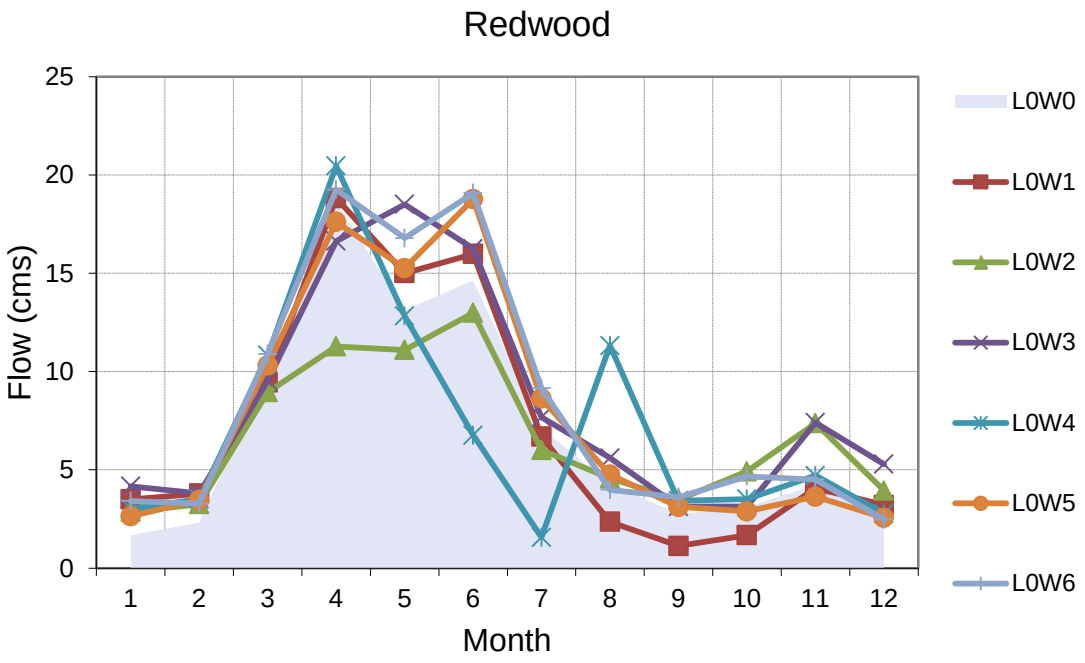

Figure 121. Monthly Average Flows, Redwood River (HSPF)

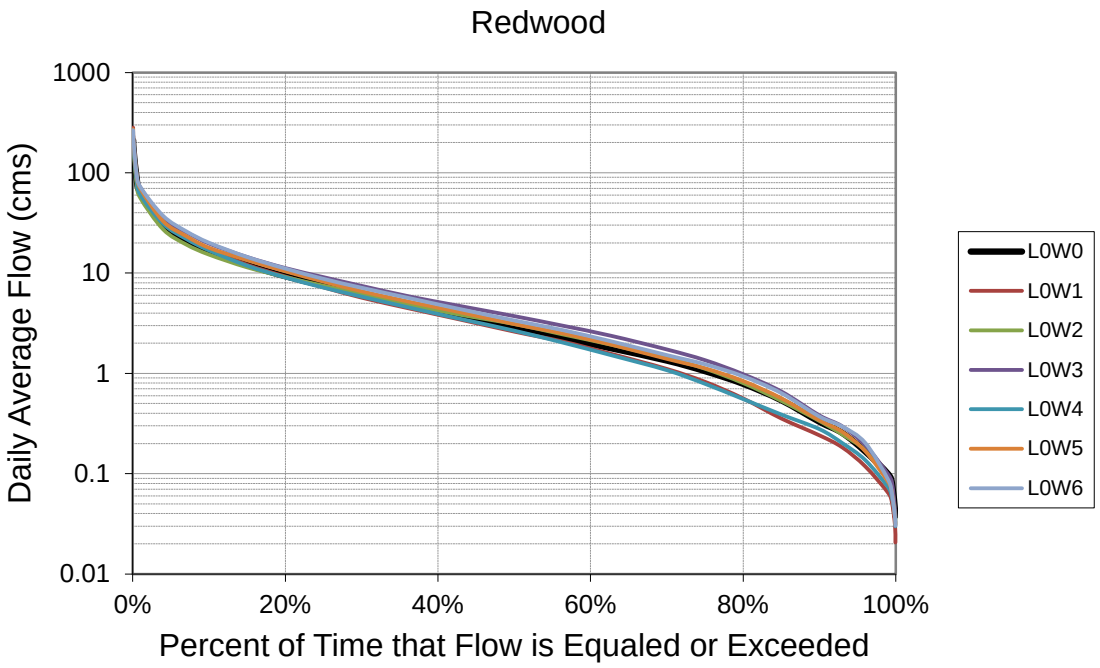

Figure 122. Flow Duration, Redwood River (HSPF)

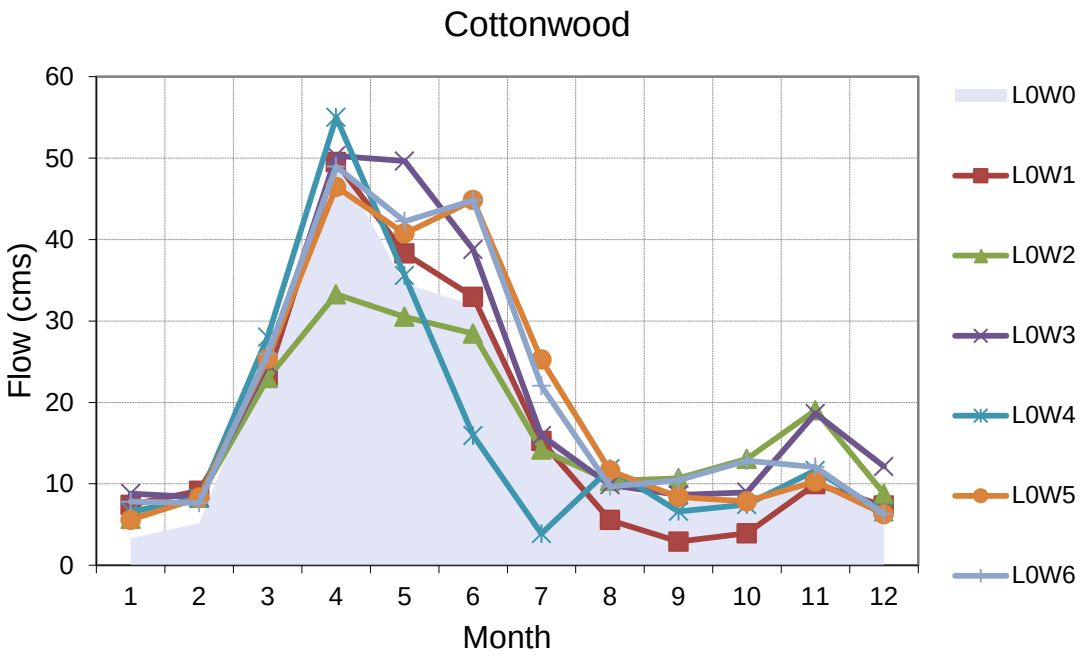

Figure 123. Monthly Average Flows, Cottonwood River (HSPF)

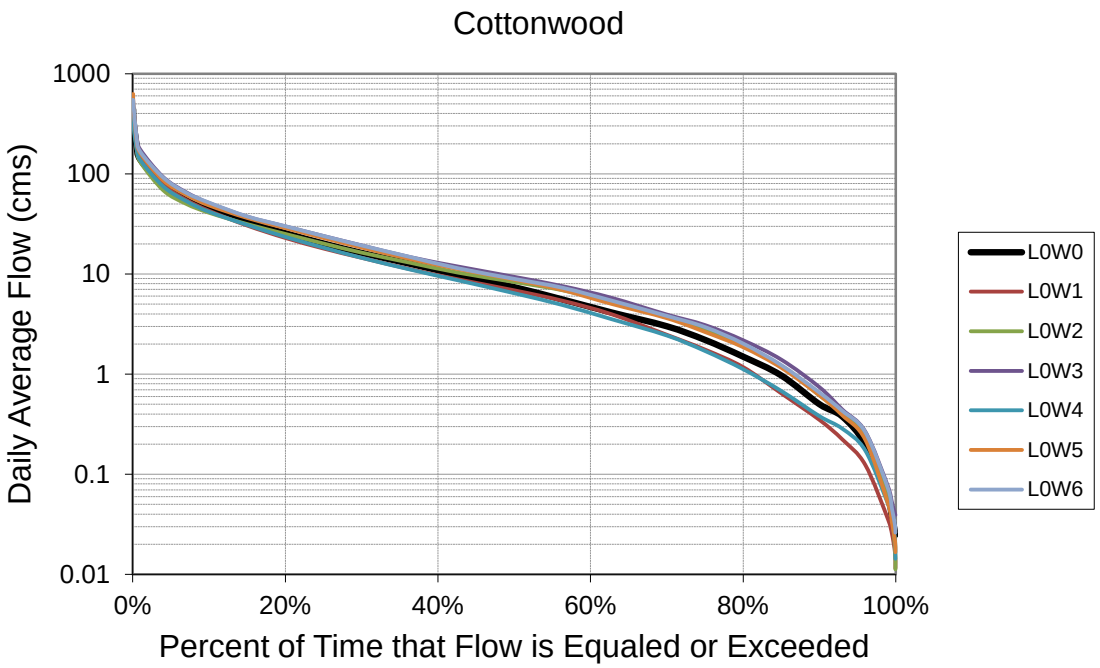

Figure 124. Flow Duration, Cottonwood River (HSPF)

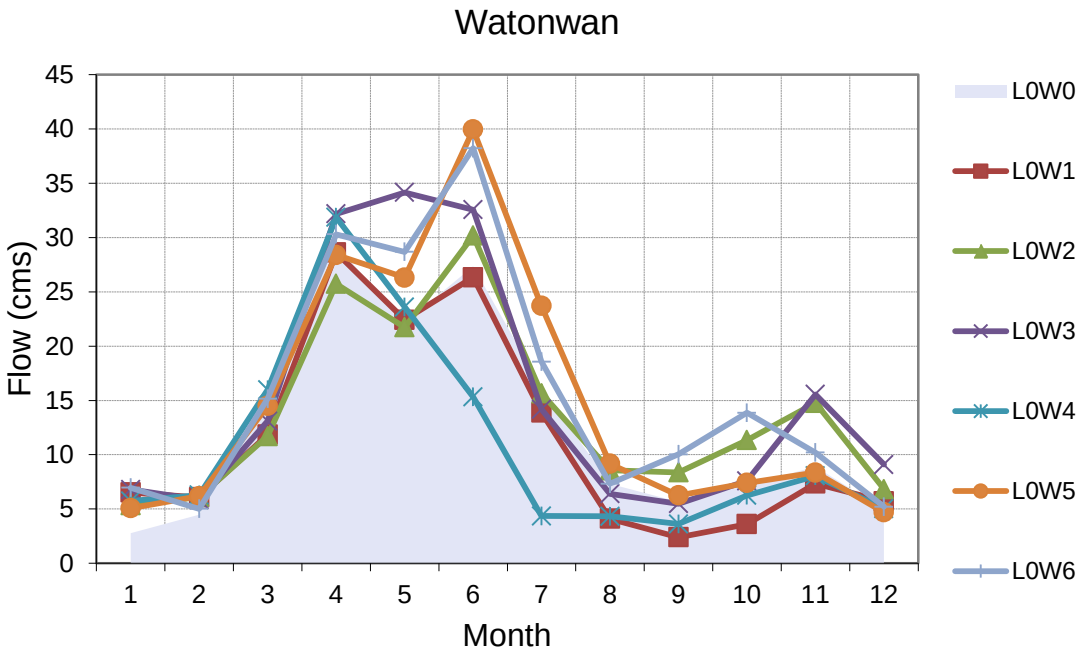

Figure 125. Monthly Average Flows, Watonwan River (HSPF)

Figure 126. Flow Duration, Watonwan River (HSPF)

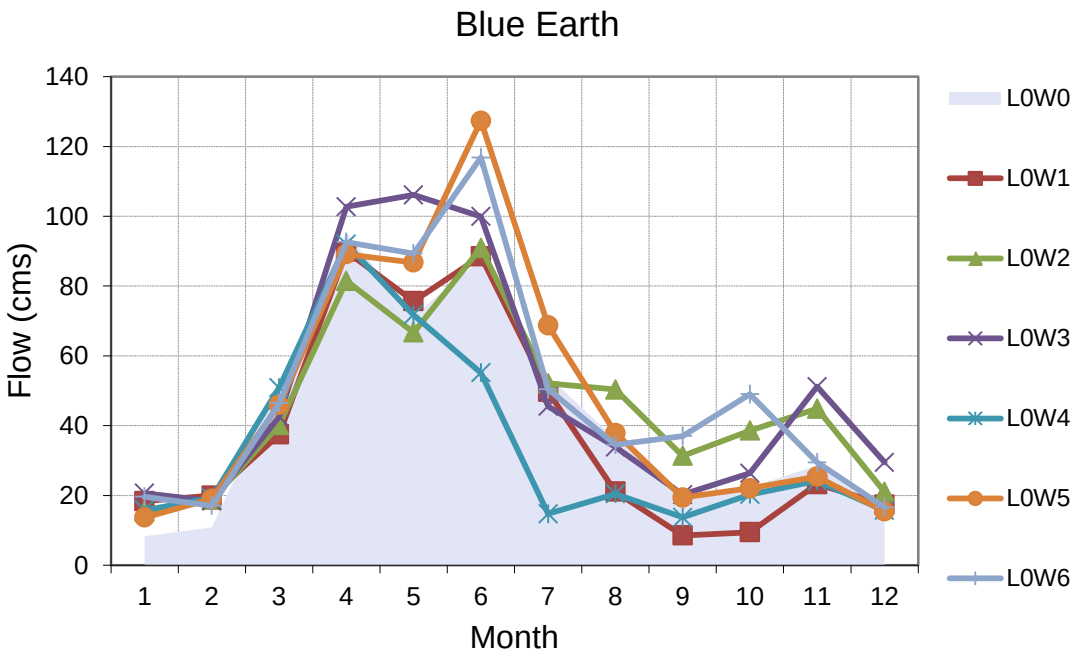

Figure 127. Monthly Average Flows, Blue Earth River (HSPF)

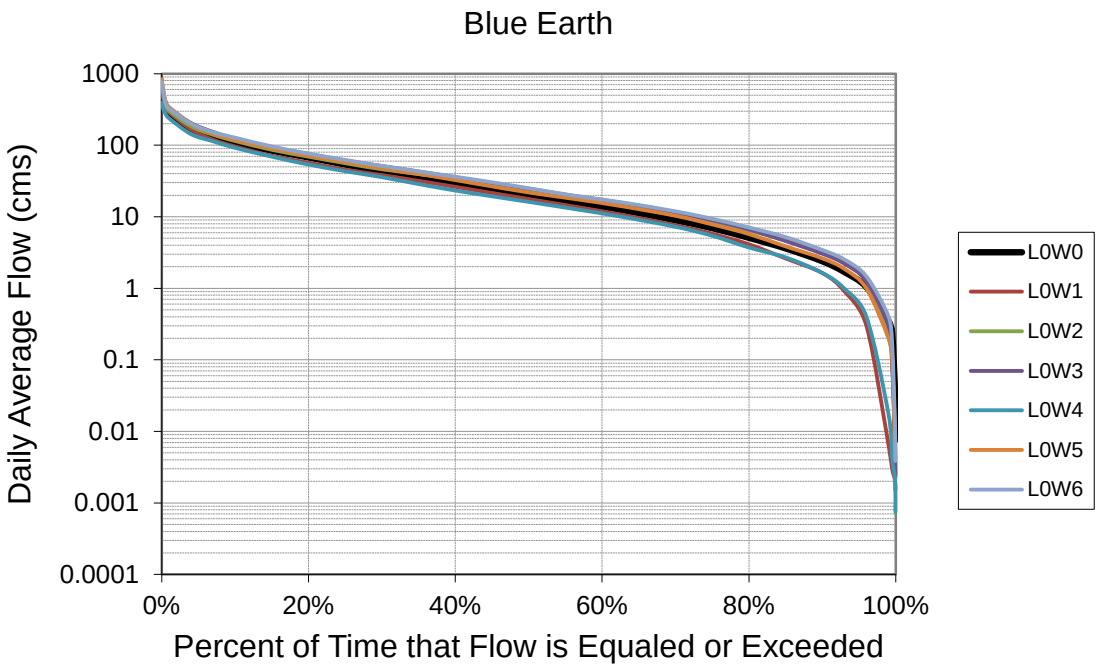

Figure 128. Flow Duration, Blue Earth River (HSPF)

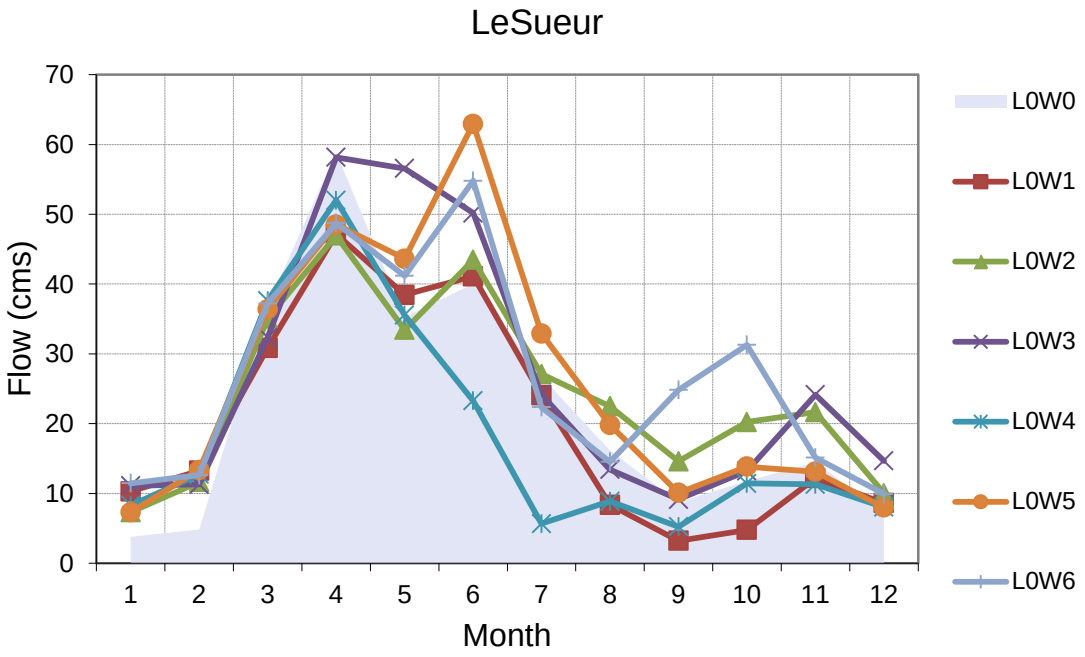

Figure 129. Monthly Average Flows, Le Sueur River (HSPF)

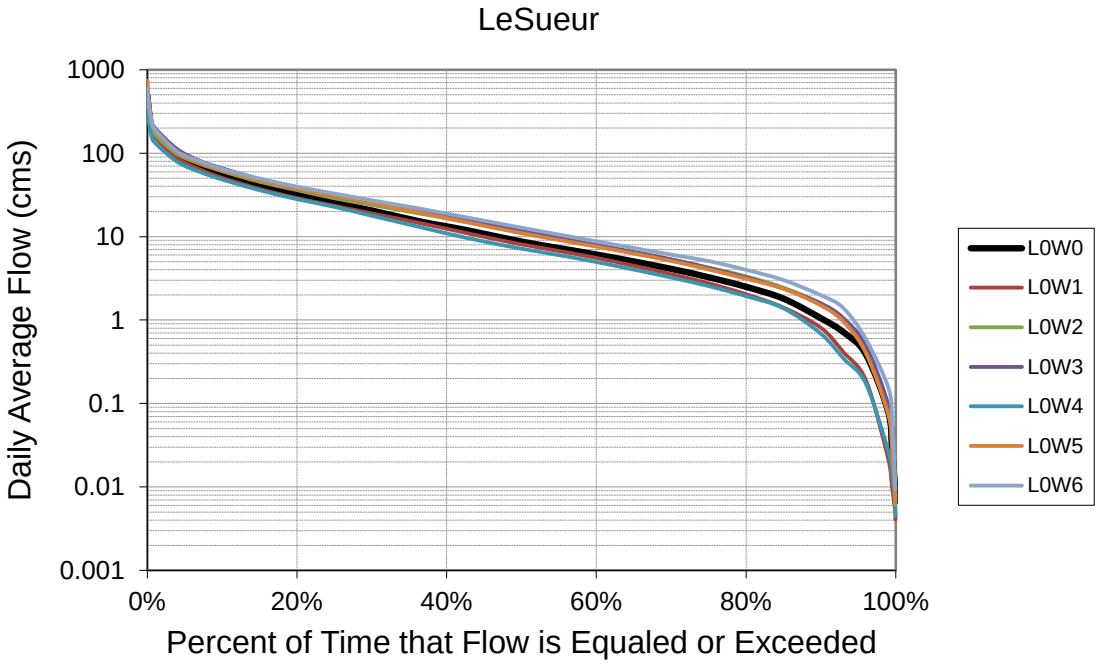

Figure 130. Flow Duration, Le Sueur River (HSPF)

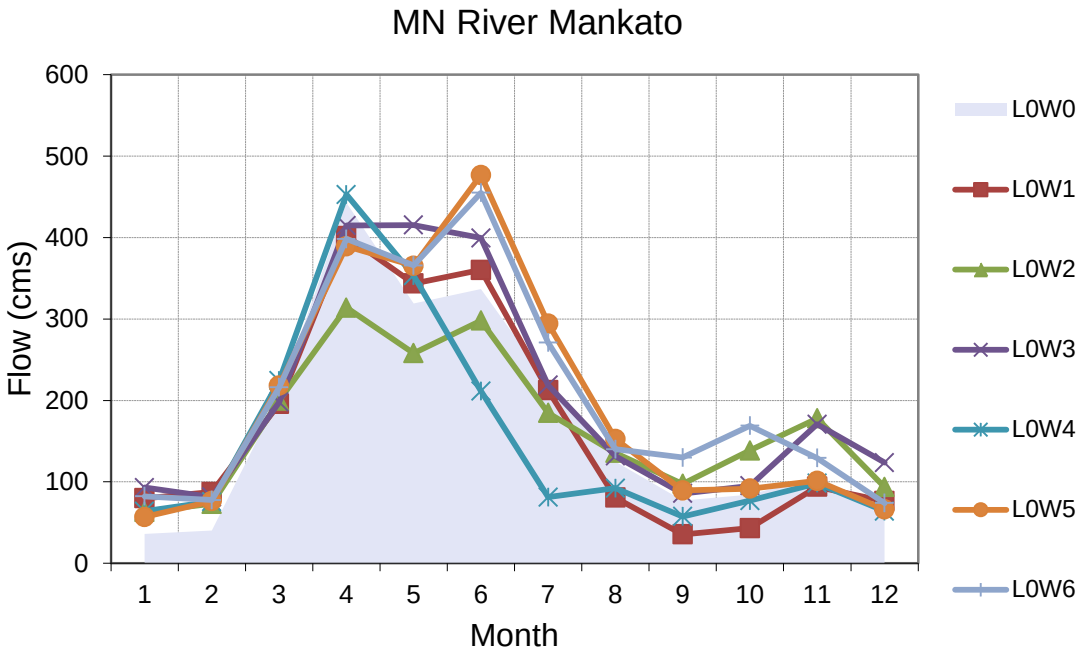

Figure 131. Monthly Average Flows, Minnesota River at Mankato (HSPF)

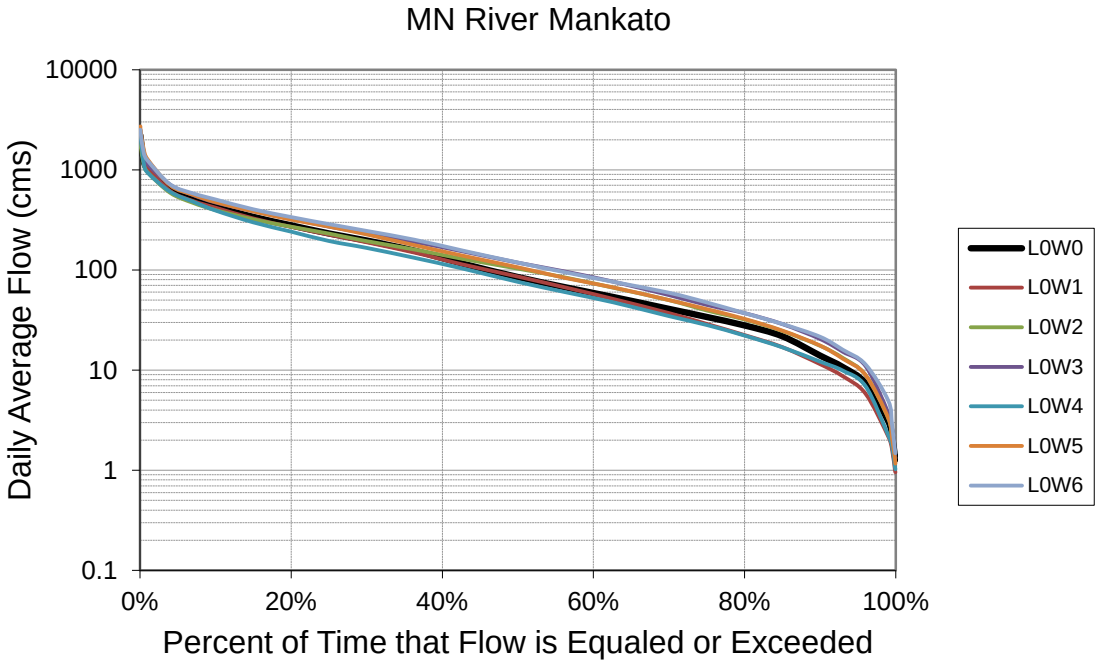

Figure 132. Flow Duration, Minnesota River at Mankato (HSPF)

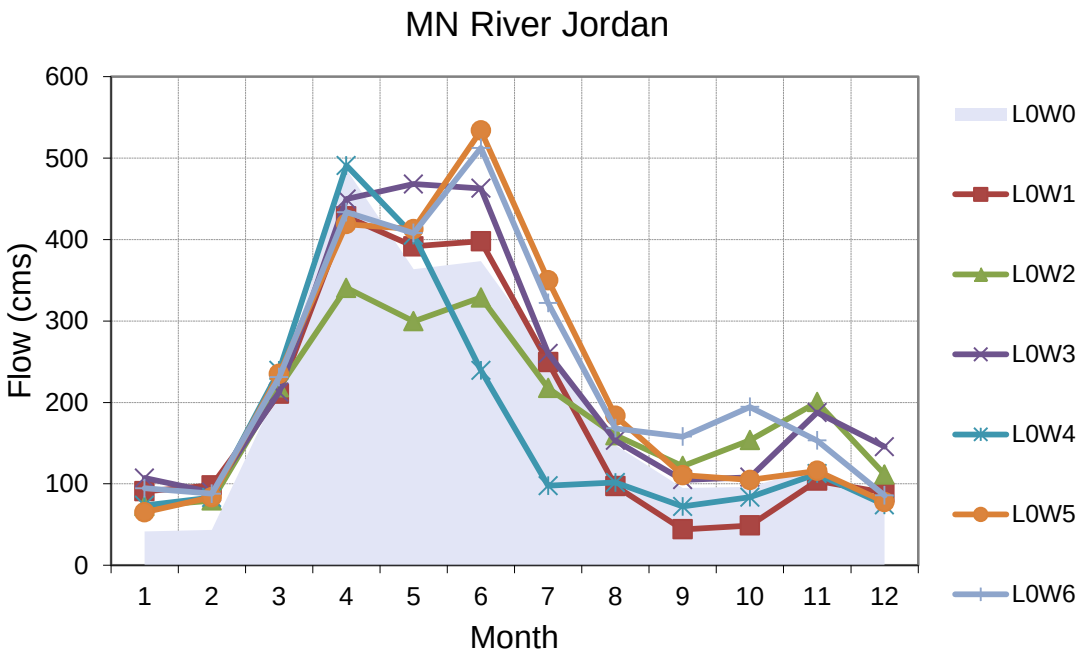

Figure 133. Monthly Average Flows, Minnesota River near Jordan (HSPF)

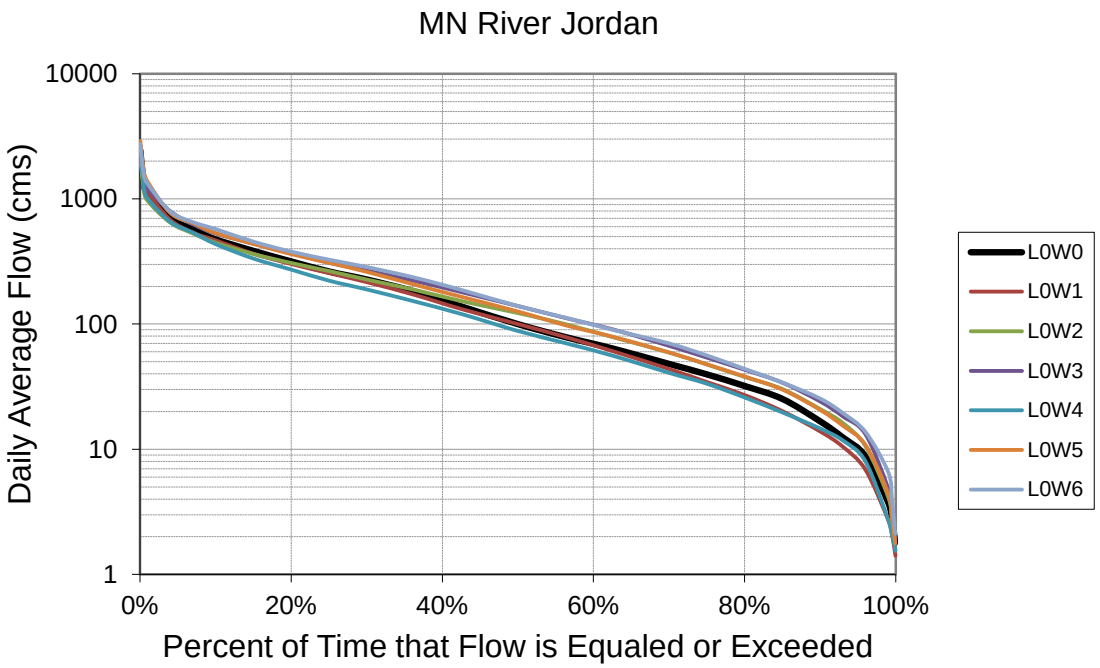

Figure 134. Flow Duration, Minnesota River near Jordan (HSPF)

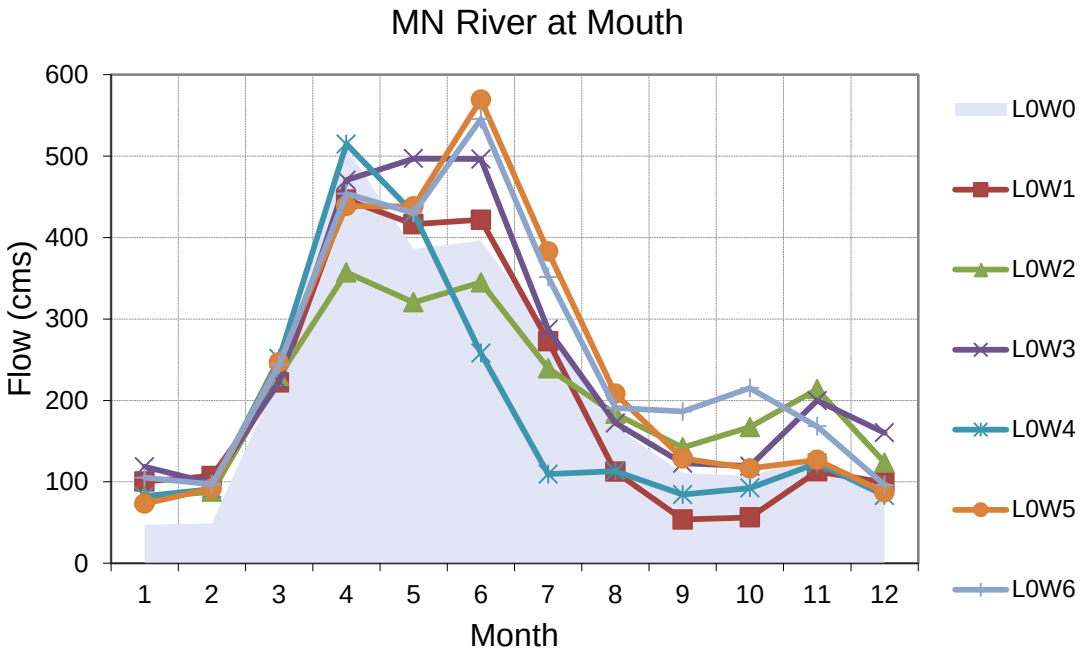

Figure 135. Monthly Average Flows, Minnesota River at Mouth (HSPF)

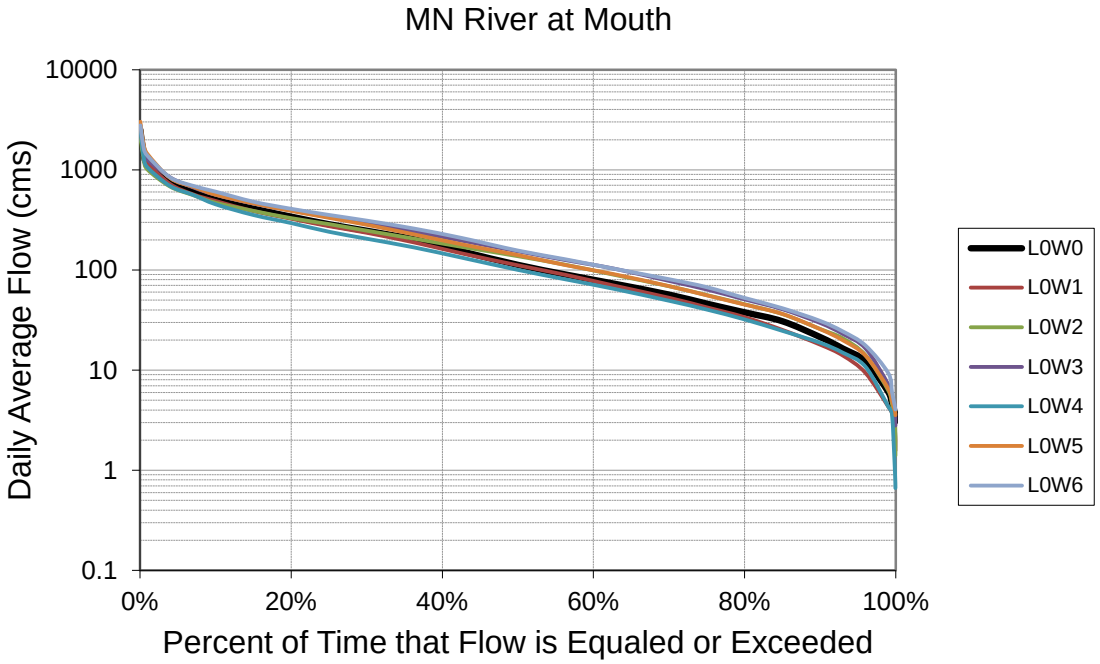

Figure 136. Flow Duration, Minnesota River at Mouth (HSPF)

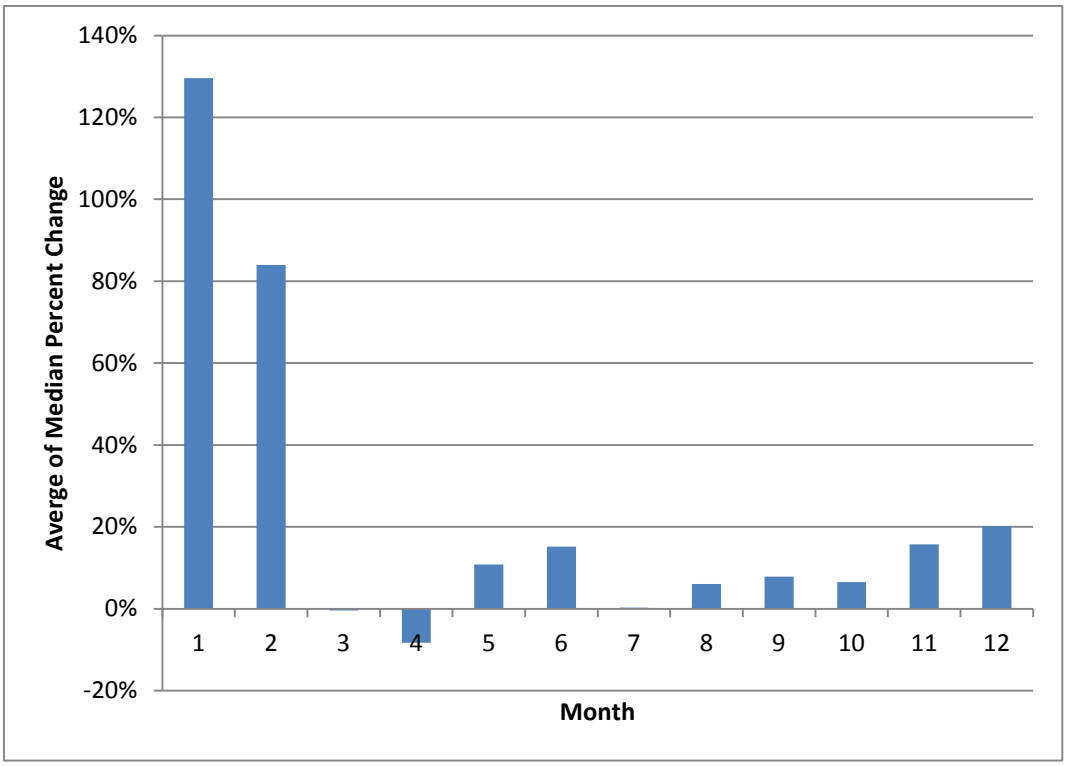

Figure 137. Average of Median Percent Change in Flow; NARCCAP Scenarios W1-W6 at all Stations, Minnesota River Basin (HSPF)

Minnesota River (Upper Mississippi Basin), SWAT Model Results at Downstream Station

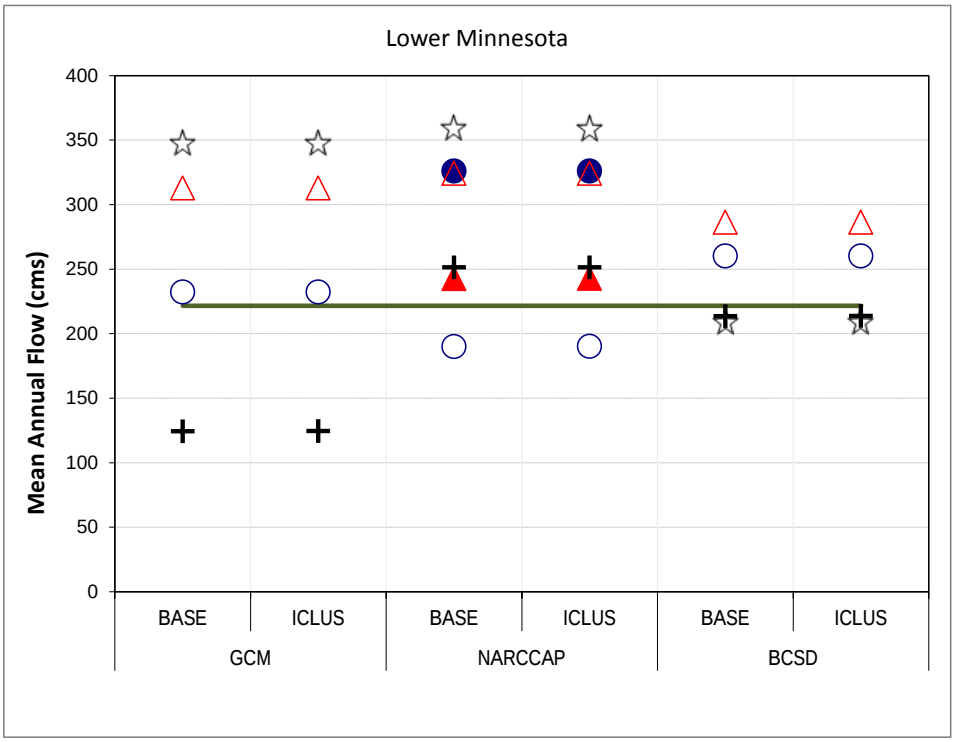

Figure 138. Mean Annual Flow, Lower Minnesota River (SWAT)

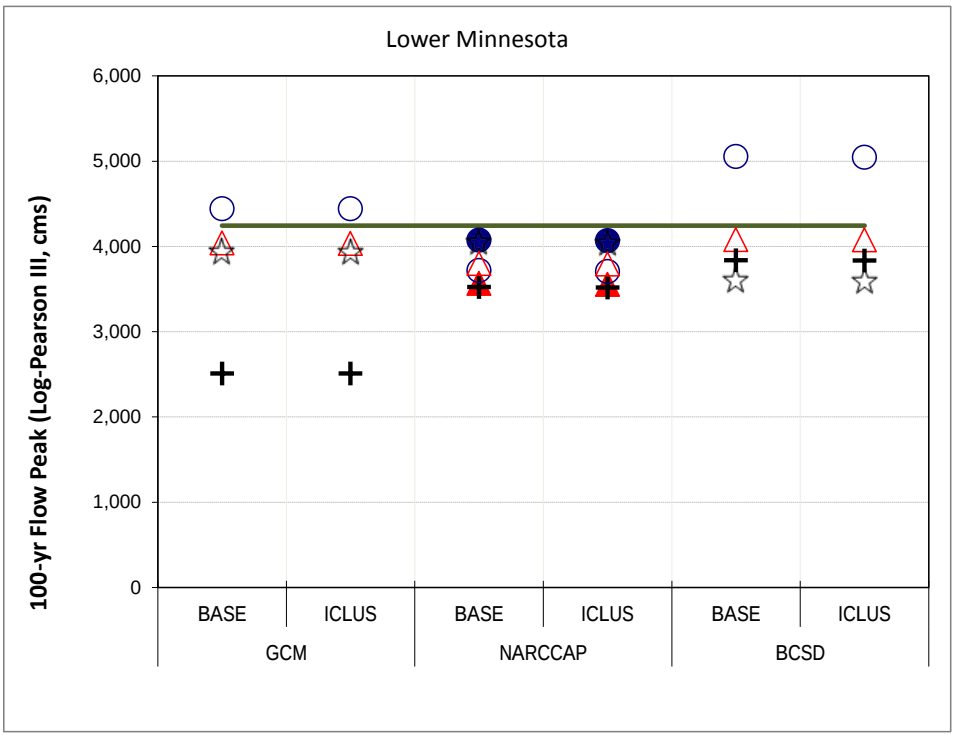

Figure 139. 100-yr Flow Peak, Lower Minnesota River (SWAT)

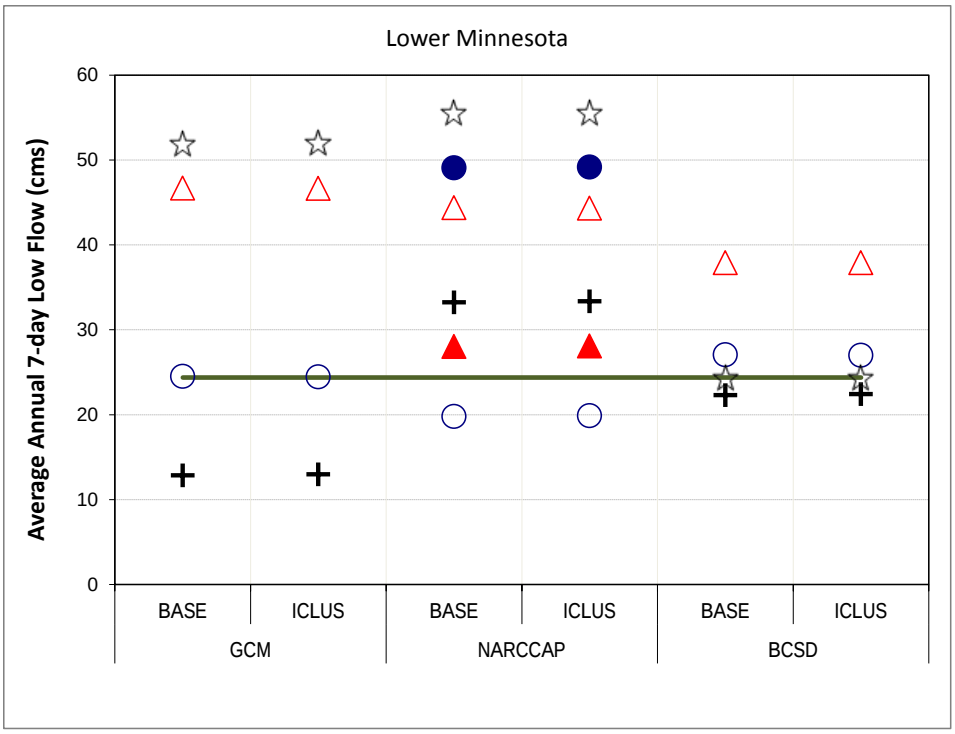

Figure 140. Average Annual 7-day Low Flow, Lower Minnesota River (SWAT)

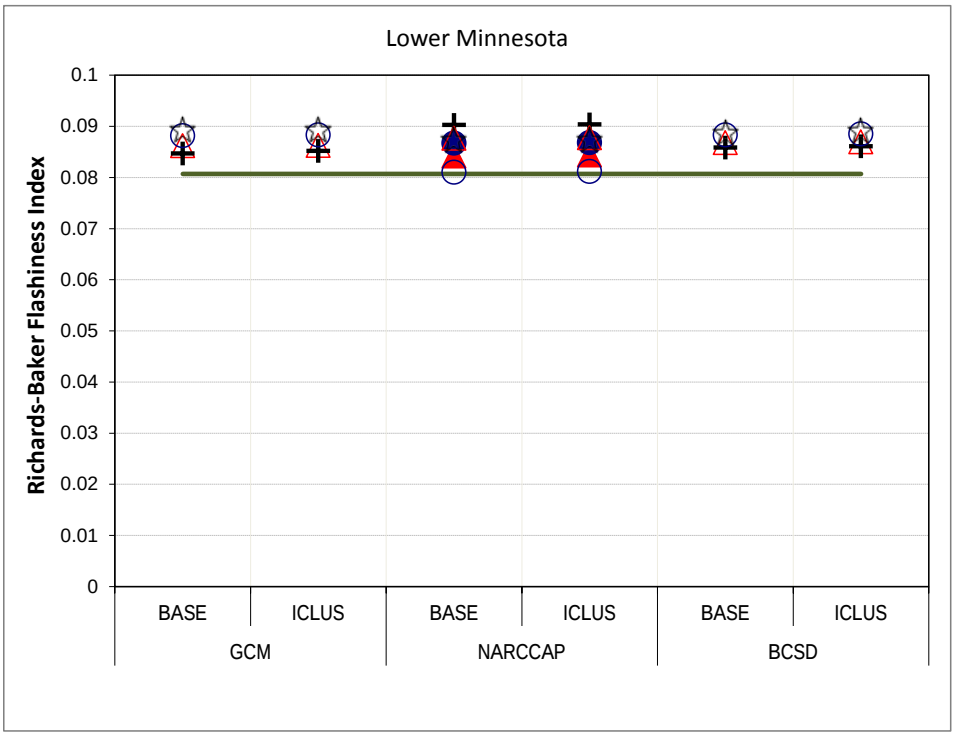

Figure 141. Richards-Baker Flashiness Index, Lower Minnesota River (SWAT)

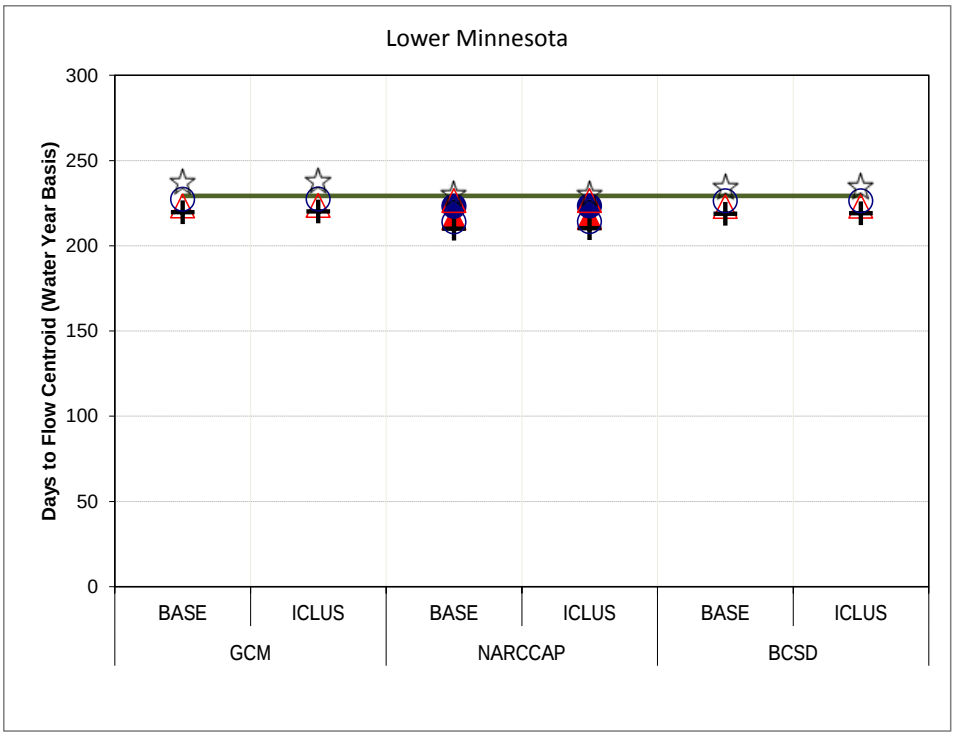

Figure 142. Days to Flow Centroid, Lower Minnesota River (SWAT)

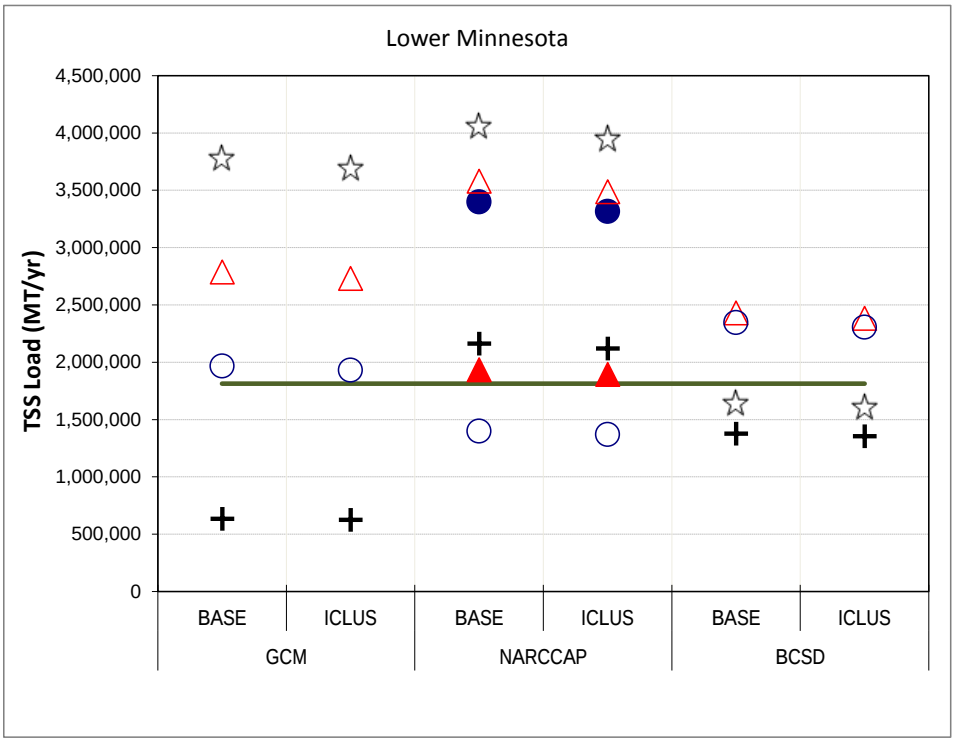

Figure 143. TSS Load, Lower Minnesota River (SWAT)

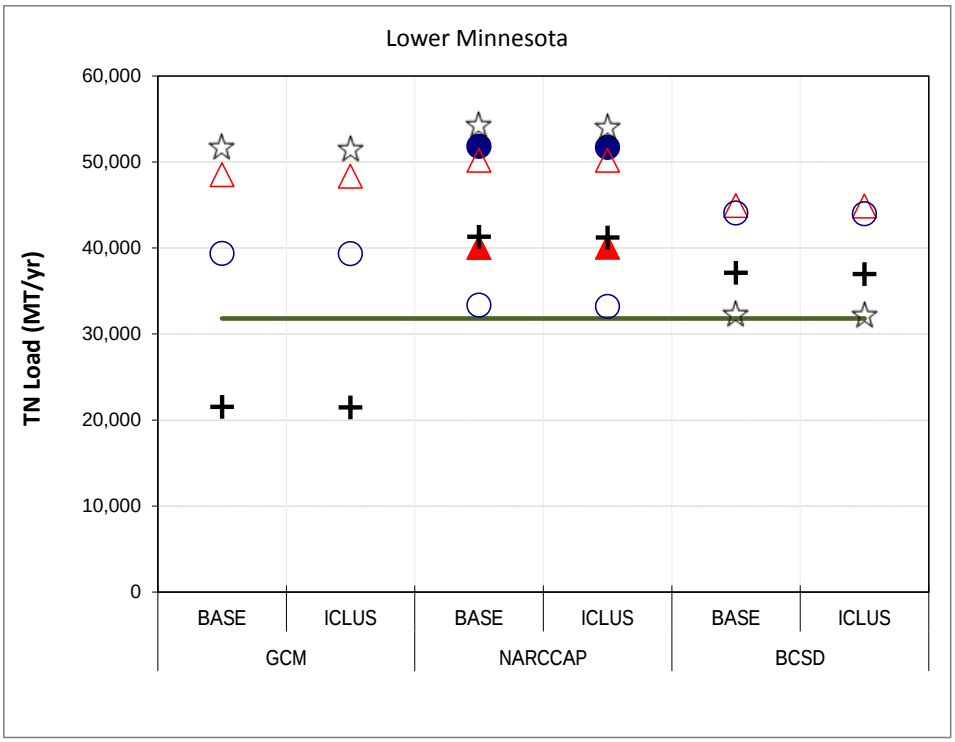

Figure 144. TN Load, Lower Minnesota River (SWAT)

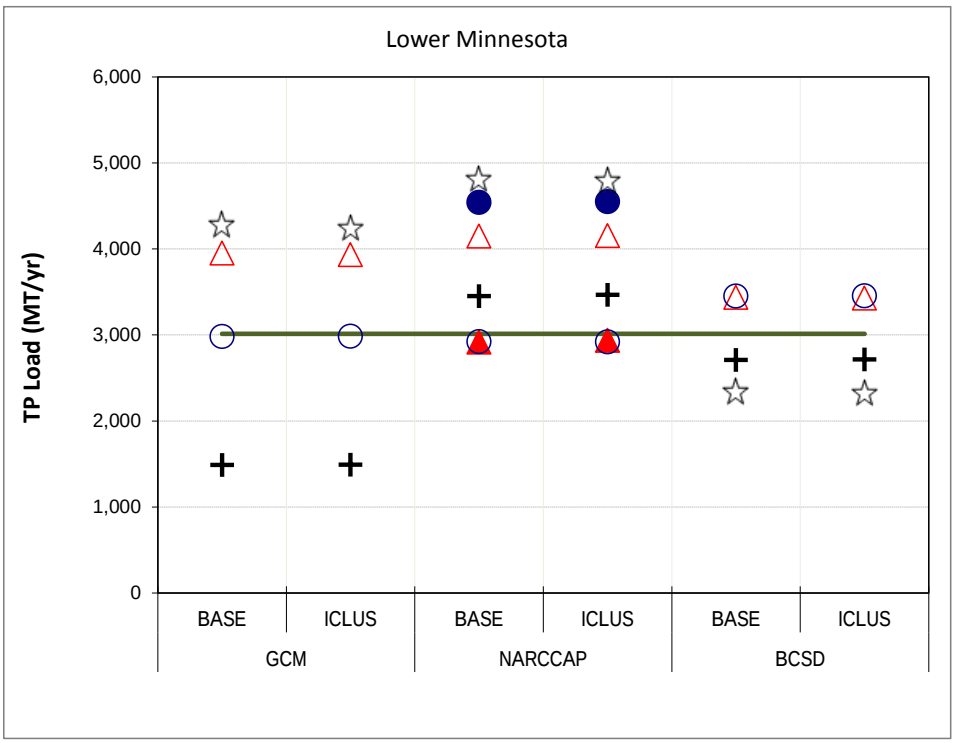

Figure 145. TP Load, Lower Minnesota River (SWAT)

Results at Multiple Stations

Table 6. Summary of Range of Change Relative to Existing Conditions for NARCCAP Dynamically Downscaled Scenarios, Minnesota River Basin SWAT Model

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Upper Minnesota HUC 07020001								
Flow	-3.95%	39.98%	36.17%	85.38%	-3.95%	39.98%	36.17%	85.38%
TSS	-17.42%	44.98%	47.84%	127.01%	-17.42%	44.98%	47.84%	127.01%
TN	19.73%	70.17%	67.01%	122.77%	19.73%	70.19%	67.03%	122.80%
TP	-12.85%	20.85%	25.01%	75.93%	-12.85%	20.87%	25.03%	75.97%
Pomme de Terre HUC 07020003								
Flow	-6.62%	33.48%	32.66%	77.84%	-6.62%	33.48%	32.66%	77.84%
TSS	-21.07%	30.07%	39.65%	115.54%	-21.07%	30.07%	39.65%	115.54%
TN	13.41%	53.98%	56.56%	107.51%	13.41%	53.99%	56.57%	107.53%
TP	-19.42%	16.76%	24.47%	83.00%	-19.42%	16.79%	24.50%	83.04%
Lac qui Parle HUC 07020002								
Flow	-7.31%	36.35%	32.40%	71.11%	-7.31%	36.35%	32.40%	71.11%
TSS	-17.12%	35.86%	33.84%	100.96%	-17.12%	35.86%	33.84%	100.96%
TN	9.56%	54.59%	48.18%	83.64%	9.56%	54.60%	48.18%	83.64%
TP	-13.85%	16.56%	18.02%	57.03%	-13.86%	16.57%	18.03%	57.05%
Yellow Medicine River HUC 07020004 (part)								
Flow	-7.92%	34.59%	31.53%	67.46%	-7.92%	34.59%	31.53%	67.46%
TSS	-16.42%	41.72%	36.16%	94.48%	-16.42%	41.72%	36.16%	94.48%
TN	0.03%	50.01%	43.94%	78.07%	0.12%	50.02%	43.97%	78.07%
TP	-20.52%	18.54%	18.61%	54.03%	-20.52%	18.55%	18.62%	54.05%
Chippewa River HUC 07020005								
Flow	-9.95%	25.69%	23.79%	65.55%	-9.95%	25.68%	23.79%	65.55%
TSS	-22.48%	32.97%	40.29%	126.59%	-22.48%	32.97%	40.29%	126.59%
TN	-0.76%	36.51%	36.79%	78.51%	-0.76%	36.53%	36.81%	78.50%
TP	-24.54%	10.93%	17.45%	70.94%	-24.56%	10.91%	17.46%	70.89%
Redwood River HUC 07020006								
Flow	-3.78%	24.23%	25.92%	53.95%	-3.78%	24.23%	25.92%	53.94%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TSS	-6.11%	32.18%	36.06%	86.18%	-6.11%	32.18%	36.06%	86.18%
TN	-0.31%	36.42%	34.70%	64.01%	-0.31%	36.43%	34.70%	64.02%
TP	-5.61%	13.19%	16.08%	44.46%	-5.61%	13.20%	16.09%	44.46%
Middle Minnesota HUC 07020007								
Flow	-12.67%	29.75%	27.94%	62.35%	-12.67%	29.74%	27.94%	62.34%
TSS	-17.81%	52.83%	47.38%	101.14%	-17.81%	52.82%	47.38%	101.13%
TN	4.32%	43.11%	41.13%	70.64%	4.36%	43.18%	41.21%	70.72%
TP	-5.46%	25.85%	24.83%	59.67%	-5.39%	25.92%	24.88%	59.72%
Cottonwood HUC 07020008								
Flow	-10.24%	33.77%	31.00%	61.72%	-10.24%	33.77%	31.00%	61.72%
TSS	-5.91%	43.69%	48.11%	104.61%	-5.91%	43.69%	48.11%	104.61%
TN	4.22%	45.84%	44.97%	75.87%	4.22%	45.84%	44.97%	75.87%
TP	-5.03%	20.93%	25.34%	63.13%	-5.03%	20.93%	25.34%	63.13%
Blue Earth HUC 07020009								
Flow	-20.61%	33.56%	22.74%	49.17%	-20.61%	33.55%	22.74%	49.17%
TSS	-24.04%	57.91%	45.79%	98.51%	-24.04%	57.91%	45.78%	98.50%
TN	-11.15%	45.50%	35.07%	63.82%	-11.14%	45.55%	35.09%	63.86%
TP	-19.24%	39.82%	29.02%	67.12%	-19.24%	39.90%	29.07%	67.19%
Watonwan HUC 07020010								
Flow	-23.39%	40.81%	28.64%	65.41%	-23.39%	40.81%	28.64%	65.41%
TSS	-30.63%	62.21%	52.72%	124.99%	-30.63%	62.21%	52.72%	124.98%
TN	-23.34%	46.15%	38.06%	89.14%	-23.34%	46.15%	38.05%	89.14%
TP	-31.51%	38.20%	31.53%	92.71%	-31.52%	38.19%	31.51%	92.70%
Le Sueur HUC 07020011								
Flow	-13.79%	31.64%	21.83%	43.28%	-13.80%	31.63%	21.81%	43.26%
TSS	-5.12%	52.63%	41.27%	75.30%	-5.12%	52.63%	41.27%	75.29%
TN	-0.63%	41.60%	33.83%	56.00%	-0.23%	42.25%	34.33%	56.43%
TP	-5.35%	35.45%	28.50%	57.54%	-4.78%	36.34%	29.17%	58.15%
Lower Minnesota HUC 07020012								
Flow	-14.28%	29.82%	27.39%	62.41%	-14.34%	29.59%	27.16%	62.09%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TSS	-22.81%	53.38%	52.06%	124.50%	-22.87%	52.90%	51.41%	122.93%
TN	4.88%	43.83%	42.08%	71.13%	4.88%	44.37%	42.44%	71.09%
TP	-3.26%	26.08%	26.14%	60.28%	-2.52%	27.28%	27.15%	60.74%
Minnesota River at Jordan (gage 05330000)								
Flow	-13.54%	30.38%	28.14%	63.25%	-13.58%	30.31%	28.07%	63.16%
TSS	-19.49%	53.66%	51.35%	115.45%	-19.48%	53.58%	51.27%	115.24%
TN	5.17%	42.75%	41.55%	70.98%	5.17%	42.84%	41.58%	70.91%
TP	-6.65%	23.91%	24.52%	59.80%	-6.28%	24.19%	24.68%	59.53%
Minnesota River at Mankato (gage 05325000)								
Flow	-13.01%	30.10%	28.11%	62.93%	-13.01%	30.09%	28.10%	62.93%
TSS	-17.21%	50.29%	46.00%	101.54%	-17.21%	50.28%	46.00%	101.52%
TN	4.83%	42.80%	41.32%	70.91%	4.85%	42.85%	41.38%	70.97%
TP	-5.52%	25.21%	24.99%	59.64%	-5.49%	25.27%	25.02%	59.65%

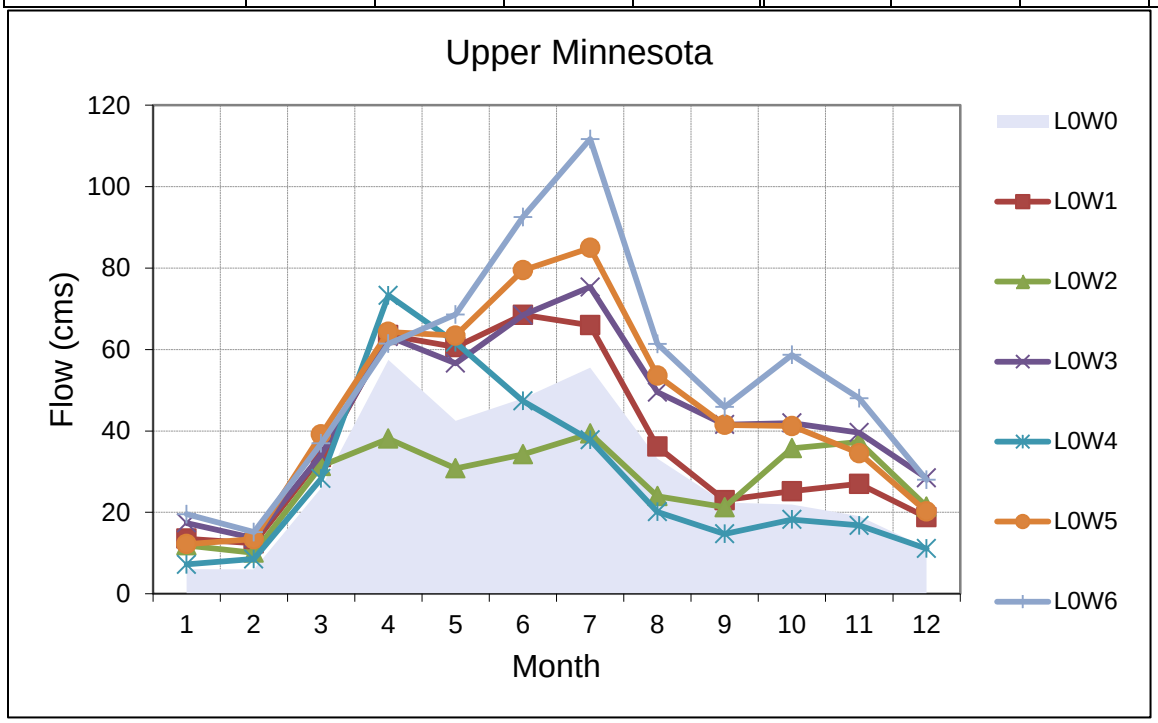

Figure 146. Monthly Average Flows, Upper Minnesota River (SWAT)

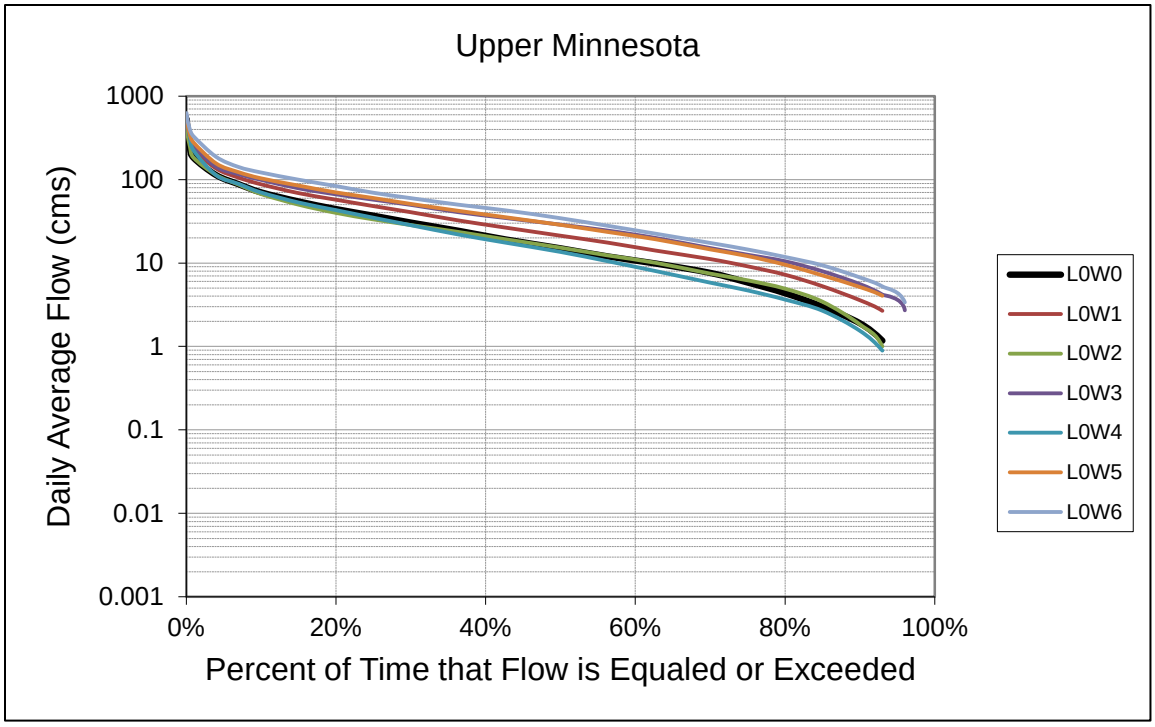

Figure 147. Flow Duration, Upper Minnesota River (SWAT)

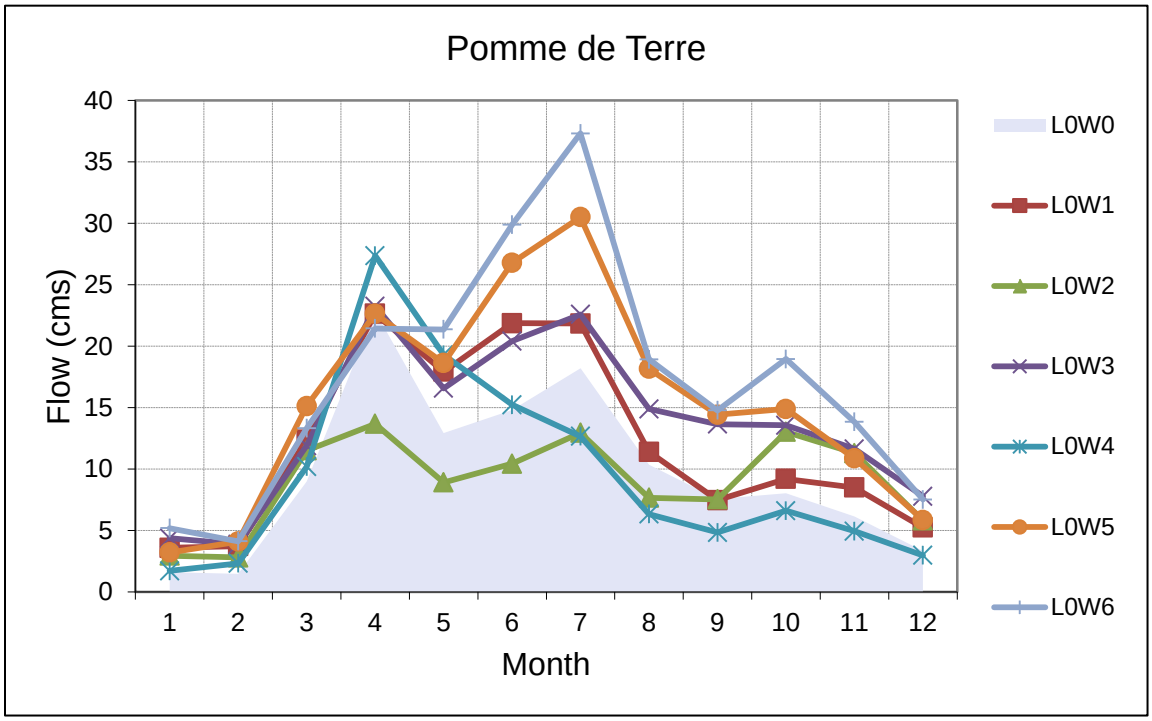

Figure 148. Monthly Average Flows, Pomme de Terre (SWAT)

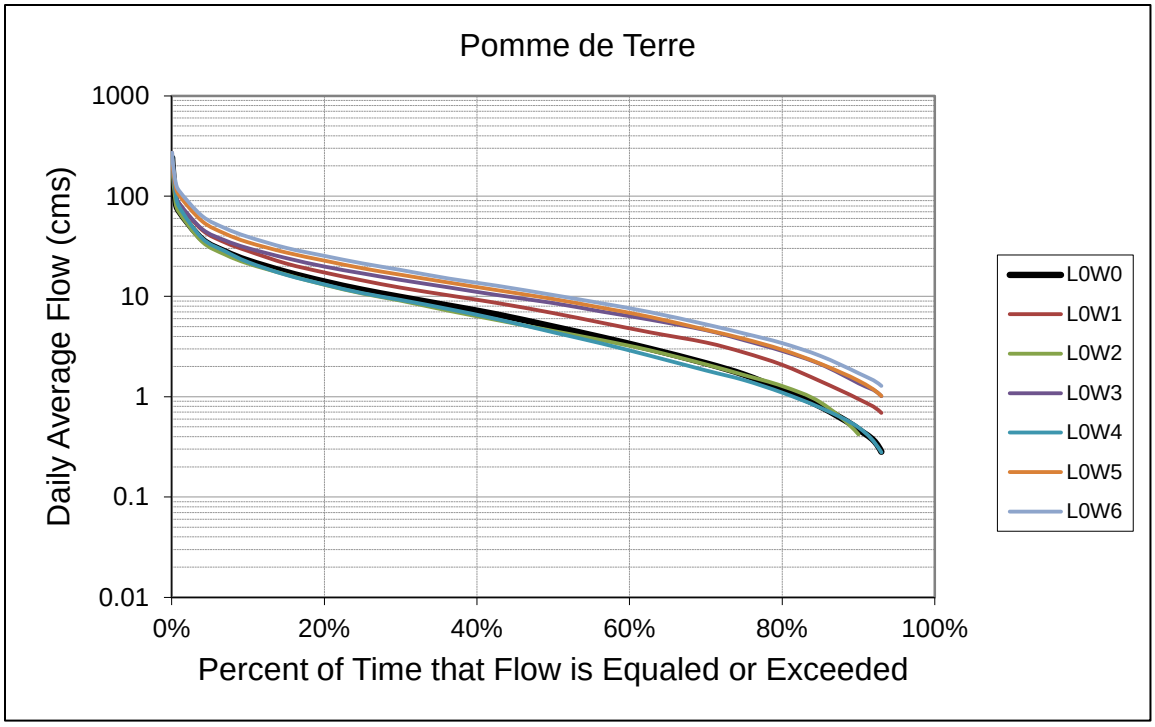

Figure 149. Flow Duration, Pomme de Terre (SWAT)

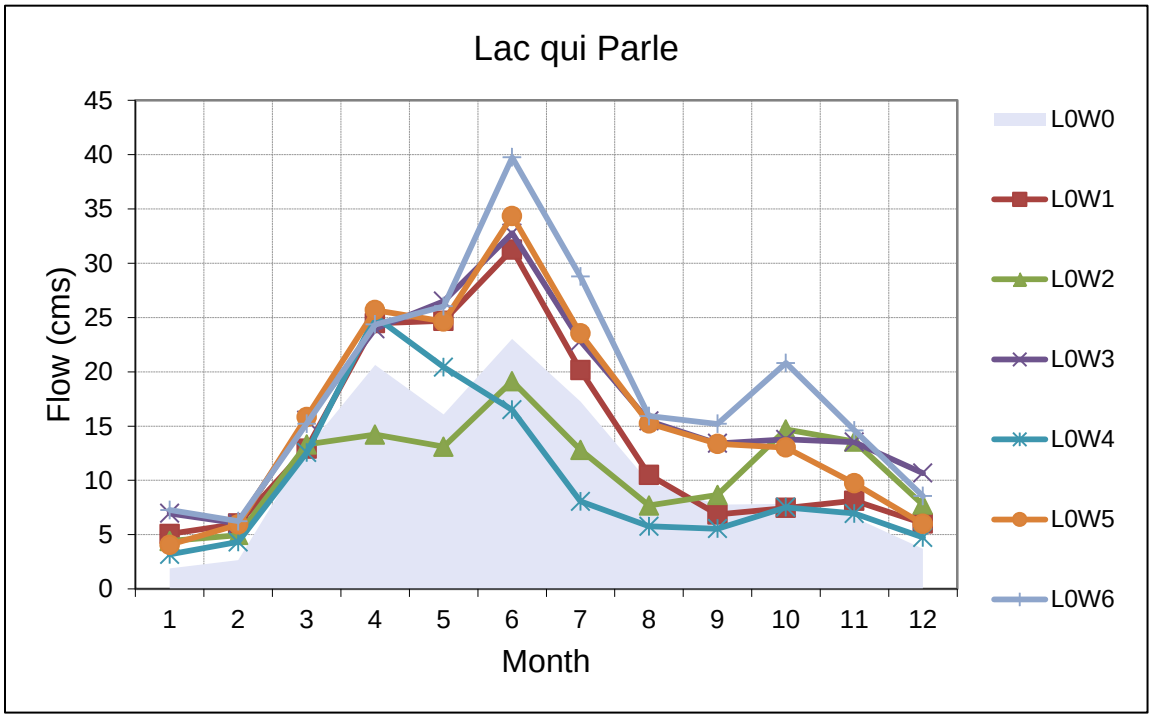

Figure 150. Monthly Average Flows, Minnesota River at Lac qui Parle (SWAT)

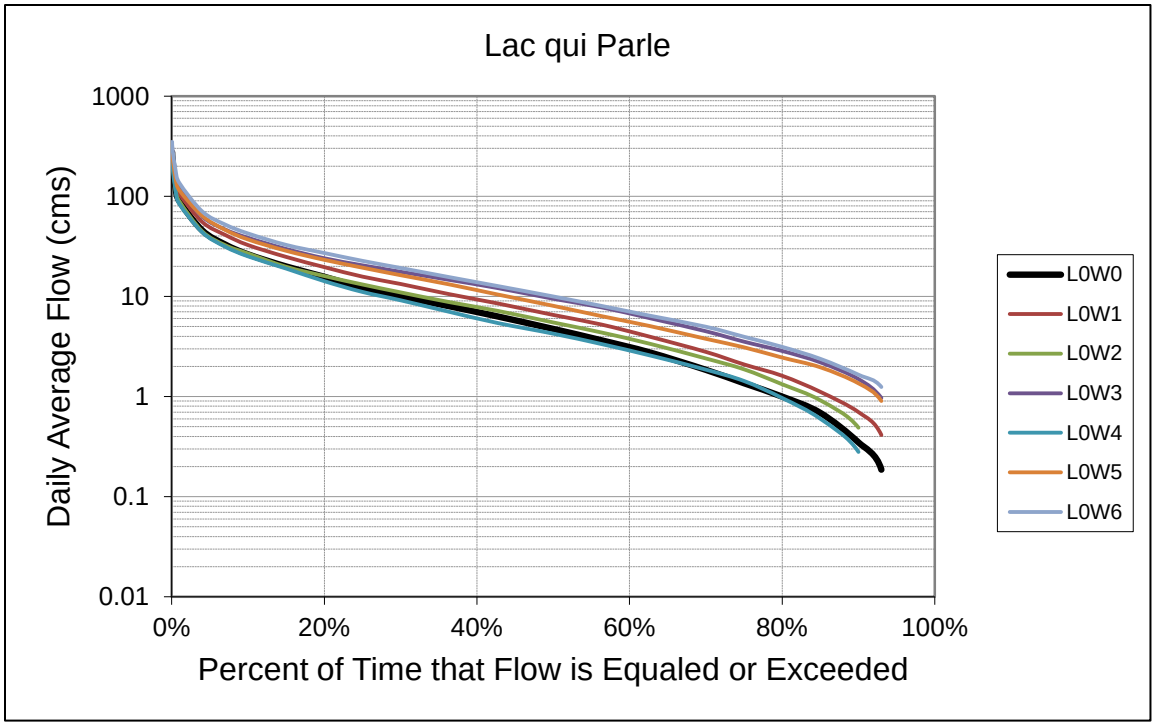

Figure 151. Flow Duration, Minnesota River at Lac qui Parle (SWAT)

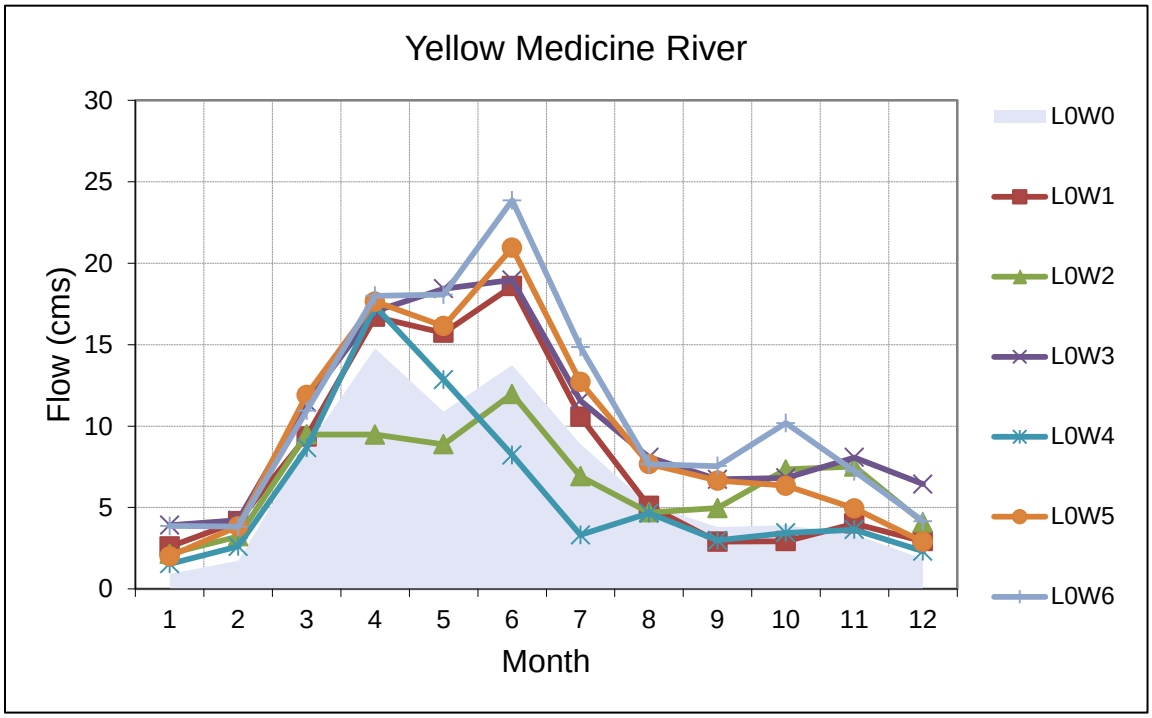

Figure 152. Monthly Average Flows, Yellow Medicine River (SWAT)

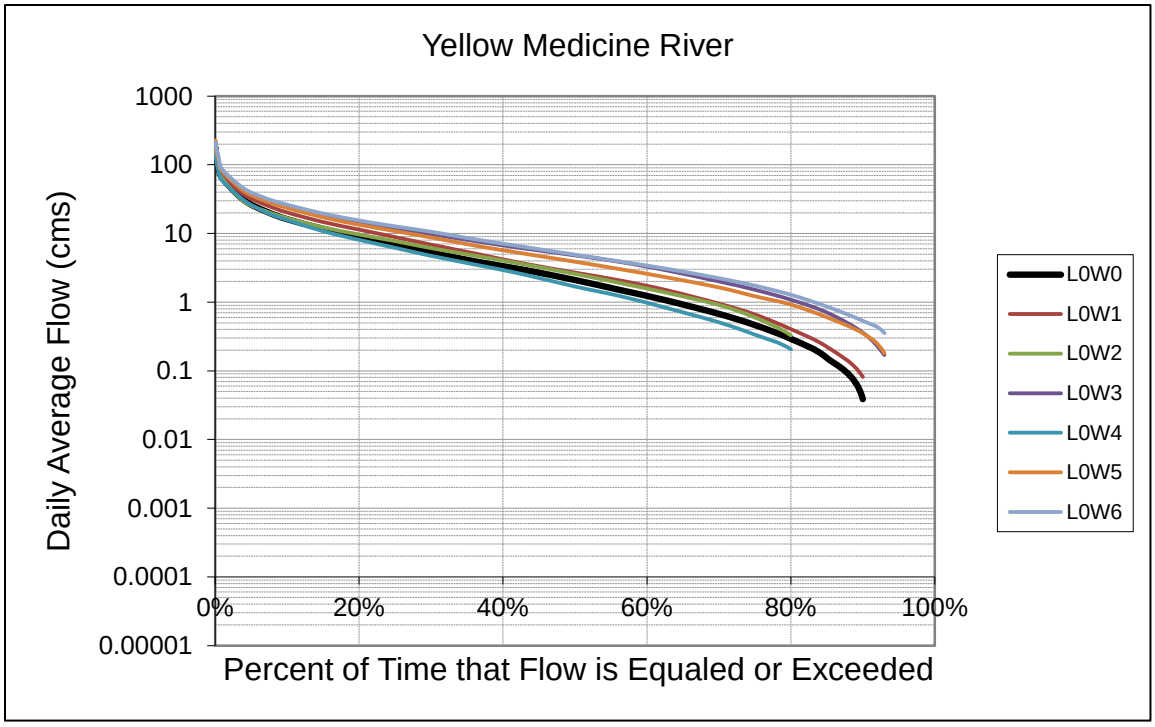

Figure 153. Flow Duration, Yellow Medicine River (SWAT)

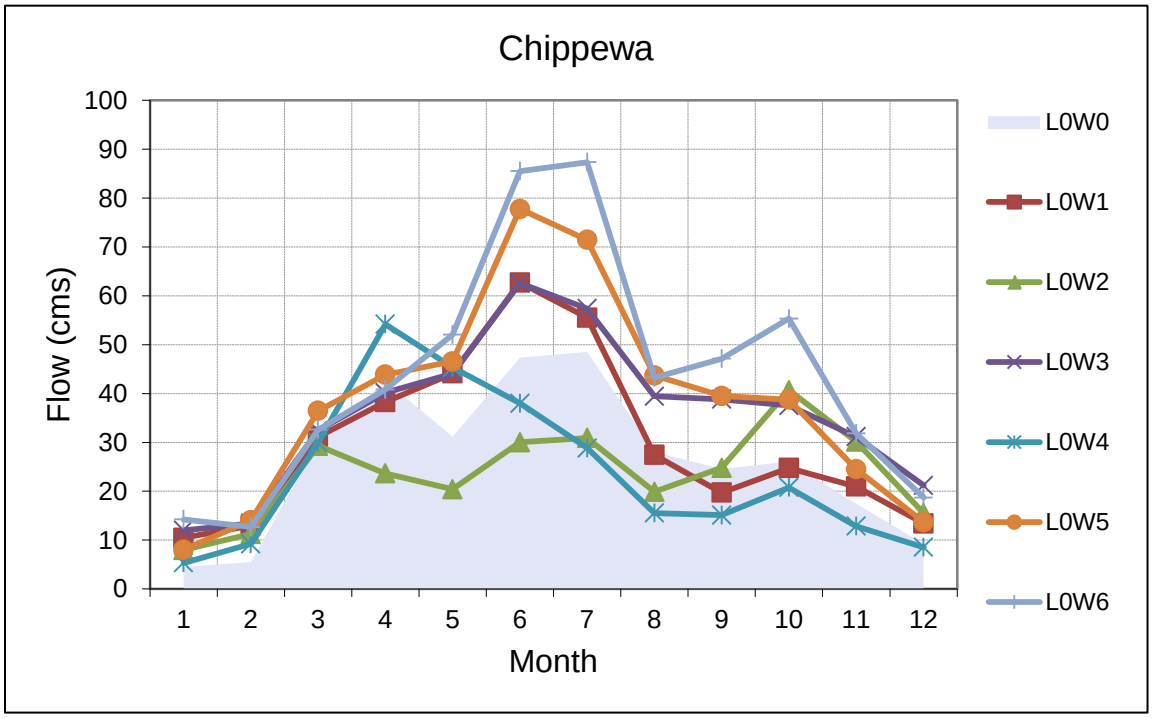

Figure 154. Monthly Average Flows, Chippewa River (SWAT)

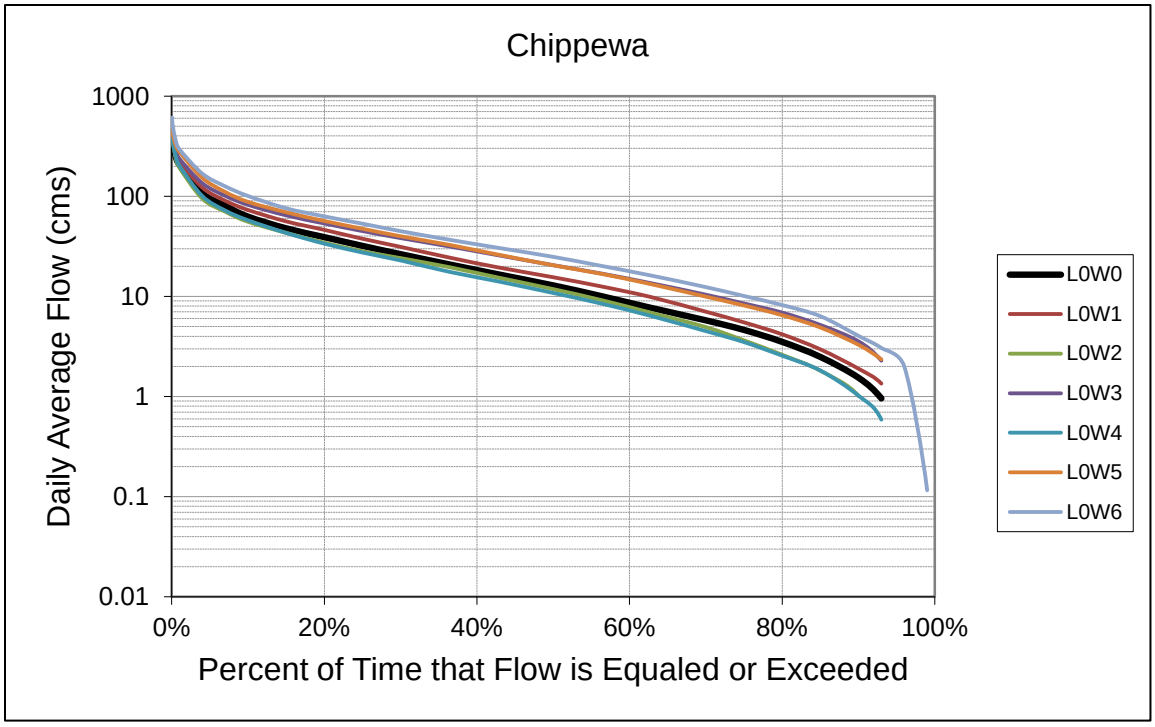

Figure 155. Flow Duration, Chippewa River (SWAT)

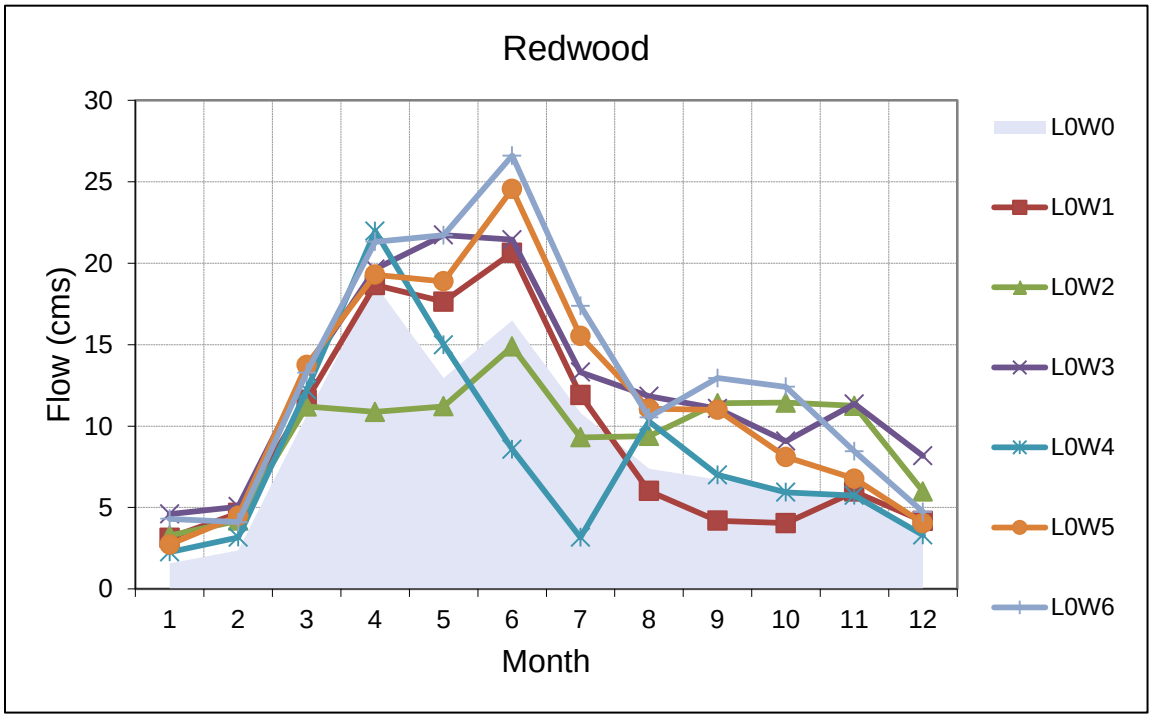

Figure 156. Monthly Average Flows, Redwood River (SWAT)

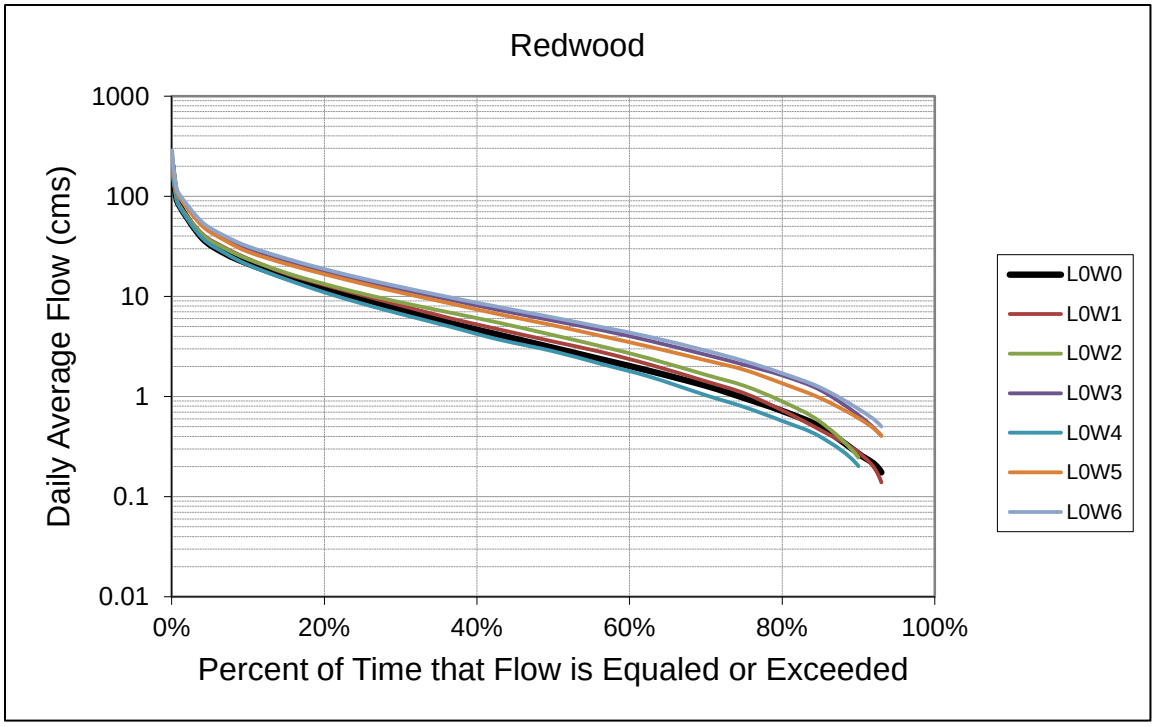

Figure 157. Flow Duration, Redwood River (SWAT)

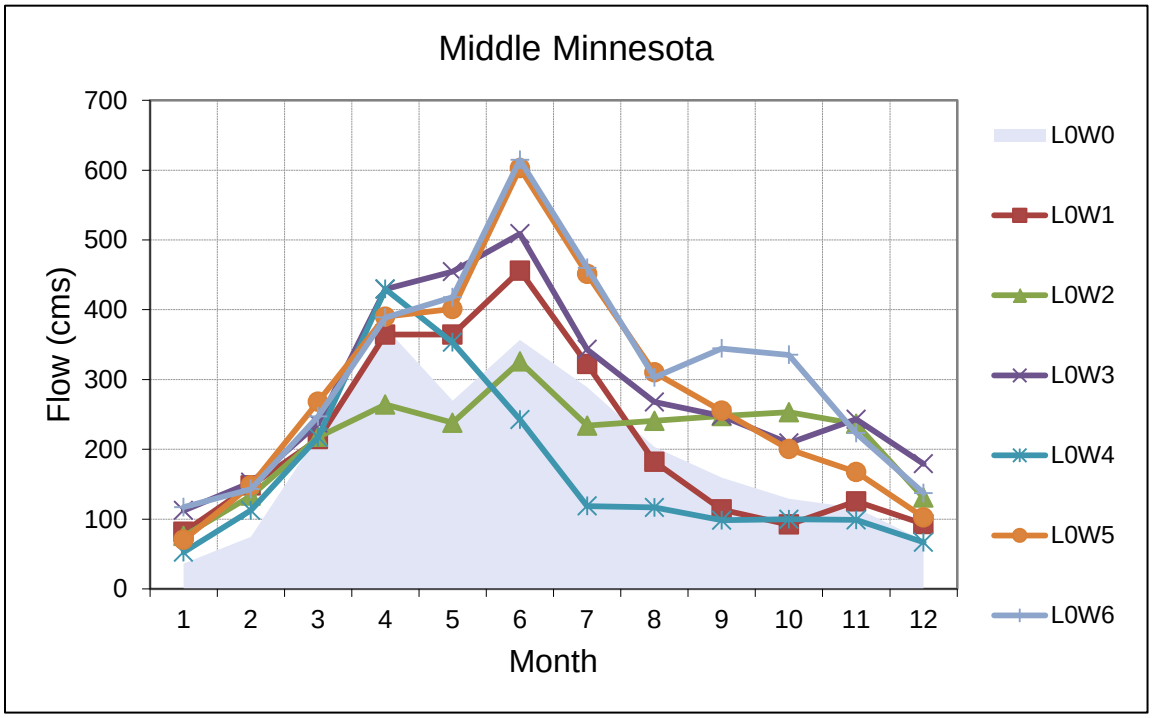

Figure 158. Monthly Average Flows, Middle Minnesota River (SWAT)

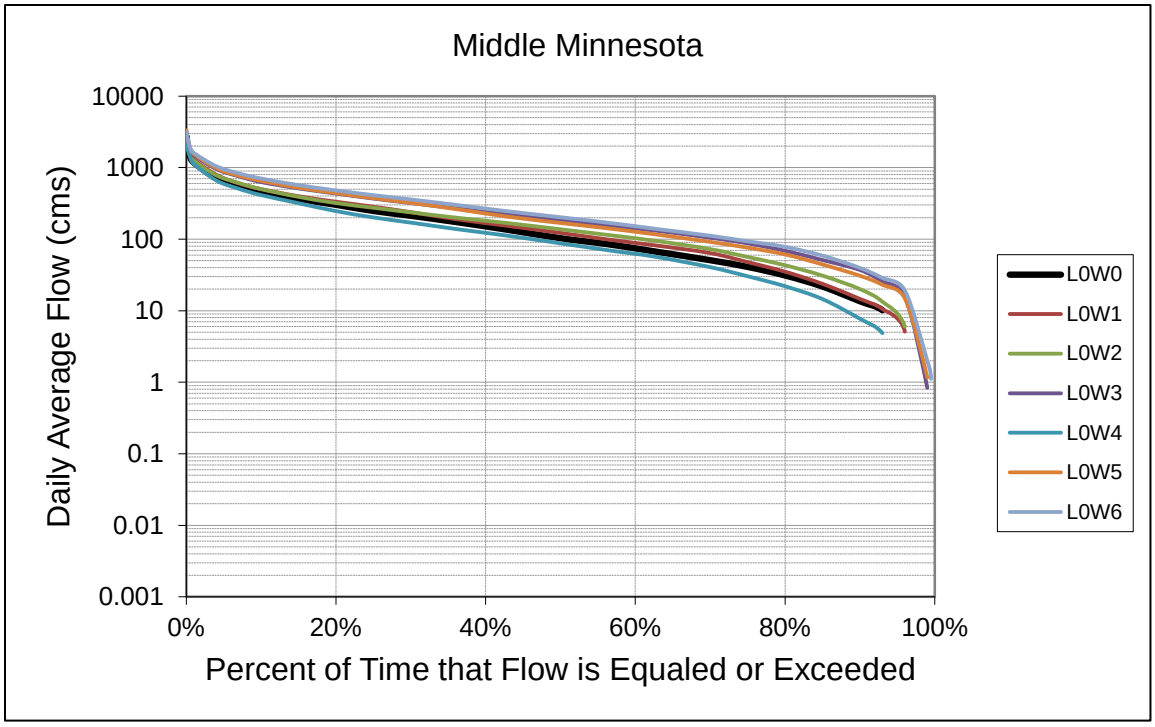

Figure 159. Flow Duration, Middle Minnesota River (SWAT)

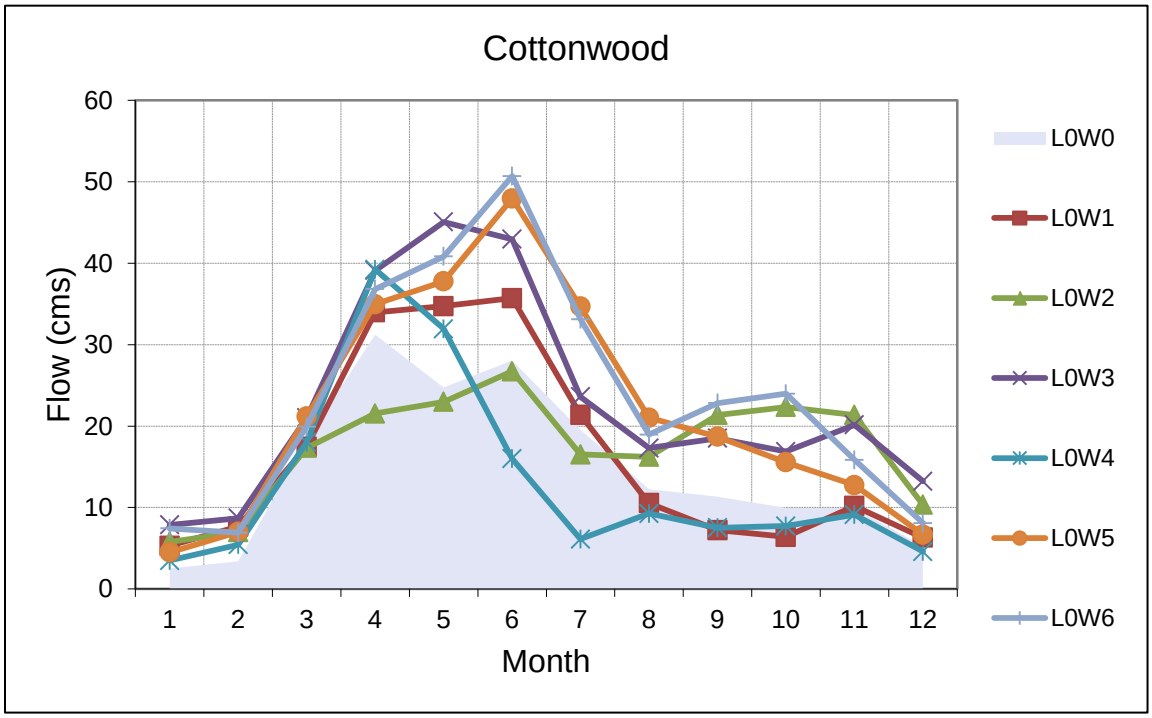

Figure 160. Monthly Average Flows, Cottonwood River (SWAT)

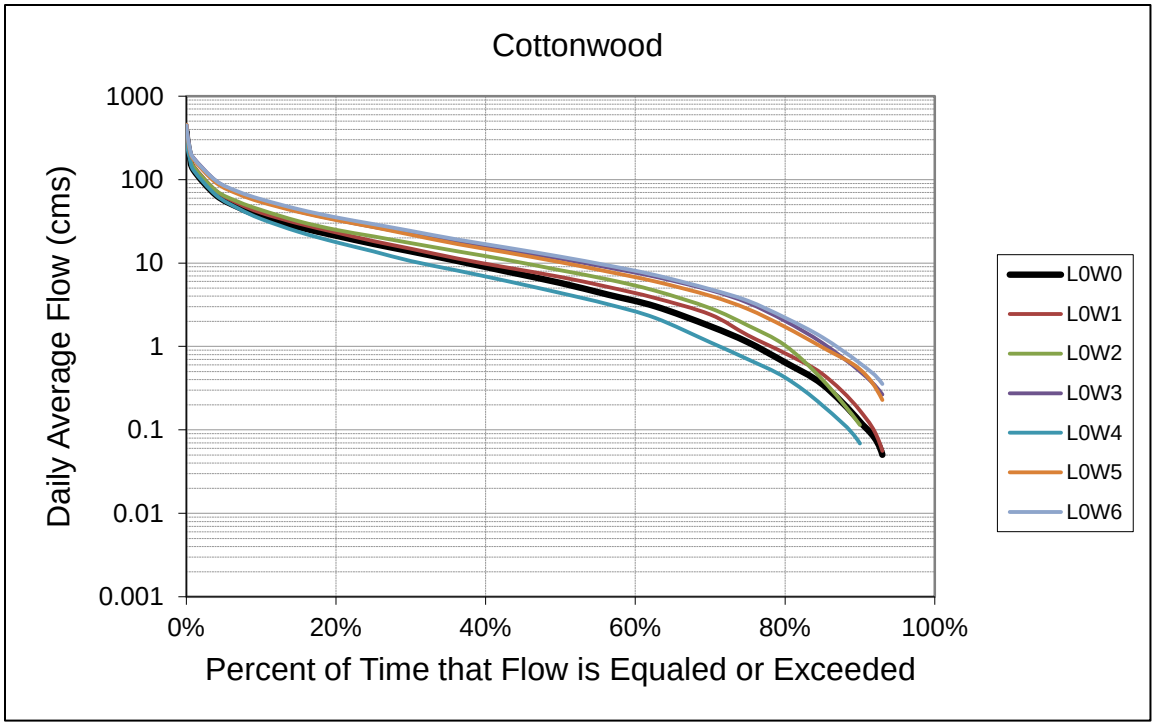

Figure 161. Flow Duration, Cottonwood River (SWAT)

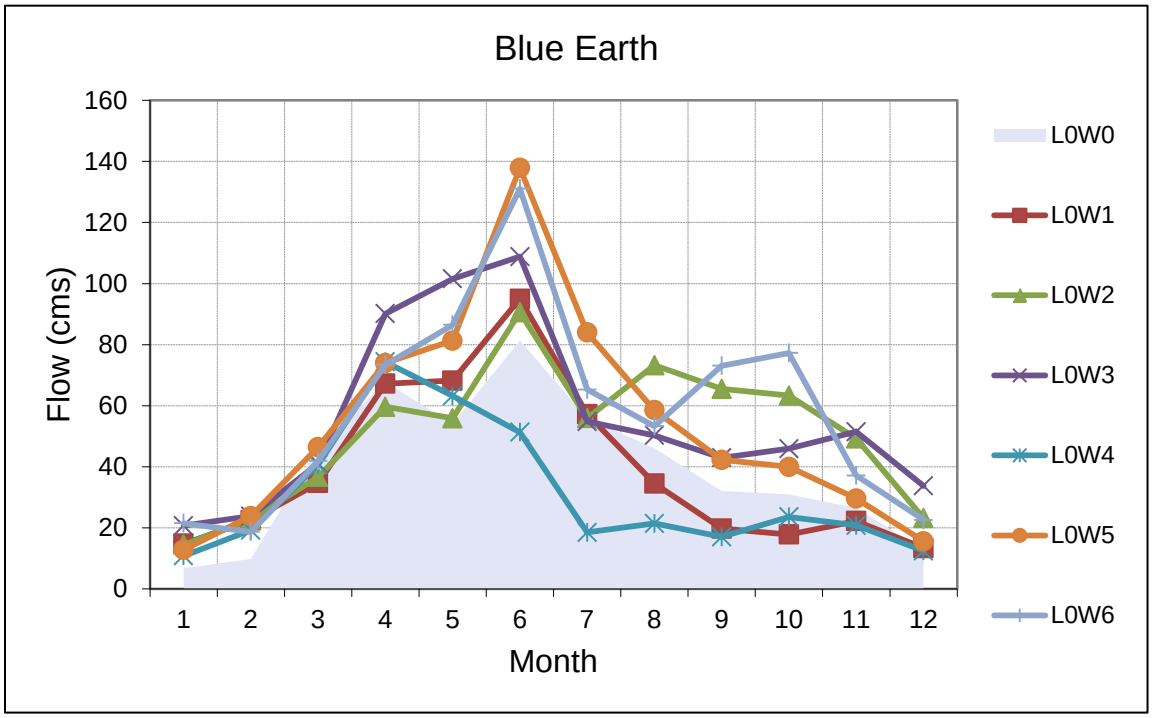

Figure 162. Monthly Average Flows, Blue Earth River (SWAT)

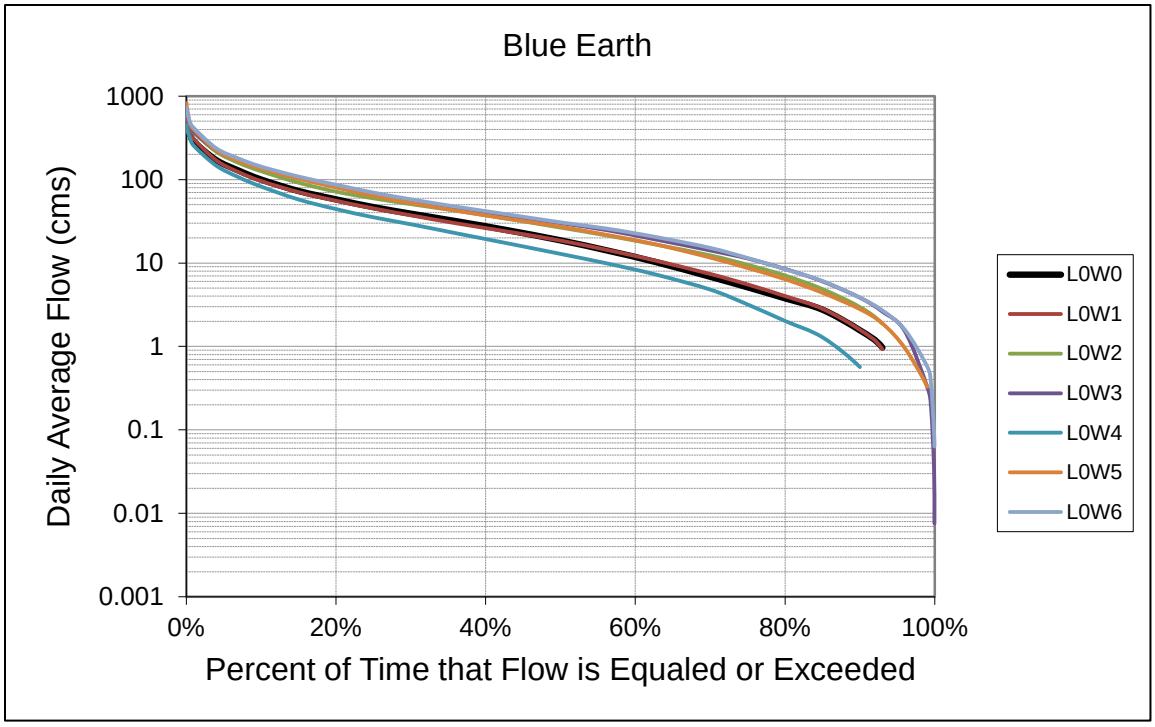

Figure 163. Flow Duration, Blue Earth River (SWAT)

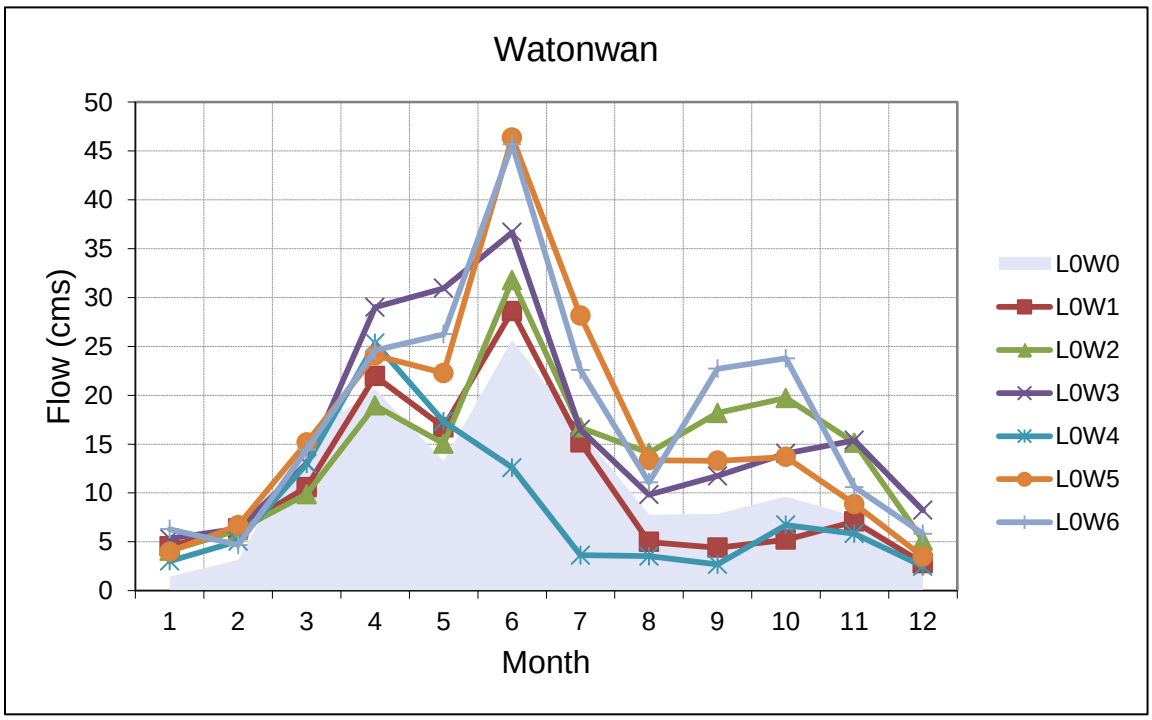

Figure 164. Monthly Average Flows, Watowan River (SWAT)

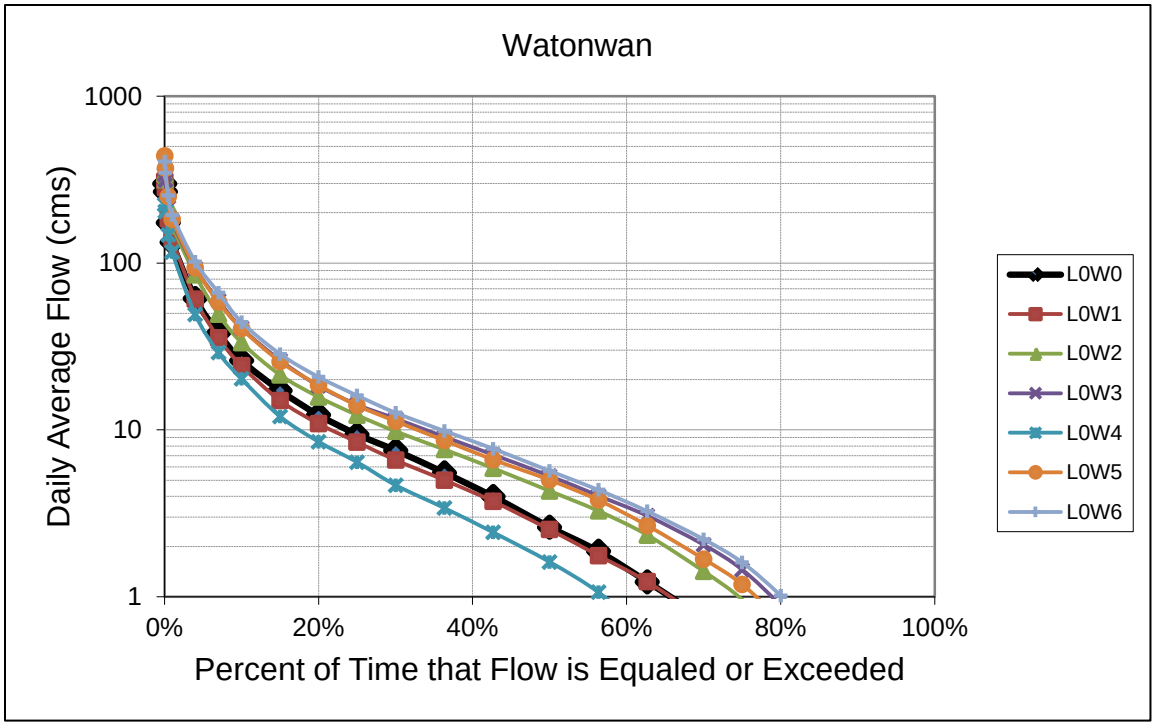

Figure 165. Flow Duration, Watowan River (SWAT)

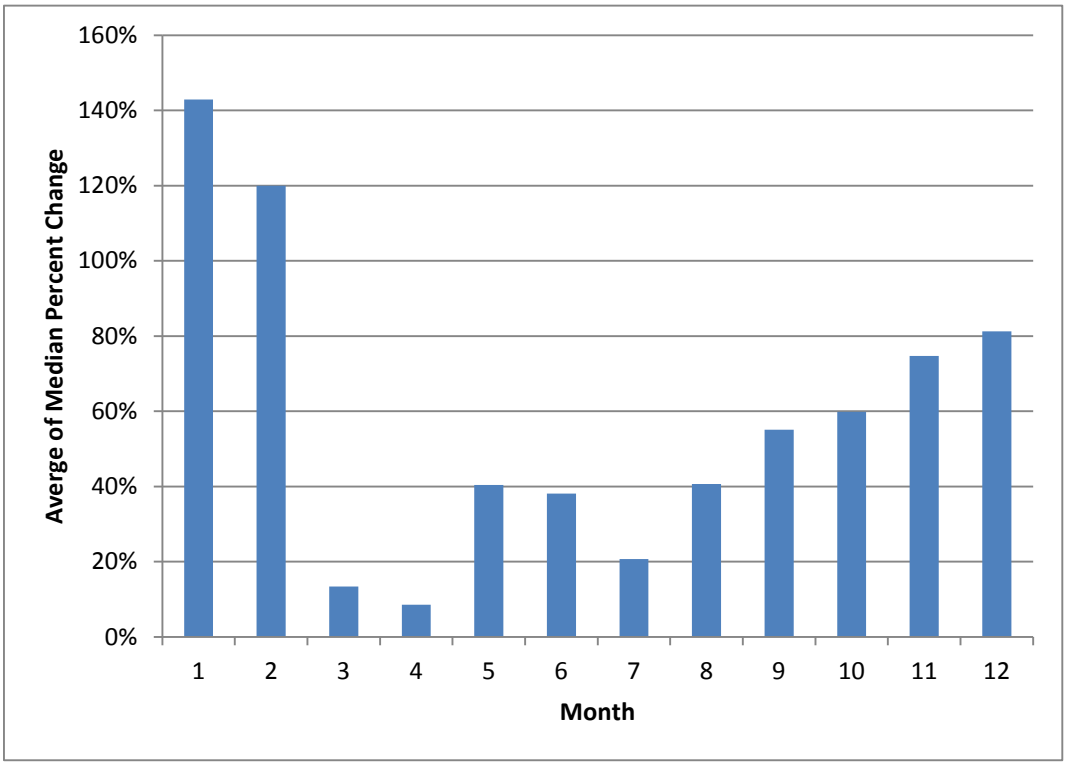

Figure 166. Average of Median Percent Change in Flow; NARCCAP Scenarios W1-W6 at all Stations, Minnesota River Basin (SWAT)

Susquehanna River Basin, HSPF Model
Results at Downstream Station

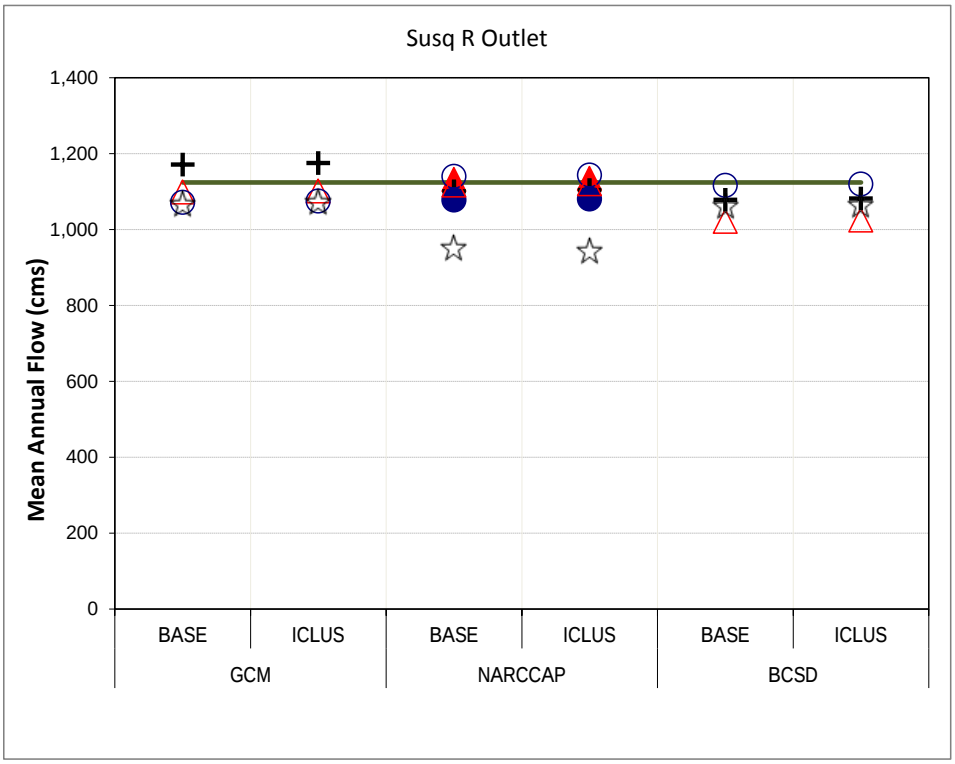

Figure 167. Mean Annual Flow, Susquehanna River Outlet (HSPF)

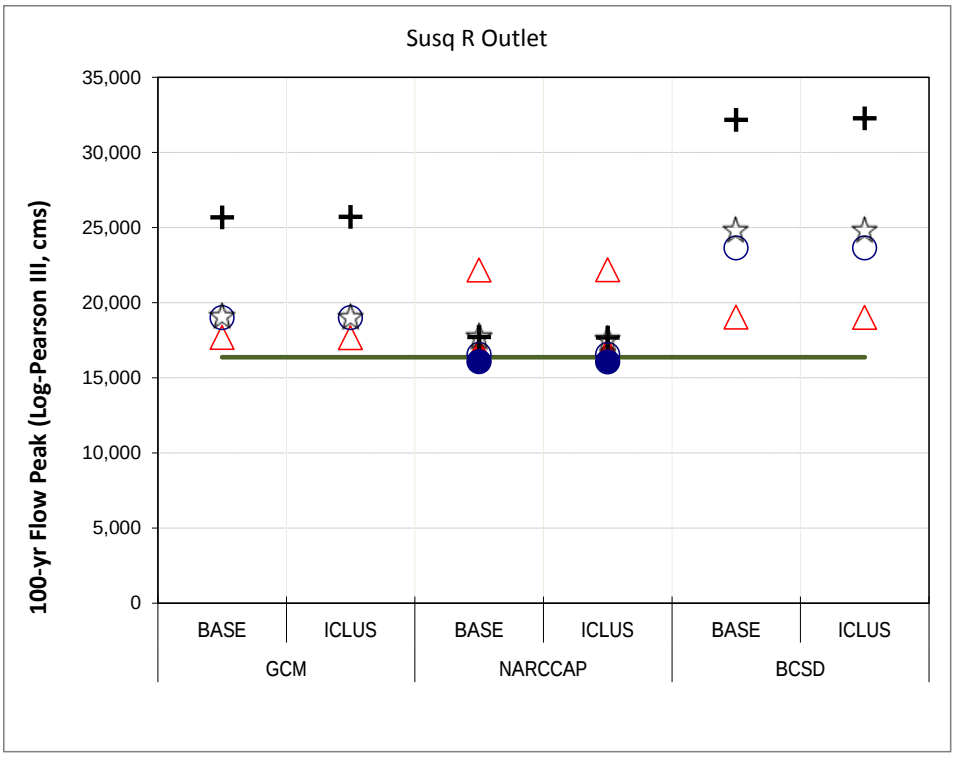

Figure 168. 100-yr Flow Peak, Susquehanna River Outlet (HSPF)

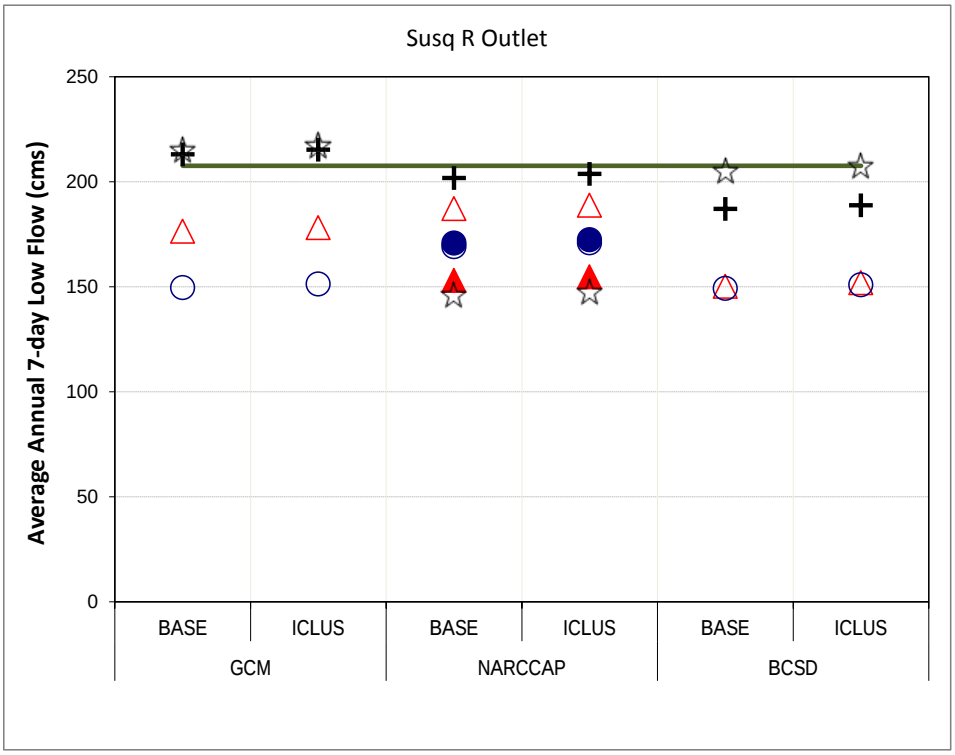

Figure 169. Average Annual 7-day Low Flow, Susquehanna River Outlet (HSPF)

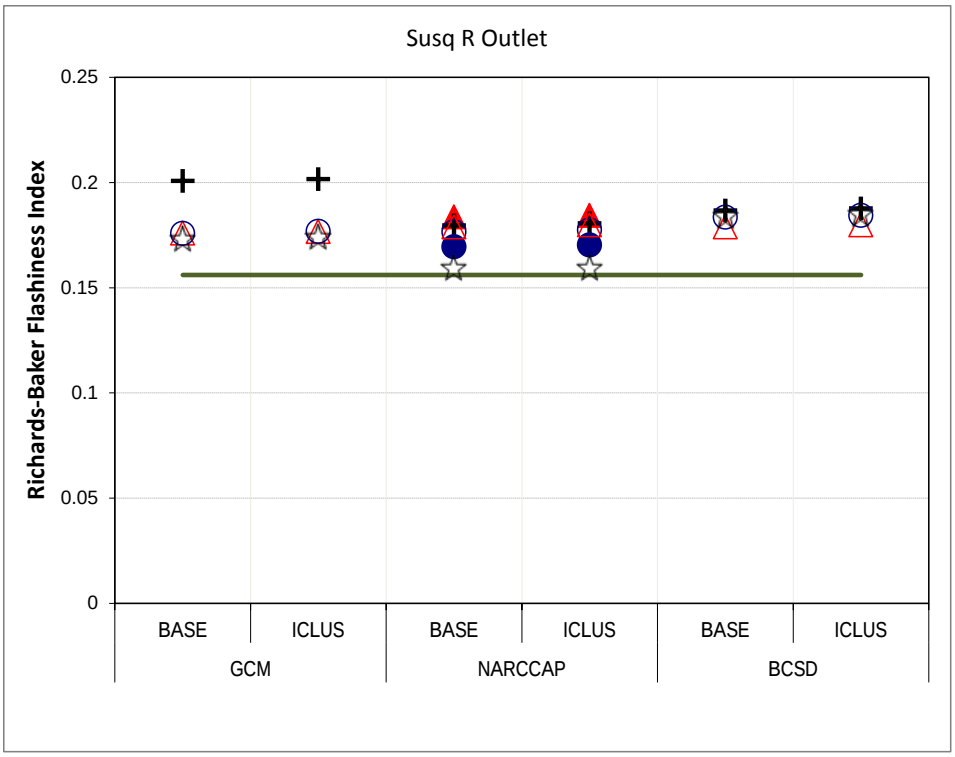

Figure 170. Richards-Baker Flashiness Index, Susquehanna River Outlet (HSPF)

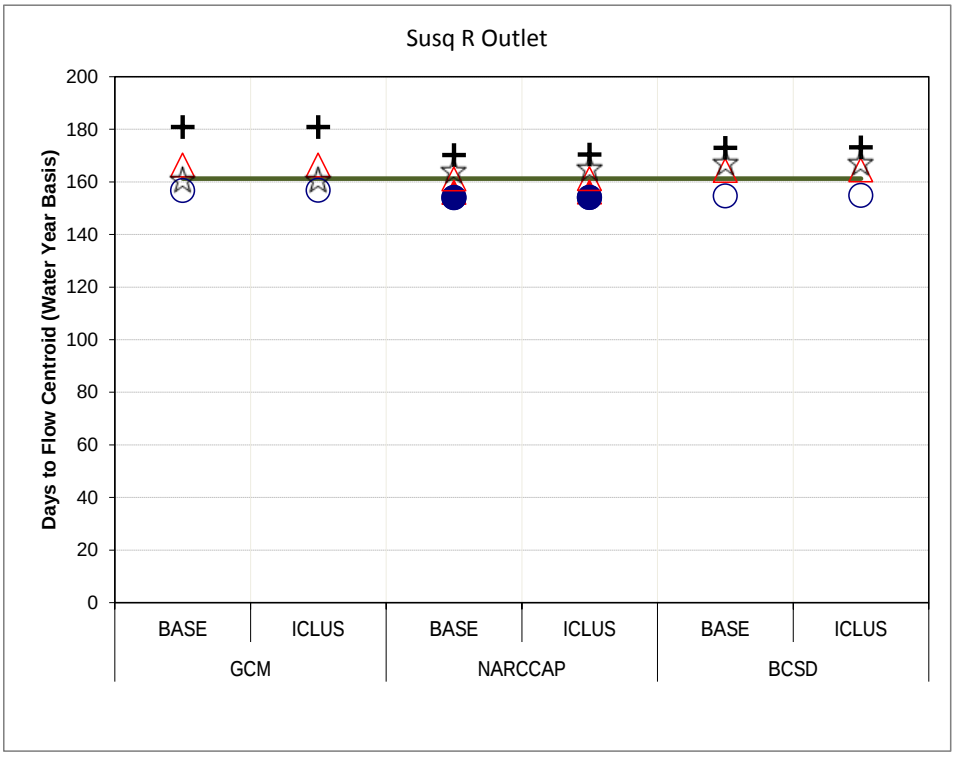

Figure 171. Days to Flow Centroid, Susquehanna River Outlet (HSPF)

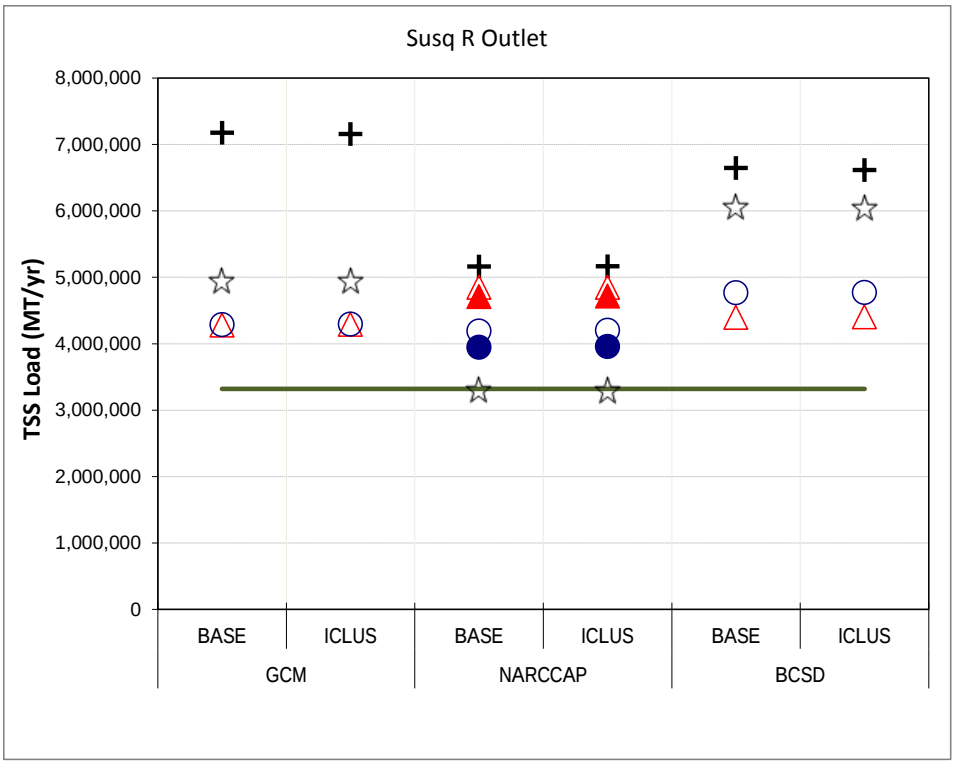

Figure 172. TSS Load, Susquehanna River Outlet (HSPF)

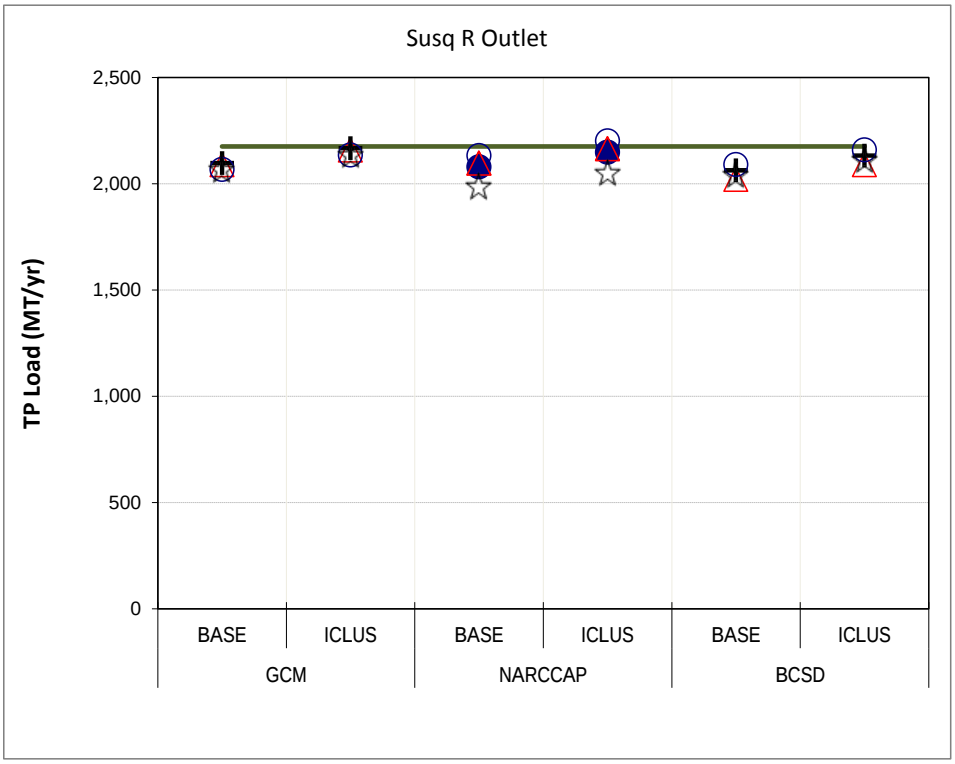

Figure 173. TP Load, Susquehanna River Outlet (HSPF)

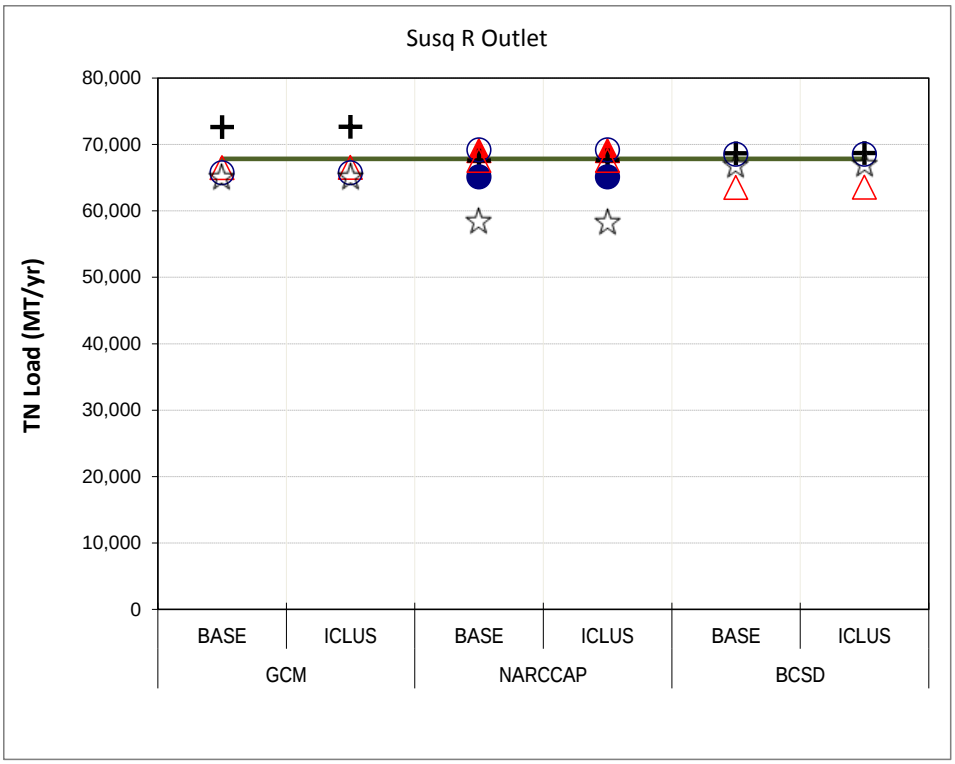

Figure 174. TN Load, Susquehanna River Outlet (HSPF)

Results at Multiple Stations

Table 7. Summary of Range of Change Relative to Existing Conditions for NARCCAP Dynamically Downscaled Scenarios, Susquehanna River Basin HSPF Model

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Raystown Branch Juniata River at Saxton (gage 01562000)								
Flow	-17.99%	-3.61%	-1.61%	14.36%	-17.99%	-3.61%	-1.61%	14.36%
TSS	-17.18%	42.95%	45.51%	115.70 %	-17.18%	42.95%	45.51%	115.70 %
TN	-17.45%	-2.53%	-0.70%	16.09%	-17.45%	-2.53%	-0.70%	16.09%
TP	-13.26%	-6.66%	-6.21%	2.03%	-13.26%	-6.66%	-6.21%	2.03%
WB Susquehanna River at Lewisberg								
Flow	-20.17%	-2.47%	-5.30%	0.18%	-20.14%	-2.45%	-5.29%	0.20%
TSS	-4.00%	28.43%	26.18%	44.79%	-4.02%	28.31%	26.08%	44.63%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TN	-15.17%	-0.43%	-3.23%	1.51%	-15.12%	-0.40%	-3.21%	1.51%
TP	-7.37%	-3.41%	-3.88%	-2.38%	-7.35%	-3.39%	-3.86%	-2.36%
Susquehanna River at Danville (gage 01540500)								
Flow	-14.40%	-1.67%	-3.58%	-0.50%	-14.40%	-1.67%	-3.58%	-0.50%
TSS	5.03%	30.55%	30.01%	57.81%	5.03%	30.55%	30.01%	57.81%
TN	-13.56%	-1.86%	-3.74%	-1.10%	-13.56%	-1.85%	-3.74%	-1.10%
TP	-7.90%	-4.19%	-4.77%	-3.53%	-7.90%	-4.19%	-4.77%	-3.53%
Susquehanna River at Marietta (gage 01576000)								
Flow	-15.39%	-1.56%	-3.51%	1.06%	-16.29%	-1.54%	-3.65%	1.06%
TSS	0.59%	33.94%	30.88%	53.97%	-0.32%	33.81%	30.60%	53.76%
TN	-13.82%	-0.79%	-2.74%	1.48%	-14.16%	-0.77%	-2.79%	1.47%
TP	-8.00%	-3.87%	-4.28%	-2.19%	-8.14%	-3.83%	-4.27%	-2.16%
Susquehanna River Outlet								
Flow	-15.14%	-1.35%	-3.33%	1.40%	-15.95%	-1.32%	-3.44%	1.41%
TSS	0.15%	33.95%	31.38%	55.42%	-0.62%	33.68%	30.94%	54.89%
TN	-13.43%	-0.36%	-2.39%	1.99%	-13.71%	-0.33%	-2.44%	1.96%
TP	-8.39%	-3.98%	-4.40%	-2.02%	-8.41%	-3.87%	-4.33%	-1.96%

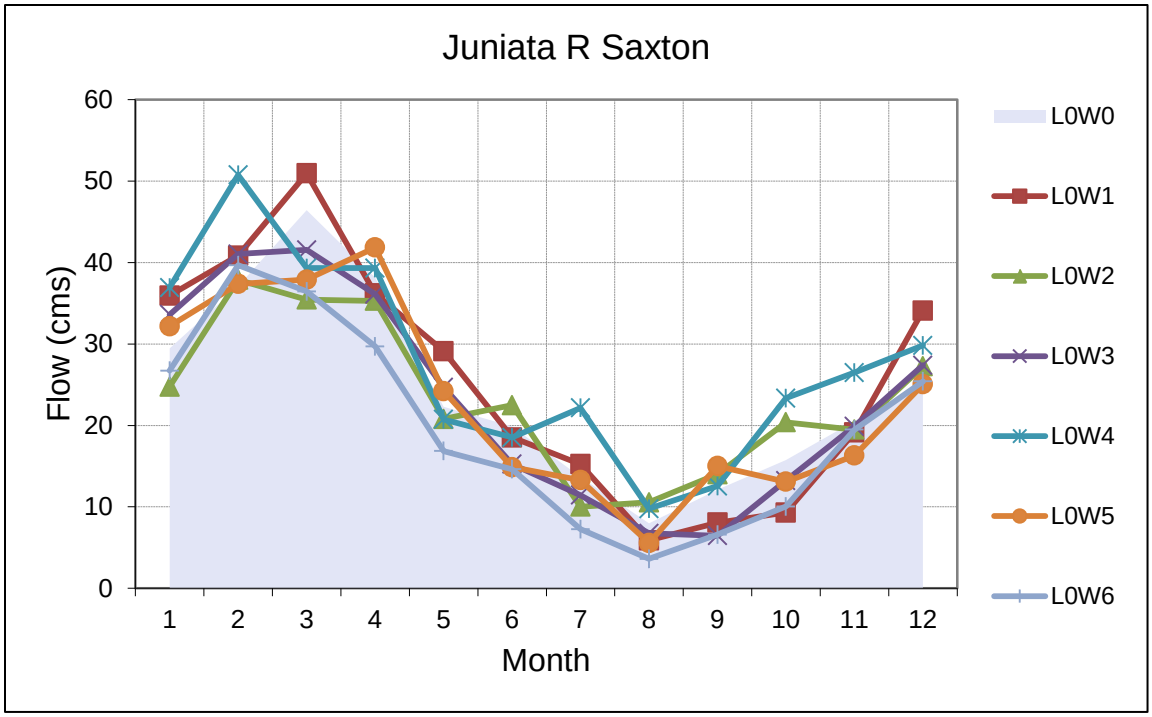

Figure 175. Monthly Average Flow, Raystown Branch Juniata River at Saxton (HSPF)

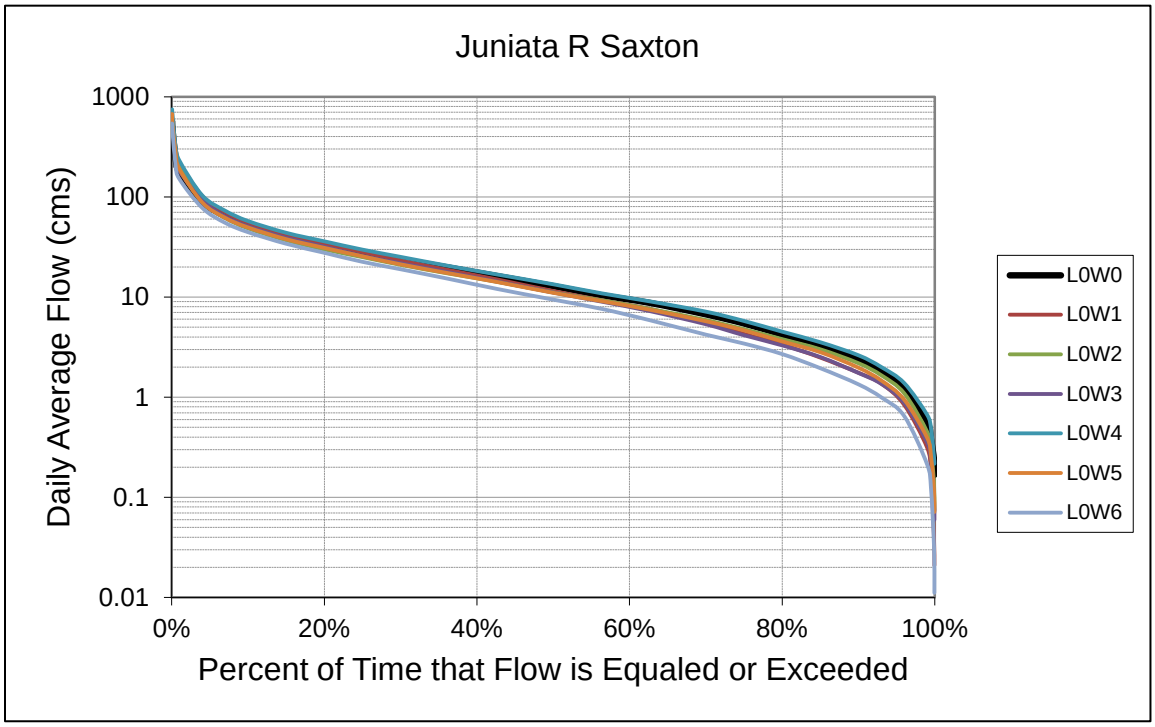

Figure 176. Flow Duration, Raystown Branch Juniata River at Saxton (HSPF)

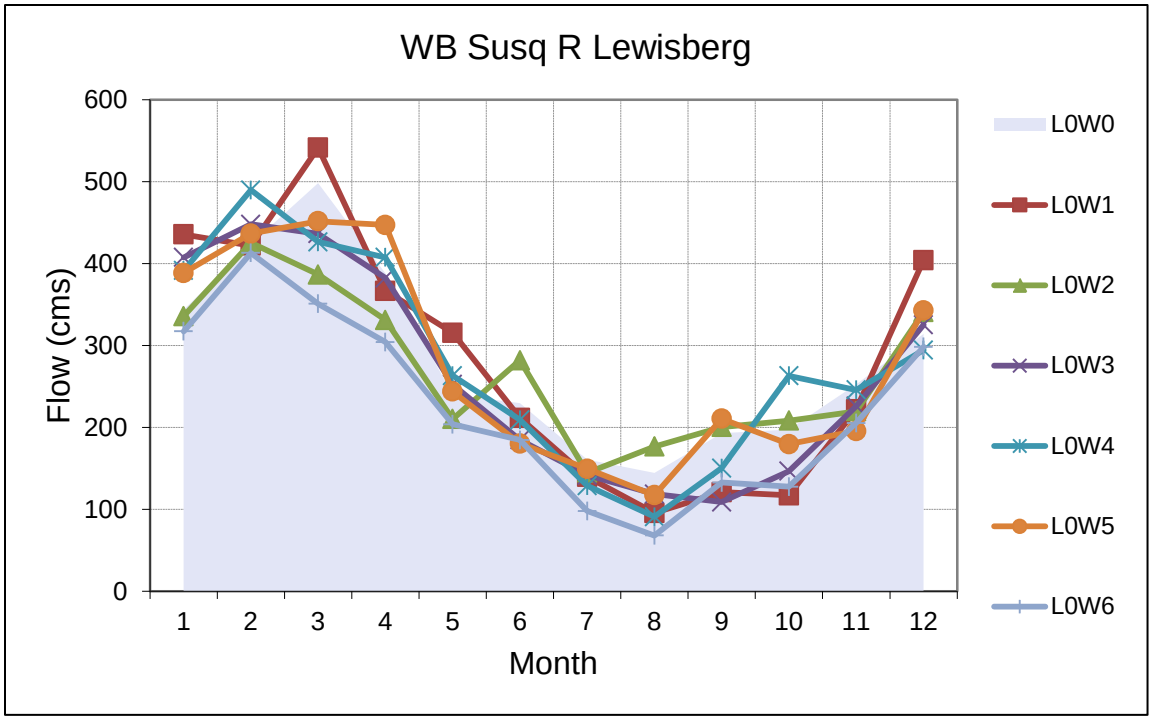

Figure 177. Monthly Average Flow, West Branch Susquehanna River at Lewisberg (HSPF)

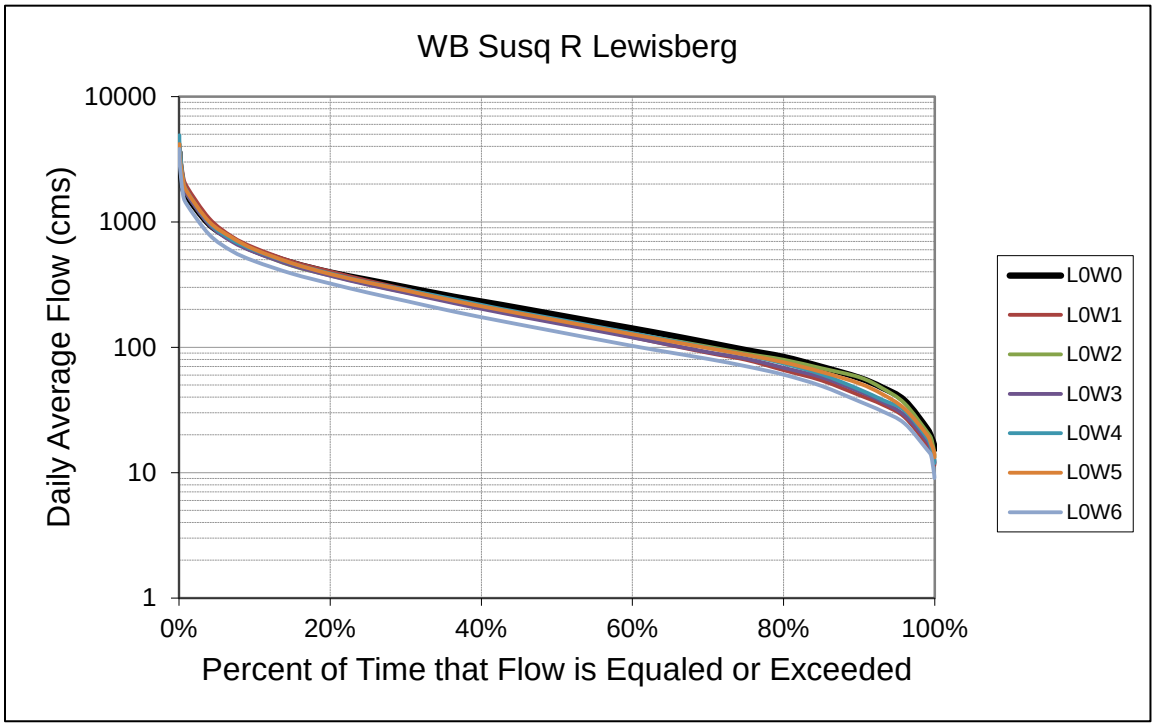

Figure 178. Flow Duration, West Branch Susquehanna River at Lewisberg (HSPF)

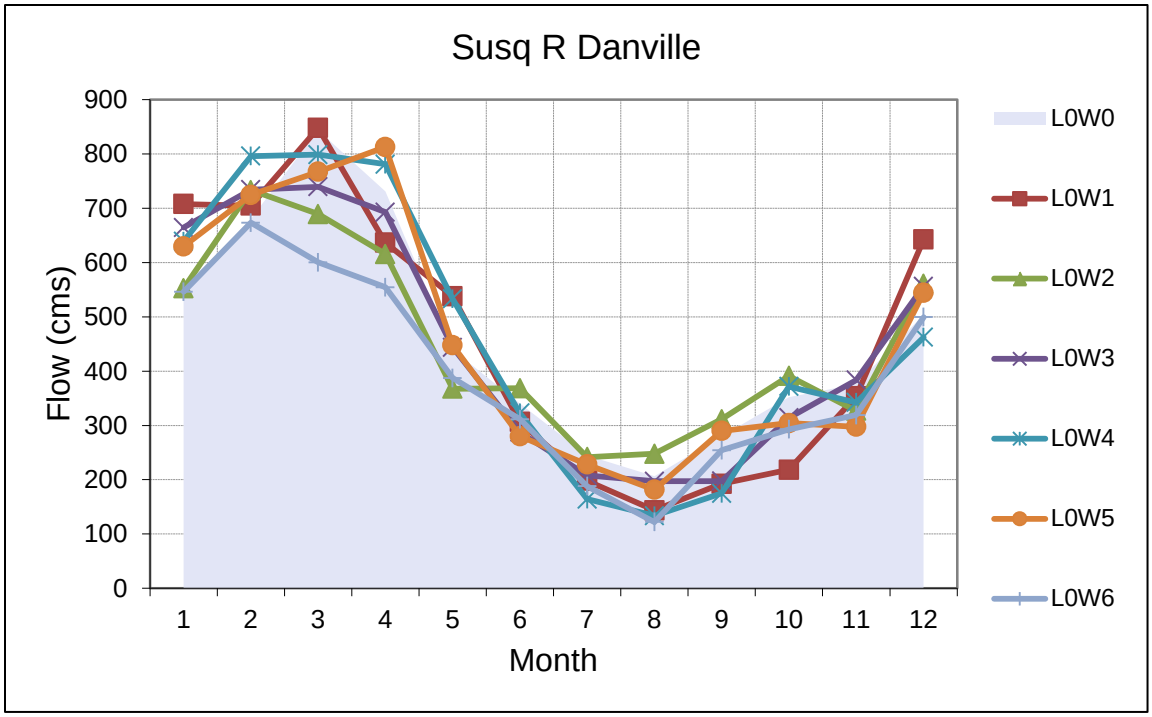

Figure 179. Monthly Average Flow, Susquehanna River at Danville (HSPF)

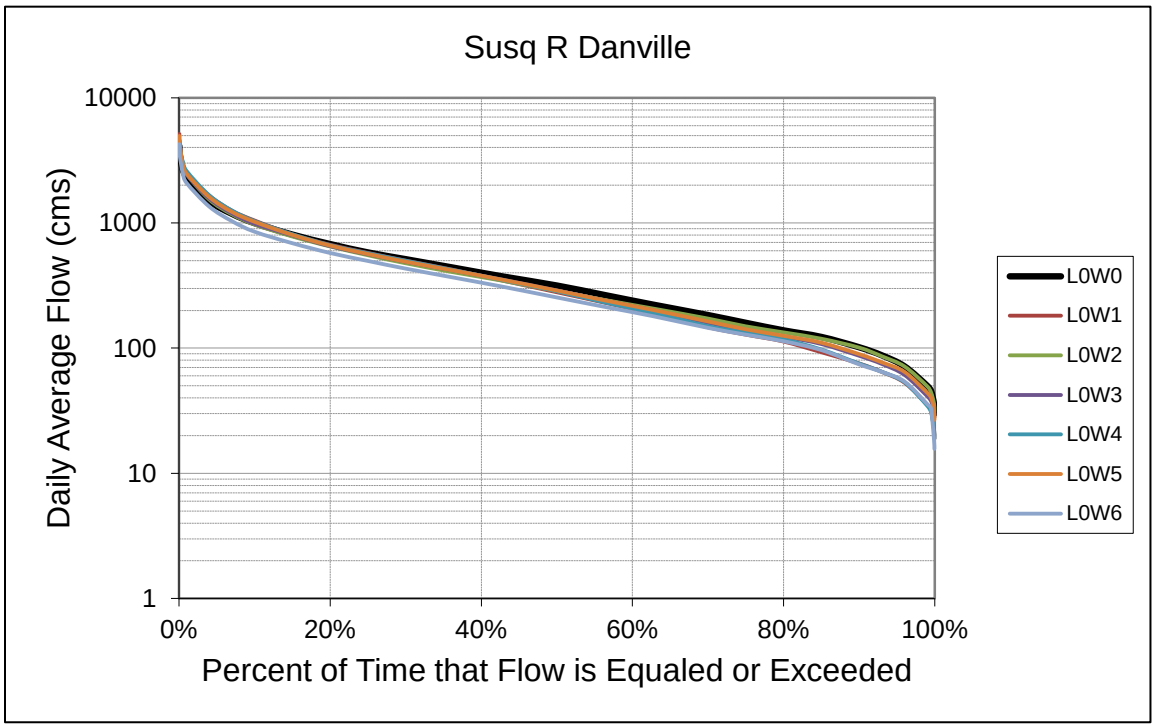

Figure 180. Flow Duration, Susquehanna River at Danville (HSPF)

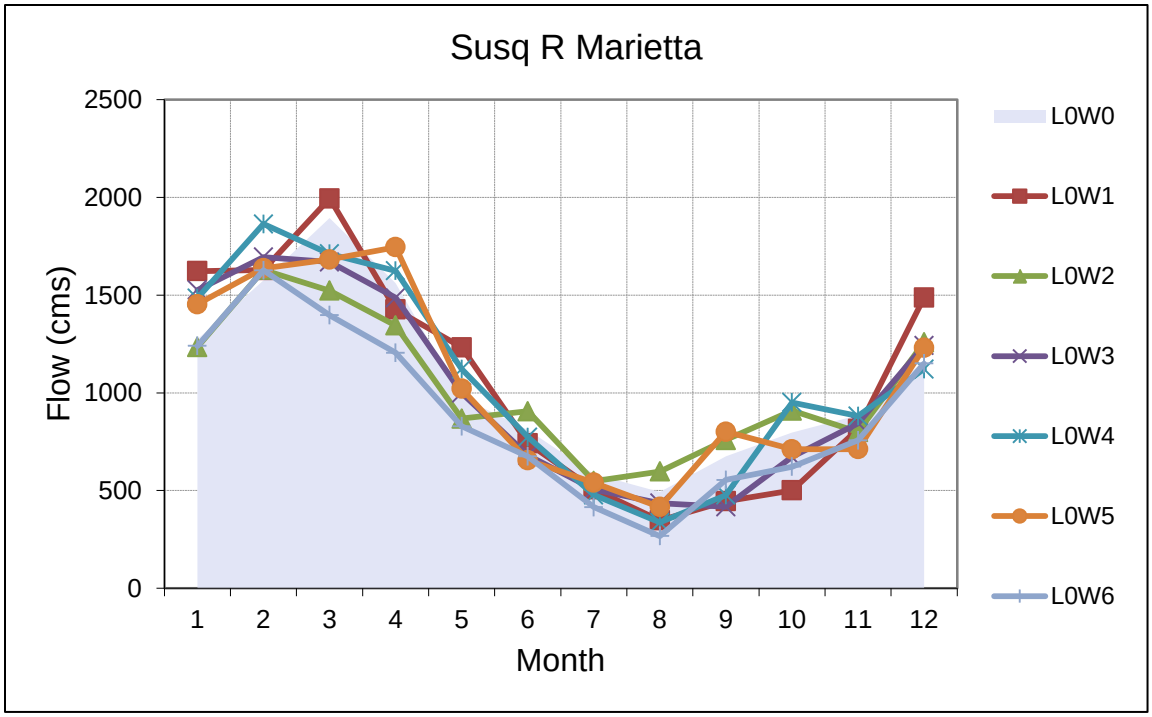

Figure 181. Monthly Average Flow, Susquehanna River at Marietta (HSPF)

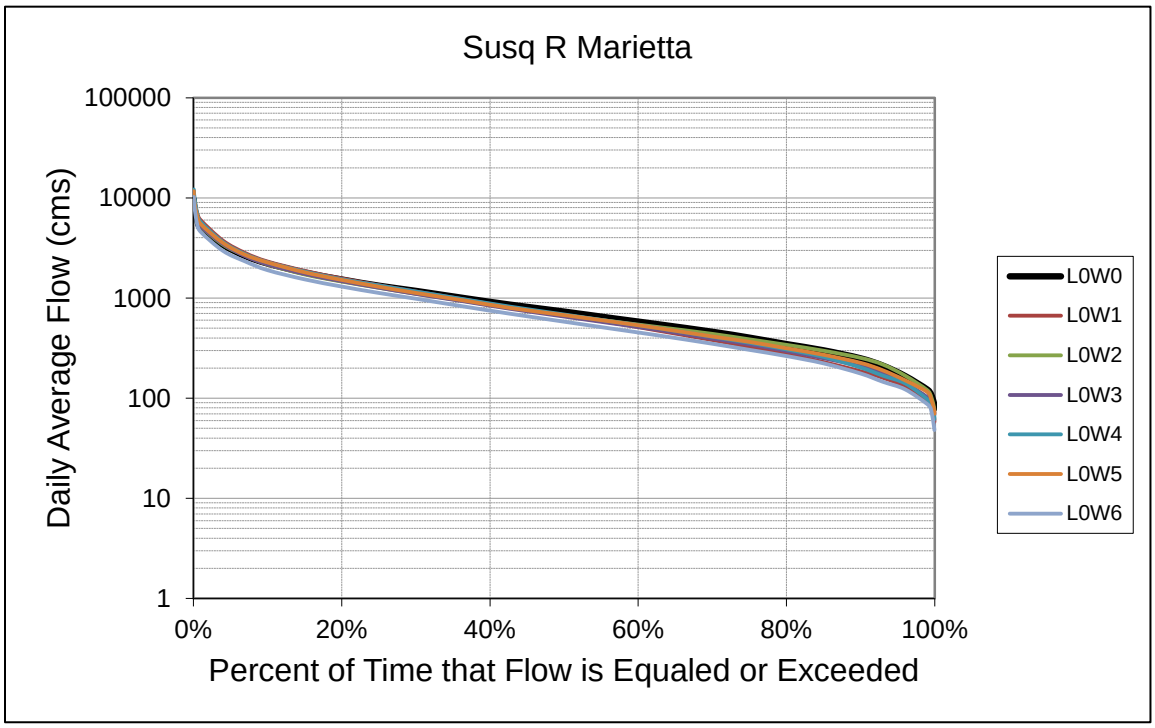

Figure 182. Flow Duration, Susquehanna River at Marietta (HSPF)

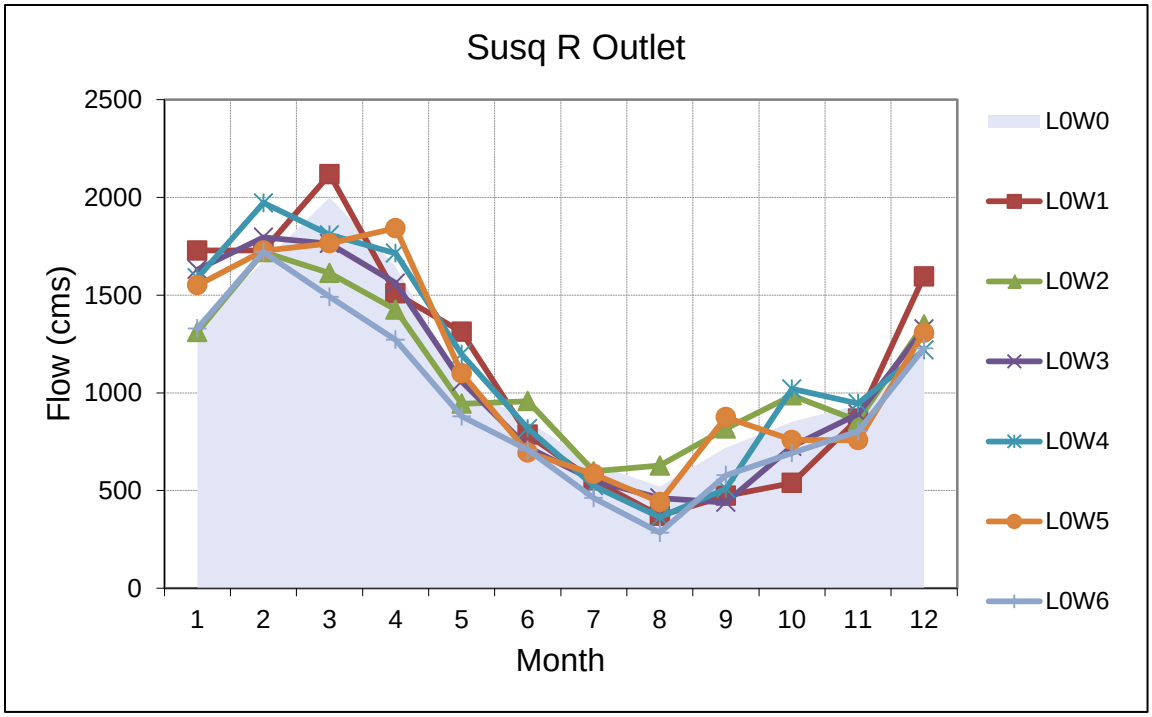

Figure 183. Monthly Average Flow, Susquehanna River at Outlet (HSPF)

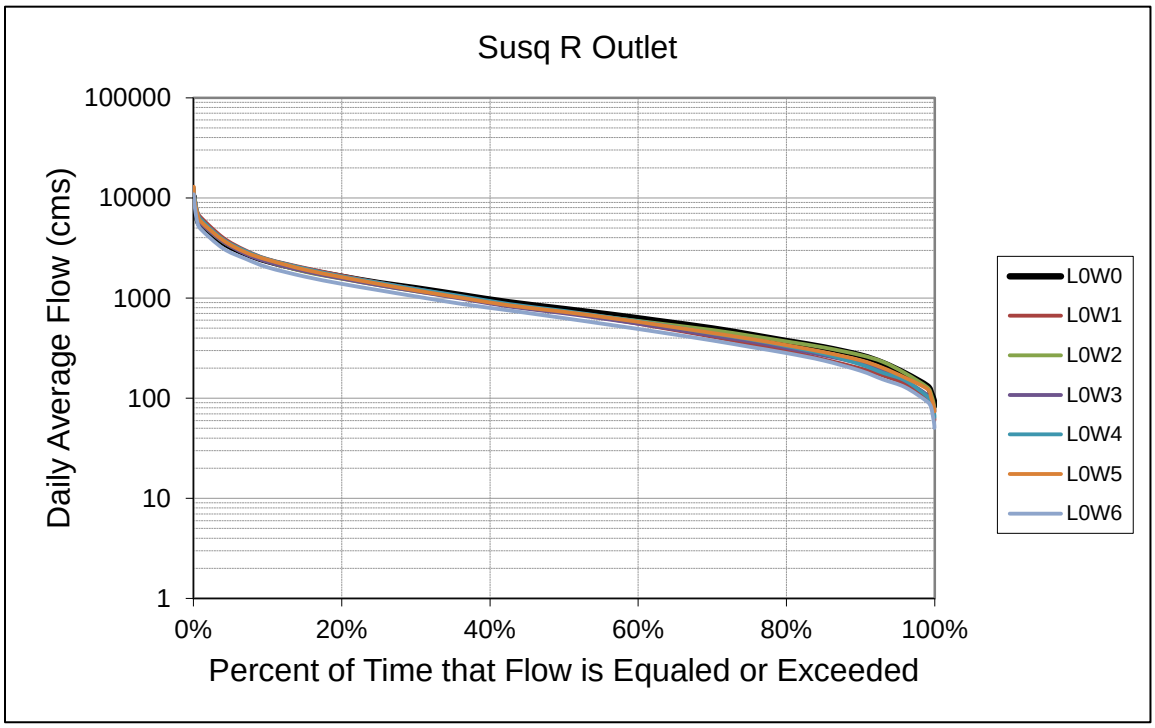

Figure 184. Flow Duration, Susquehanna River at Outlet (HSPF)

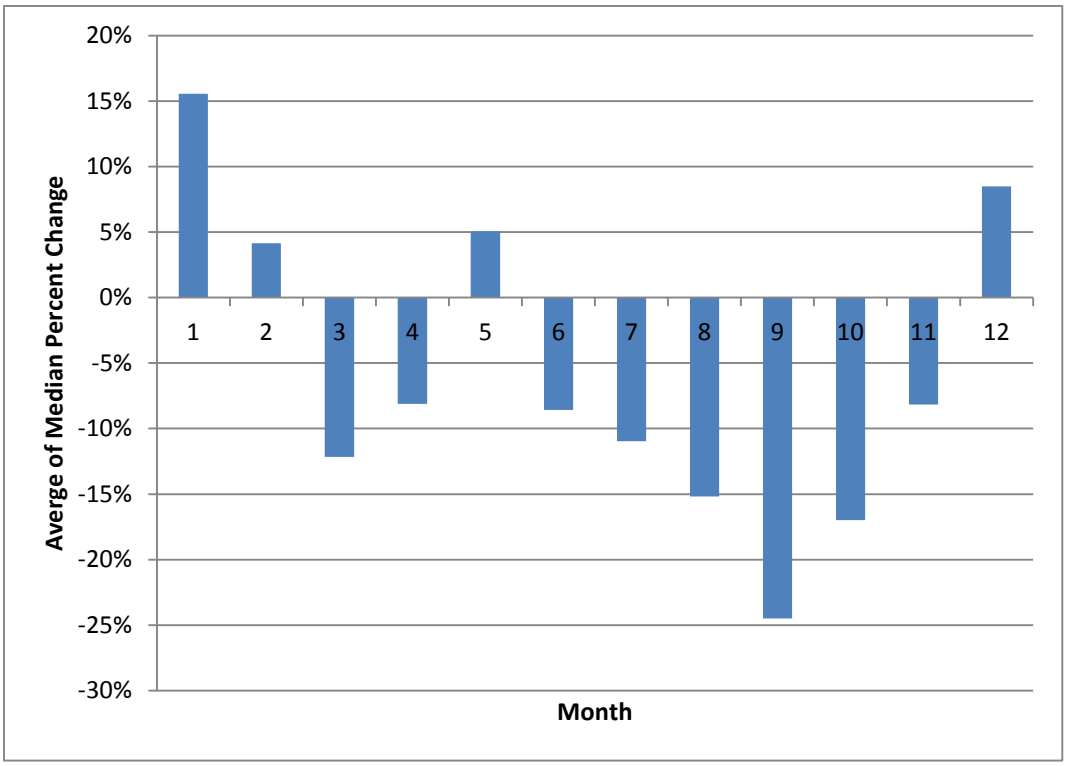

Figure 185. Average of Median Percent Change in Flow; NARCCAP Scenarios W1-W6 at all Stations, Susquehanna River Basin (HSPF)

Susquehanna River Basin, SWAT Model
Results at Downstream Station

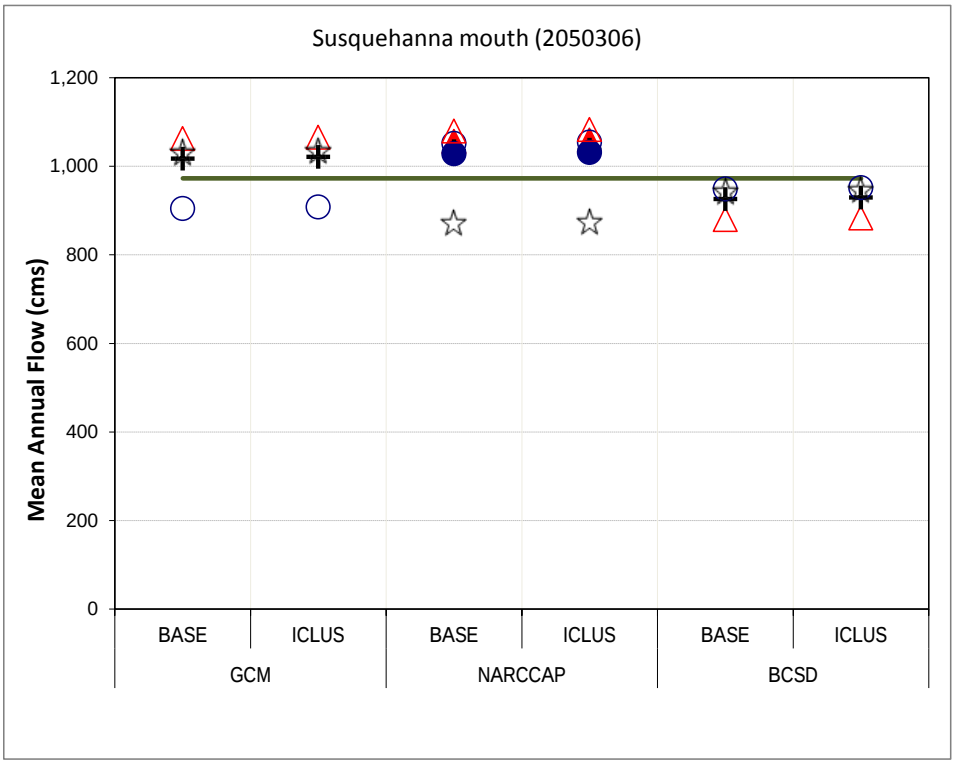

Figure 186. Mean Annual Flow, Susquehanna River Mouth (SWAT)

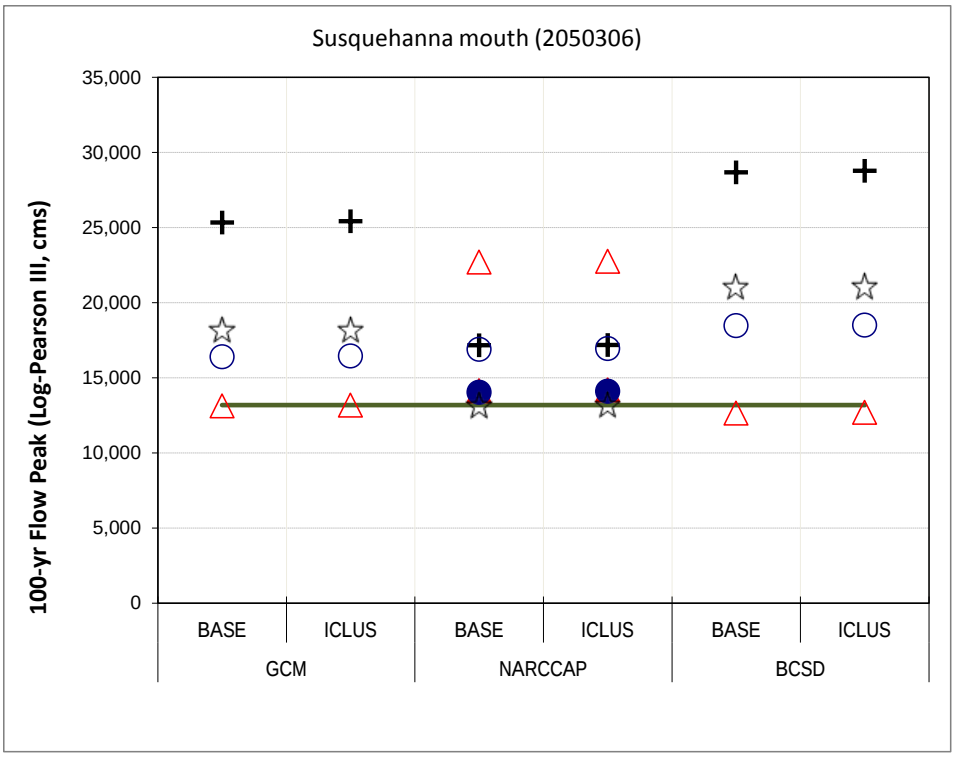

Figure 187. 100-yr Flow Peak, Susquehanna River Mouth (SWAT)

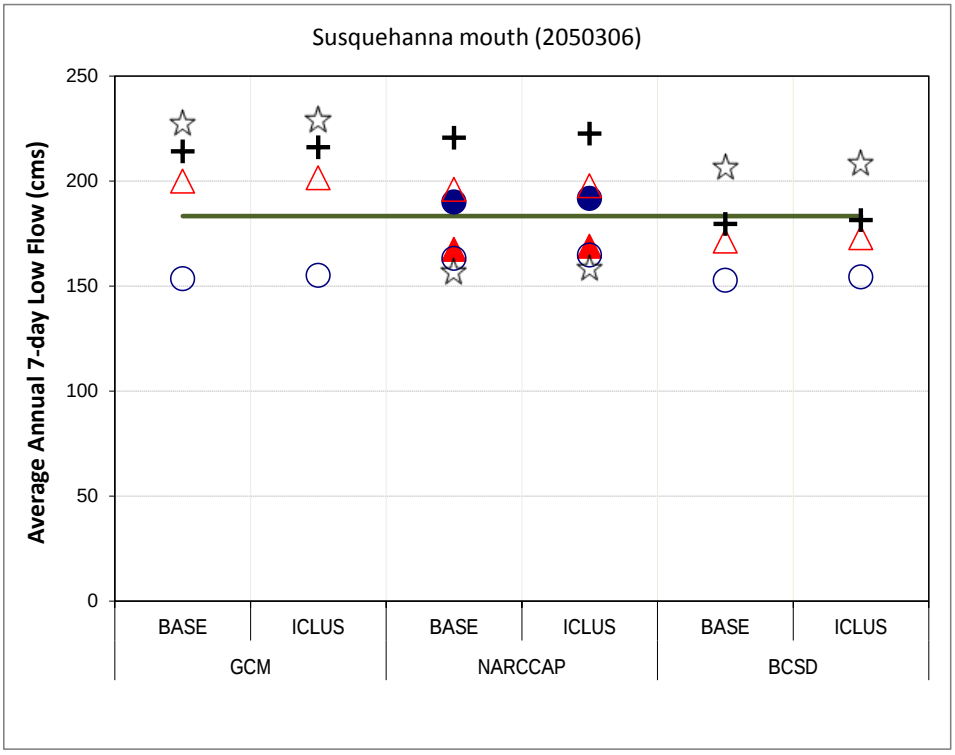

Figure 188. Average Annual 7-day Low Flow, Susquehanna River Mouth (SWAT)

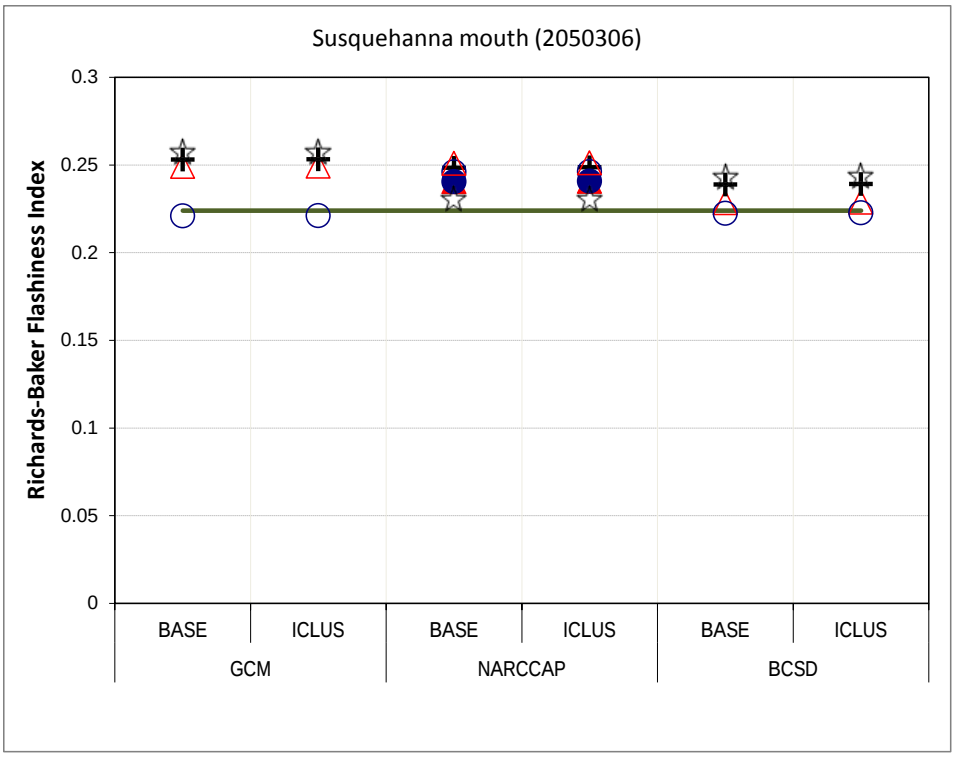

Figure 189. Richards-Baker Flashiness Index, Susquehanna River Mouth (SWAT)

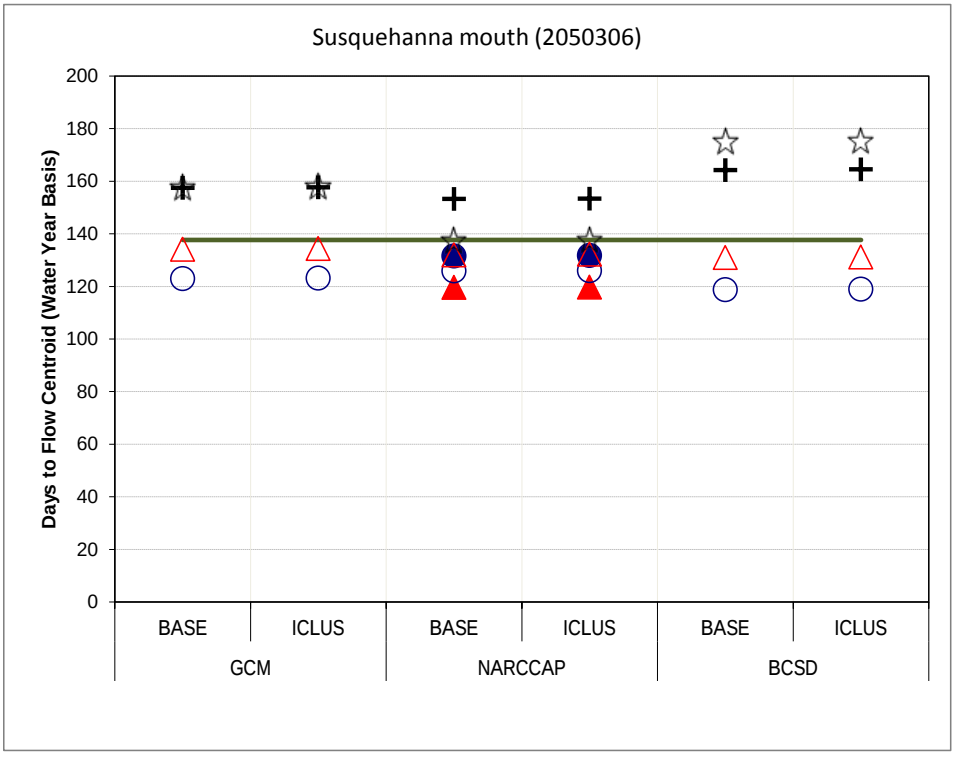

Figure 190. Days to Flow Centroid, Susquehanna River Mouth (SWAT)

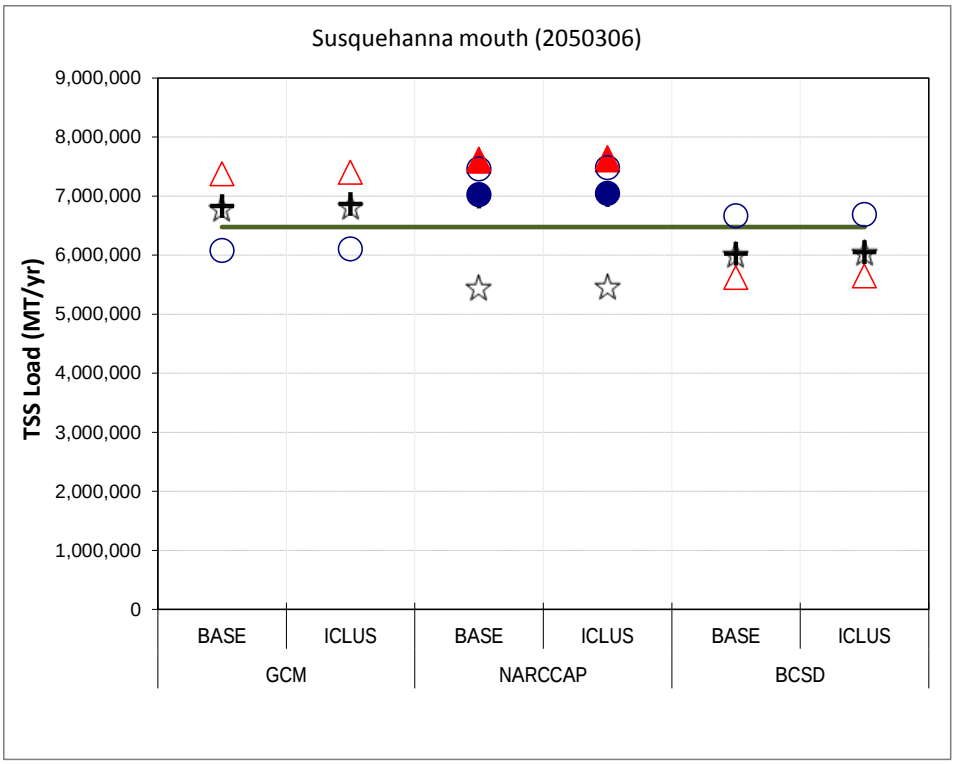

Figure 191. TSS Load, Susquehanna River Mouth (SWAT)

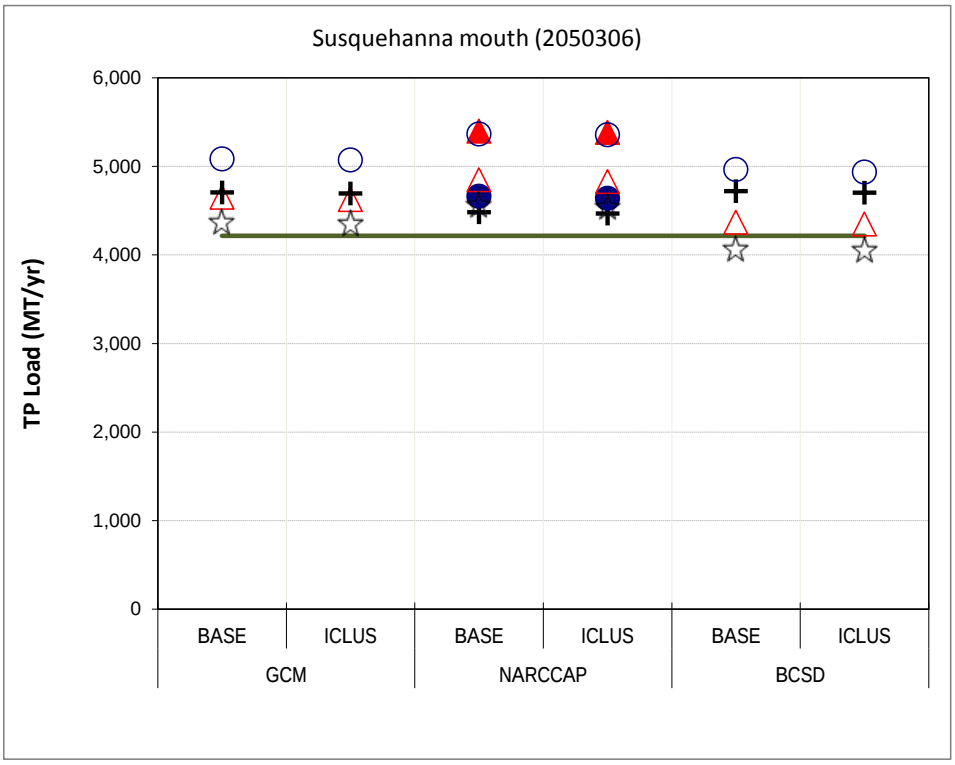

Figure 192. TP Load, Susquehanna River Mouth (SWAT)

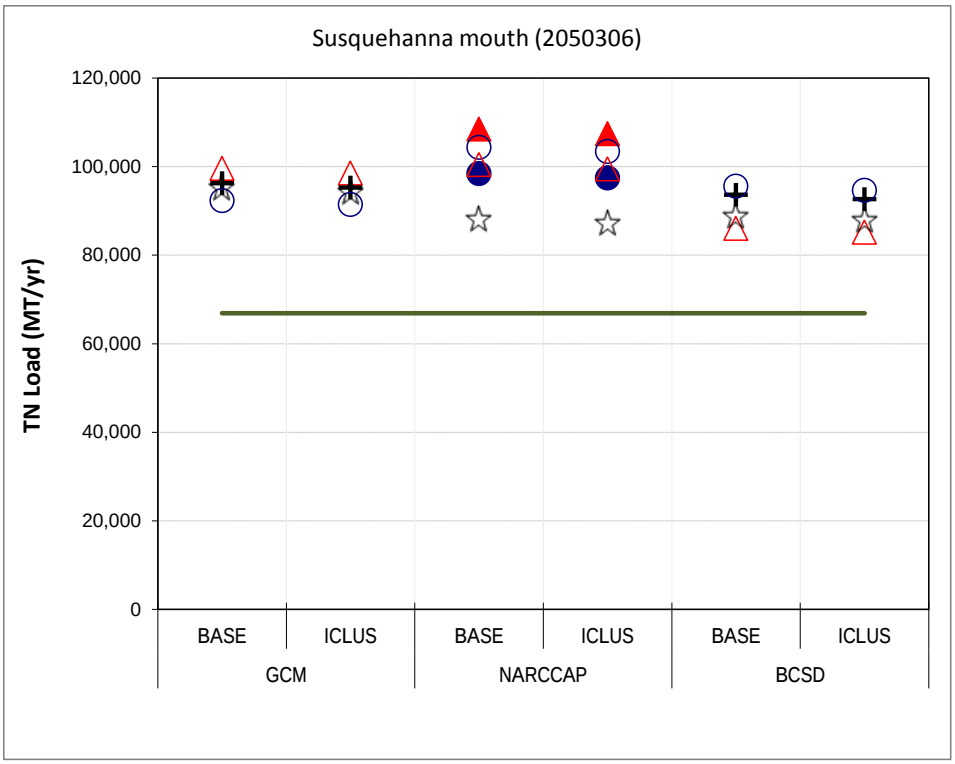

Figure 193. TN Load, Susquehanna River Mouth (SWAT)

Results at Multiple Stations

Table 8. Summary of Range of Change Relative to Existing Conditions for NARCCAP Dynamically Downscaled Scenarios, Susquehanna River Basin (SWAT)

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Upper Susquehanna HUC 02050101								
Flow	-2.93%	12.56%	10.45%	15.50%	-2.93%	12.56%	10.45%	15.50%
TSS	-5.62%	18.17%	14.02%	21.68%	-5.62%	18.17%	14.02%	21.67%
TN	45.88%	75.36%	76.83%	99.64%	45.88%	75.36%	76.83%	99.64%
TP	3.04%	27.68%	27.36%	59.62%	3.05%	27.69%	27.37%	59.64%
Chenango HUC 02050102								

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Flow	-1.33%	13.06%	10.39%	16.13%	-1.32%	13.06%	10.39%	16.13%
TSS	-6.39%	15.86%	13.94%	24.18%	-6.42%	15.82%	13.90%	24.14%
TN	32.00%	48.75%	51.04%	68.74%	31.98%	48.73%	51.02%	68.71%
TP	6.83%	14.34%	12.96%	16.77%	6.78%	14.30%	12.92%	16.72%
Owego-Wappasening HUC 02050103								
Flow	-2.16%	12.58%	10.35%	16.13%	-2.16%	12.58%	10.35%	16.13%
TSS	-8.14%	17.35%	13.91%	25.19%	-8.13%	17.36%	13.91%	25.20%
TN	39.16%	61.49%	63.16%	82.59%	39.15%	61.46%	63.13%	82.56%
TP	1.55%	14.40%	13.10%	24.10%	1.53%	14.36%	13.07%	24.07%
Tioga HUC 02050104								
Flow	-5.57%	12.57%	10.25%	16.43%	-5.57%	12.57%	10.25%	16.43%
TSS	-9.02%	17.47%	14.23%	25.28%	-9.02%	17.48%	14.23%	25.28%
TN	21.38%	42.38%	39.90%	52.61%	21.37%	42.37%	39.90%	52.60%
TP	-6.17%	10.06%	7.86%	13.87%	-6.17%	10.05%	7.85%	13.87%
Chemung HUC 02050105								
Flow	-4.38%	12.63%	10.18%	19.43%	-4.38%	12.63%	10.18%	19.43%
TSS	-12.77%	19.73%	18.69%	44.35%	-12.77%	19.73%	18.69%	44.35%
TN	28.01%	49.52%	46.02%	57.58%	28.01%	49.52%	46.02%	57.58%
TP	-1.02%	13.10%	12.22%	20.53%	-1.02%	13.10%	12.22%	20.53%
Upper Susquehanna - Lackawanna HUC 02050107								
Flow	-5.85%	8.79%	7.24%	14.08%	-5.85%	8.79%	7.24%	14.08%
TSS	-10.13%	17.56%	13.91%	24.94%	-10.13%	17.56%	13.91%	24.95%
TN	25.64%	44.63%	43.97%	58.47%	25.64%	44.62%	43.96%	58.46%
TP	3.34%	14.91%	13.94%	20.04%	3.33%	14.90%	13.93%	20.03%
Upper West Branch Susquehanna HUC 02050201								
Flow	-23.80%	-2.72%	-4.76%	2.53%	-23.81%	-2.73%	-4.77%	2.52%
TSS	4.05%	63.07%	57.82%	82.45%	4.02%	63.02%	57.77%	82.39%
TN	67.29%	94.34%	90.48%	99.00%	67.27%	94.17%	90.42%	99.04%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TP	33.51%	45.30%	44.90%	57.08%	33.74%	45.08%	44.99%	57.26%
Sinnemahoning HUC 02050202								
Flow	-14.29%	5.33%	3.08%	9.54%	-14.29%	5.33%	3.08%	9.54%
TSS	-14.32%	17.04%	14.25%	26.19%	-14.32%	17.04%	14.25%	26.19%
TN	36.24%	62.62%	62.69%	84.45%	36.15%	62.48%	62.56%	84.28%
TP	-4.98%	23.38%	22.14%	44.63%	-5.09%	23.17%	21.94%	44.37%
Pine HUC 02050205								
Flow	-8.36%	9.77%	6.66%	11.67%	-8.36%	9.77%	6.66%	11.67%
TSS	-10.51%	16.48%	12.22%	20.93%	-10.51%	16.48%	12.22%	20.93%
TN	-2.43%	23.34%	22.34%	37.97%	-2.43%	23.31%	22.32%	37.95%
TP	-24.19%	9.79%	5.12%	22.56%	-24.13%	9.77%	5.11%	22.53%
Lower West Branch Susquehanna HUC 02050206								
Flow	-14.99%	3.29%	0.92%	7.08%	-14.94%	3.32%	0.95%	7.11%
TSS	-20.99%	3.46%	0.98%	9.63%	-20.89%	3.57%	1.09%	9.73%
TN	20.95%	38.10%	37.14%	48.13%	20.71%	37.79%	36.90%	47.89%
TP	5.23%	19.50%	25.19%	46.70%	4.95%	19.21%	25.15%	47.18%
Lower Susquehanna - Penns HUC 02050301								
Flow	-9.65%	6.11%	4.62%	11.36%	-9.64%	6.12%	4.63%	11.37%
TSS	-16.11%	11.76%	8.58%	19.88%	-16.10%	11.77%	8.58%	19.89%
TN	25.20%	42.75%	42.26%	55.42%	25.13%	42.68%	42.20%	55.35%
TP	7.40%	14.40%	18.75%	32.05%	7.24%	14.23%	18.66%	32.22%
Raystown HUC 02050303								
Flow	-14.94%	9.00%	7.75%	25.79%	-14.94%	9.00%	7.75%	25.79%
TSS	-16.49%	32.88%	34.95%	82.05%	-16.49%	32.88%	34.95%	82.05%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TN	57.89%	80.61%	84.77%	110.76%	57.90%	80.62%	84.78%	110.78%
TP	-1.88%	21.52%	25.52%	47.14%	-1.86%	21.55%	25.55%	47.19%
Lower Juniata HUC 02050304								
Flow	-10.44%	10.01%	7.44%	14.53%	-10.43%	10.02%	7.44%	14.53%
TSS	-11.79%	17.24%	13.86%	24.60%	-11.78%	17.29%	13.89%	24.64%
TN	41.30%	55.01%	57.70%	76.08%	41.29%	55.01%	57.69%	76.09%
TP	-2.88%	5.01%	5.03%	14.45%	-2.90%	5.02%	5.03%	14.45%
Susquehanna mouth HUC 02050306								
Flow	-10.08%	7.19%	4.92%	10.98%	-9.97%	7.27%	5.00%	11.04%
TSS	-15.67%	11.82%	8.49%	17.75%	-15.55%	11.90%	8.59%	17.84%
TN	32.30%	48.76%	49.18%	62.17%	32.07%	48.51%	48.96%	61.94%
TP	6.27%	12.74%	15.92%	27.94%	6.28%	12.63%	15.92%	28.09%
Susquehanna River at Marietta (gage 01576000)								
Flow	-9.97%	6.97%	4.96%	11.18%	-9.94%	6.99%	4.98%	11.19%
TSS	-15.13%	12.16%	8.77%	18.47%	-15.12%	12.12%	8.74%	18.43%
TN	29.75%	46.51%	46.61%	59.51%	29.62%	46.37%	46.49%	59.40%
TP	6.04%	12.82%	16.08%	28.35%	5.91%	12.68%	16.02%	28.45%

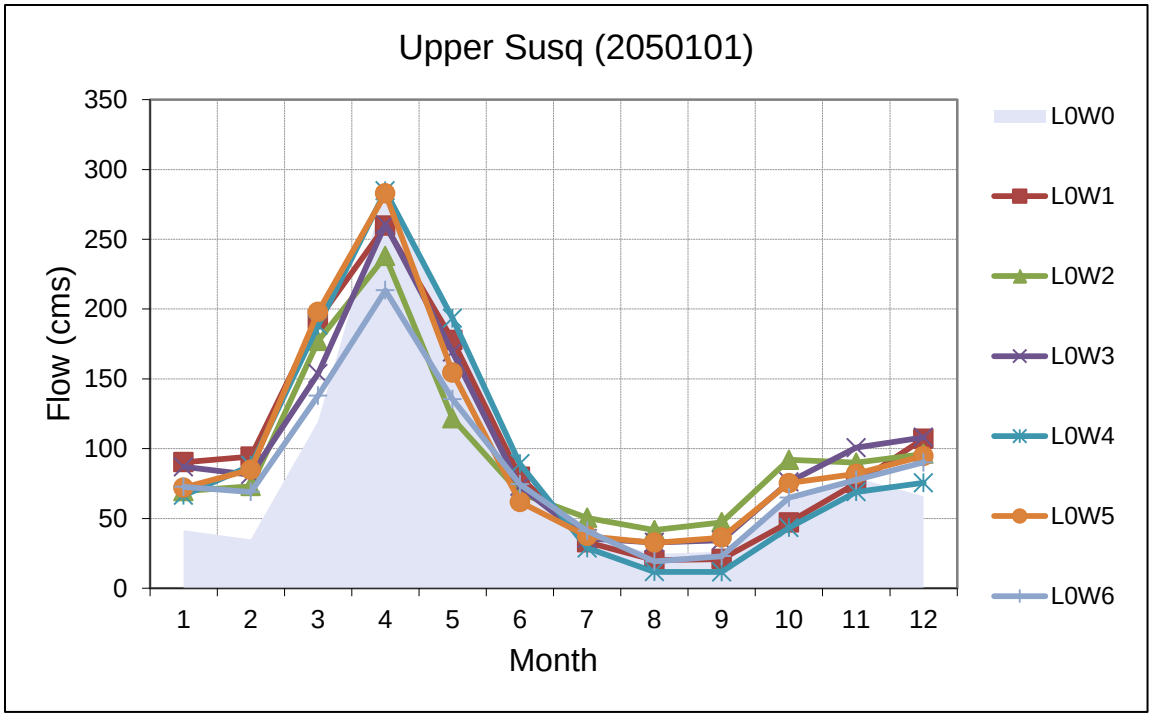

Figure 194. Monthly Average Flows, Upper Susquehanna River (SWAT)

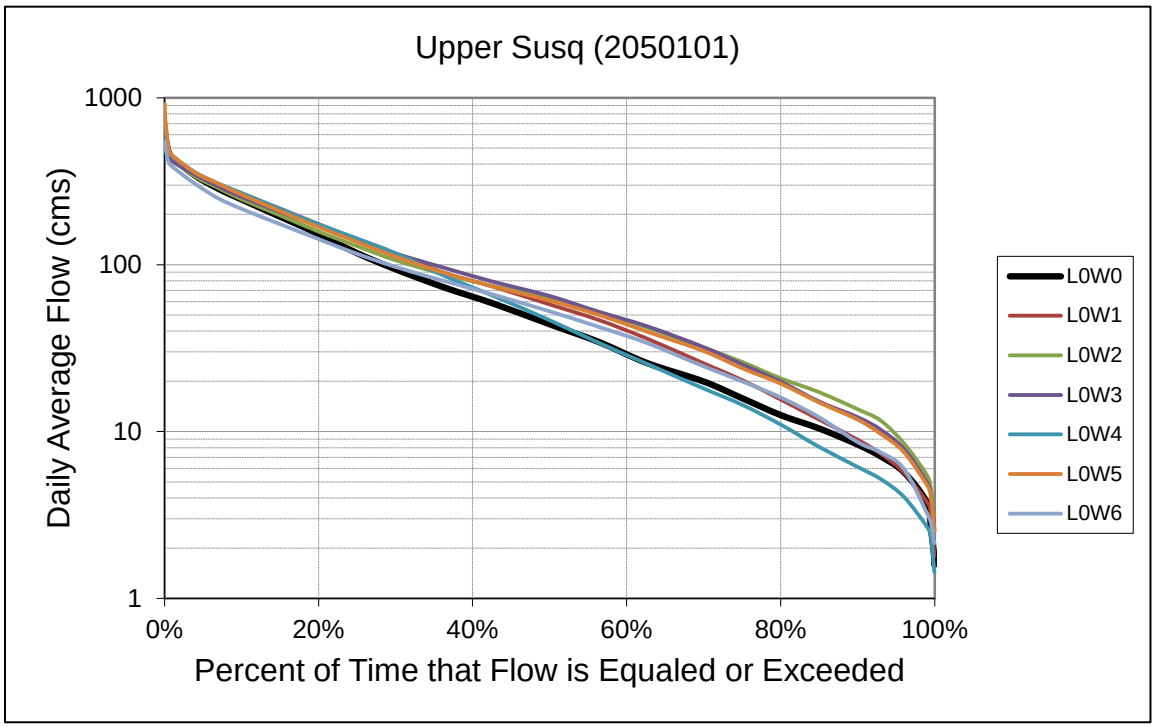

Figure 195. Flow Duration, Upper Susquehanna River (SWAT)

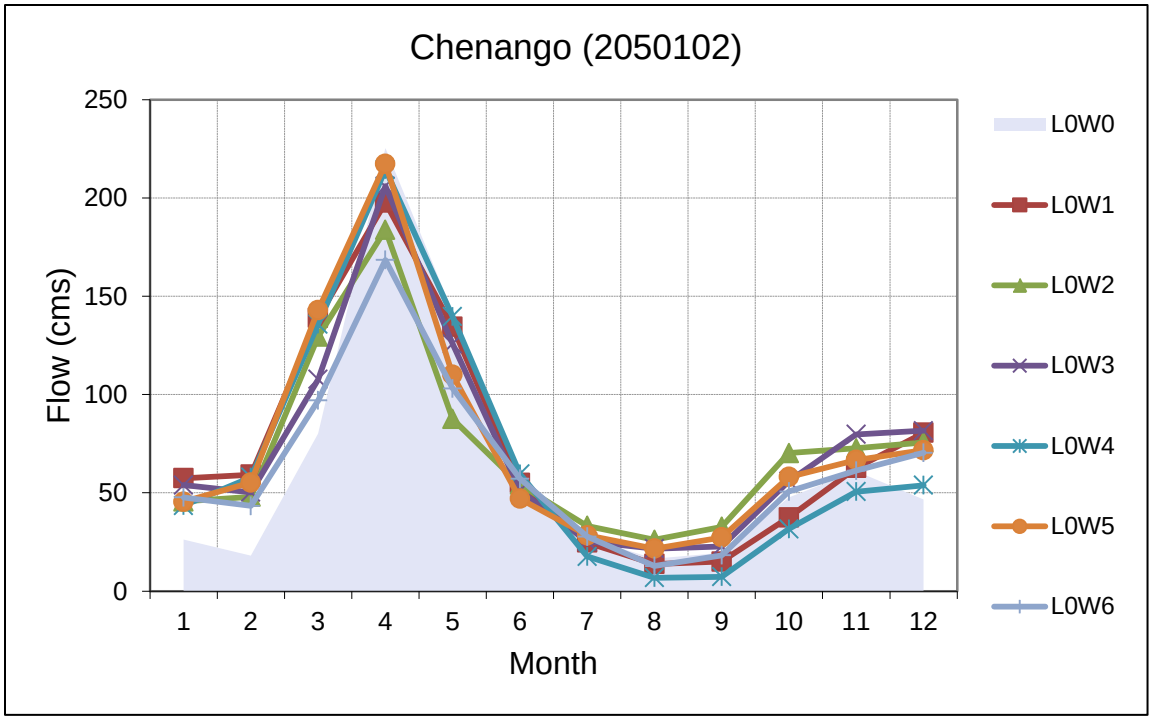

Figure 196. Monthly Average Flows, Chenango (SWAT)

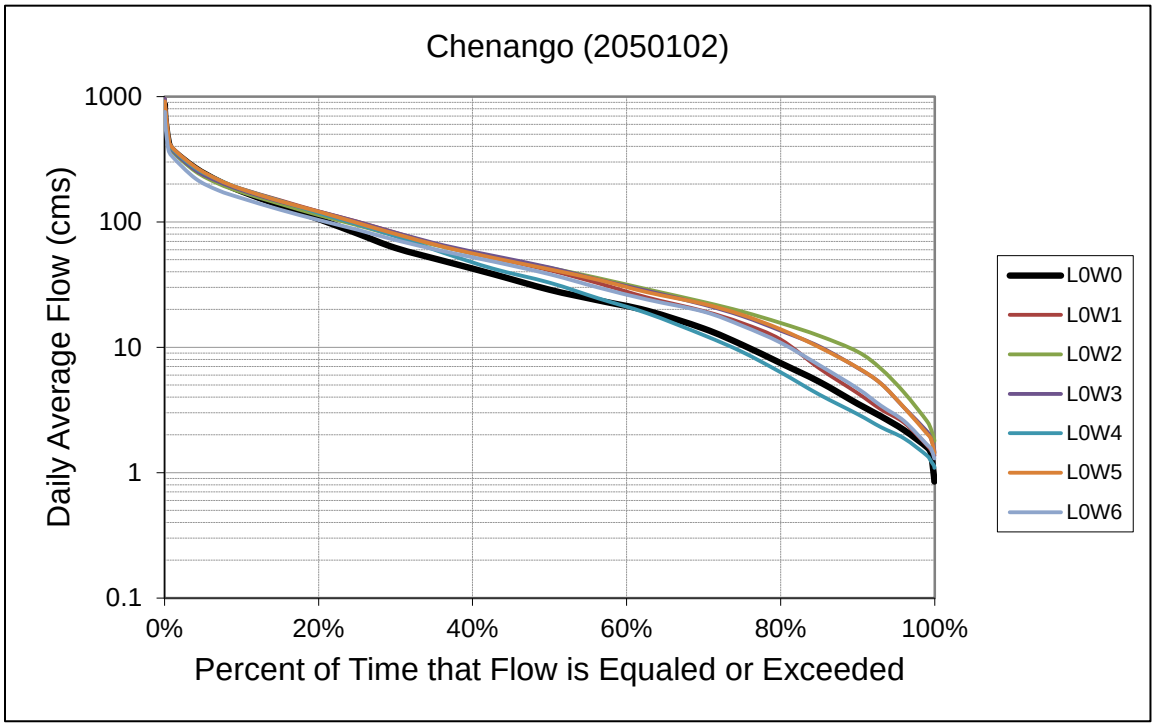

Figure 197. Flow Duration, Chenango (SWAT)

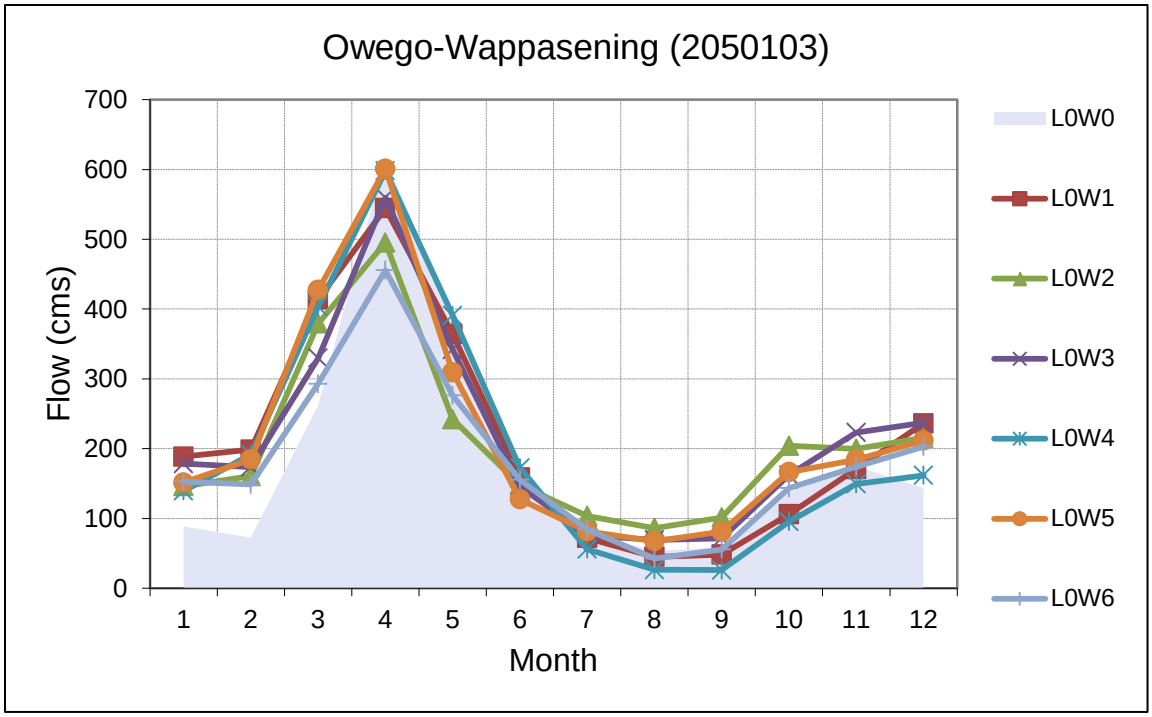

Figure 198. Monthly Average Flows, Owego-Wappasening (SWAT)

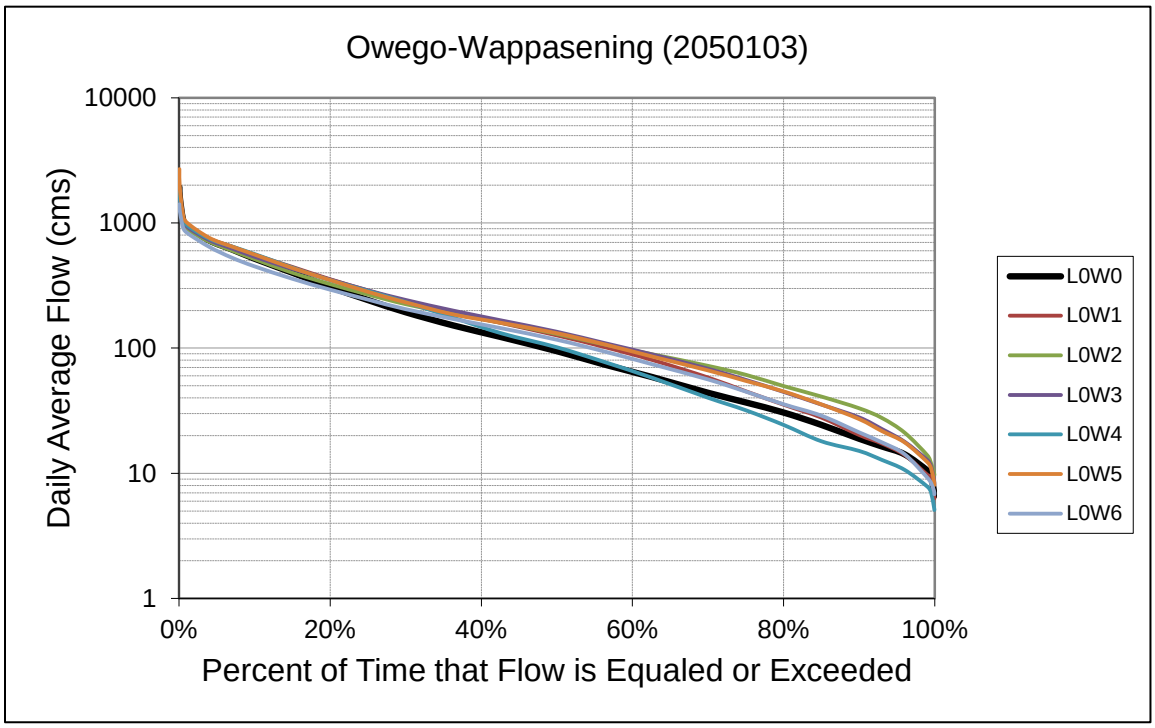

Figure 199. Flow Duration, Owego-Wappasening (SWAT)

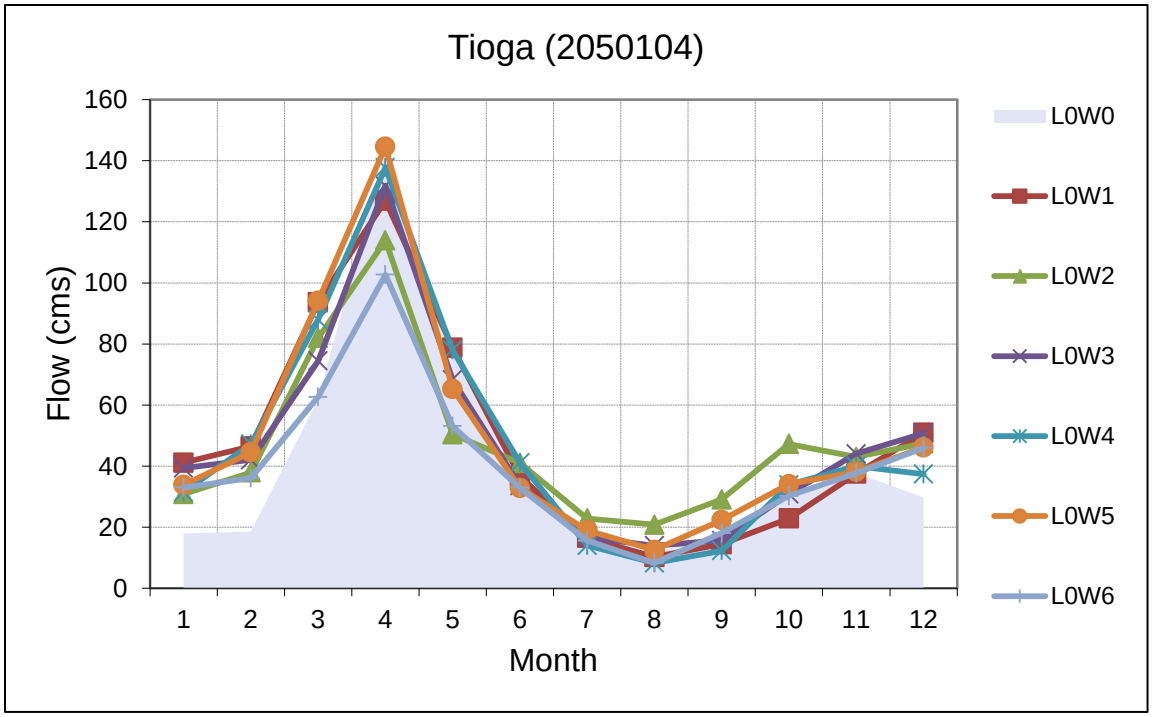

Figure 200. Monthly Average Flows, Tioga (SWAT)

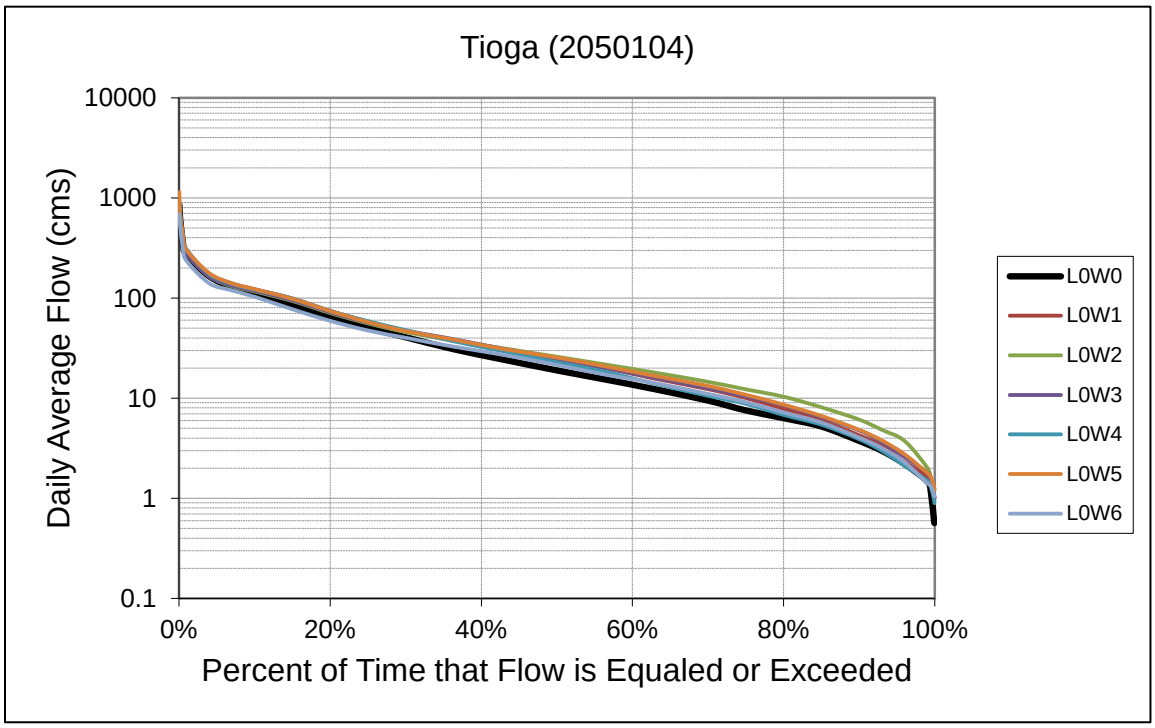

Figure 201. Flow Duration, Tioga (SWAT)

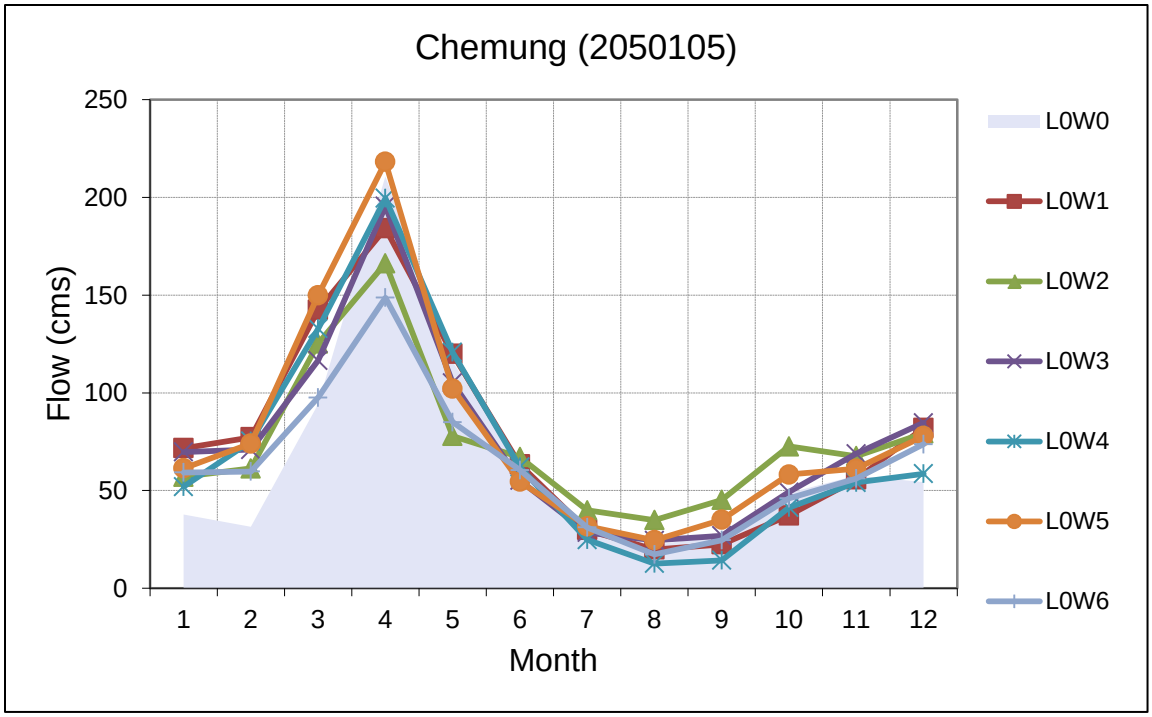

Figure 202. Monthly Average Flows, Chemung (SWAT)

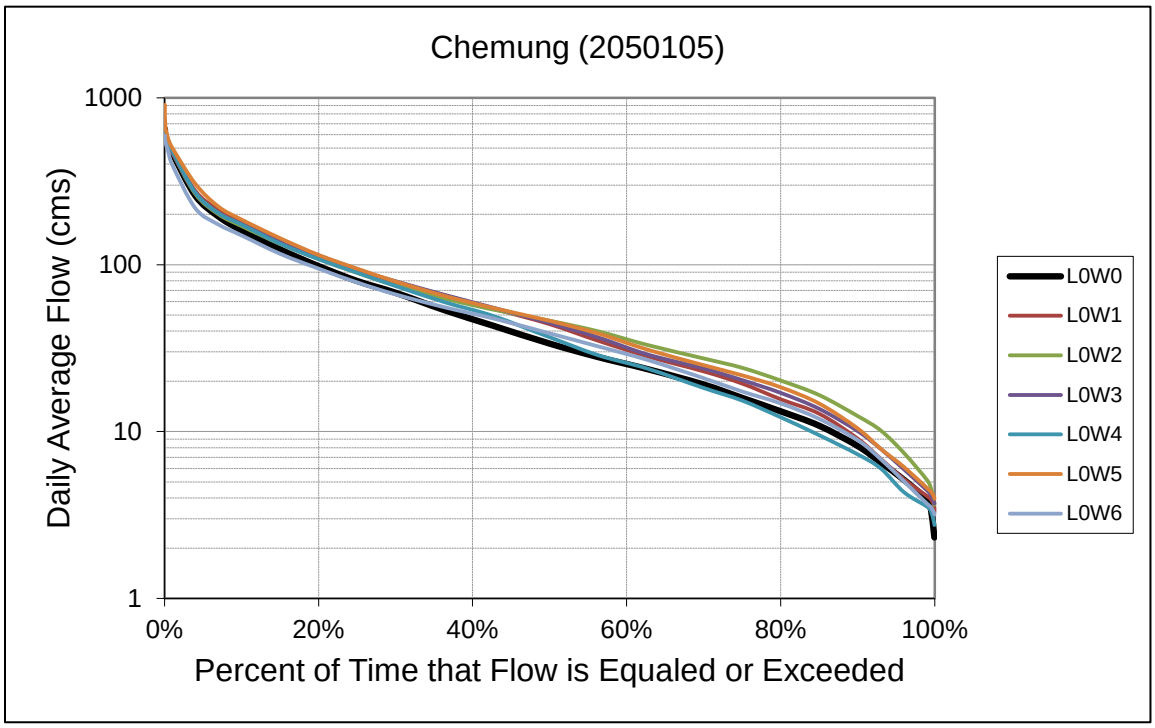

Figure 203. Flow Duration, Chemung (SWAT)

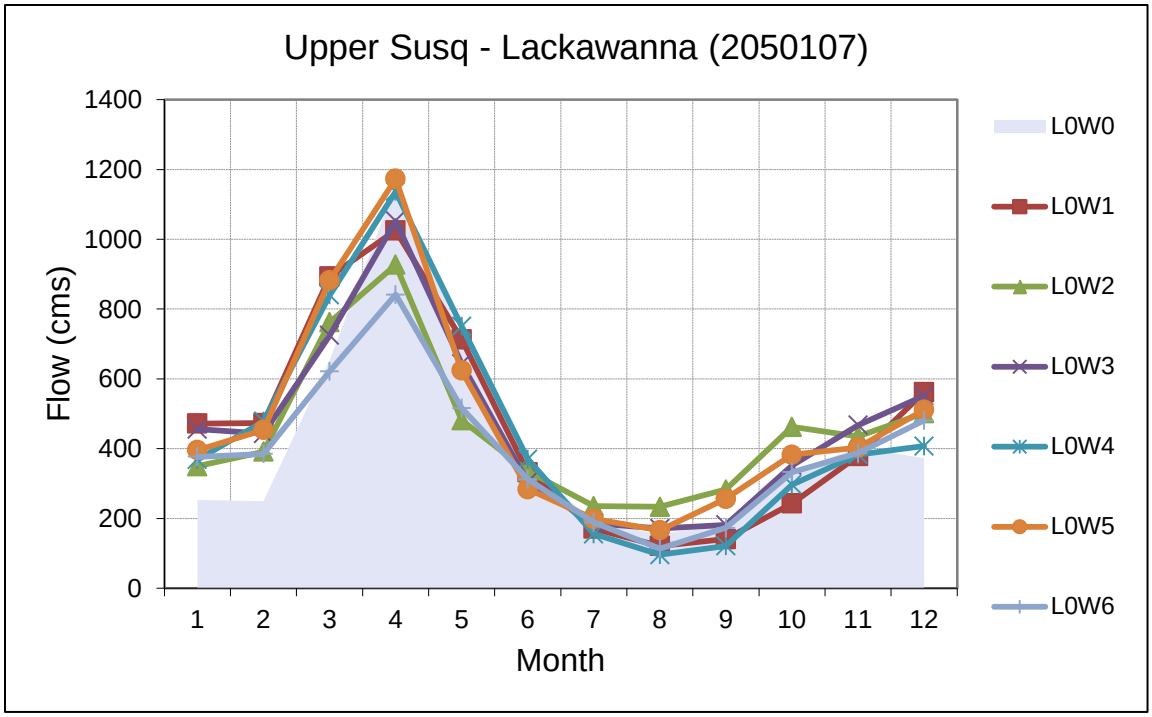

Figure 204. Monthly Average Flows, Upper Susquehanna River - Lackawanna (SWAT)

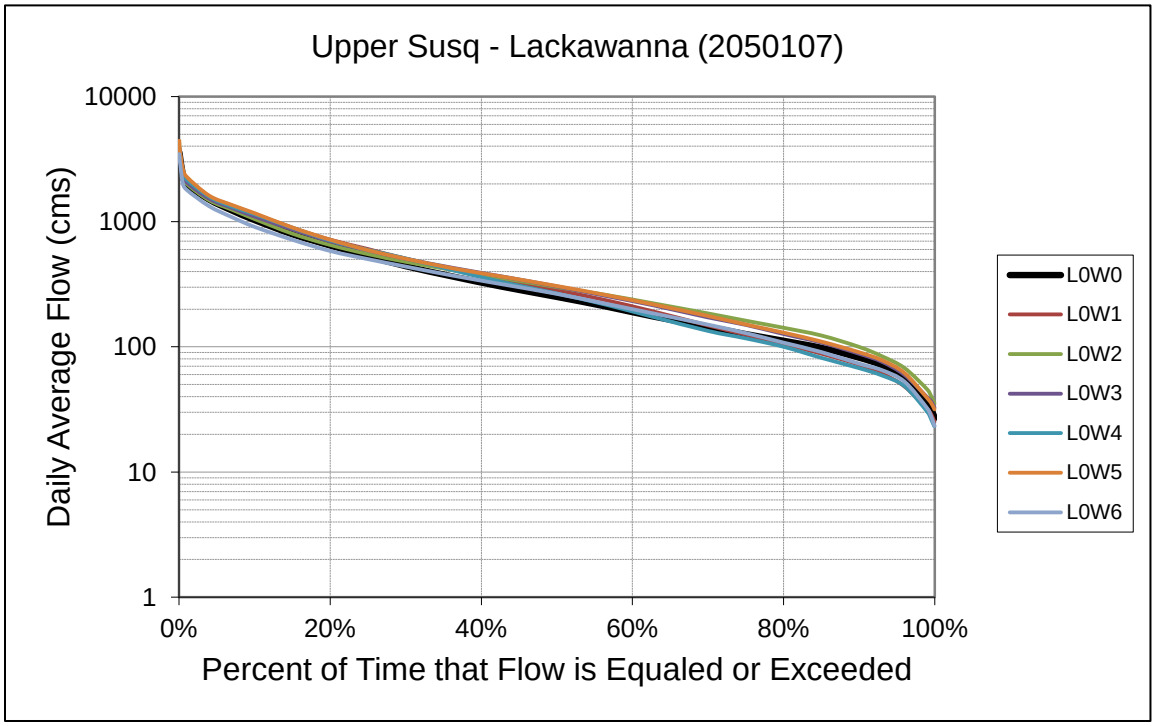

Figure 205. Flow Duration, Upper Susquehanna River - Lackawanna (SWAT)

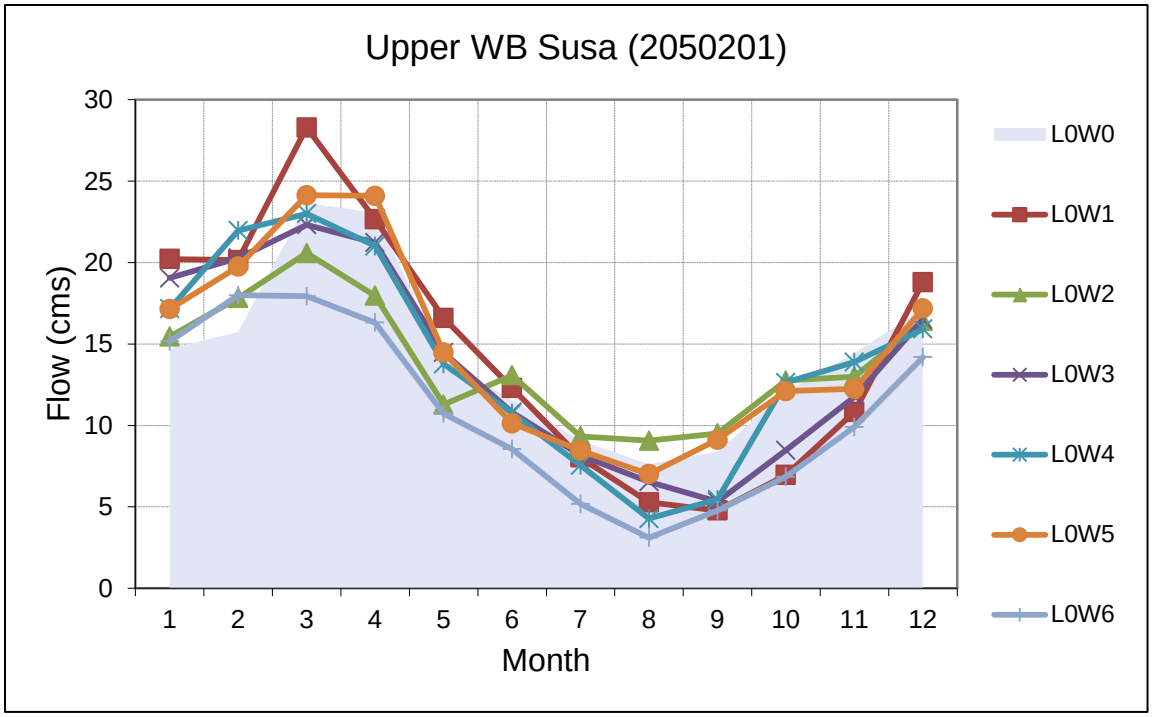

Figure 206. Monthly Average Flows, Upper West Branch Susquehanna River (SWAT)

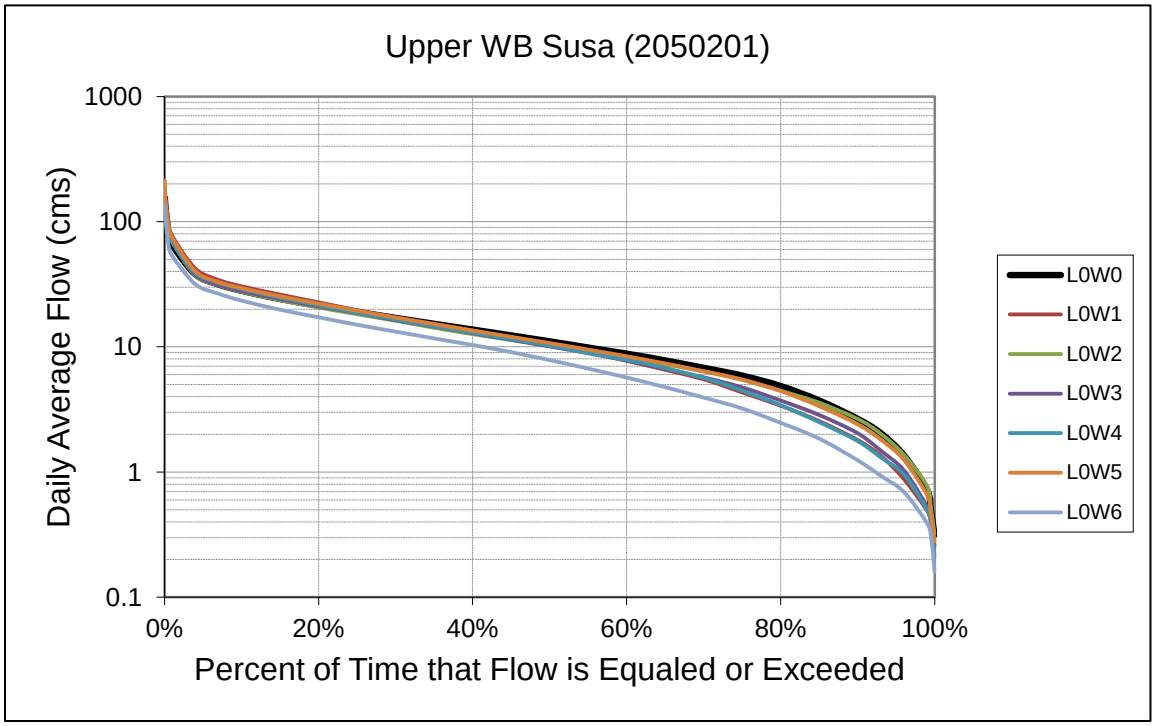

Figure 207. Flow Duration, Upper West Branch Susquehanna River (SWAT)

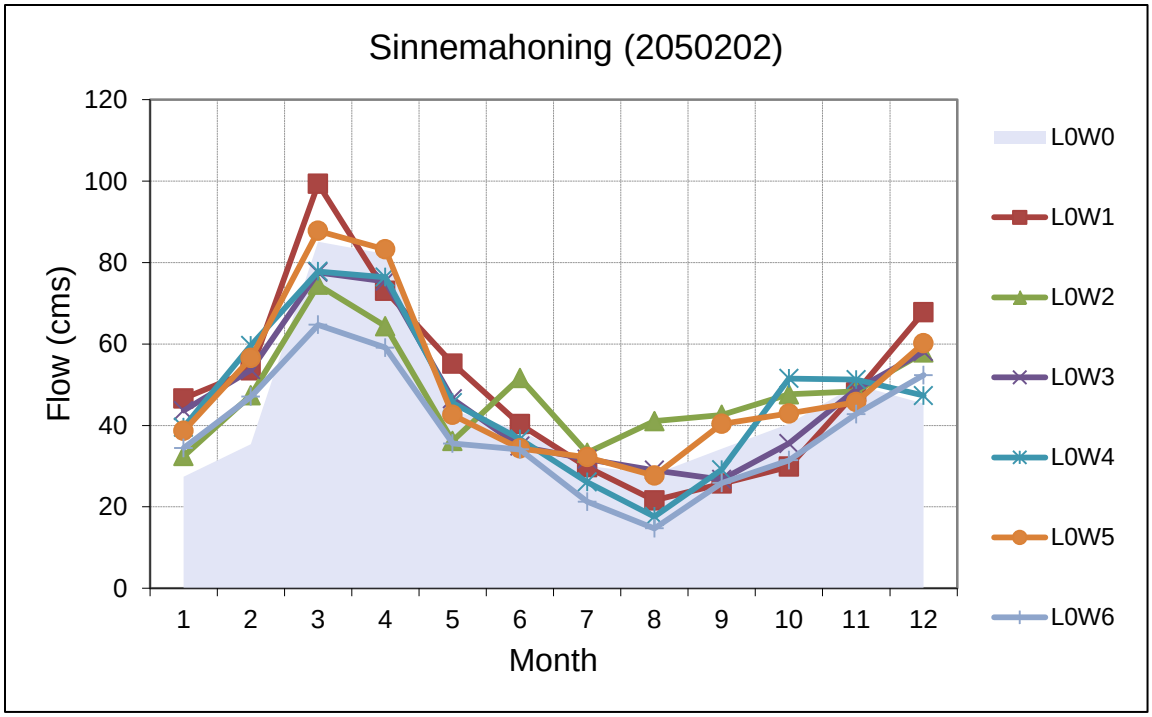

Figure 208. Monthly Average Flows, Sinnemahoning (SWAT)

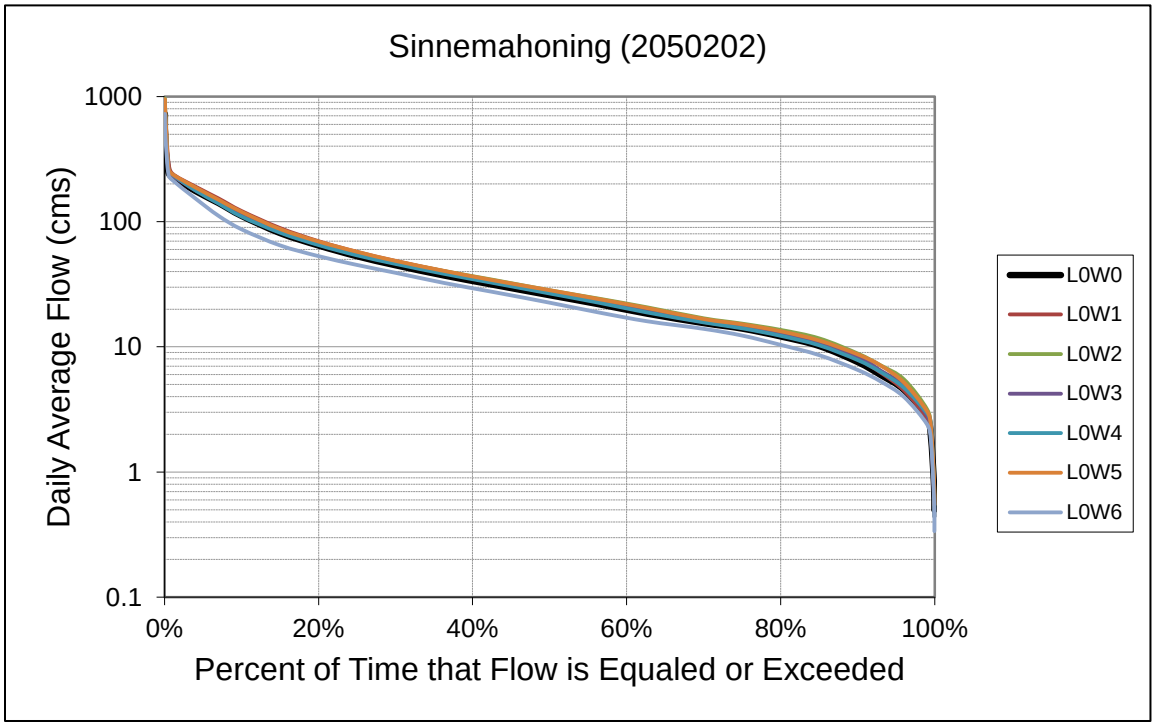

Figure 209. Flow Duration, Sinnemahoning (SWAT)

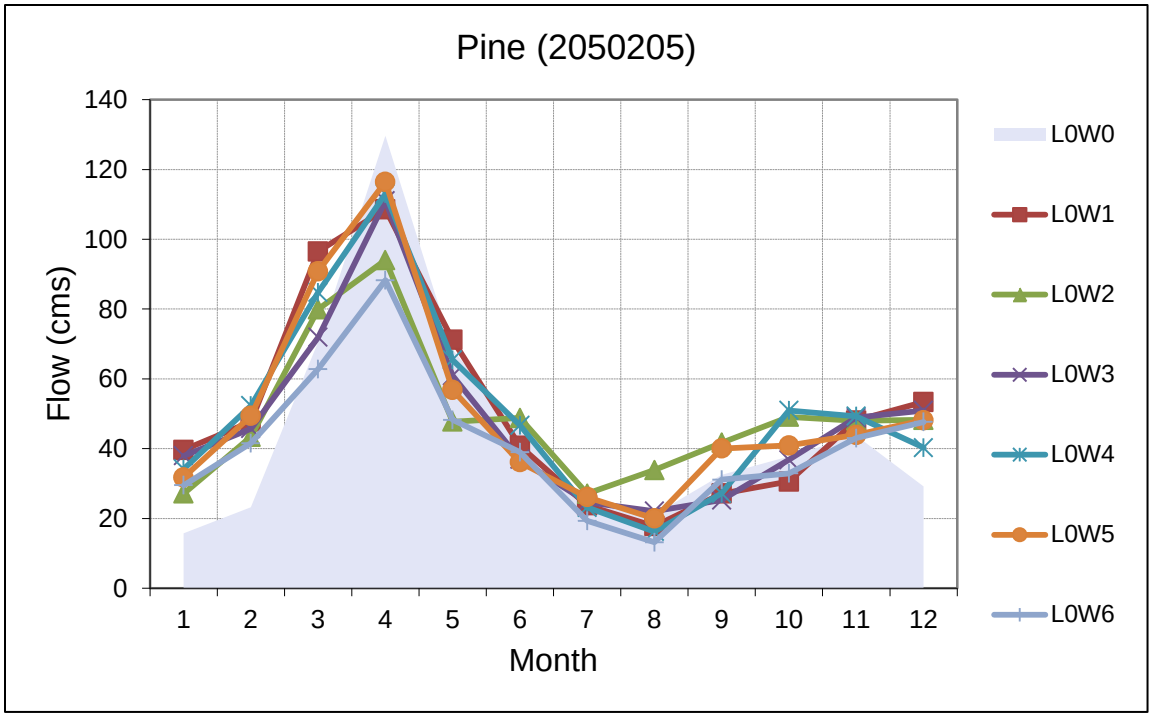

Figure 210. Monthly Average Flows, Pine (SWAT)

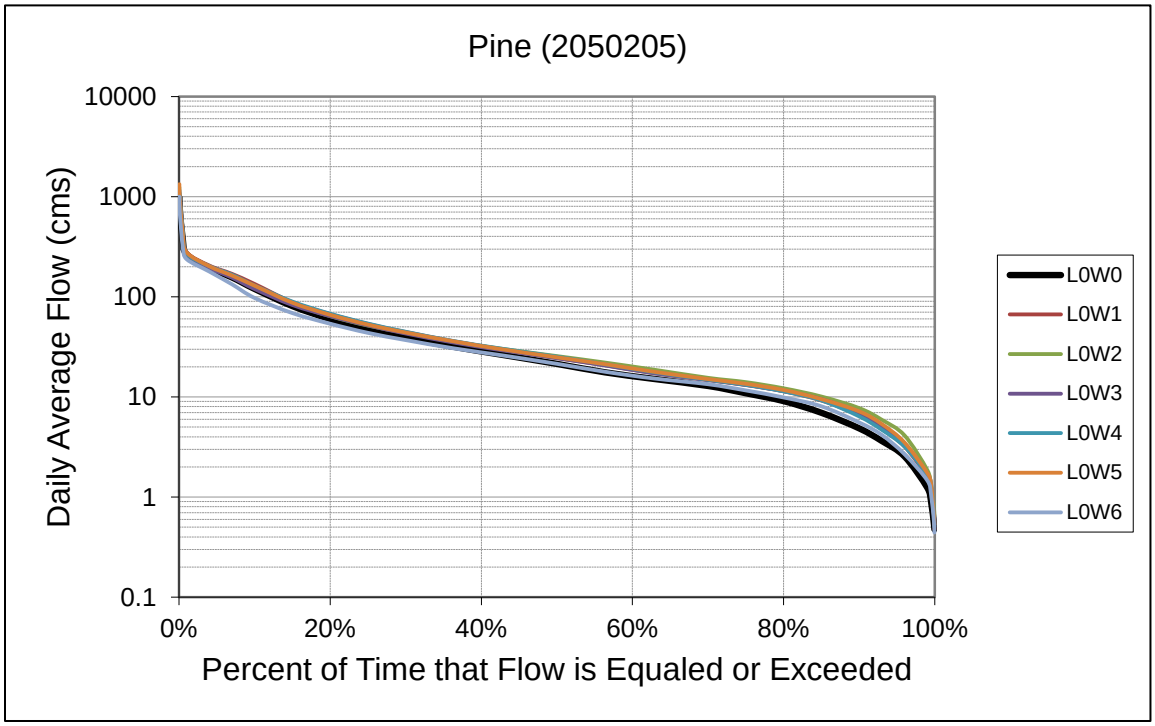

Figure 211. Flow Duration, Pine (SWAT)

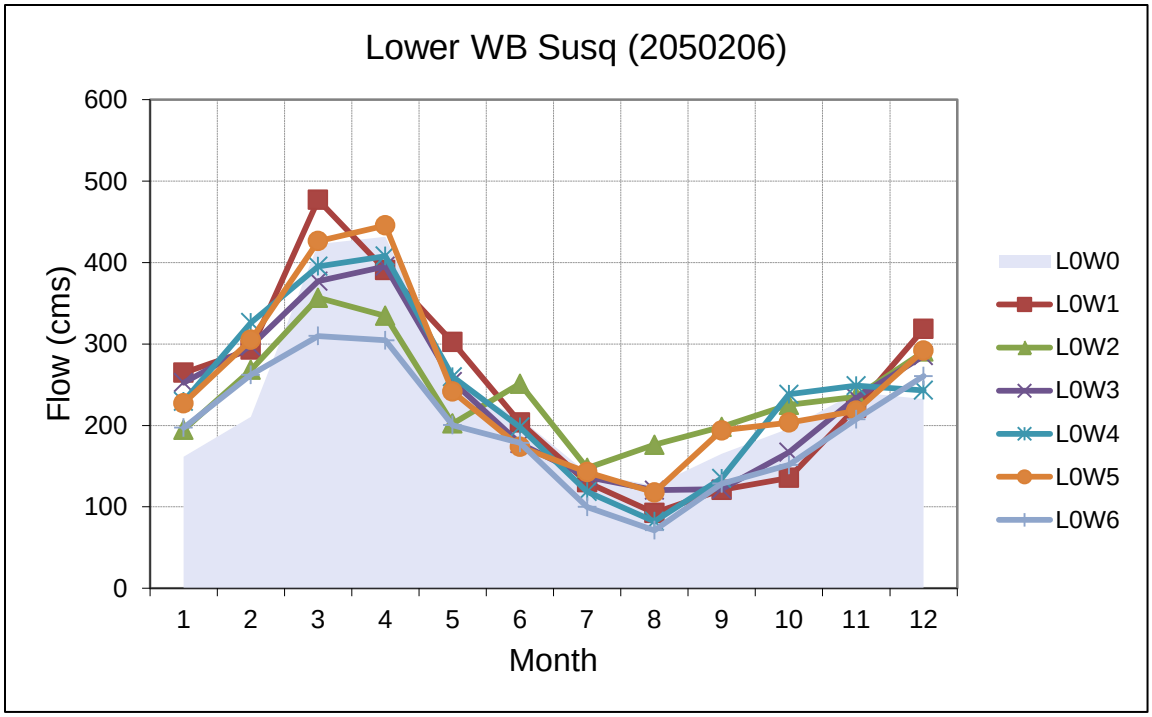

Figure 212. Monthly Average Flows, Lower West Branch Susquehanna River (SWAT)

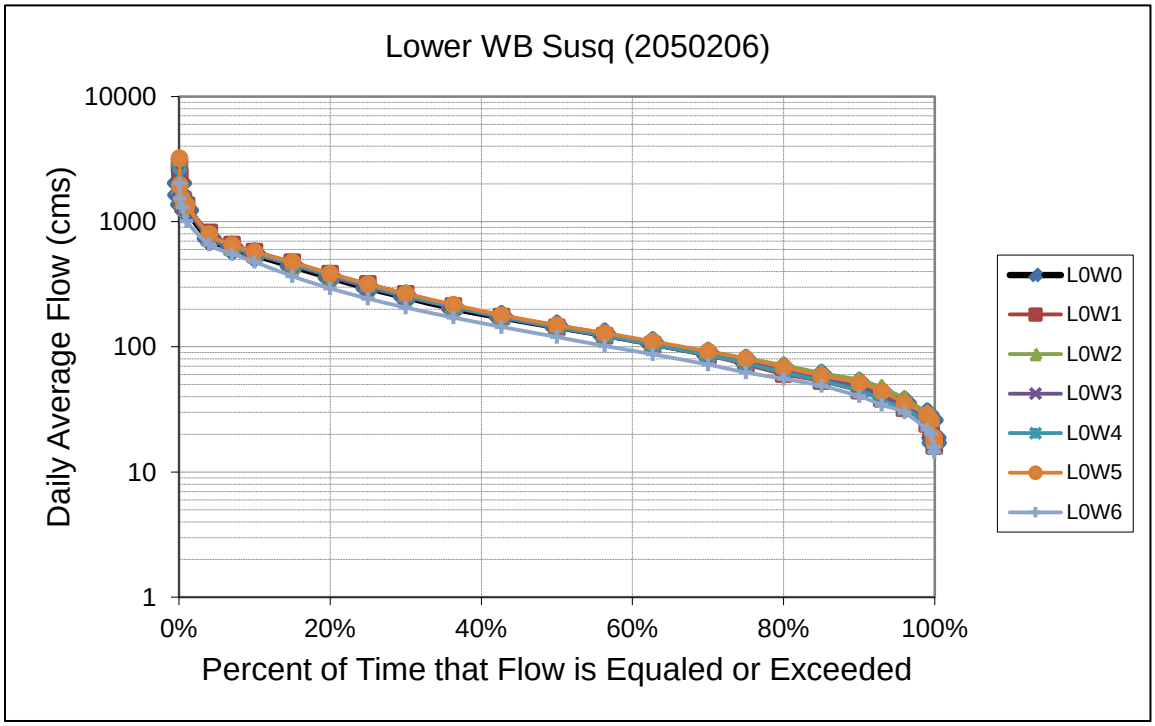

Figure 213. Flow Duration, Lower West Branch Susquehanna River (SWAT)

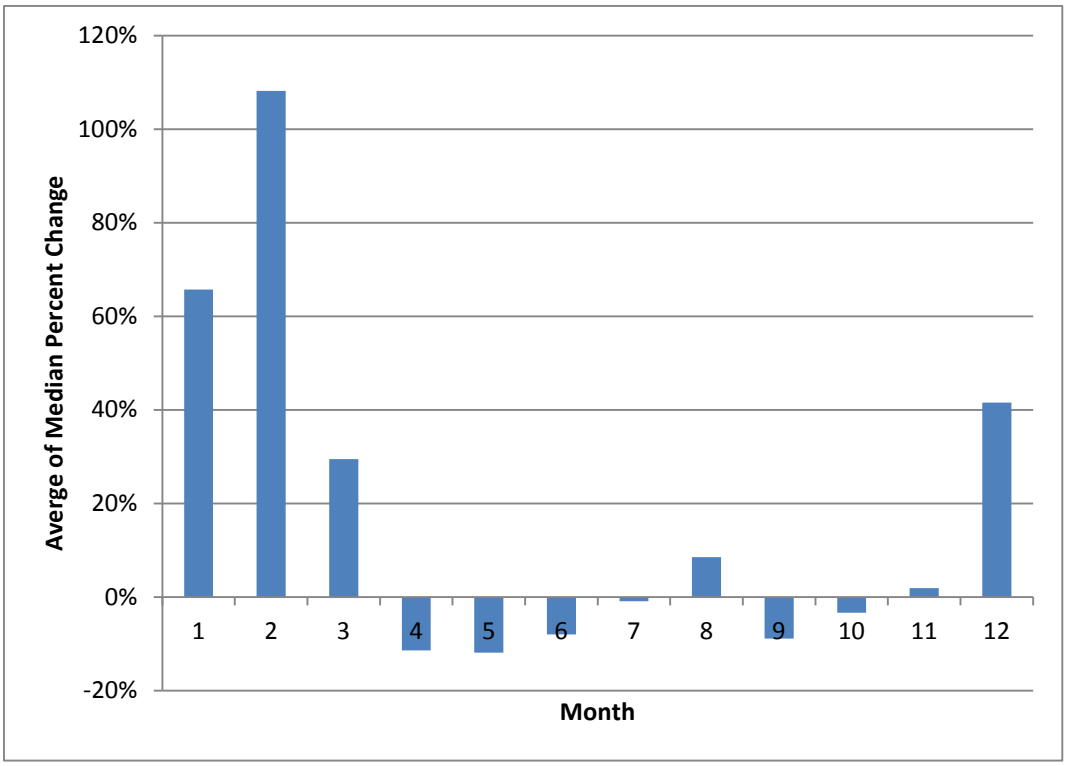

Figure 214. Average of Median Percent Change in Flow; NARCCAP Scenarios W1-W6 at all Stations, Susquehanna River Basin (SWAT)

Willamette River Basin, HSPF Model
Results at Downstream Station

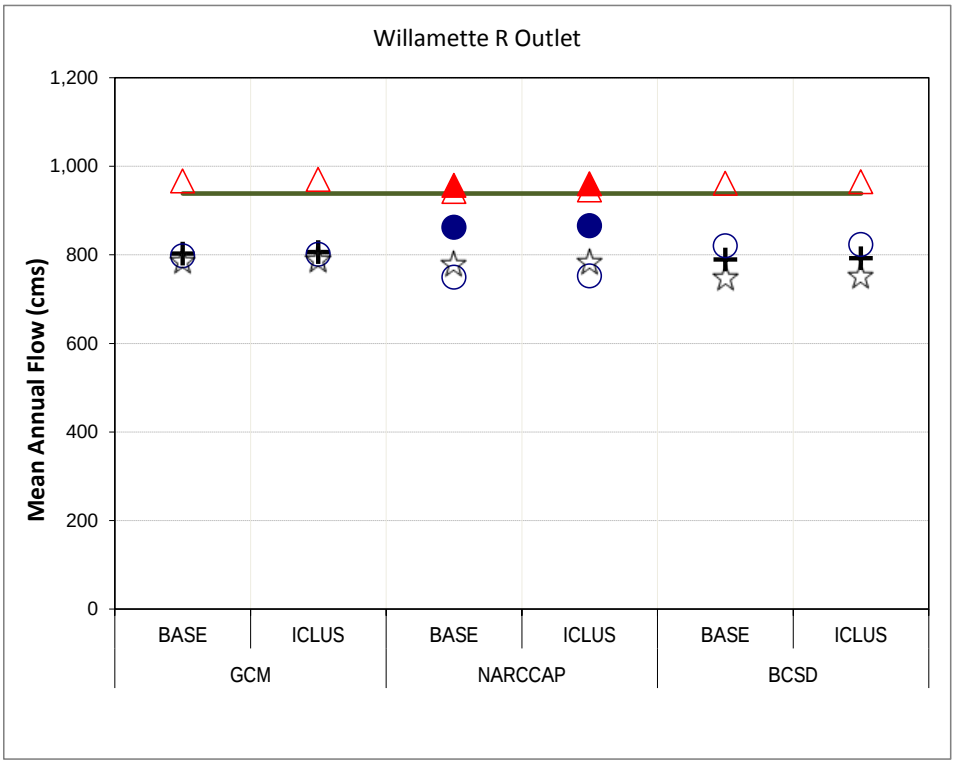

Figure 215. Mean Annual Flow, Willamette River Outlet (HSPF)

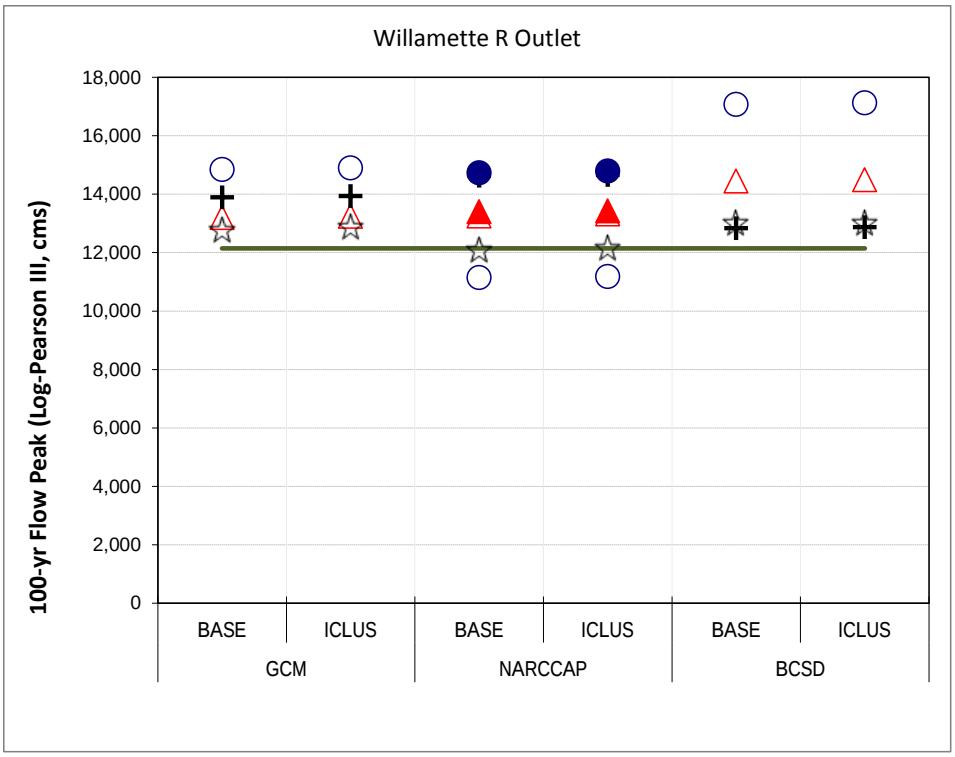

Figure 216. 100-yr Flow Peak, Willamette River Outlet (HSPF)

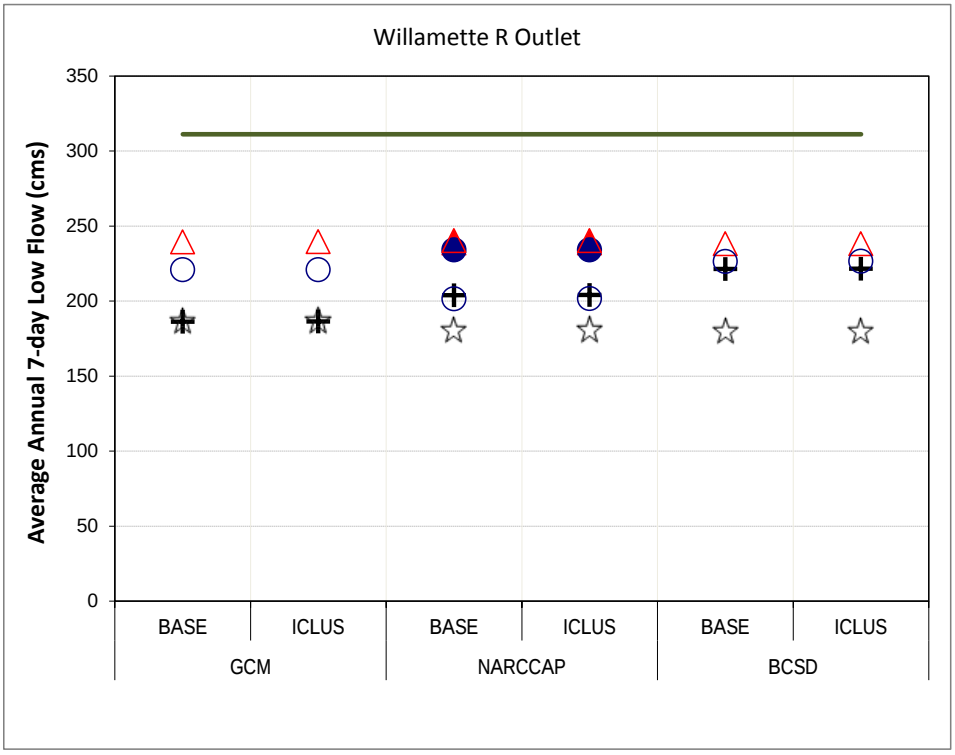

Figure 217. Average Annual 7-day Low Flow, Willamette River Outlet (HSPF)

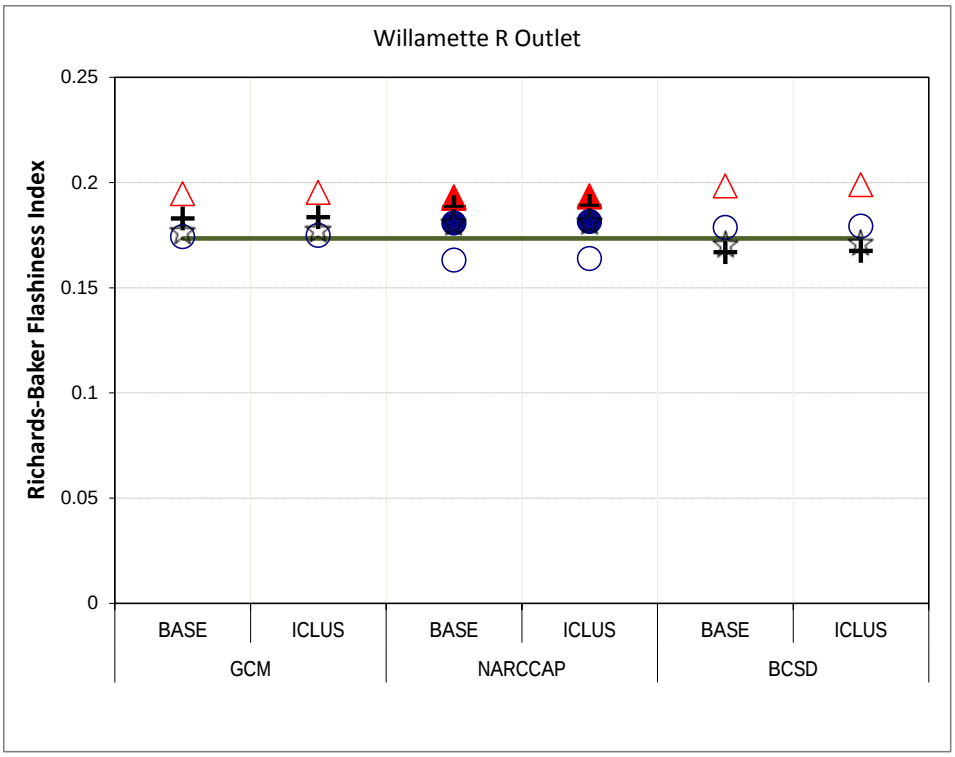

Figure 218. Richards-Baker Flashiness Index, Willamette River Outlet (HSPF)

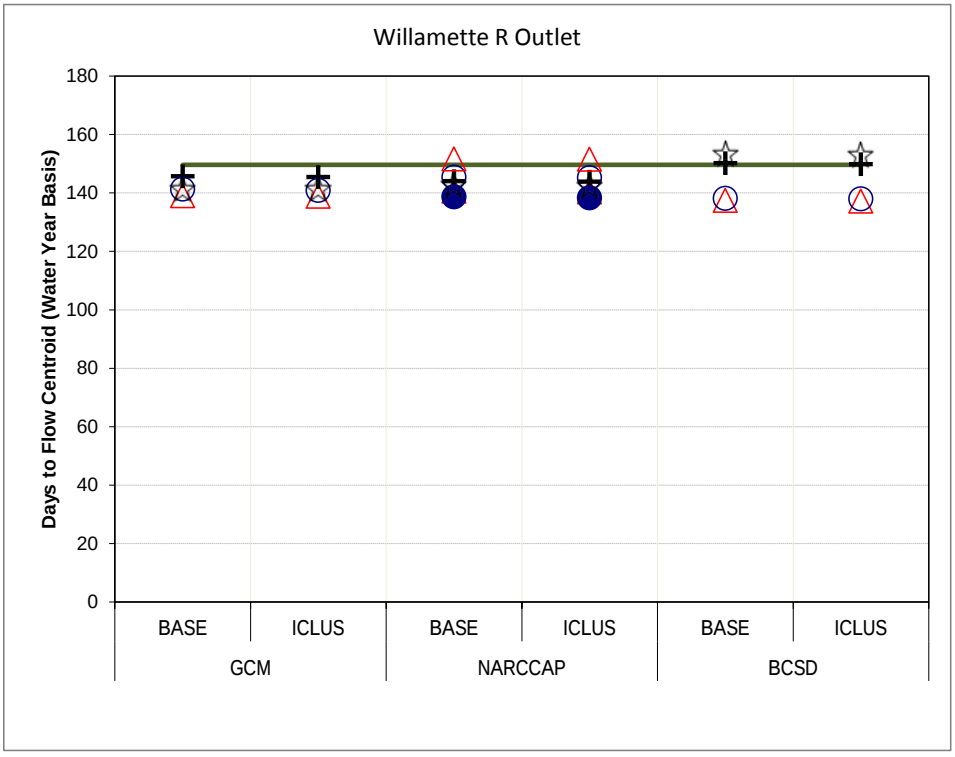

Figure 219. Days to Flow Centroid, Willamette River Outlet (HSPF)

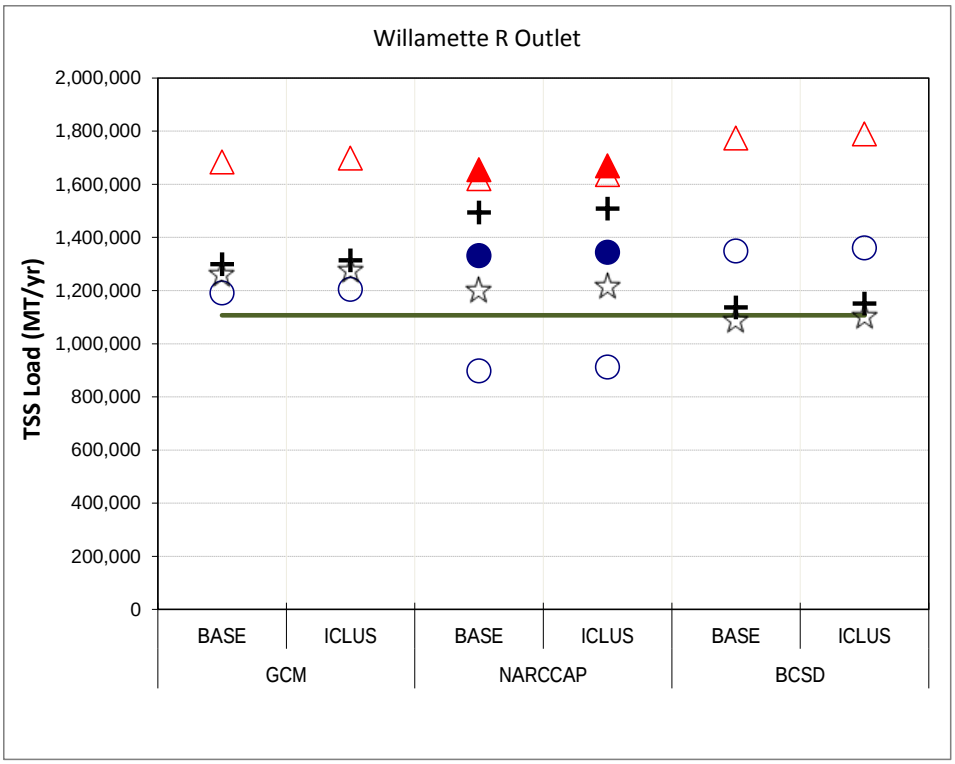

Figure220. TSS Load, Willamette River Outlet (HSPF)

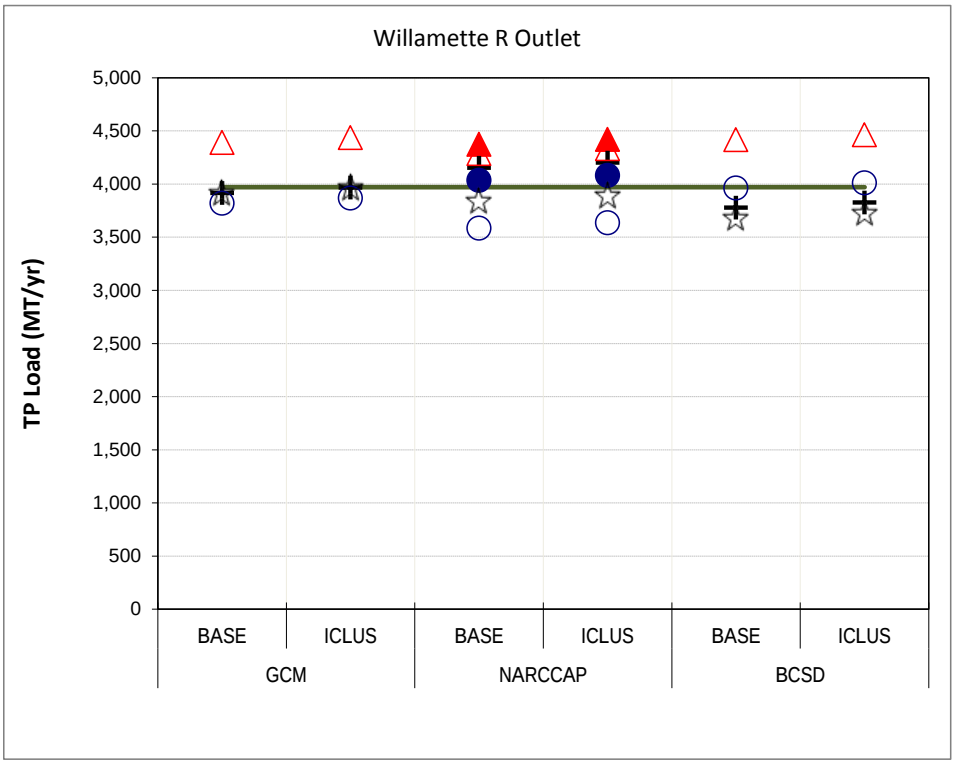

Figure 221. TP Load, Willamette River Outlet (HSPF)

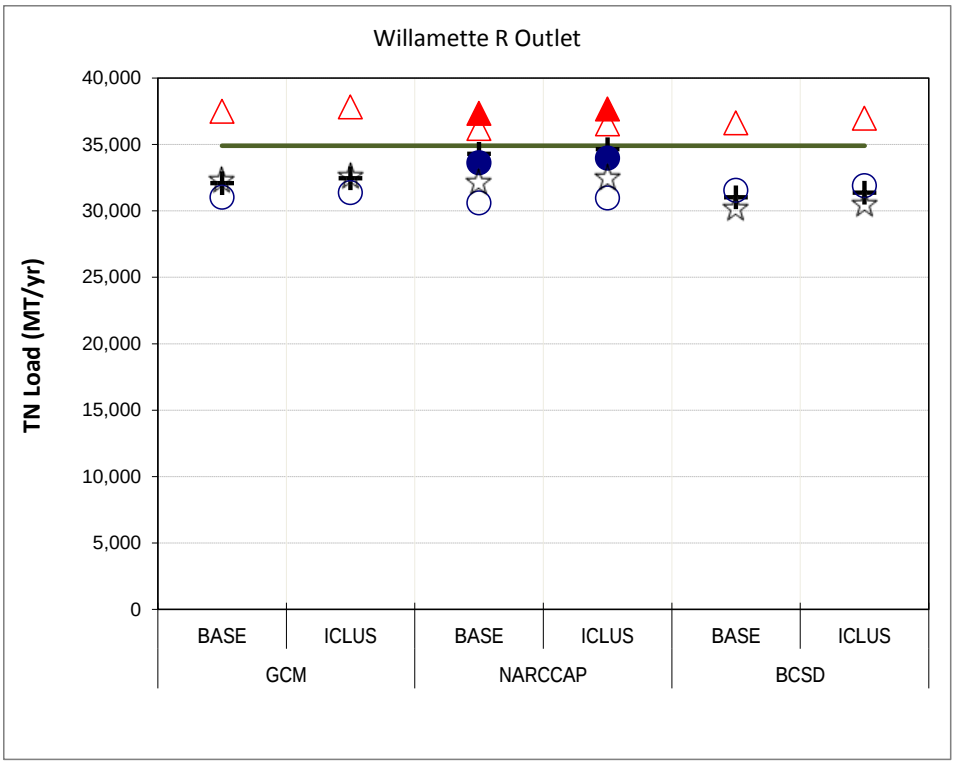

Figure 222. TN Load, Willamette River Outlet (HSPF)

Results at Multiple Stations

Table 9. Summary of Range of Change Relative to Existing Conditions for NARCCAP Dynamically Downscale Scenarios, Willamette River Basin HSPF Model

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Tualatin River at West Linn (gage 14207500)								
Flow	-13.42%	-4.50%	-1.79%	12.35%	-13.02%	-4.18%	-1.62%	12.02%
TSS	-25.17%	10.27%	15.01%	48.58%	-23.87%	8.88%	13.31%	44.17%
TN	-10.72%	-3.96%	-2.59%	6.34%	-9.95%	-3.88%	-2.55%	5.71%
TP	-14.21%	0.17%	1.56%	15.23%	-12.79%	-0.07%	1.24%	13.34%
Pudding River at Aurora (gage 1402000)								

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Flow	-16.00%	-2.54%	-2.68%	11.19%	-15.86%	-2.48%	-2.63%	11.10%
TSS	-30.22%	28.41%	16.43%	46.12%	-29.58%	27.24%	15.64%	44.45%
TN	-15.76%	-2.60%	-2.92%	10.07%	-15.31%	-2.64%	-2.90%	9.73%
TP	-19.31%	8.63%	3.67%	19.98%	-18.64%	8.16%	3.42%	19.06%
South Yamhill River at McMinnville (gage 14194150)								
Flow	-13.06%	-3.46%	-1.22%	11.94%	-13.05%	-3.45%	-1.22%	11.93%
TSS	-25.38%	15.18%	13.24%	44.55%	-25.29%	15.03%	13.12%	44.25%
TN	-13.03%	-2.56%	-1.42%	9.66%	-12.98%	-2.57%	-1.42%	9.62%
TP	-17.48%	4.54%	4.02%	21.59%	-17.38%	4.49%	3.99%	21.44%
Mohawk River nr Springfield (gage 14165000)								
Flow	-16.75%	-3.37%	-2.88%	10.17%	-16.74%	-3.37%	-2.88%	10.16%
TSS	-31.73%	16.15%	10.93%	36.72%	-31.69%	16.10%	10.90%	36.66%
TN	-18.86%	-2.17%	-3.61%	8.92%	-18.81%	-2.18%	-3.60%	8.90%
TP	-26.14%	8.44%	3.67%	20.10%	-26.05%	8.39%	3.64%	20.02%
Willamette River at Salem (gage 14191000)								
Flow	-21.09%	-8.49%	-8.99%	1.03%	-21.07%	-8.48%	-8.98%	1.04%
TSS	-17.43%	30.36%	25.97%	50.61%	-17.40%	30.24%	25.88%	50.47%
TN	-13.71%	-2.48%	-2.43%	7.65%	-13.66%	-2.49%	-2.43%	7.61%
TP	-12.82%	6.46%	4.40%	15.17%	-12.77%	6.41%	4.37%	15.09%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Willamette River Outlet								
Flow	-20.16%	-8.10%	-8.42%	1.96%	-20.10%	-8.06%	-8.38%	1.98%
TSS	-18.90%	27.60%	23.54%	49.49%	-18.75%	27.05%	23.10%	48.68%
TN	-12.36%	-2.72%	-2.46%	6.96%	-12.19%	-2.73%	-2.45%	6.82%
TP	-9.71%	3.12%	1.96%	10.17%	-9.58%	3.03%	1.90%	9.95%

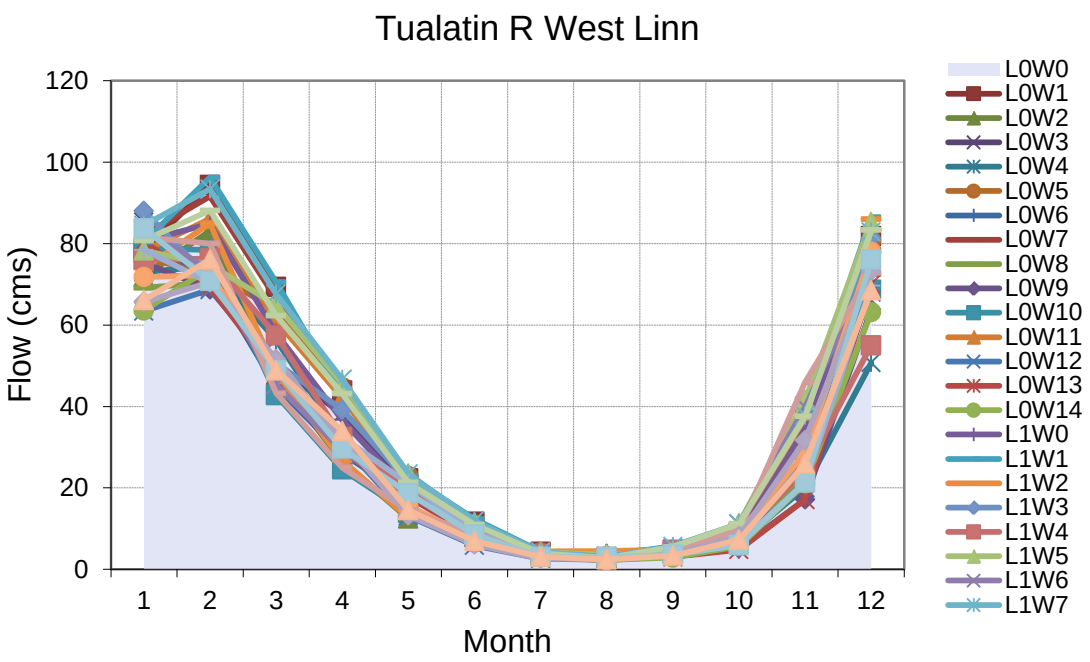

Figure 223. Monthly Average Flows, Tualatin River at West Linn (HSPF)

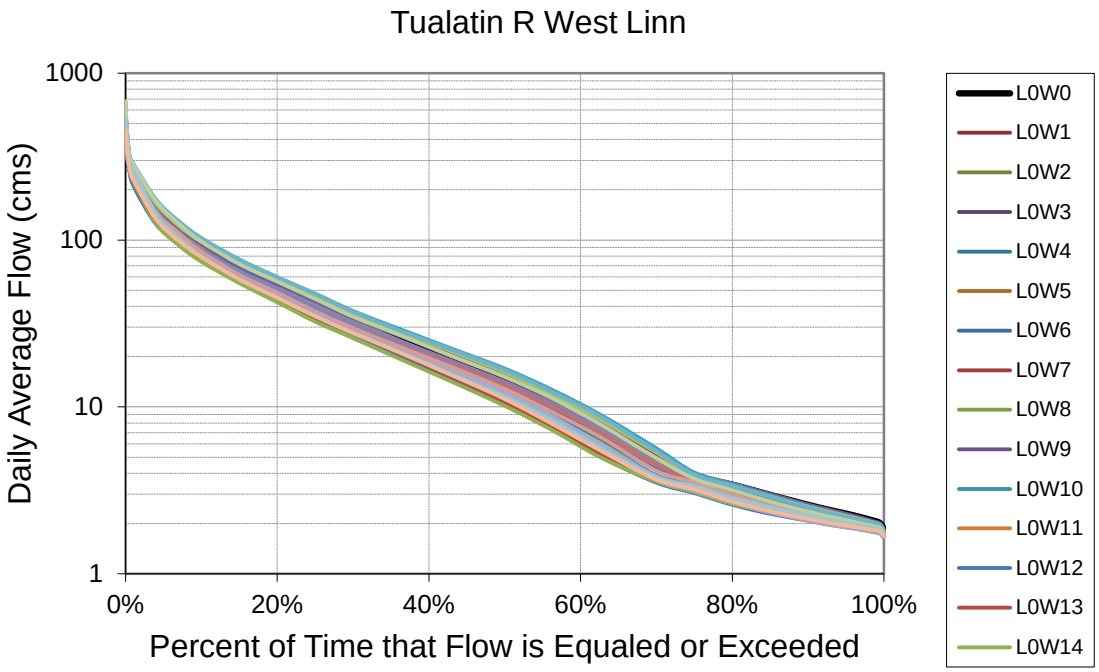

Figure 224. Flow Duration, Tualatin River at West Linn (HSPF)

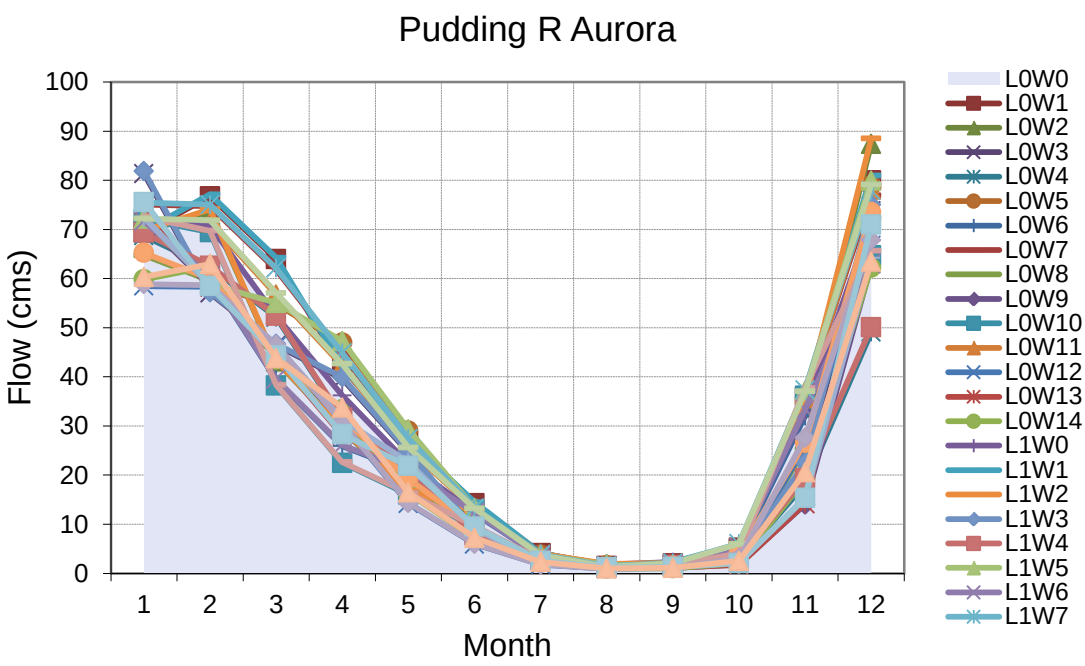

Figure 225. Monthly Average Flows, Pudding River at Aurora (HSPF)

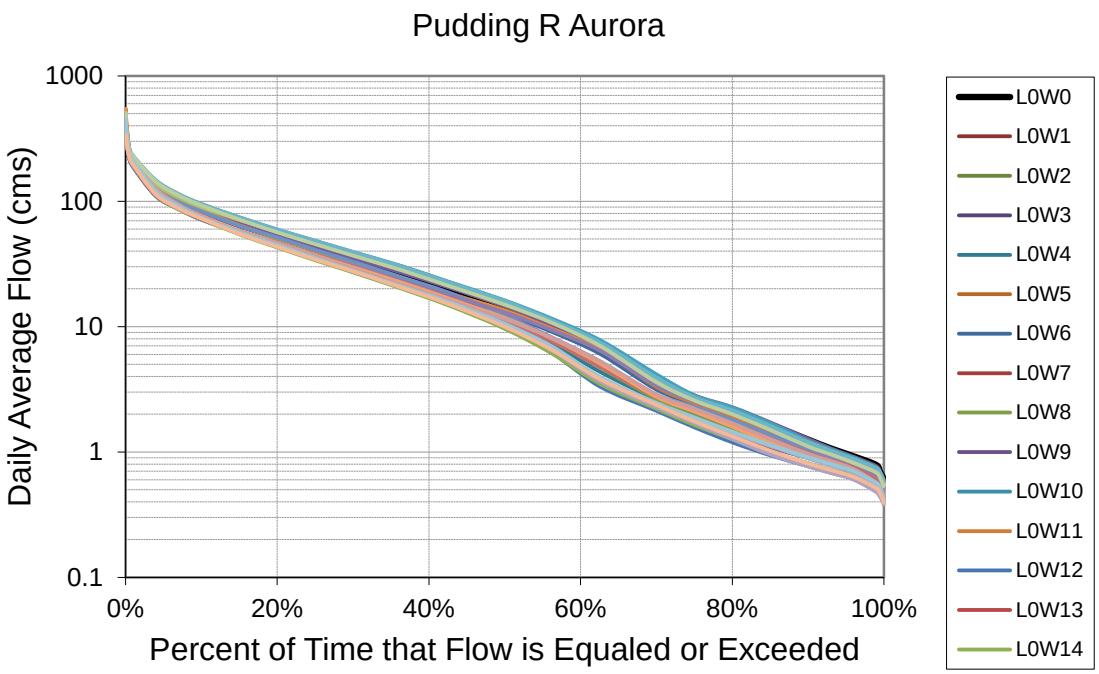

Figure 226. Flow Duration, Pudding River at Aurora (HSPF)

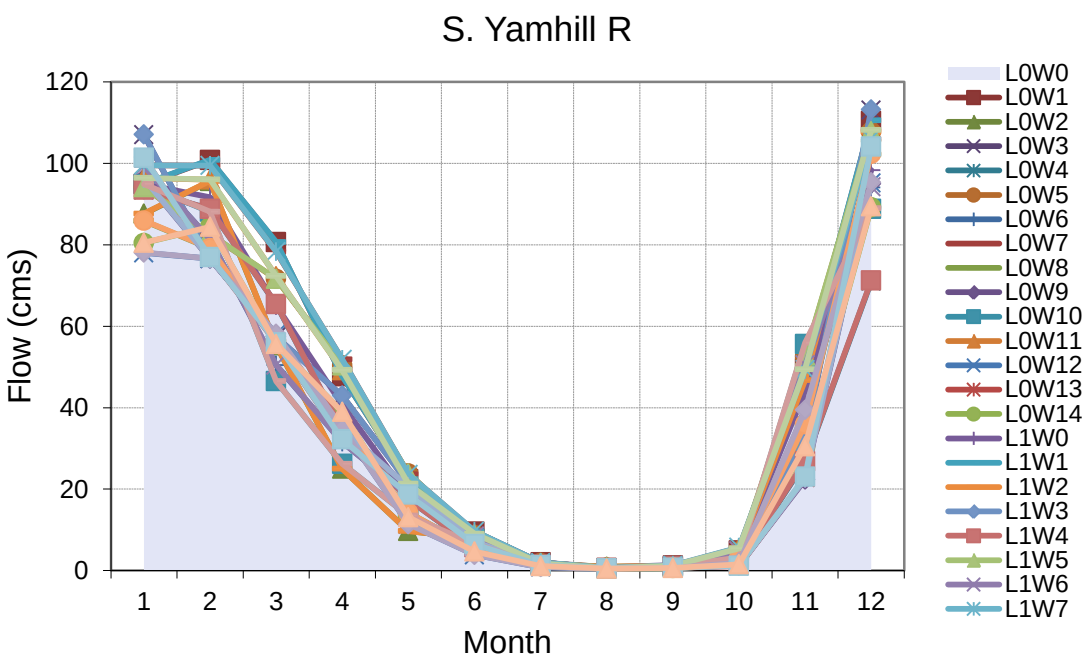

Figure 227. Monthly Average Flows, South Yamhill River (HSPF)

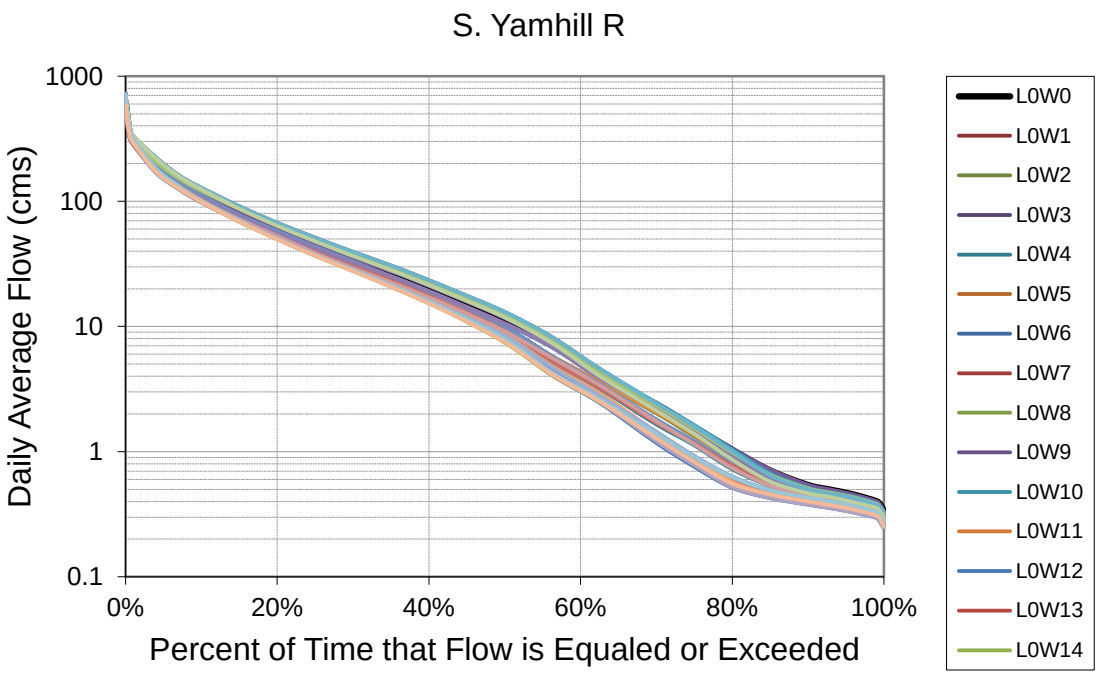

Figure 228. Flow Duration, South Yamhill River (HSPF)

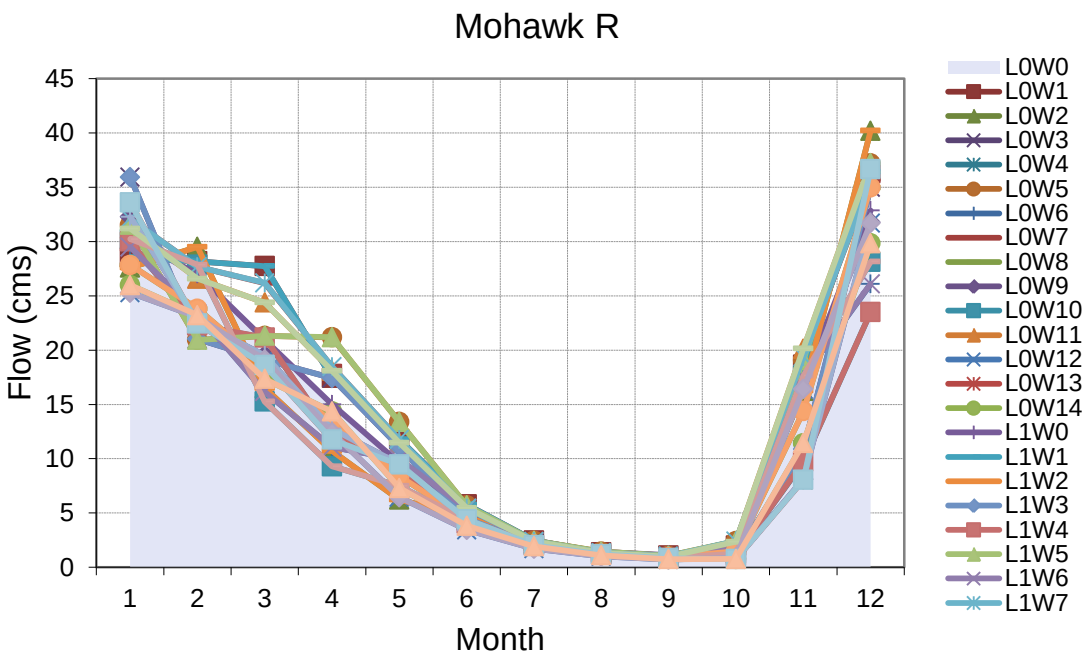

Figure 229. Monthly Average Flows, Mohawk River (HSPF)

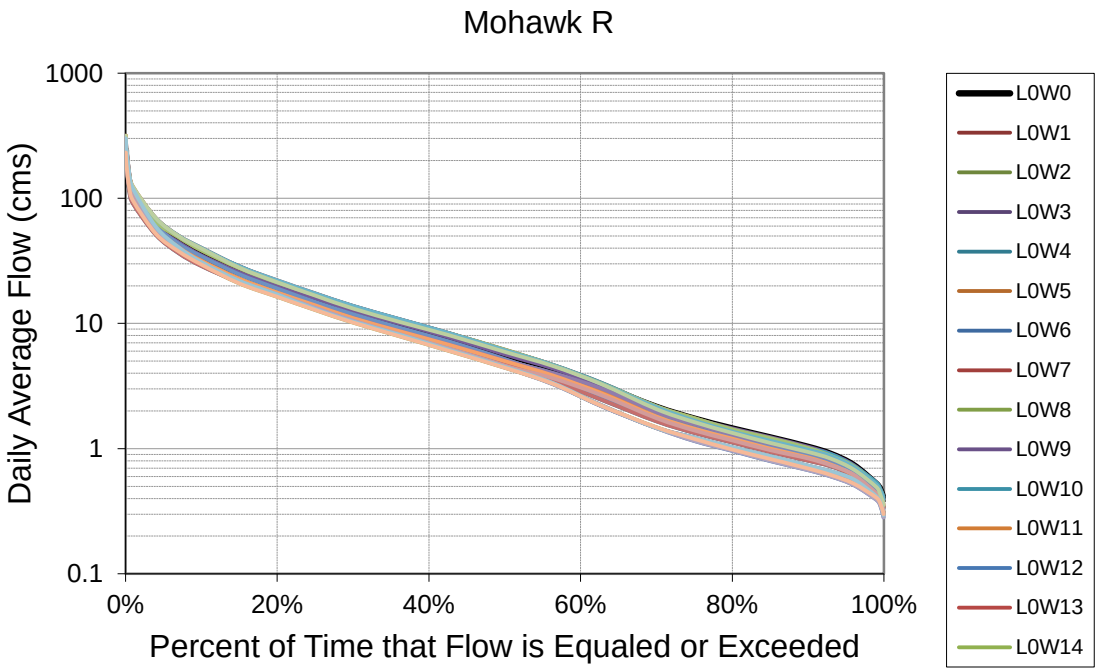

Figure 230. Flow Duration, Mohawk River (HSPF)

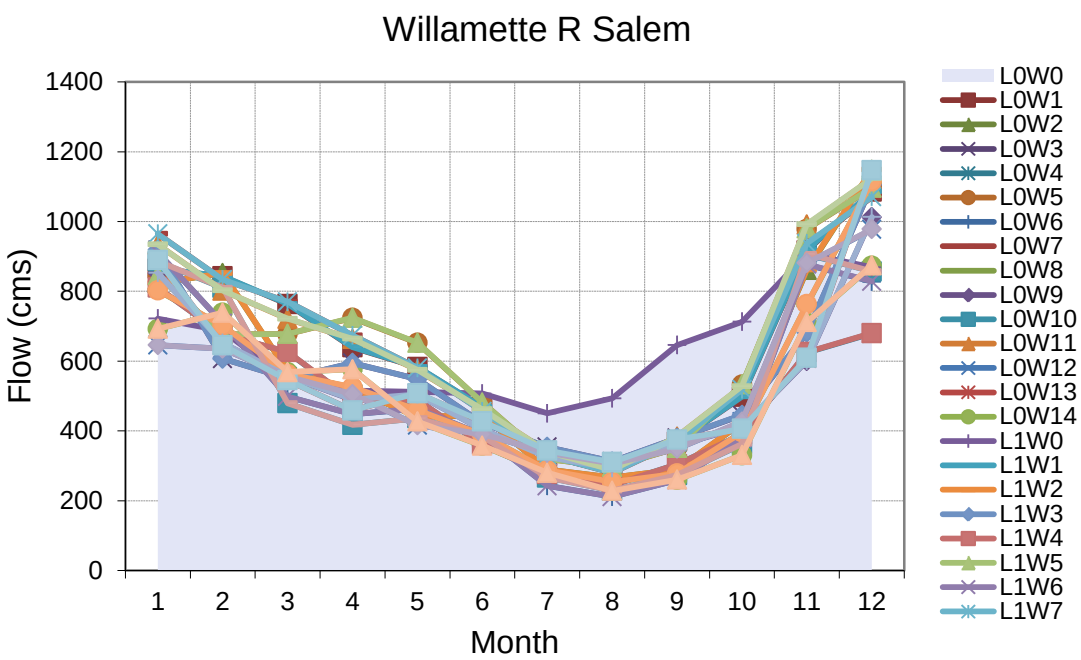

Figure 231. Monthly Average Flows, Willamette River at Salem (HSPF)

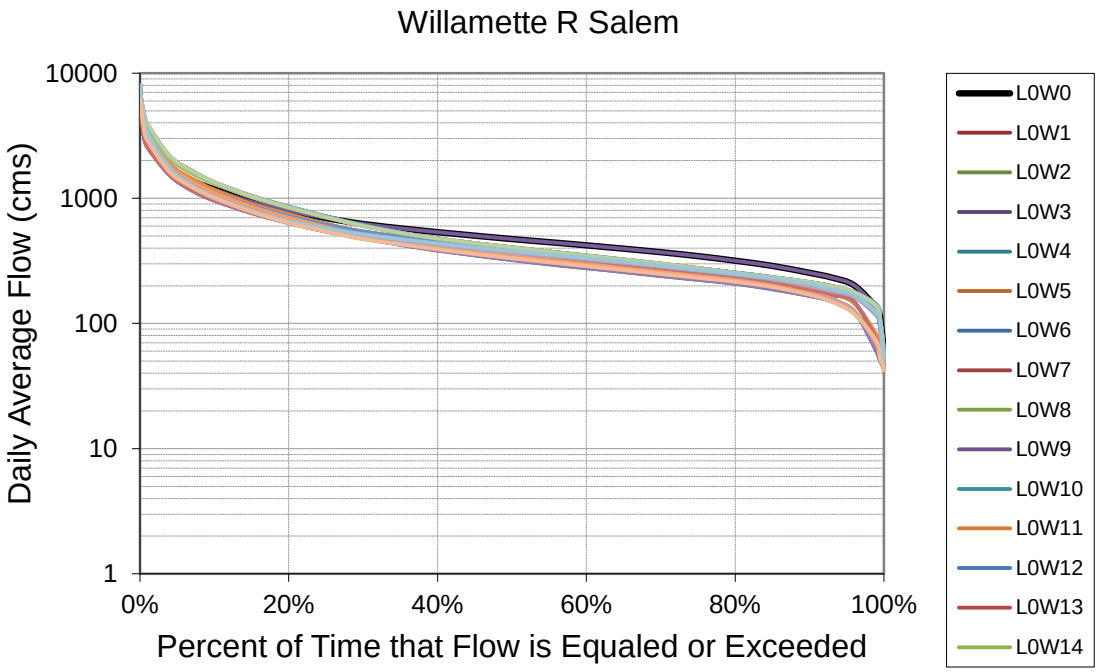

Figure 232. Flow Duration, Willamette River at Salem (HSPF)

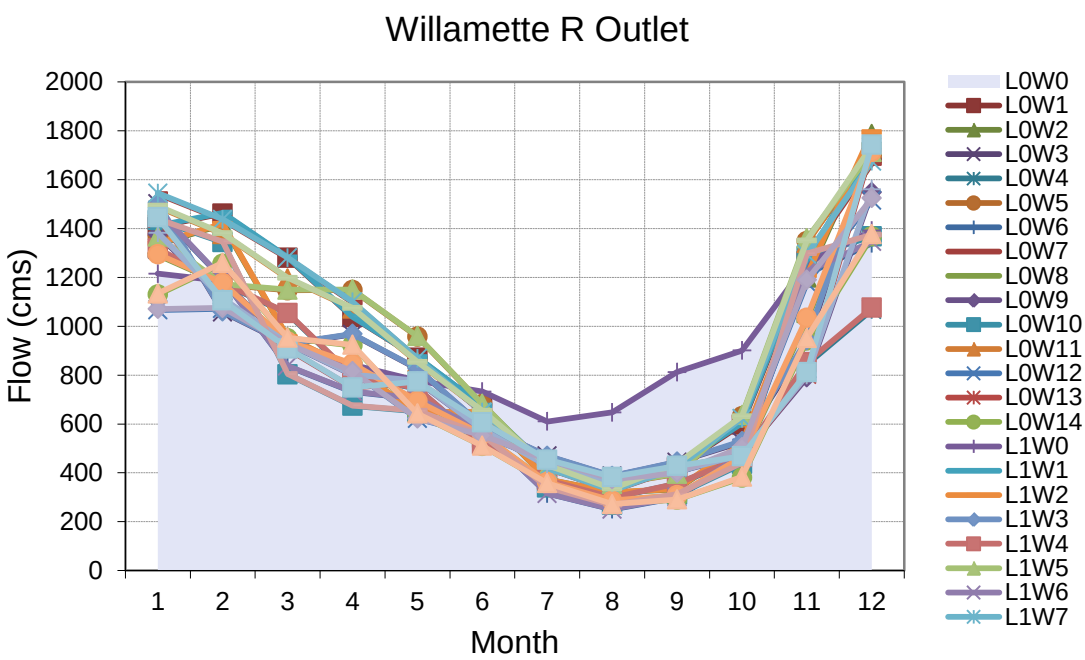

Figure 233. Monthly Average Flows, Willamette River Outlet (HSPF)

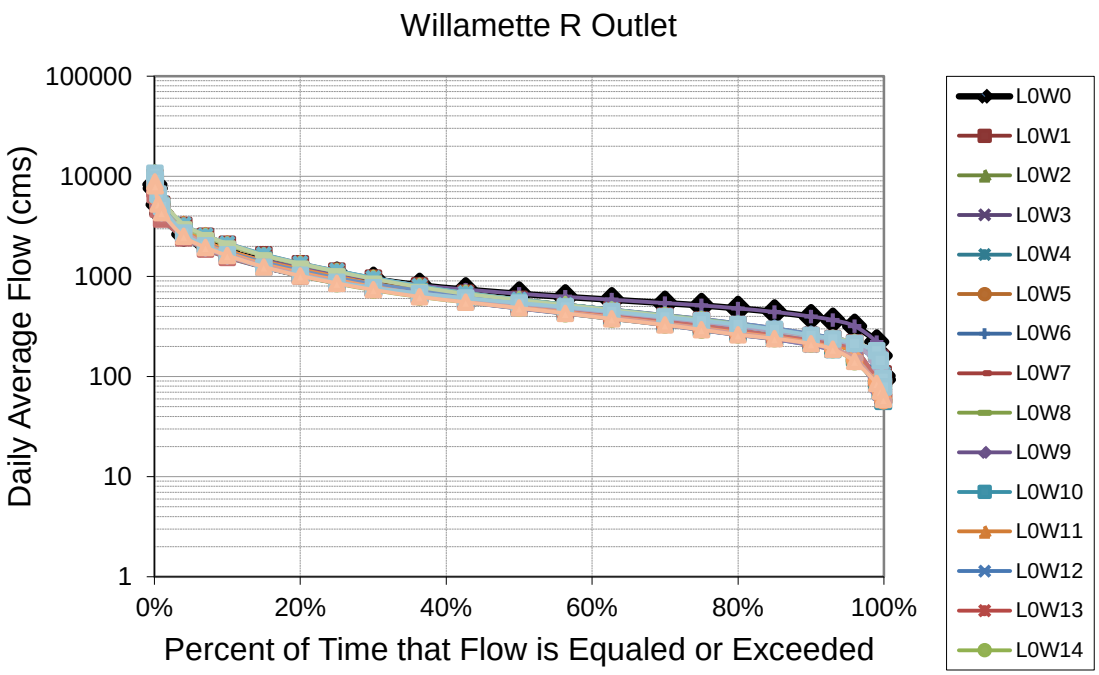

Figure 234. Flow Duration, Willamette River Outlet (HSPF)

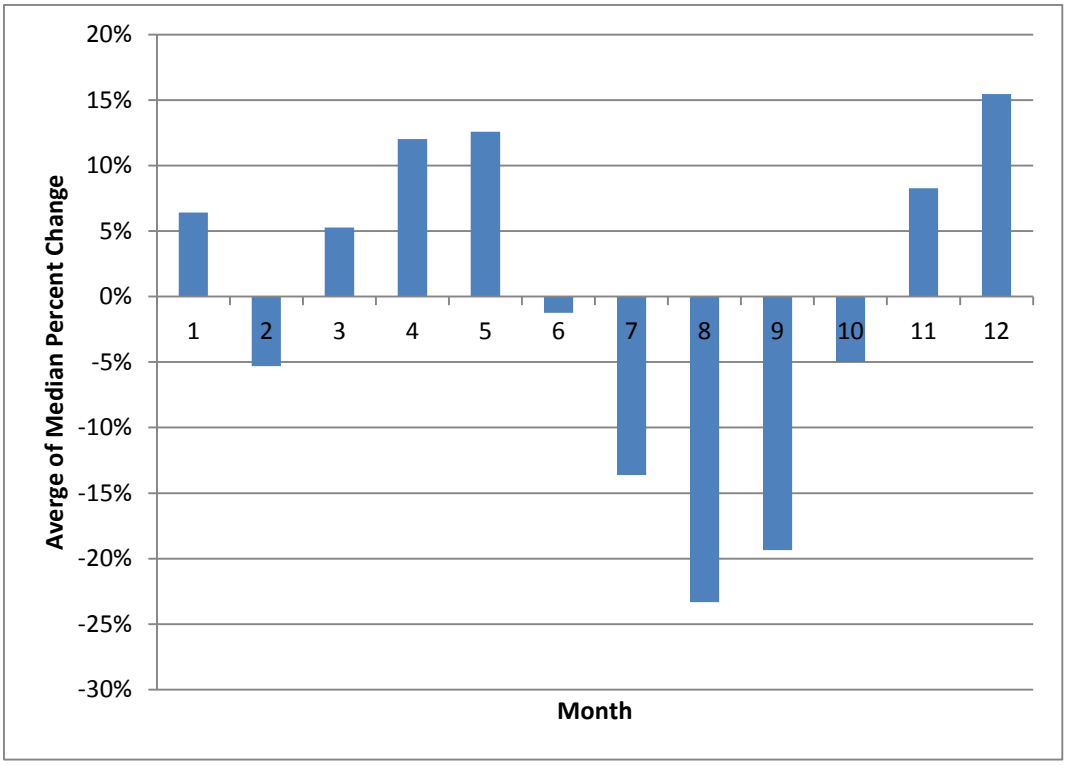

Figure 235. Average of Median Percent Change in Flow; NARCCAP Scenarios W1-W6 at all Stations, Willamette River Basin (HSPF)

Willamette River Basin, SWAT Model
Results at Downstream Station

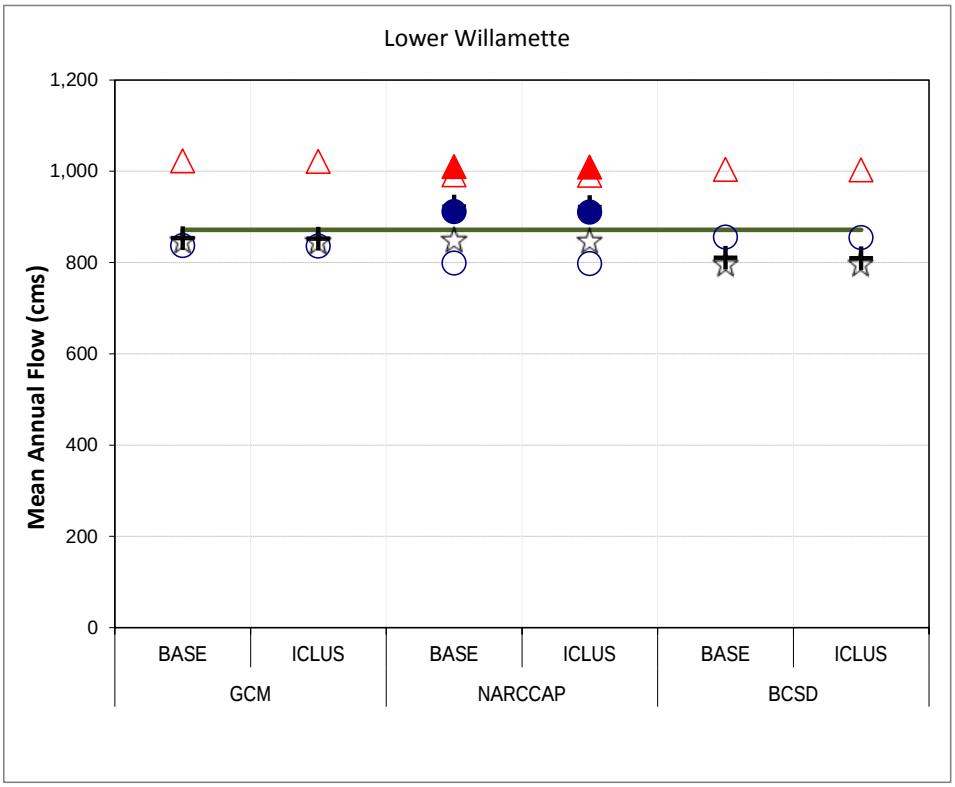

Figure 236. Mean Annual Flow, Lower Willamette River (SWAT)

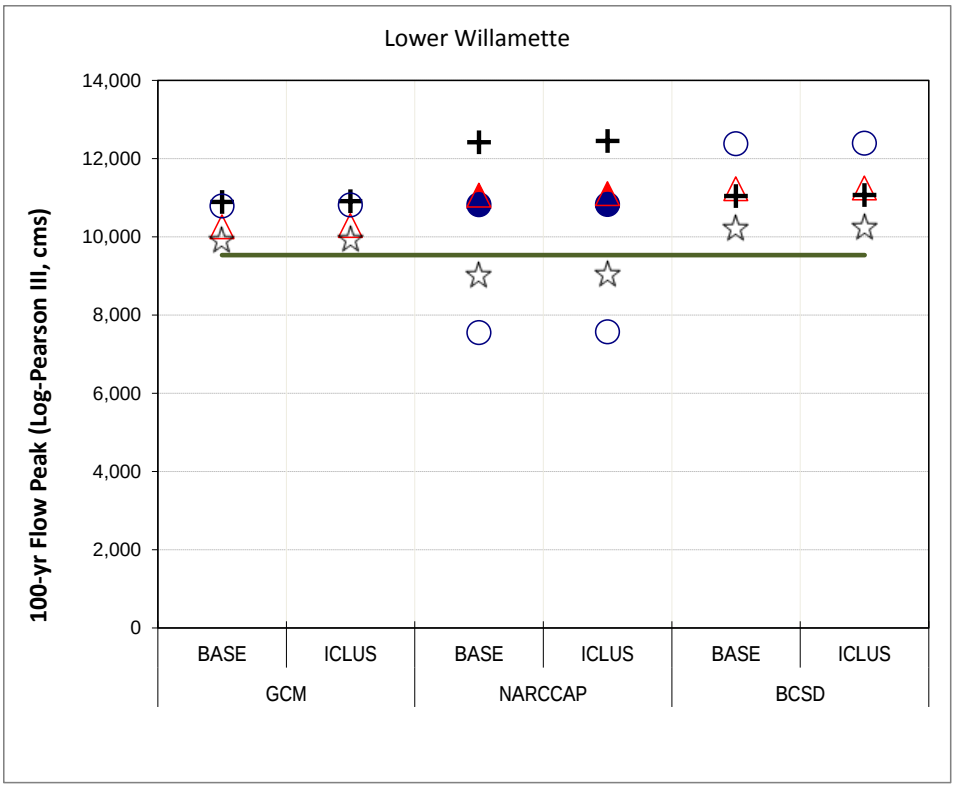

Figure 237. 100-yr Flow Peak, Lower Willamette River (SWAT)

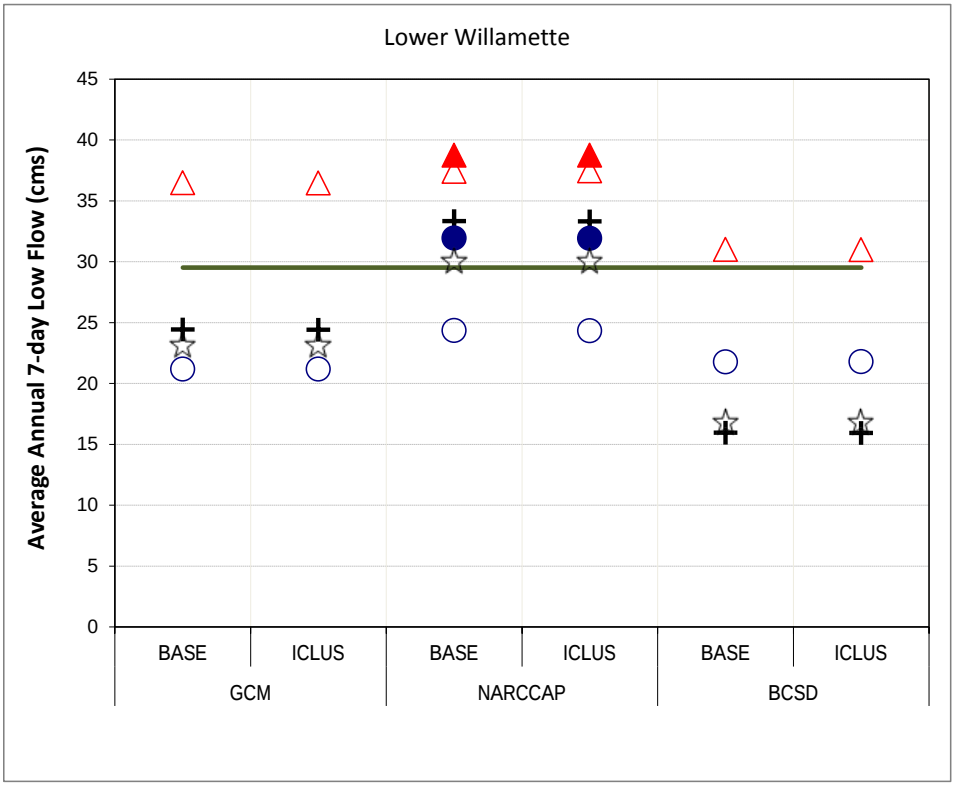

Figure 238. Average Annual 7-day Low Flow, Lower Willamette River (SWAT)

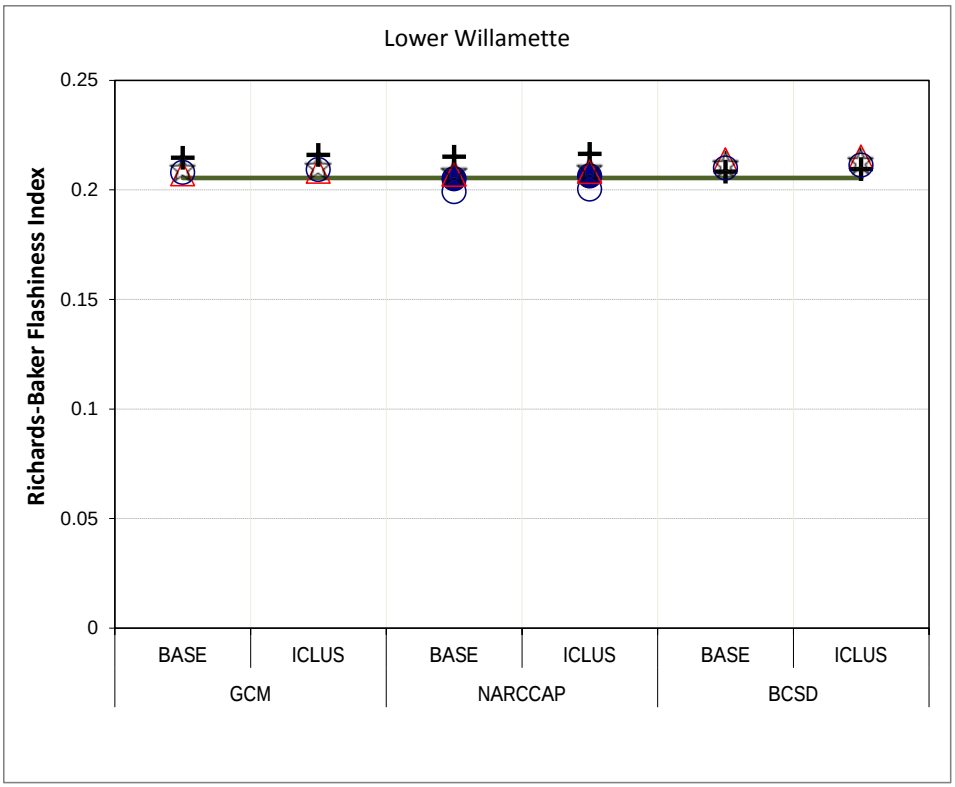

Figure 239. Richards-Baker Flashiness Index, Lower Willamette River (SWAT)

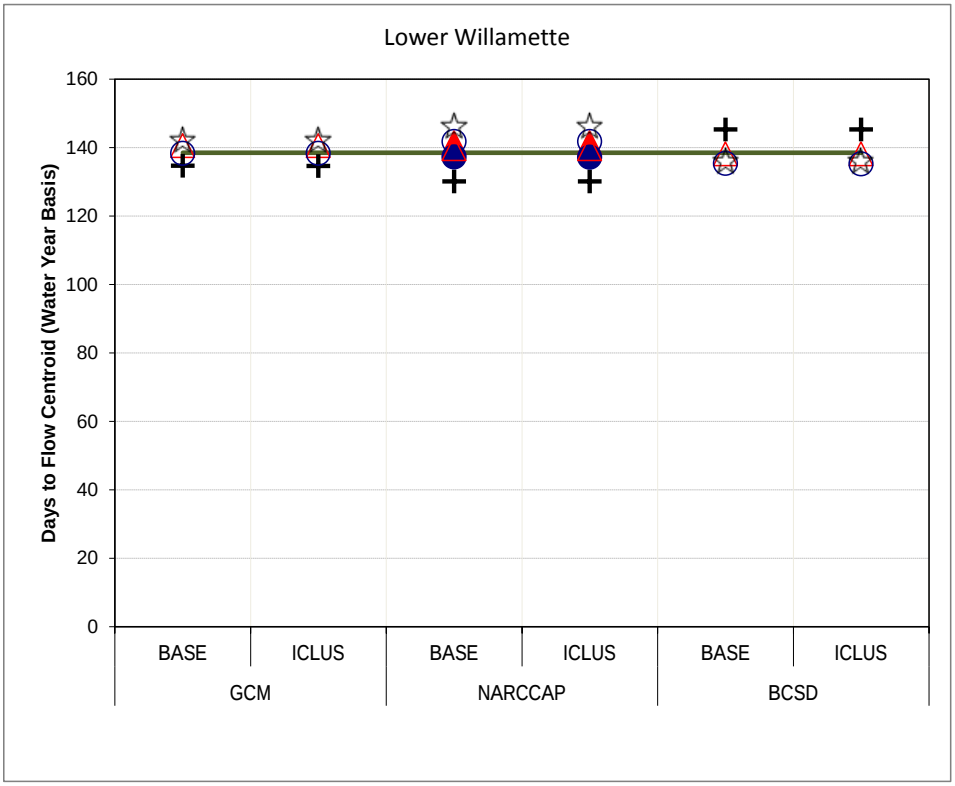

Figure 240. Days to Flow Centroid, Lower Willamette River (SWAT)

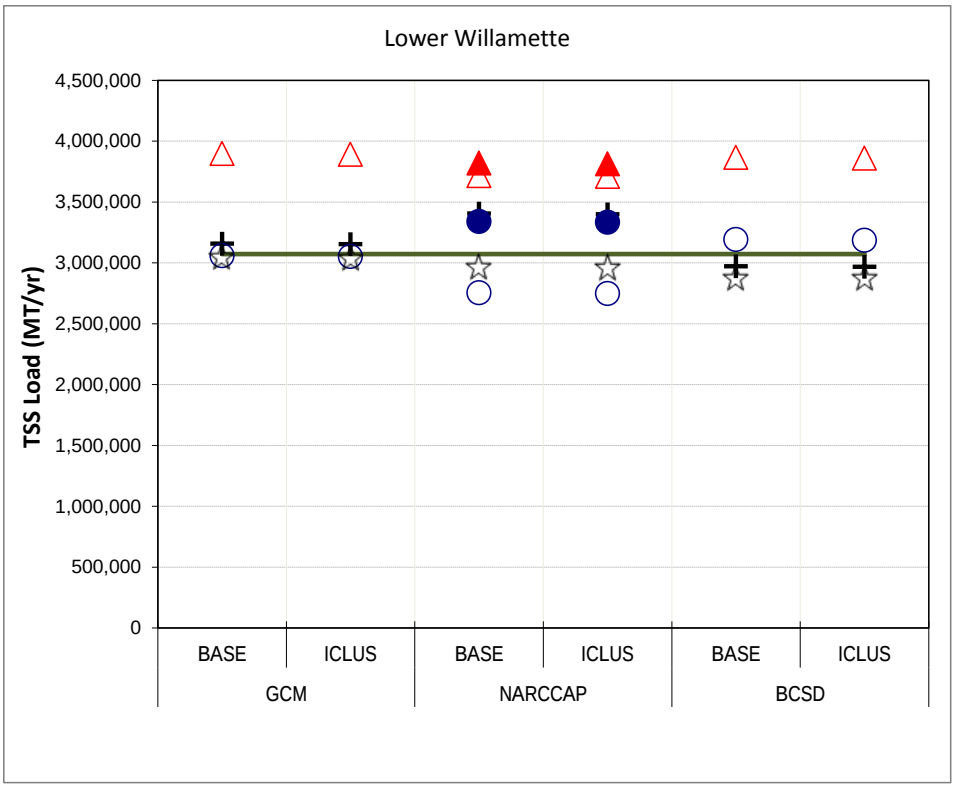

Figure 241. TSS Load, Lower Willamette River (SWAT)

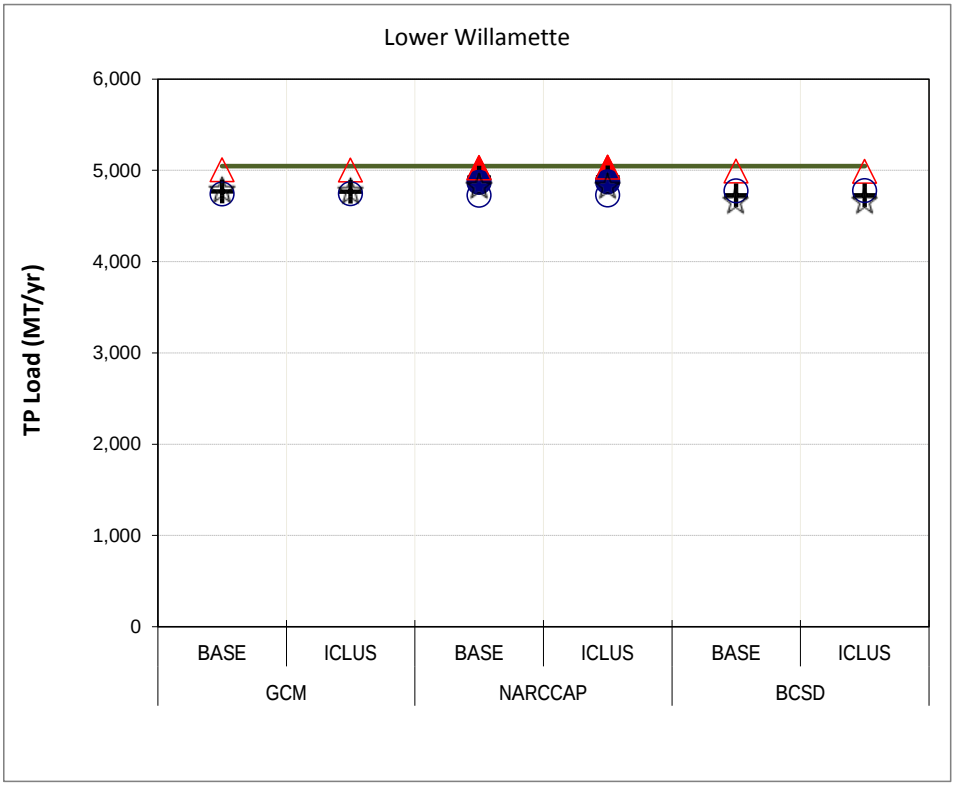

Figure 242. TP Load, Lower Willamette River (SWAT)

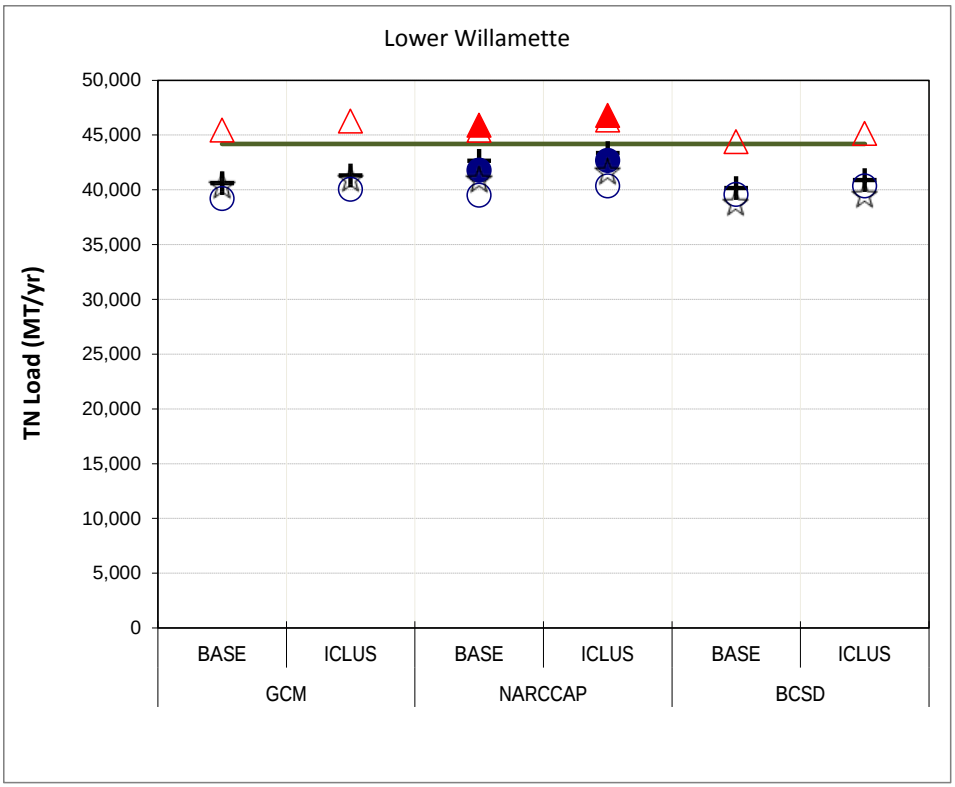

Figure 243. TN Load, Lower Willamette River (SWAT)

Results at Multiple Stations

Table 10. Summary of Range of Change Relative to Existing Conditions for NARCCAP Dynamically Downscaled Scenarios, Willamette River Basin (SWAT)

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Middle Fork Willamette HUC 17090001								
Flow	-17.51%	0.03%	-1.70%	10.39%	-17.51%	0.03%	-1.69%	10.40%
TSS	91.02%	132.96%	135.57%	177.73%	91.33%	133.31%	135.95%	178.19%
TN	49.94%	84.32%	82.64%	110.23%	48.72%	82.46%	80.90%	108.15%
TP	86.17%	142.56%	140.77%	183.53%	83.96%	139.23%	137.48%	179.48%
Coast Fork Willamette HUC 17090002								
Flow	-4.95%	6.37%	7.28%	19.55%	-4.98%	6.34%	7.26%	19.53%
TSS	-4.93%	29.49%	31.31%	63.92%	-4.65%	29.73%	31.54%	64.12%
TN	-14.77%	2.84%	4.93%	24.75%	-15.48%	1.50%	3.68%	23.30%
TP	-19.61%	5.31%	6.77%	31.82%	-19.46%	5.08%	6.60%	31.67%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Upper Willamette HUC 17090003								
Flow	-10.42%	3.89%	2.92%	12.86%	-10.43%	3.89%	2.91%	12.85%
TSS	-1.01%	13.58%	15.18%	31.82%	-0.99%	13.61%	15.20%	31.85%
TN	-7.23%	2.07%	3.41%	13.70%	-7.45%	1.78%	3.13%	13.40%
TP	-10.15%	-0.27%	-0.29%	7.20%	-10.21%	-0.32%	-0.32%	7.20%
McKenzie HUC 17090004								
Flow	-12.39%	5.32%	2.24%	10.76%	-12.39%	5.32%	2.24%	10.76%
TSS	-0.95%	114.25%	105.67%	218.42%	-0.94%	114.53%	105.97%	219.11%
TN	-1.52%	27.74%	22.02%	36.83%	-1.70%	27.11%	21.48%	35.94%
TP	-10.56%	35.02%	24.38%	48.46%	-10.63%	34.55%	24.02%	47.80%
North Santiam HUC 17090005								
Flow	-9.28%	5.21%	5.32%	16.94%	-9.29%	5.21%	5.31%	16.94%
TSS	-7.60%	6.79%	9.26%	29.41%	-7.14%	7.29%	9.76%	29.96%
TN	-14.08%	-3.80%	-3.19%	5.72%	-14.56%	-4.43%	-3.77%	5.07%
TP	-19.42%	-7.42%	-7.20%	1.44%	-19.68%	-7.63%	-7.41%	1.15%
South Santiam HUC 17090006								
Flow	-7.77%	4.90%	6.28%	18.21%	-7.77%	4.90%	6.28%	18.21%
TSS	-8.09%	9.51%	11.57%	32.22%	-8.09%	9.51%	11.57%	32.23%
TN	-15.63%	-5.85%	-4.99%	5.14%	-15.62%	-5.90%	-5.02%	5.08%
TP	-19.81%	-8.02%	-7.75%	3.02%	-19.76%	-8.05%	-7.74%	3.01%
Middle Willamette HUC 17090007								
Flow	-8.45%	4.70%	4.53%	15.28%	-8.49%	4.69%	4.51%	15.27%
TSS	-9.71%	8.31%	8.06%	24.61%	-9.65%	8.42%	8.17%	24.70%
TN	-11.45%	-4.78%	-3.64%	3.94%	-11.71%	-5.36%	-4.16%	3.37%
TP	-7.59%	-3.62%	-3.50%	-0.47%	-7.42%	-3.43%	-3.33%	-0.31%
Yamhill HUC 17090008								
Flow	-3.30%	7.65%	9.71%	23.21%	-3.33%	7.64%	9.69%	23.20%
TSS	-8.27%	9.81%	11.30%	30.05%	-8.26%	9.86%	11.35%	30.13%
TN	-14.22%	-6.23%	-5.40%	3.24%	-14.41%	-6.57%	-5.69%	2.98%
TP	-18.00%	-8.13%	-7.82%	0.31%	-18.03%	-8.09%	-7.75%	0.39%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
Pudding River at Aurora (gage 14202000)								
Flow	1.31%	5.72%	6.17%	12.04%	1.19%	5.65%	6.09%	11.96%
TSS	0.39%	5.98%	6.80%	15.12%	0.24%	5.94%	6.62%	14.68%
TN	-23.37%	-19.63%	-19.35%	-15.64%	-23.55%	-20.07%	-19.75%	-16.04%
TP	-20.73%	-13.83%	-14.92%	-11.96%	-19.81%	-12.77%	-13.98%	-10.77%
Tualatin HUC 17090010								
Flow	-5.04%	6.49%	8.24%	22.16%	-5.34%	6.31%	8.07%	22.08%
TSS	-7.91%	8.21%	10.43%	29.32%	-8.05%	8.02%	10.51%	29.99%
TN	-12.32%	-7.81%	-6.10%	0.58%	-11.86%	-8.34%	-6.41%	0.15%
TP	-11.04%	-2.89%	-2.18%	5.07%	-10.48%	-2.70%	-1.79%	5.34%
Clackamas HUC 17090011								
Flow	-8.10%	9.04%	7.61%	20.18%	-8.13%	9.01%	7.58%	20.15%
TSS	-8.89%	10.94%	9.11%	27.42%	-8.86%	10.91%	9.10%	27.41%
TN	-7.16%	1.37%	1.83%	9.21%	-7.05%	1.34%	1.88%	9.16%
TP	-7.68%	0.66%	-0.08%	4.89%	-7.28%	1.31%	0.55%	5.60%
Lower Willamette HUC 17090012								
Flow	-8.35%	5.20%	4.91%	15.89%	-8.39%	5.18%	4.89%	15.87%
TSS	-10.38%	9.78%	8.57%	24.33%	-10.31%	9.90%	8.68%	24.49%
TN	-10.62%	-4.47%	-3.33%	3.87%	-10.86%	-4.99%	-3.80%	3.36%
TP	-6.34%	-3.02%	-2.86%	-0.32%	-6.16%	-2.84%	-2.68%	-0.14%
Williamette River at Salem (gage 14191000)								
Flow	-9.99%	4.30%	3.70%	14.23%	-10.00%	4.30%	3.70%	14.23%
TSS	-9.58%	11.57%	9.93%	24.93%	-9.51%	11.67%	10.03%	25.04%
TN	-9.63%	-0.42%	0.79%	10.54%	-9.95%	-0.83%	0.41%	10.15%
TP	-13.20%	-3.34%	-3.23%	4.13%	-13.30%	-3.34%	-3.24%	4.19%
Mohawk River nr Springfield (gage 14165000)								
Flow	-8.80%	3.09%	2.34%	12.39%	-8.80%	3.09%	2.34%	12.39%
TSS	6.65%	2391.16%	2875.55%	8244.24%	17.29%	2396.01%	2878.21%	8232.58%
TN	8.19%	80.12%	63.54%	102.34%	6.78%	76.20%	60.19%	97.67%

	Results without LU Change				Results with LU Change			
	Min	Median	Mean	Max	Min	Median	Mean	Max
TP	-1.08%	132.86%	101.95%	165.98%	-2.24%	128.33%	98.19%	160.61%

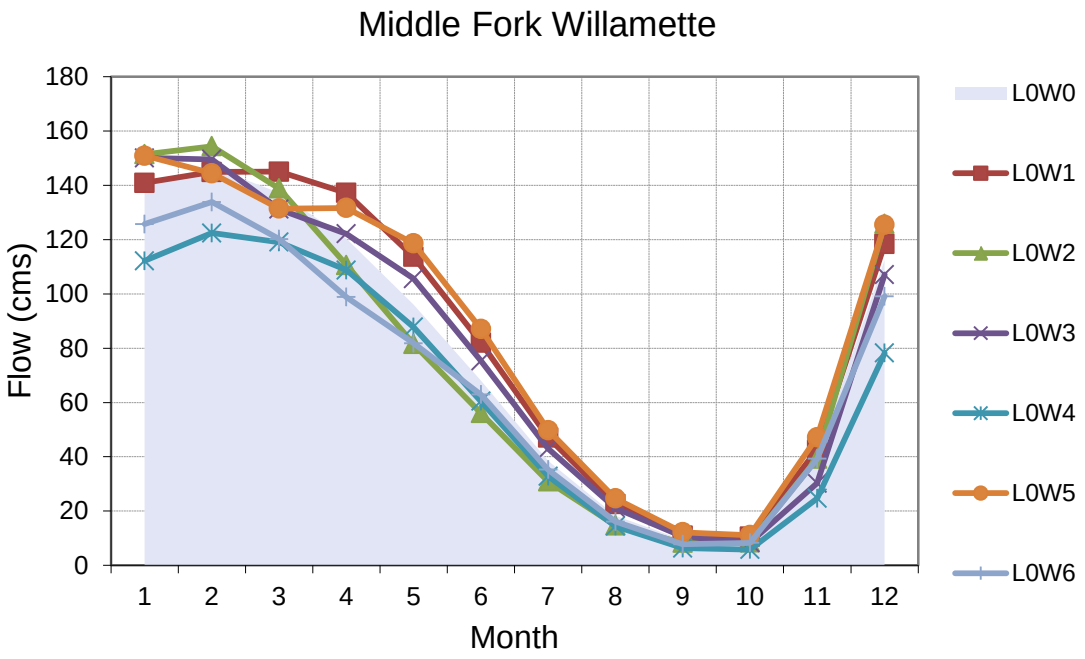

Figure 244. Monthly Average Flows, Middle Fork Willamette River (SWAT)

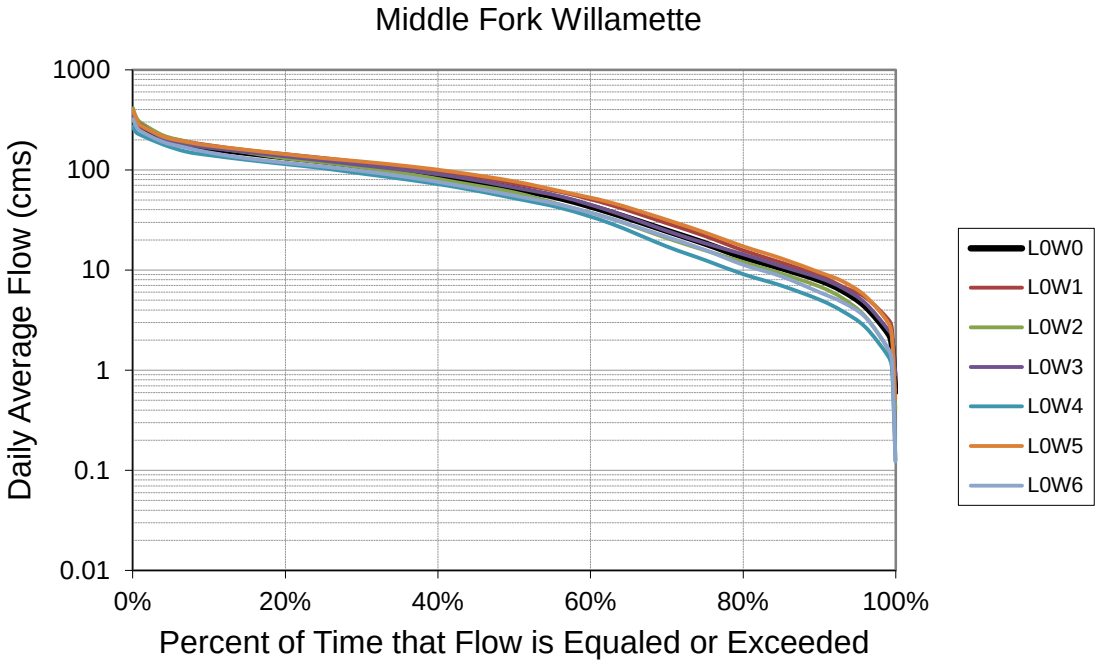

Figure 245. Flow Duration, Middle Fork Willamette River (SWAT)

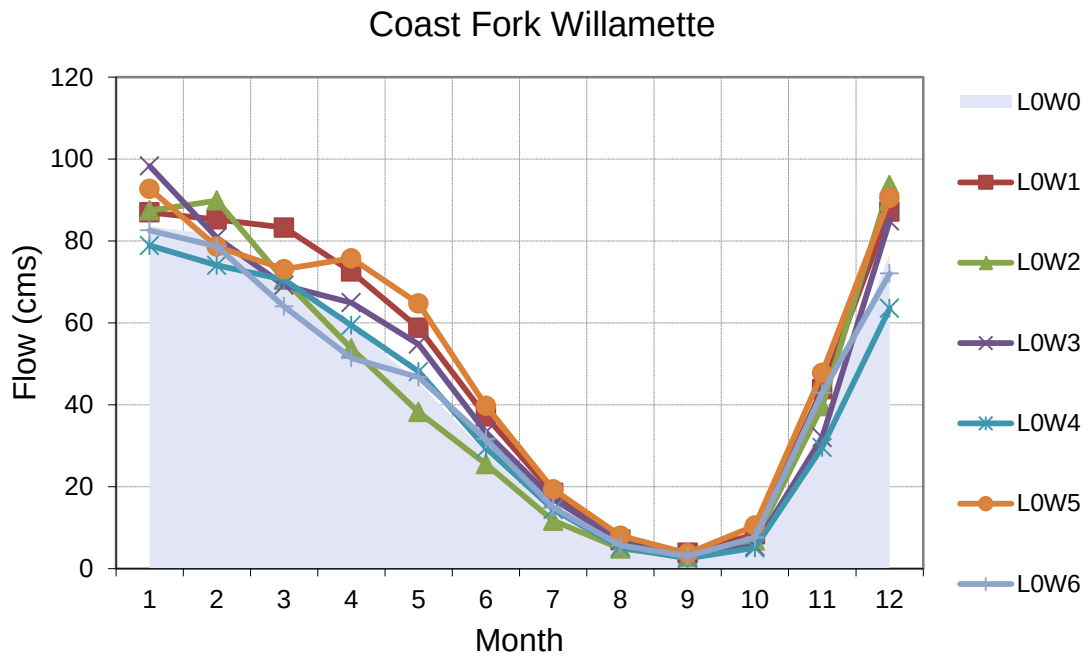

Figure 246. Monthly Average Flows, Coast Fork Willamette River (SWAT)

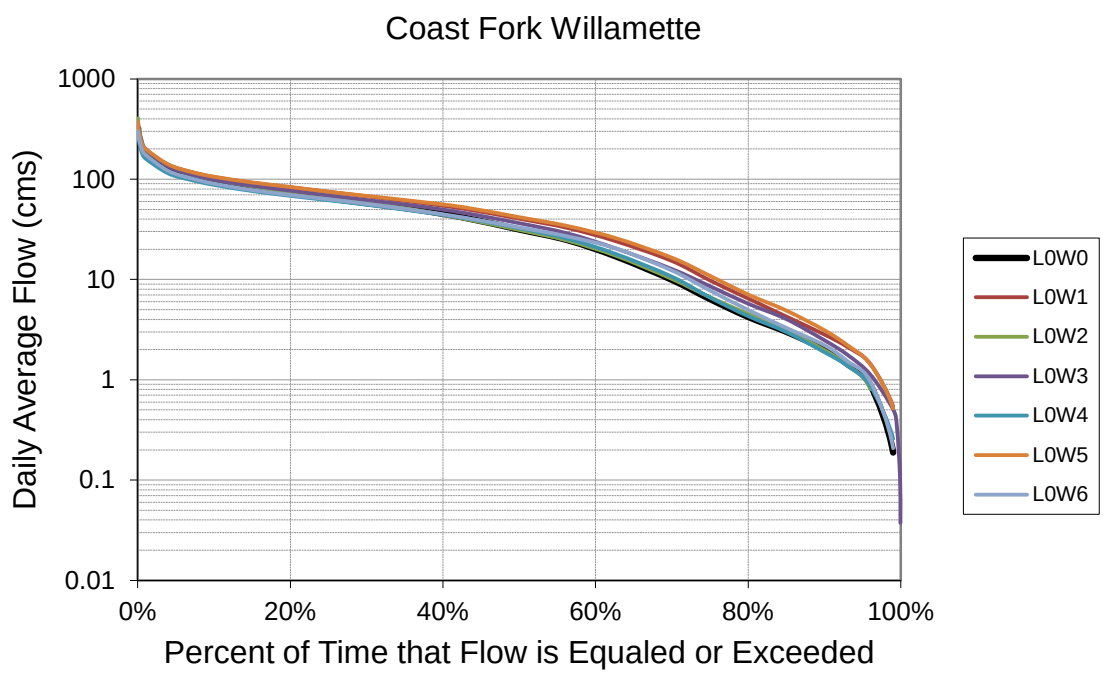

Figure 247. Flow Duration, Coast Fork Willamette River (SWAT)

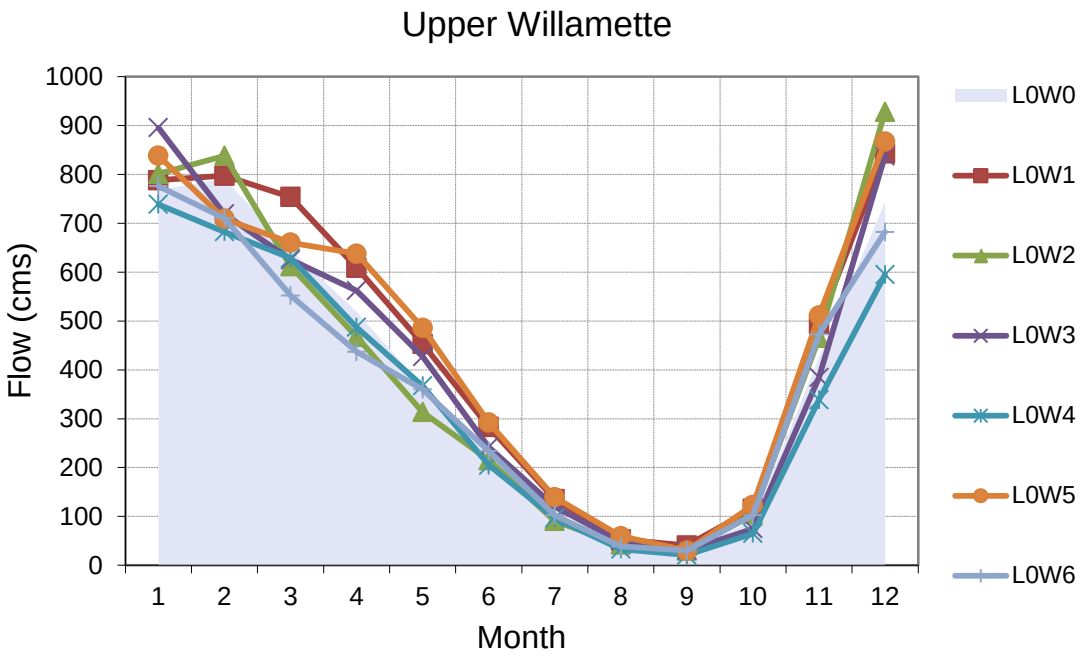

Figure 248. Monthly Average Flows, Upper Willamette River (SWAT)

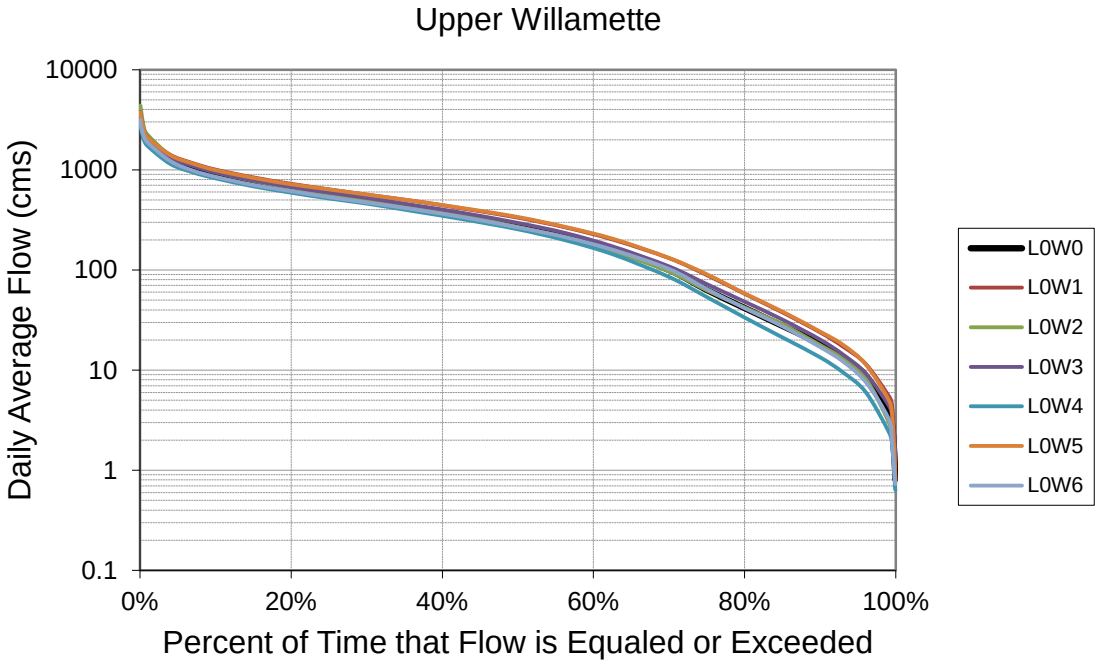

Figure 249. Flow Duration, Upper Willamette River (SWAT)

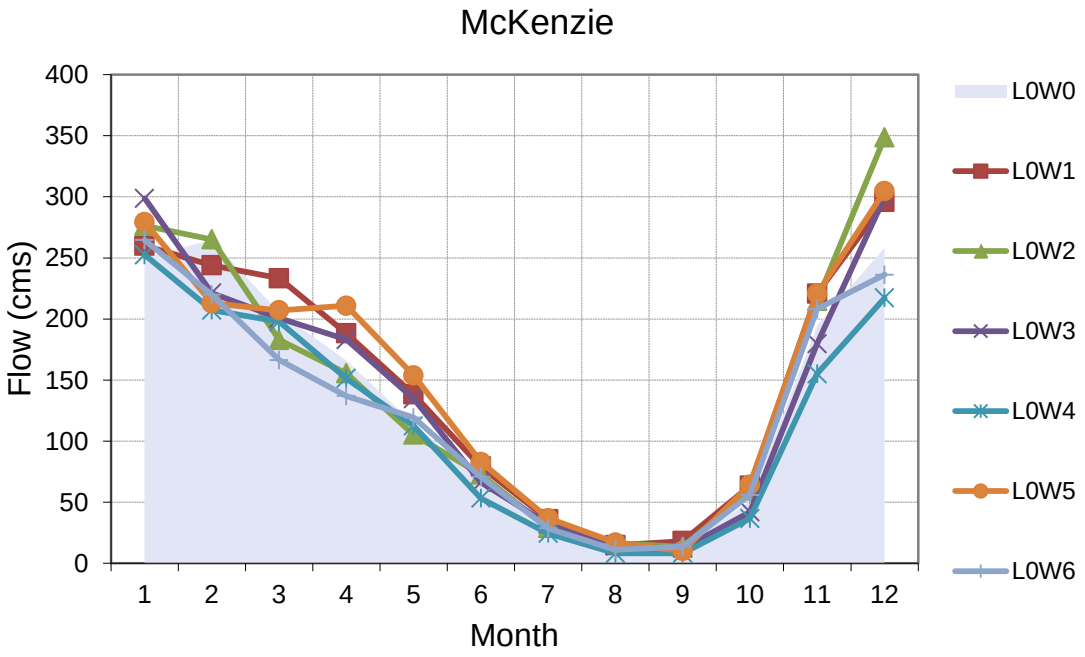

Figure 250. Monthly Average Flows, McKenzie River (SWAT)

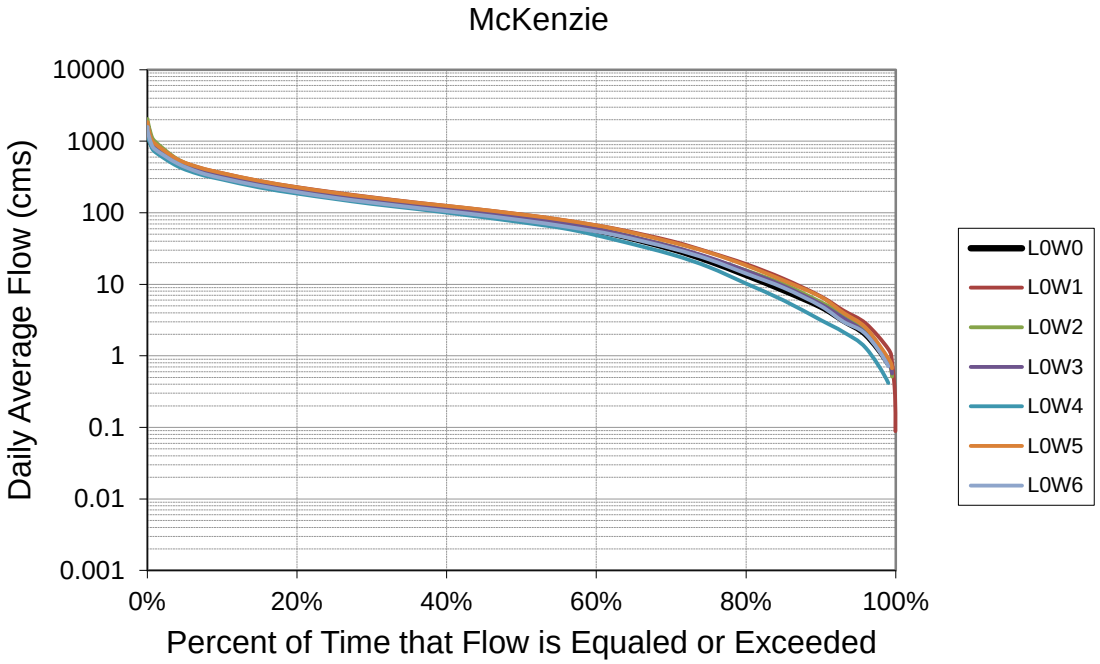

Figure 251. Flow Duration, McKenzie River (SWAT)

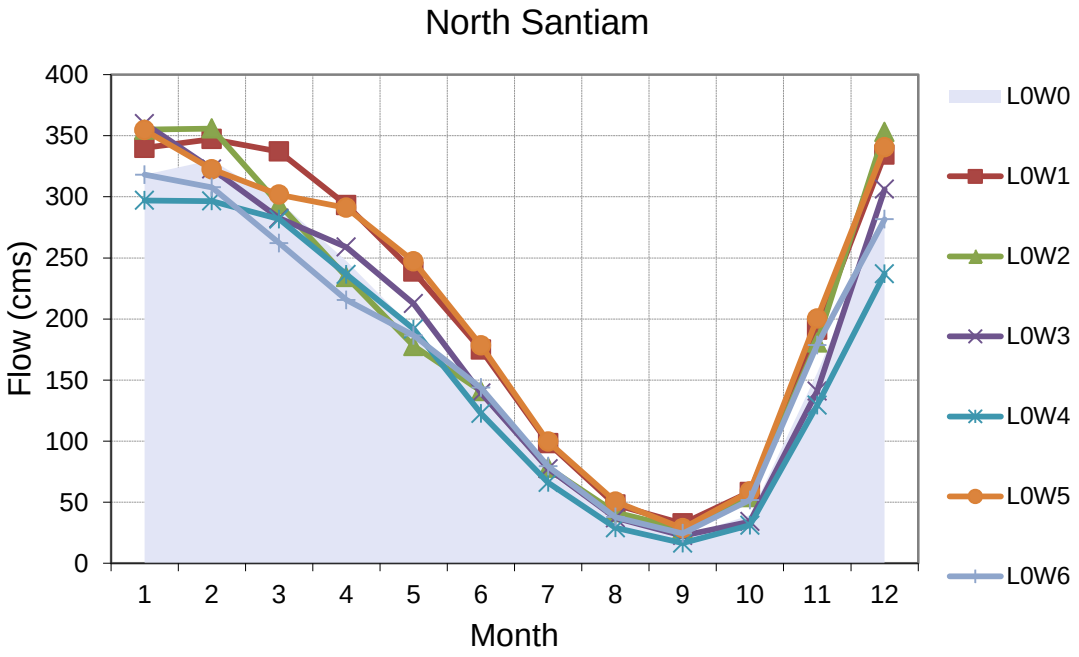

Figure 252. Monthly Average Flows, North Santiam River (SWAT)

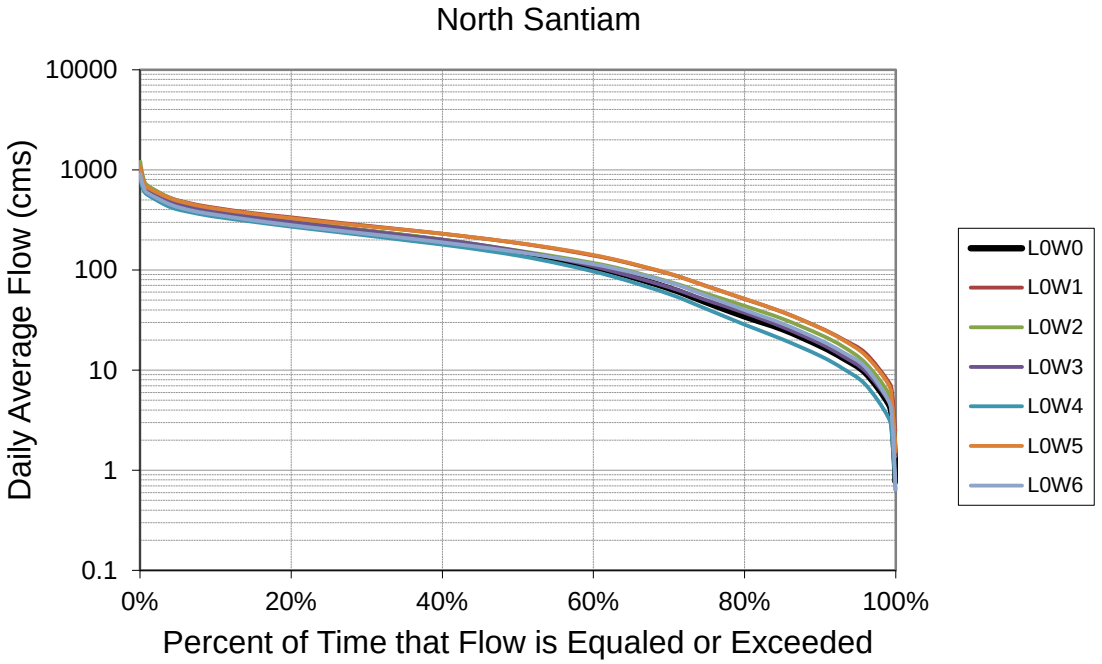

Figure 253. Flow Duration, North Santiam River (SWAT)

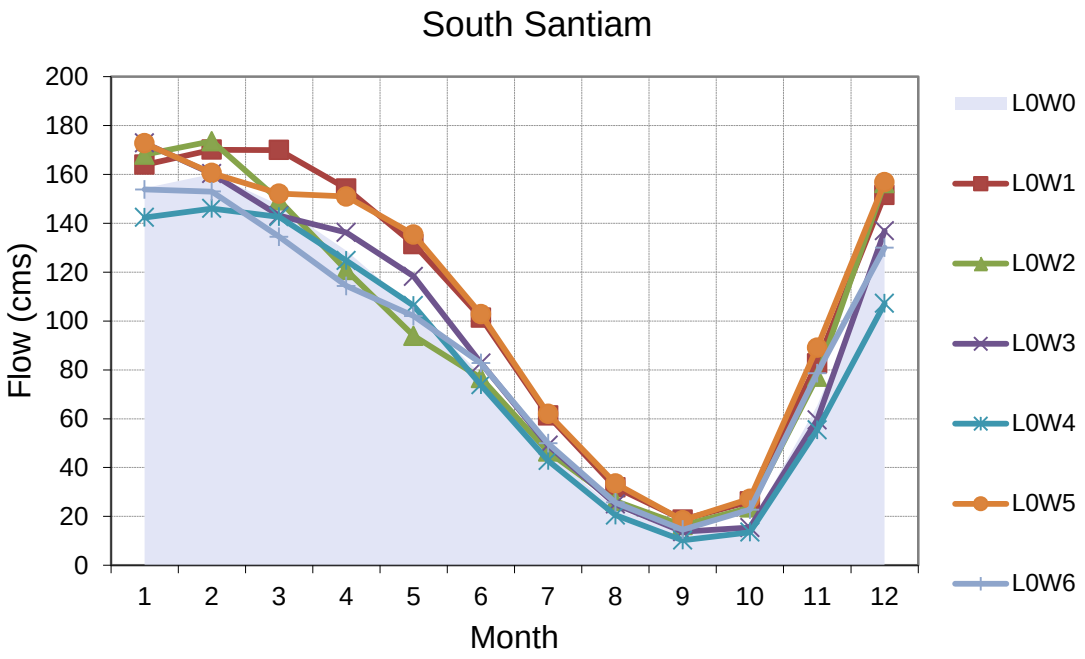

Figure 254. Monthly Average Flows, South Santiam River (SWAT)

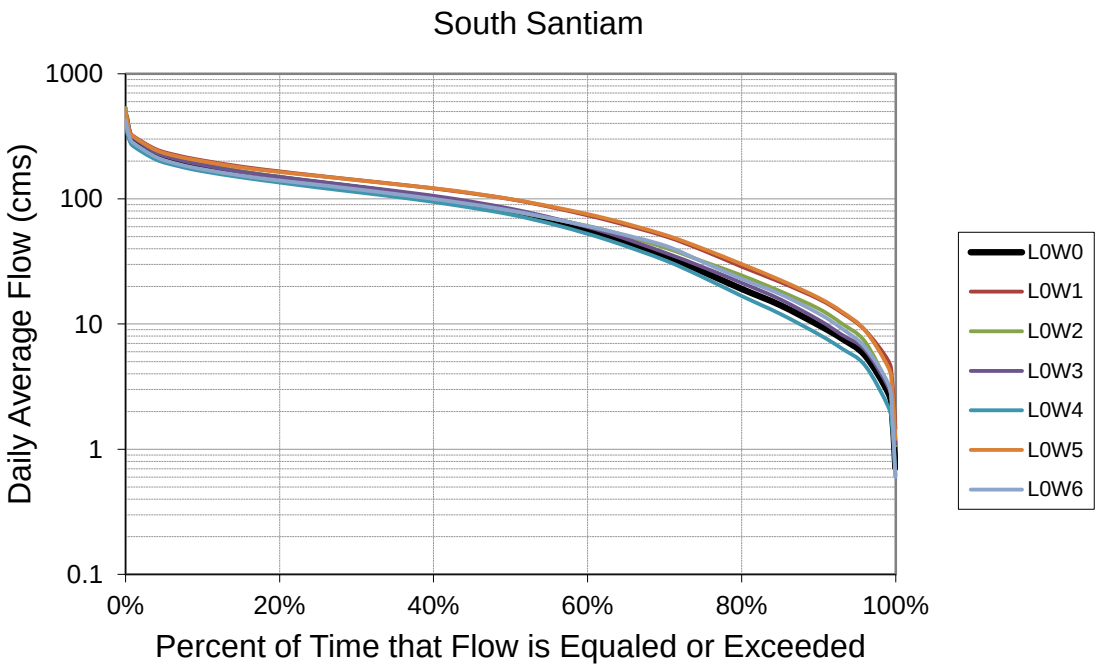

Figure 255. Flow Duration, South Santiam River (SWAT)

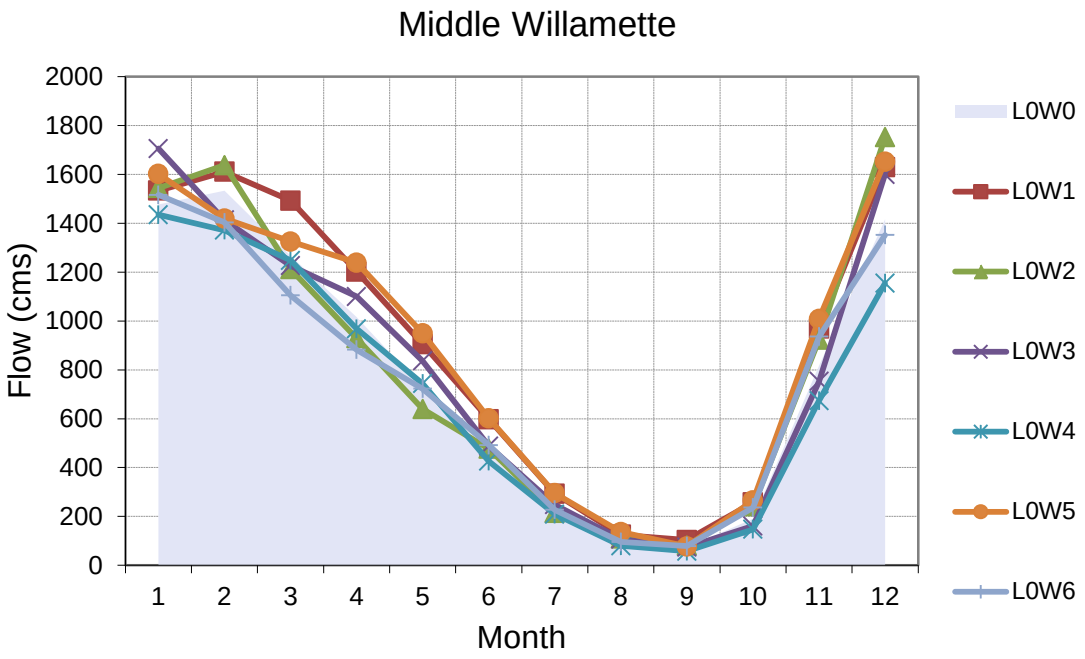

Figure 256. Monthly Average Flows, Middle Willamette River (SWAT)

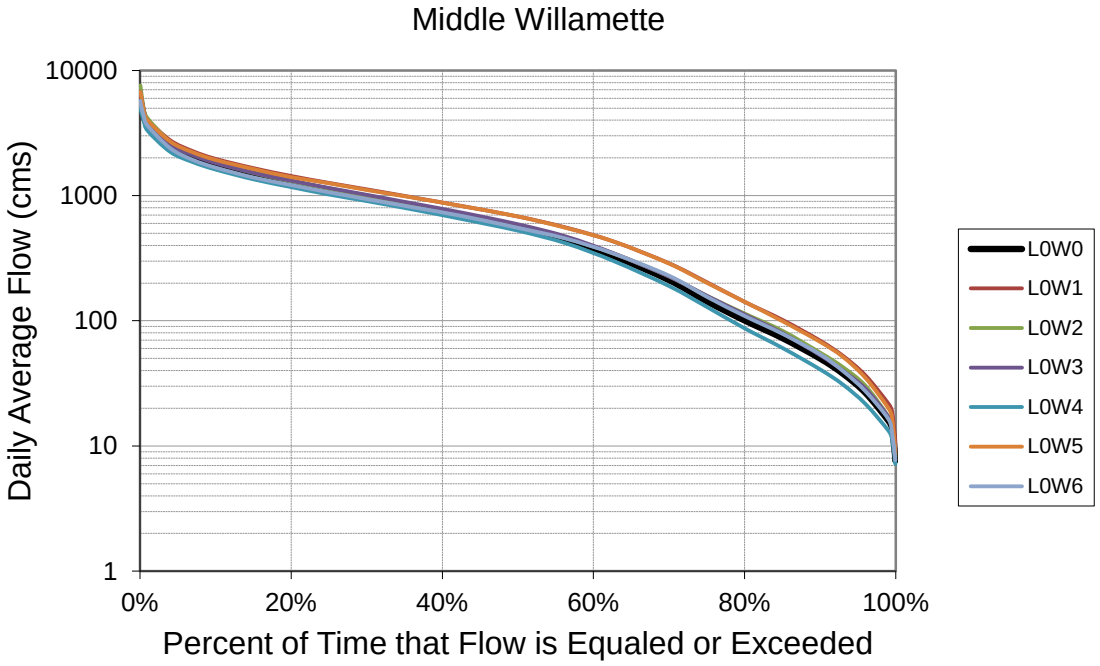

Figure 257. Flow Duration, Middle Willamette River (SWAT)

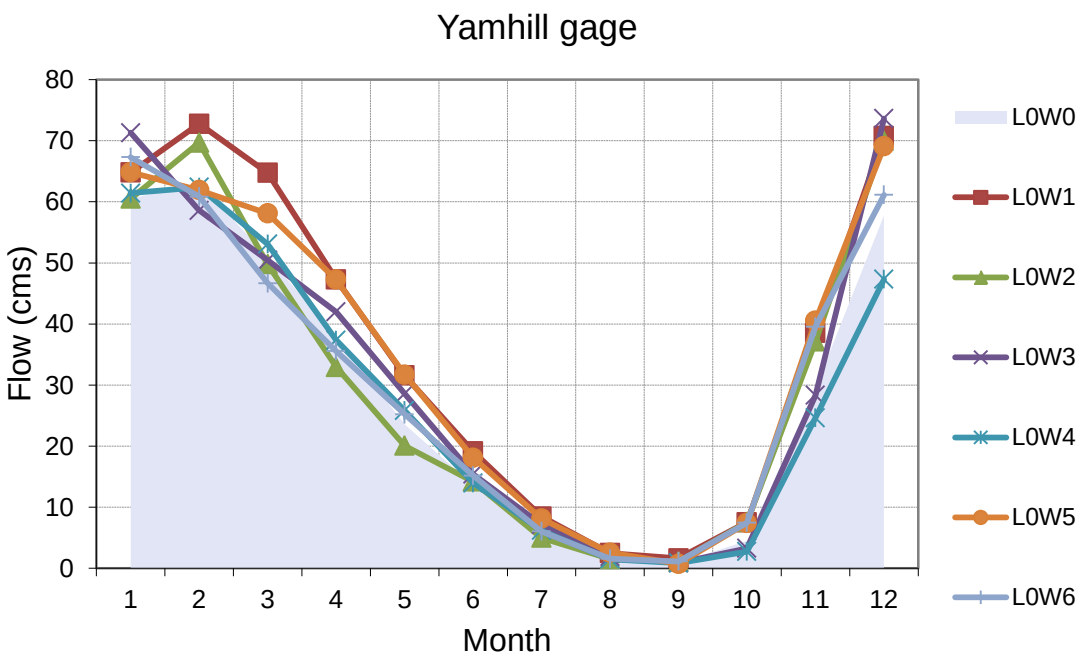

Figure 258. Monthly Average Flows, Yamhill River (SWAT)

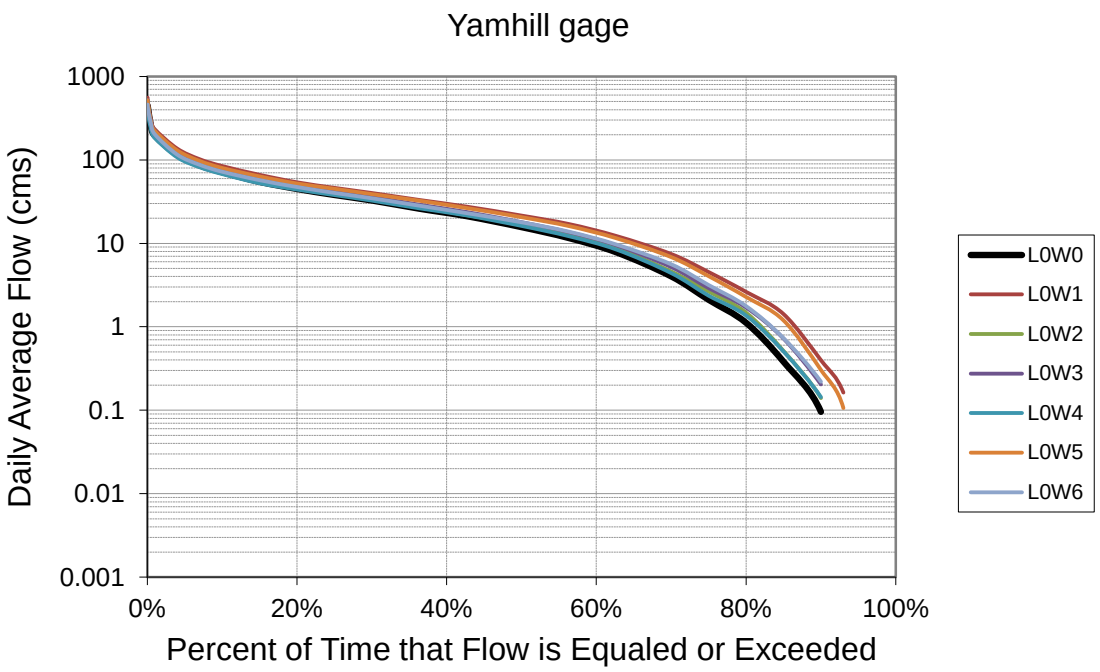

Figure 259. Flow Duration, Yamhill River (SWAT)

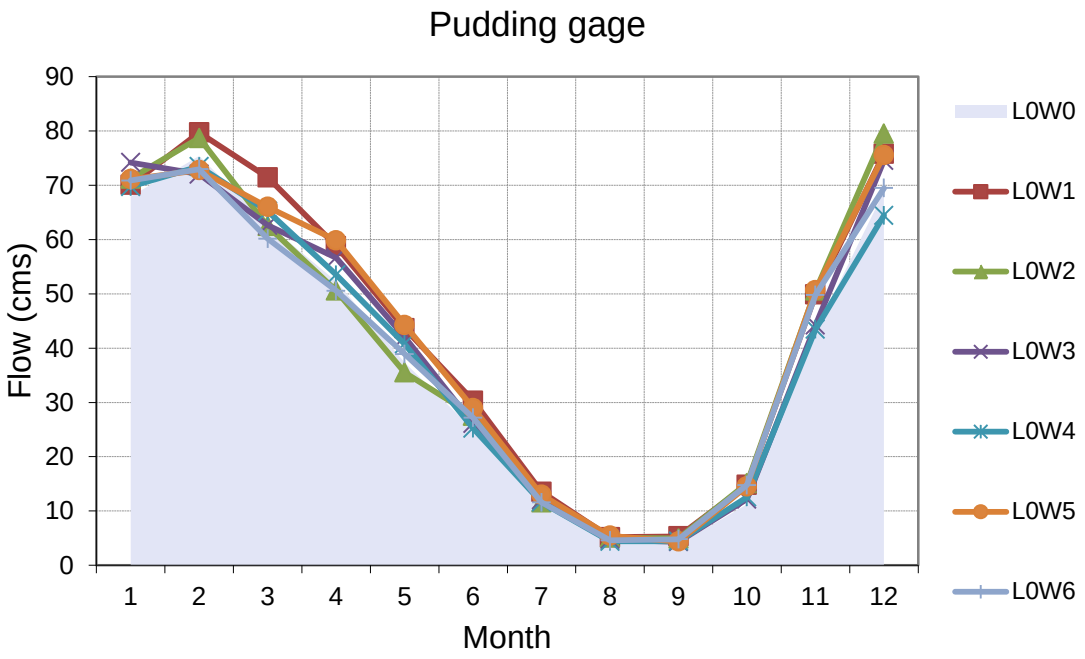

Figure 260. Monthly Average Flows, Pudding River (SWAT)

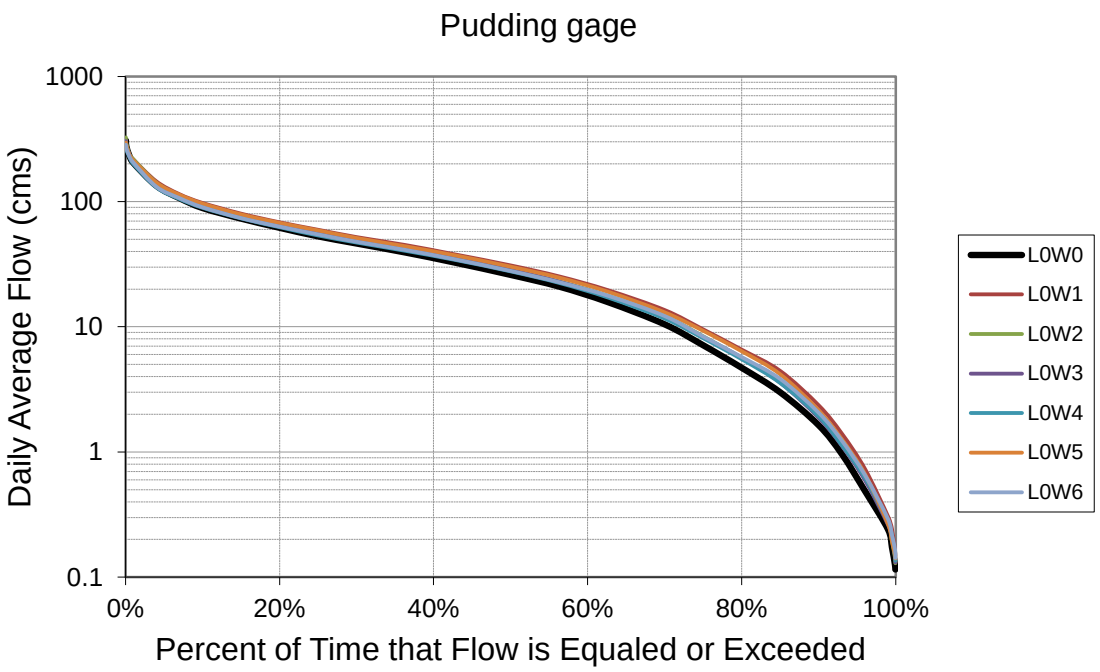

Figure 261. Flow Duration, Pudding River (SWAT)

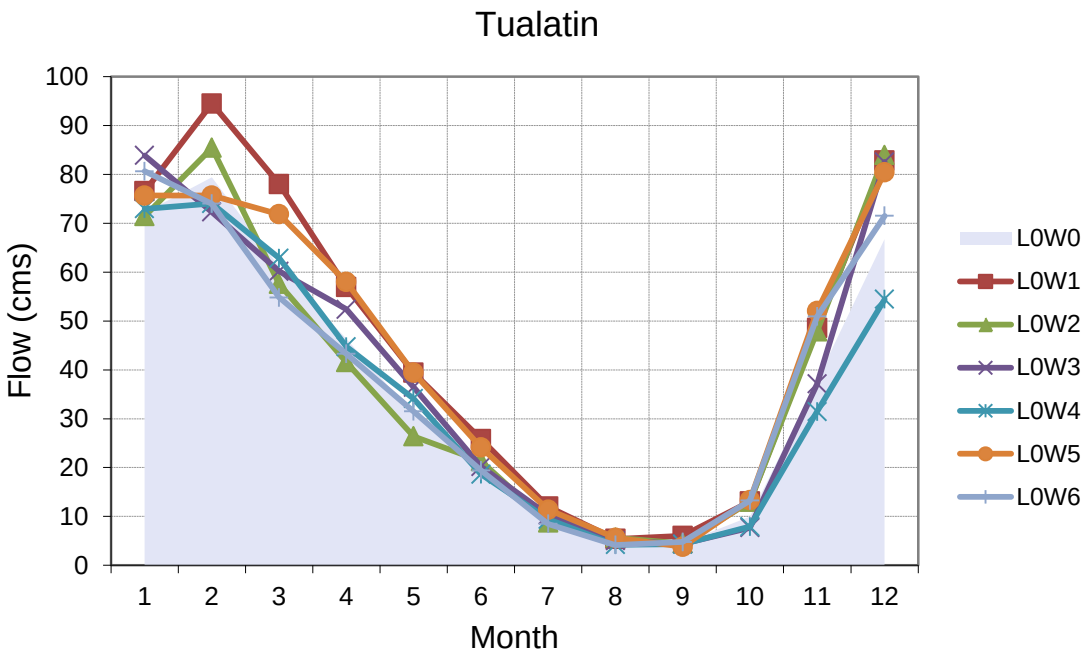

Figure 262. Monthly Average Flows, Tualatin River (SWAT)

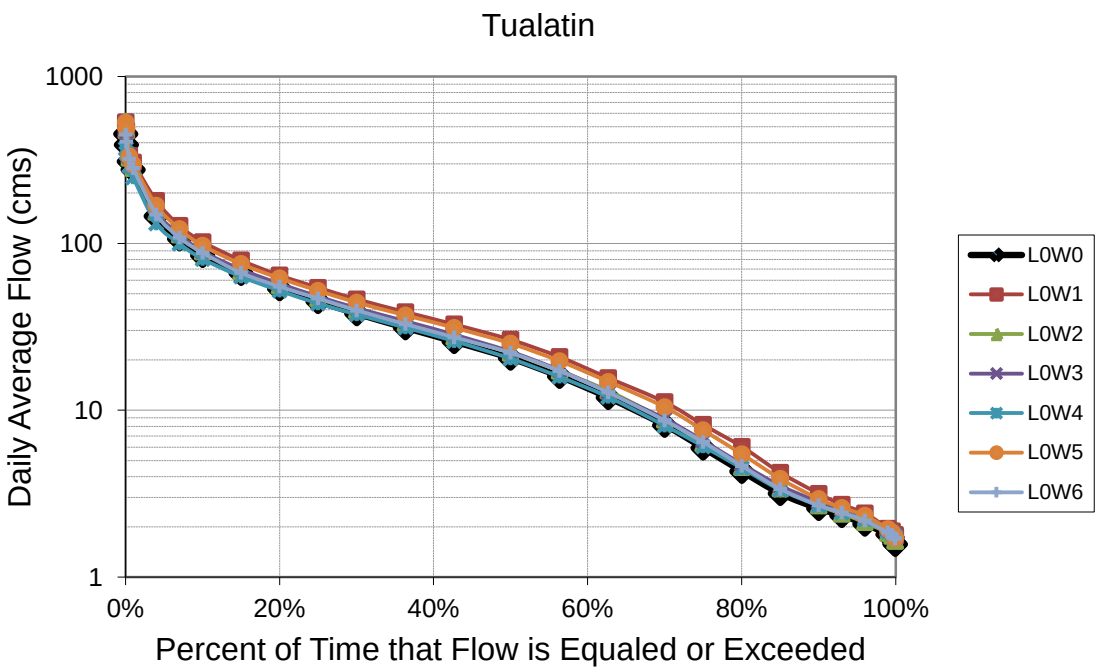

Figure 263. Flow Duration, Tualatin River (SWAT)

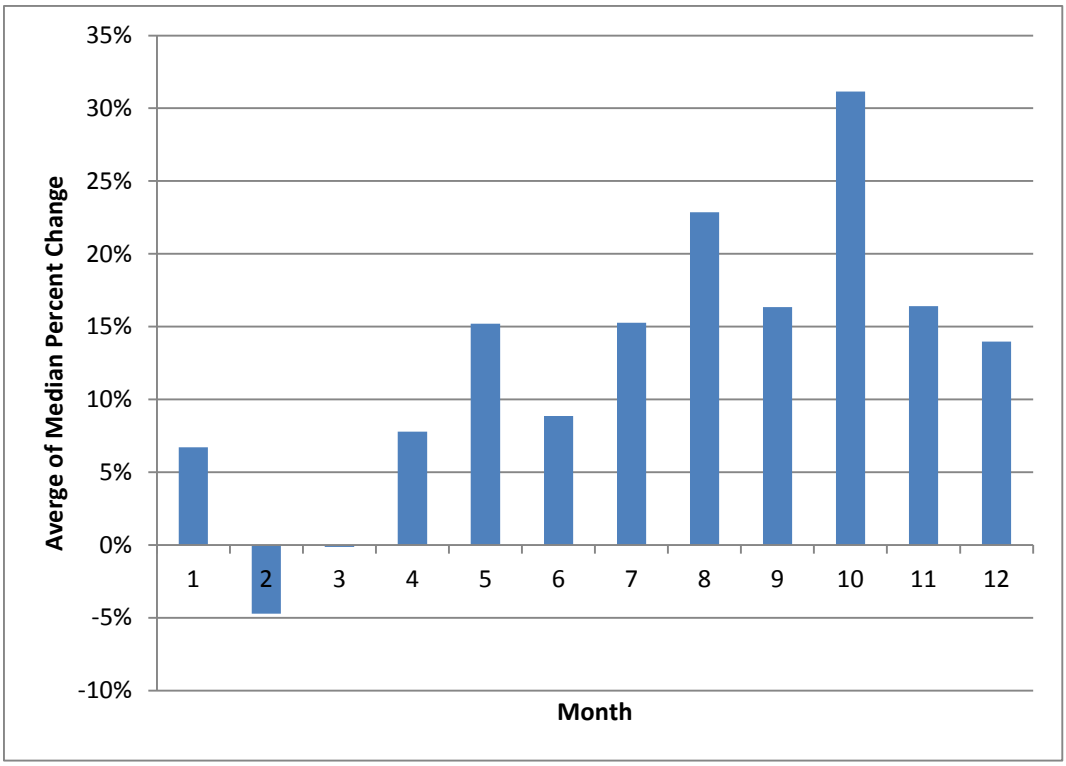

Figure 264. Average of Median Percent Change in Flow; NARCCAP Scenarios W1-W6 at all Stations, Willamette River Basin (SWAT)