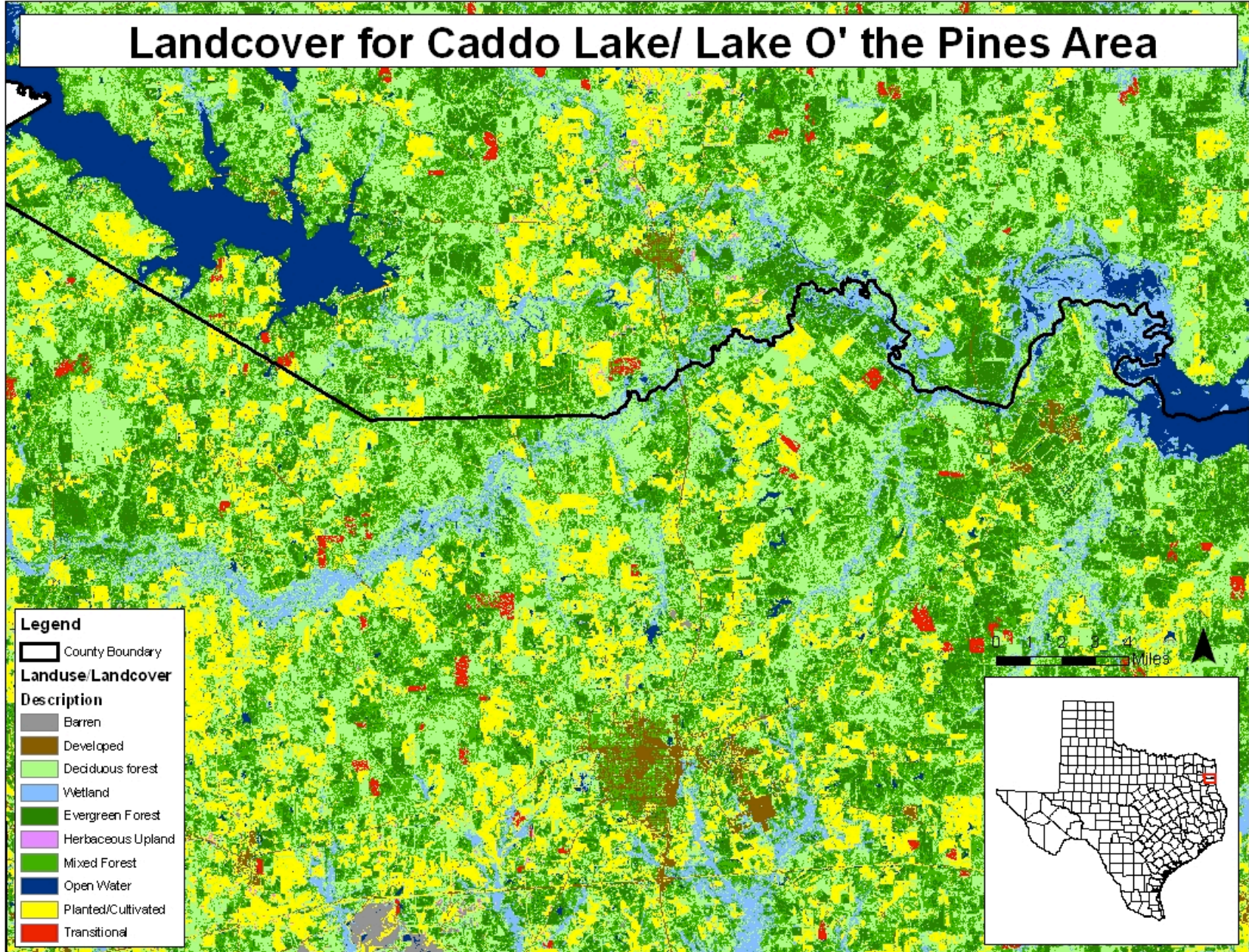


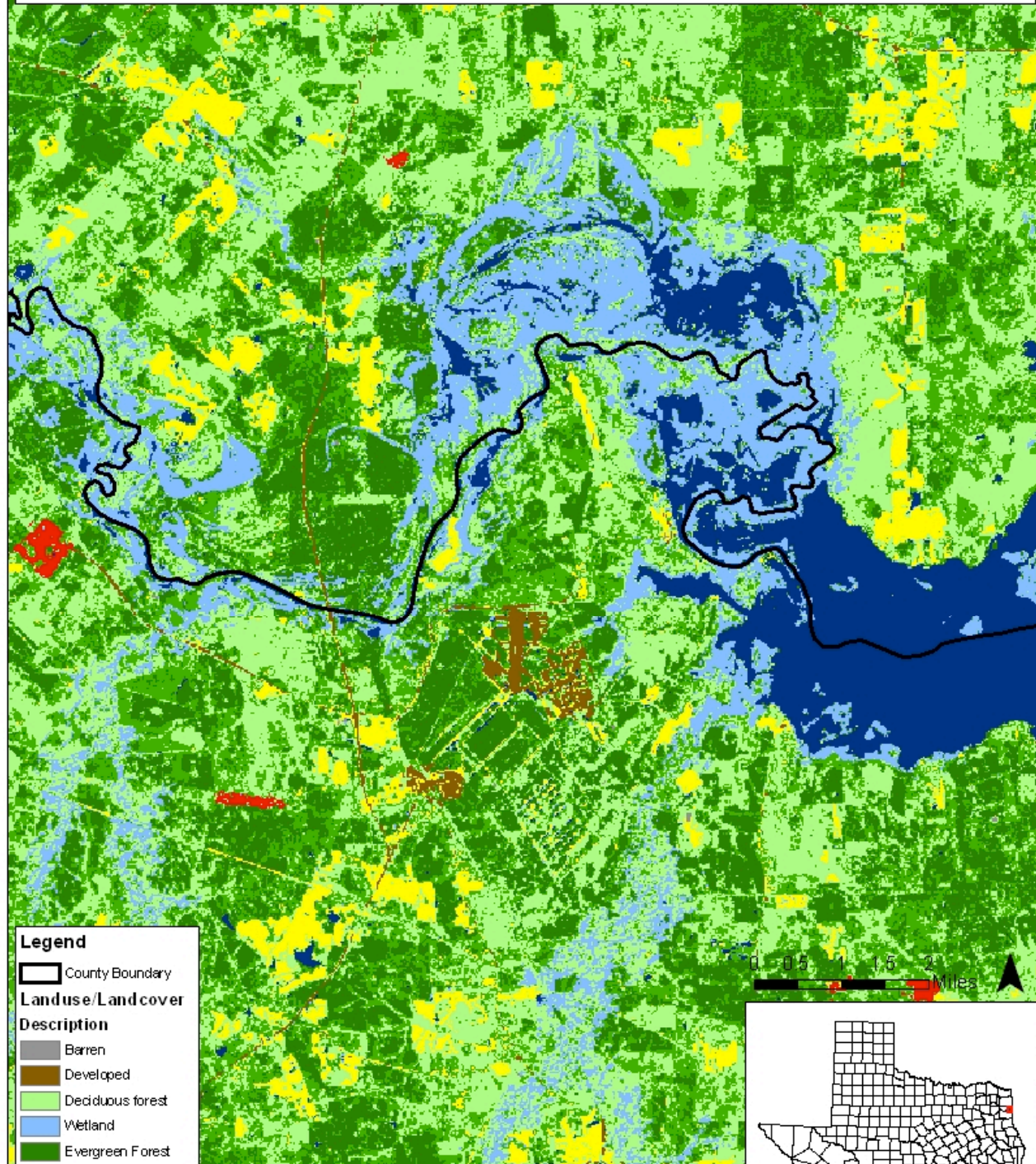
## **Appendix A**

**Land-use maps of the Big Cypress Creek Basin and Upper Caddo Lake at 2 scales**

# Landcover for Caddo Lake/ Lake O' the Pines Area



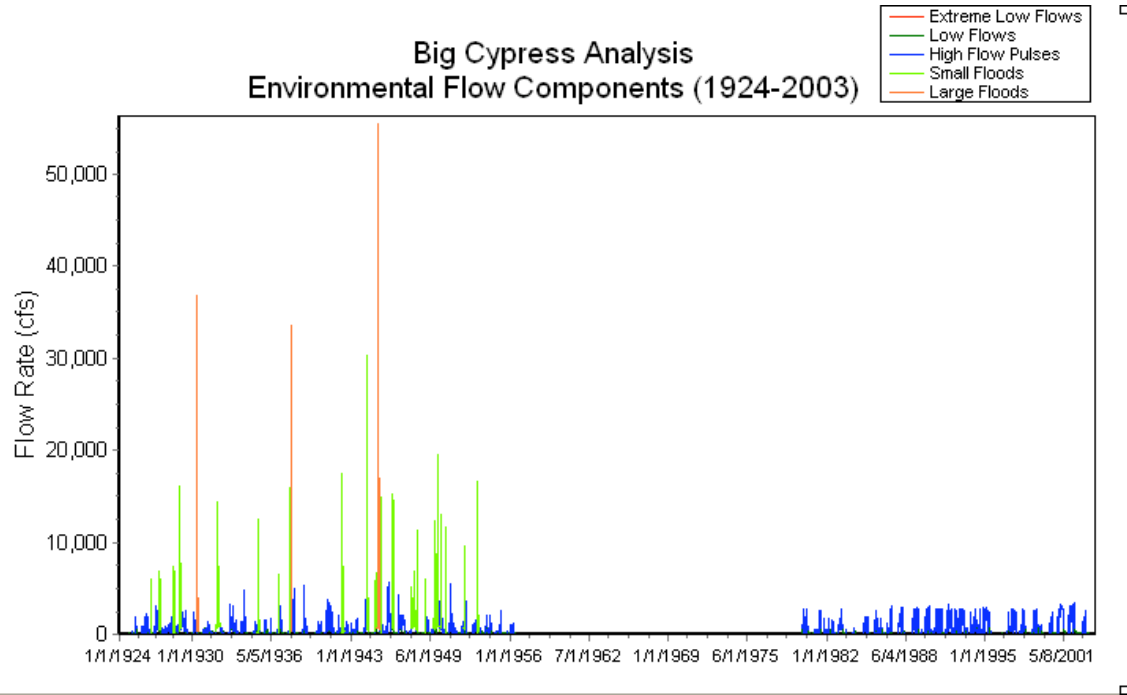
# Landcover for Caddo Lake Basin

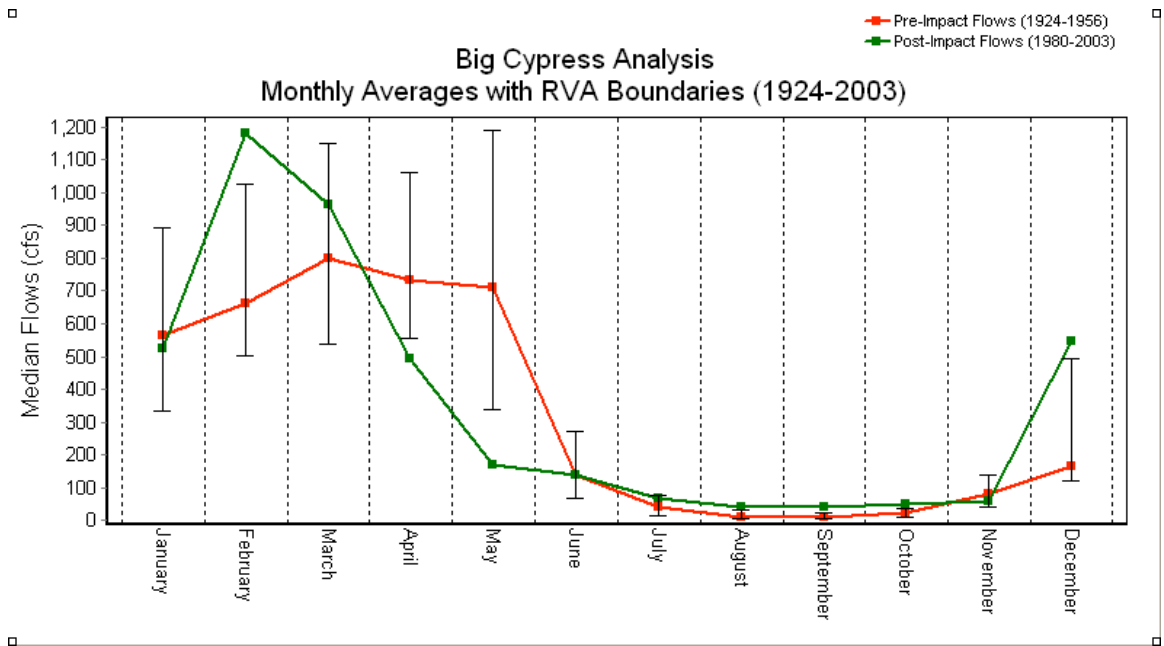


## **Appendix B**

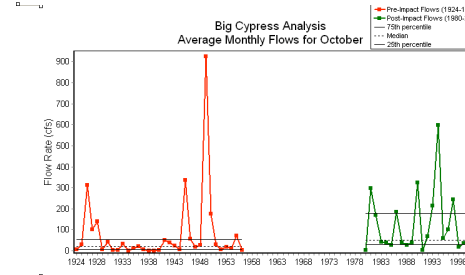
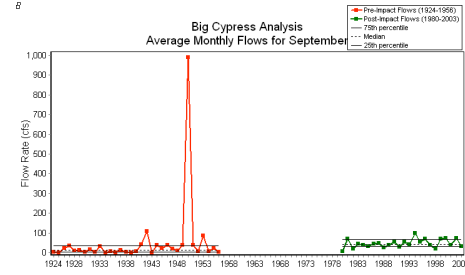
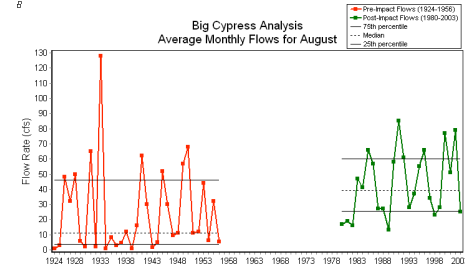
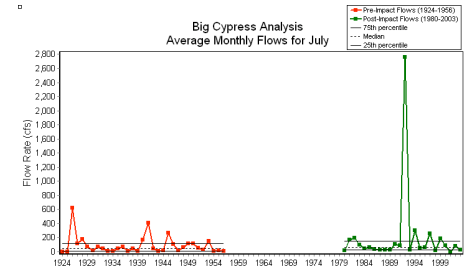
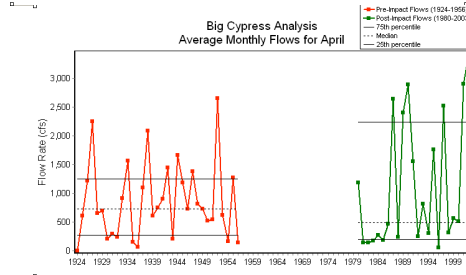
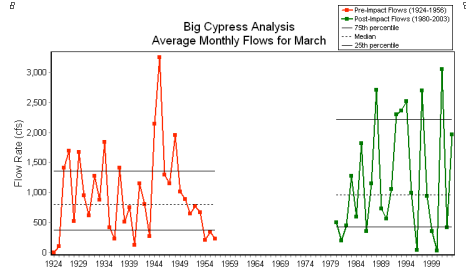
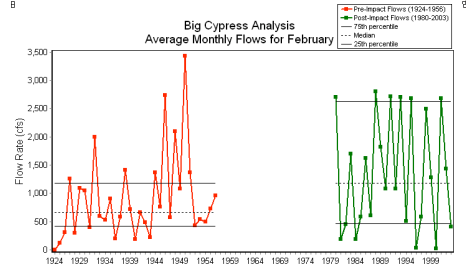
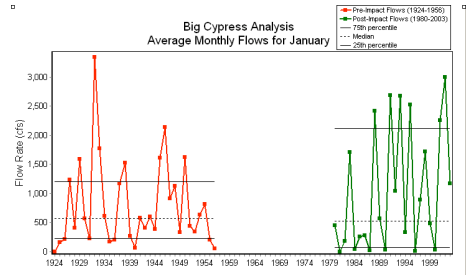
### **Graphical output of Flow Analyses**

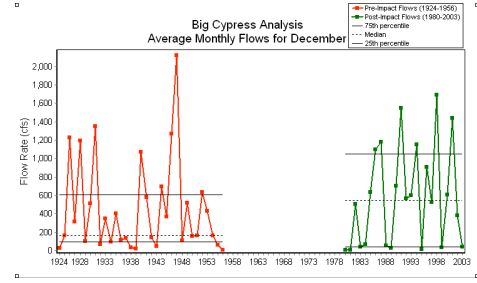
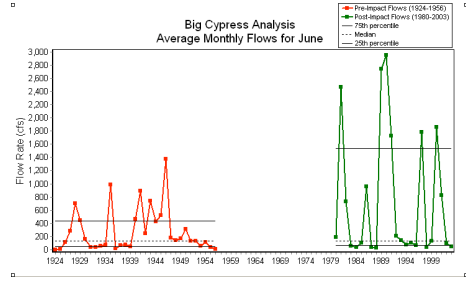
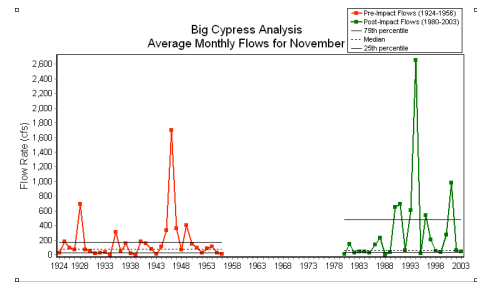
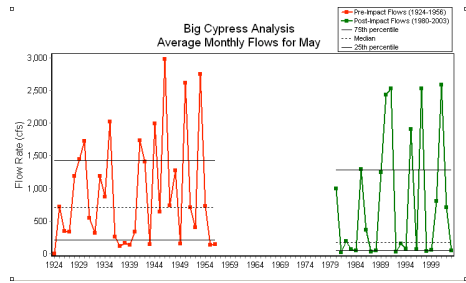
### Big Cypress Analysis Environmental Flow Components (1924-2003)





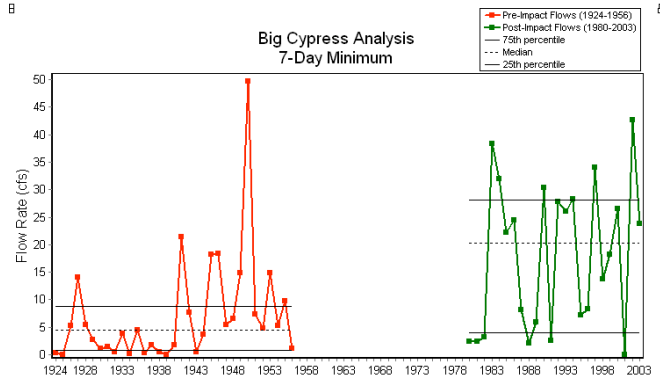
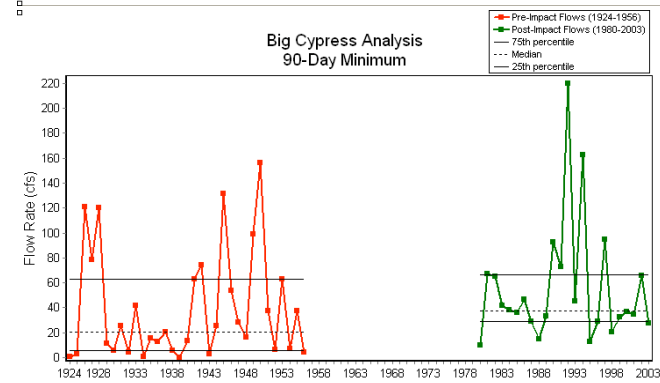
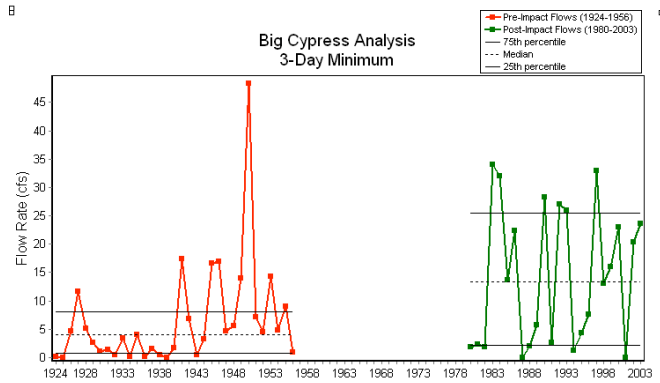
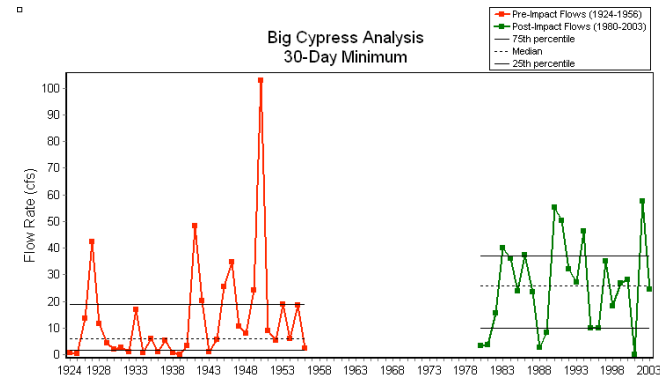
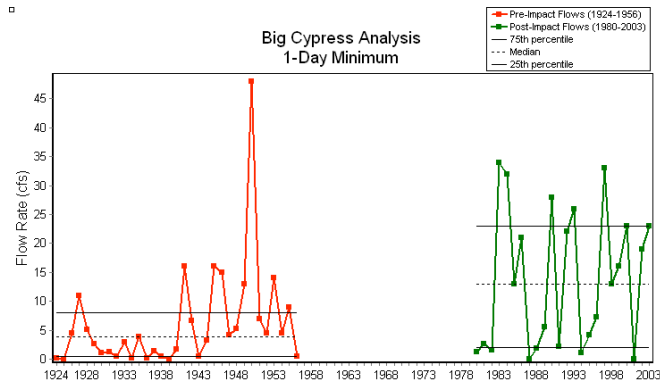
# MONTHLY FLOW FOR THE PERIOD OF RECORD



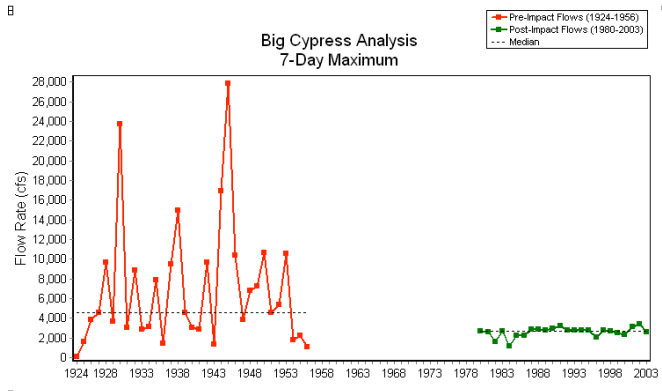
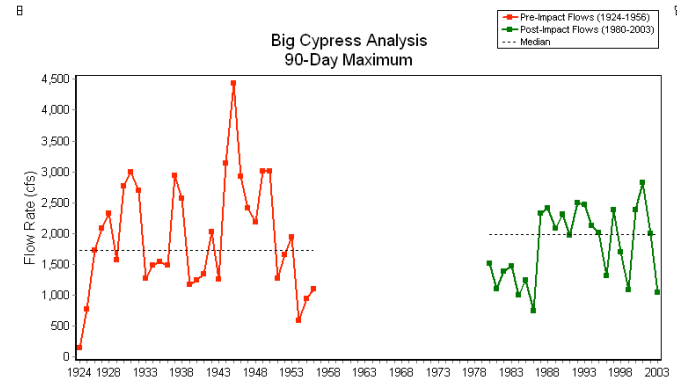
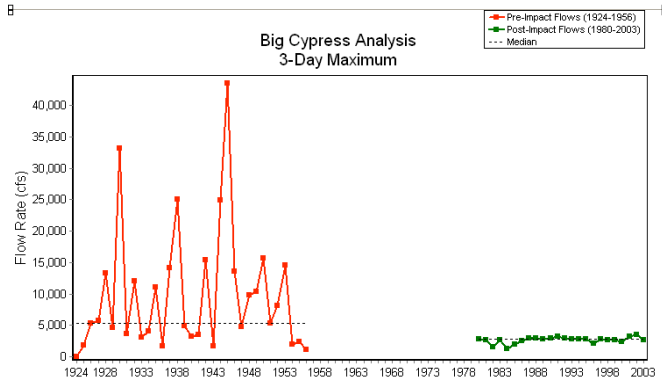
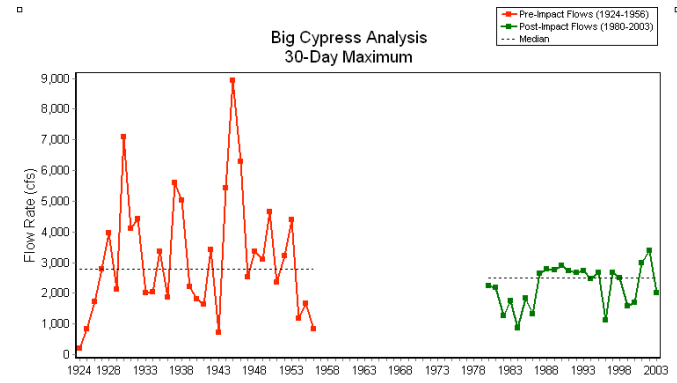
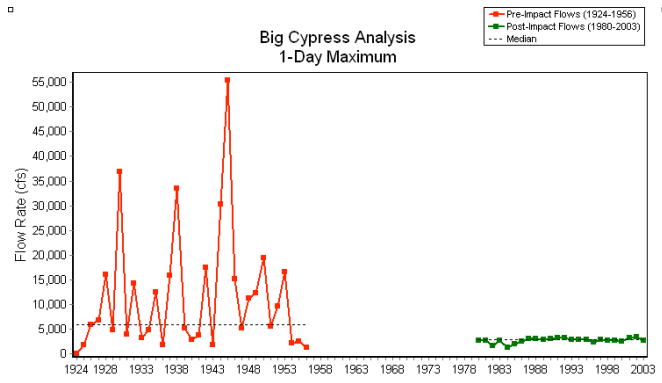




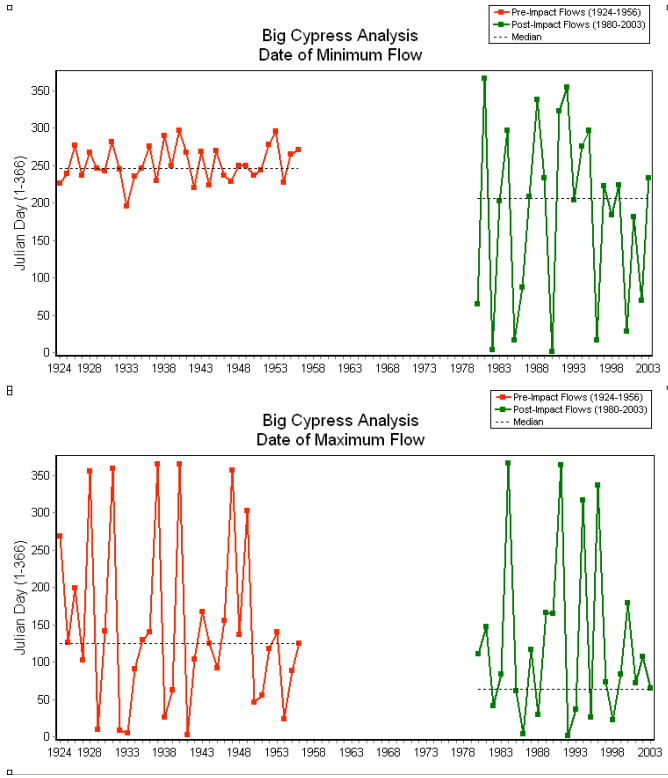
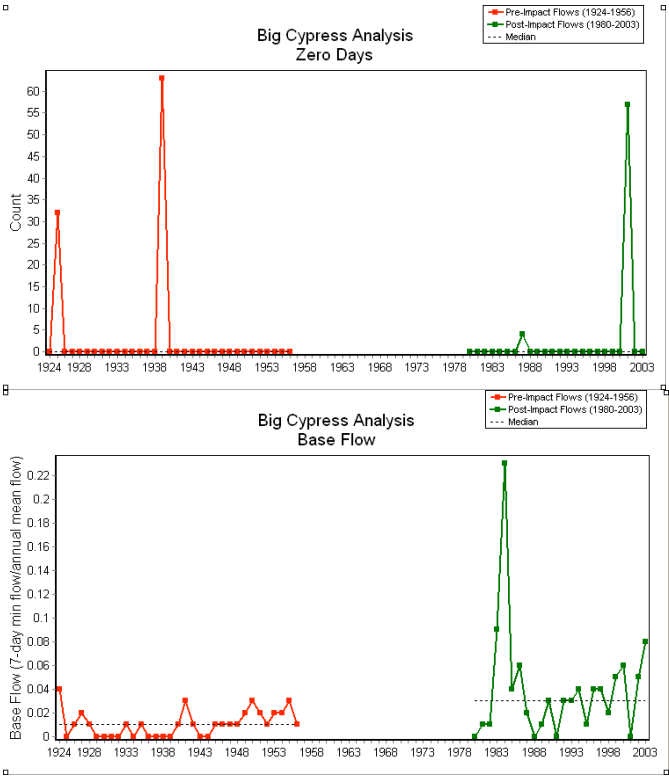
# MINIMUM FLOW ANALYSIS



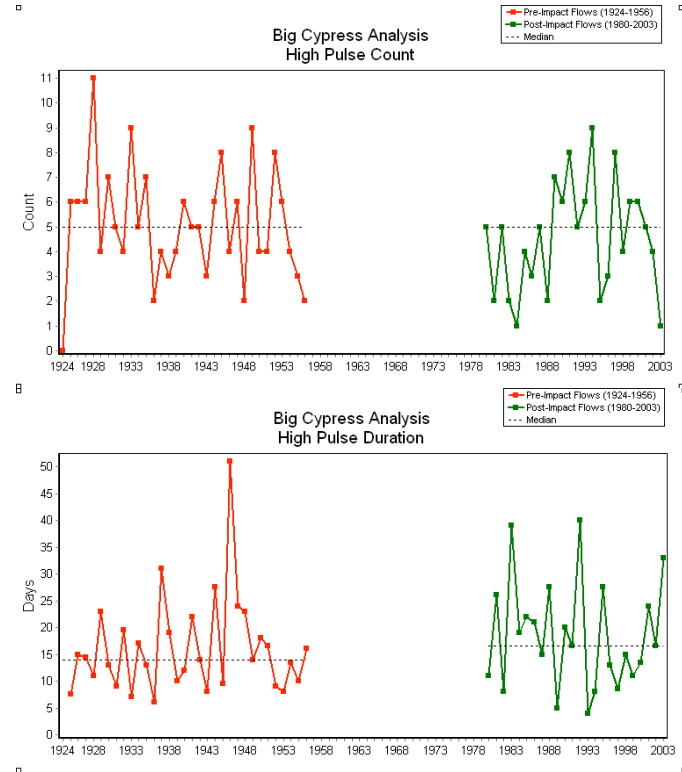
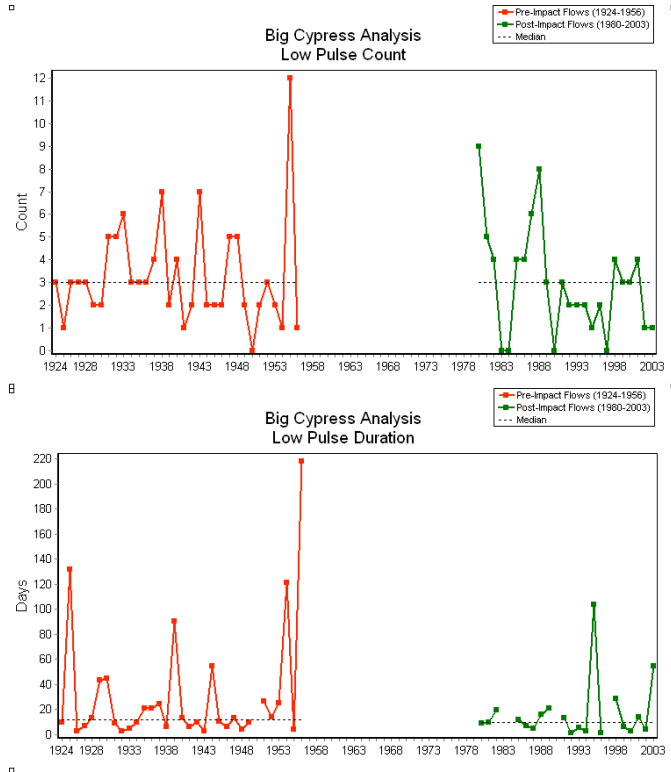
# MAXIMUM FLOW ANALYSIS



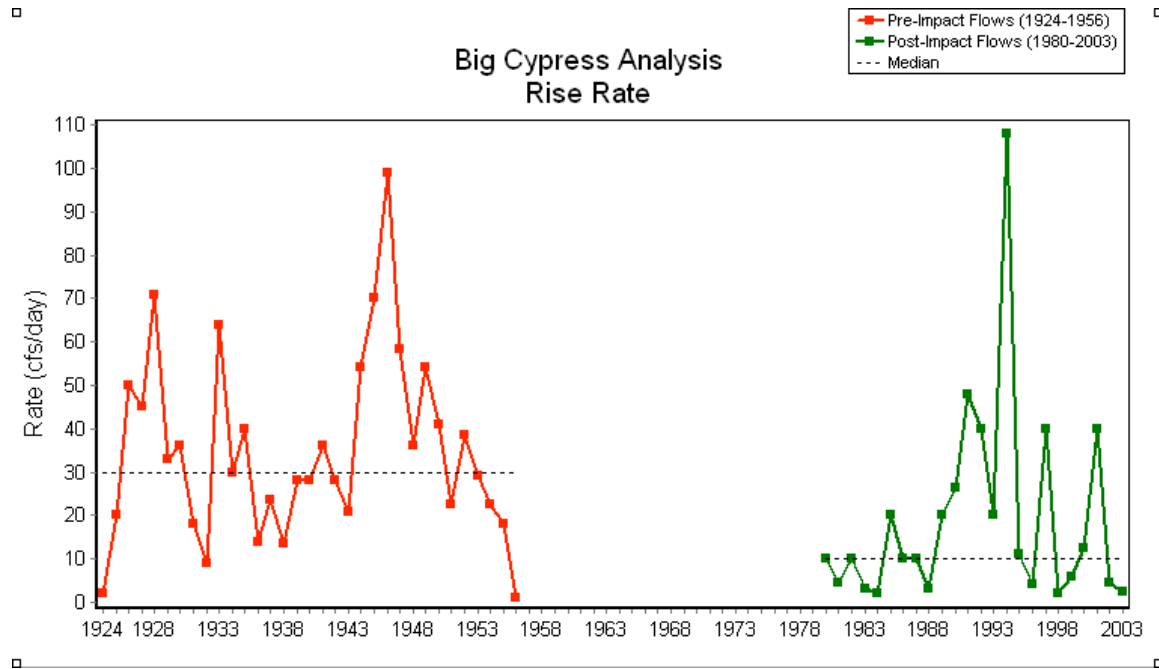
# ZERO DAYS, DATE OF MIN/MAX, BASE FLOW



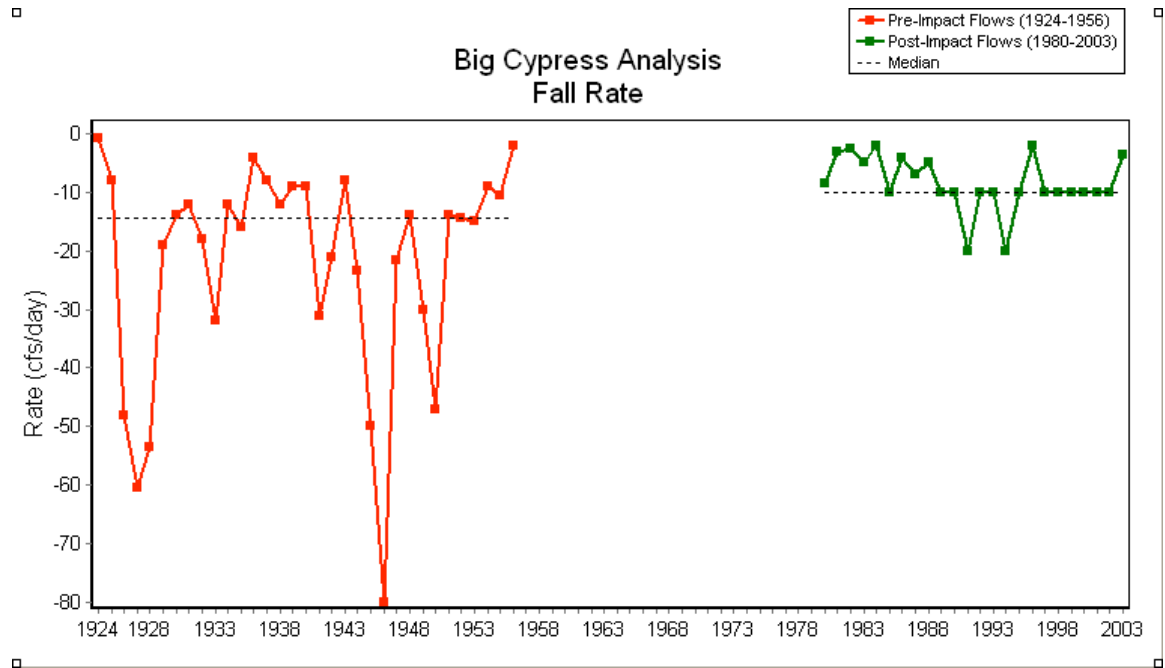
# PULSE COUNT



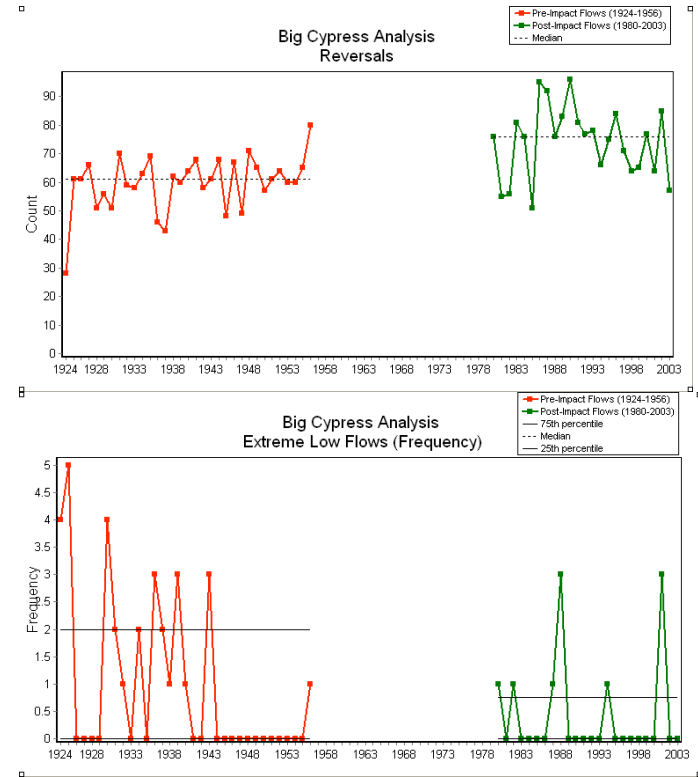
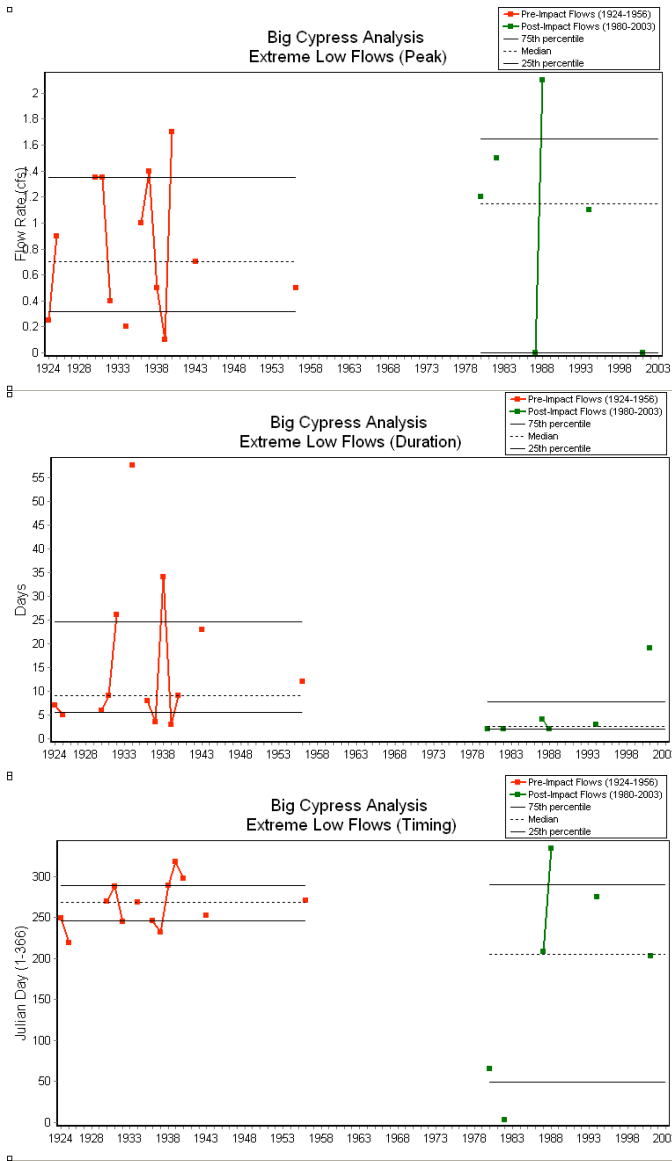
# RISE RATES



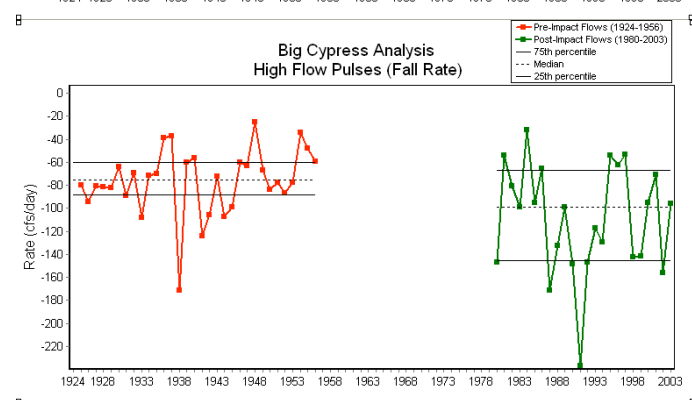
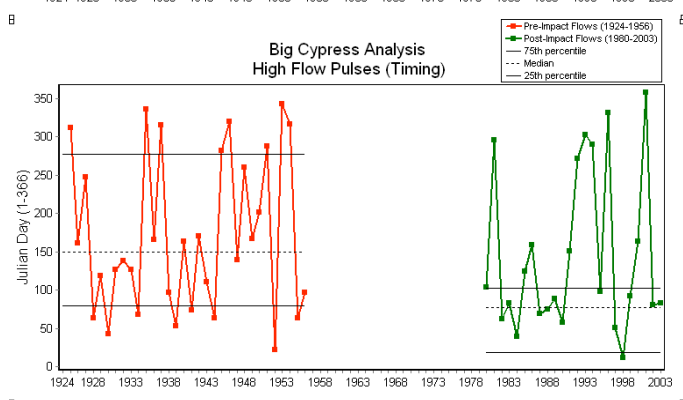
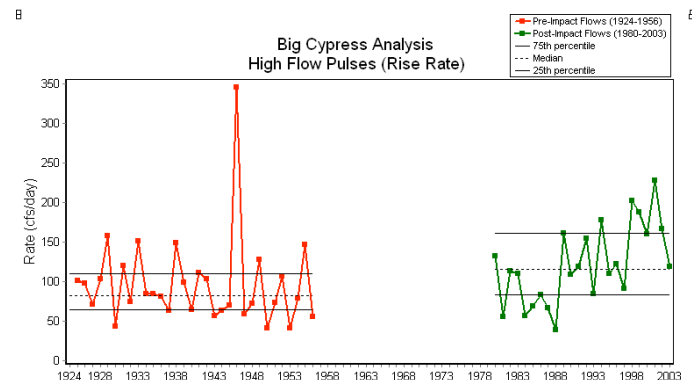
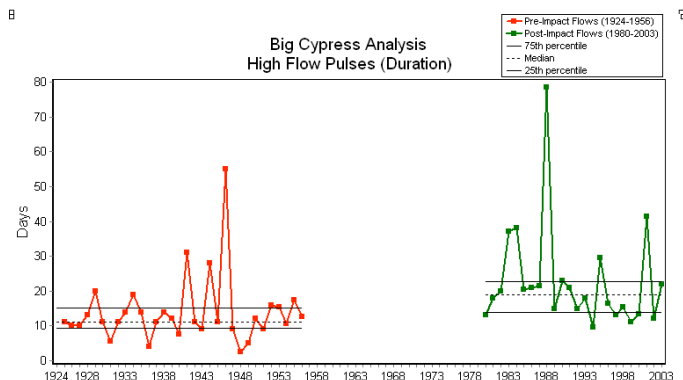
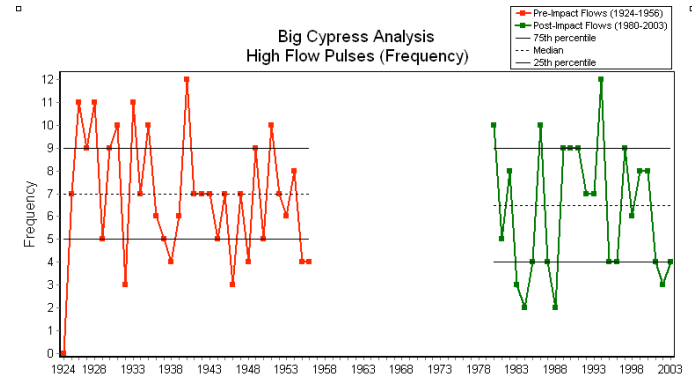
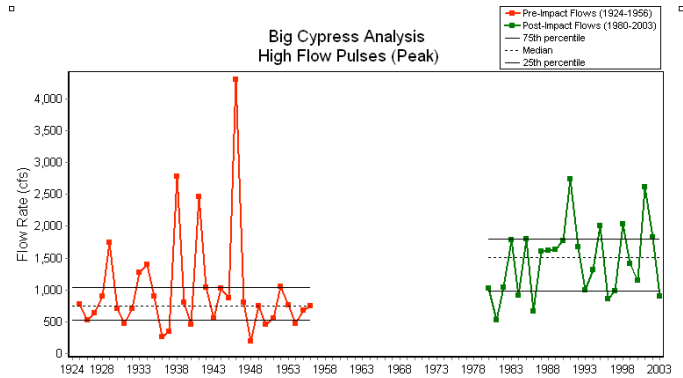
# FALL RATES



# LOW FLOW PULSE ANALYSIS

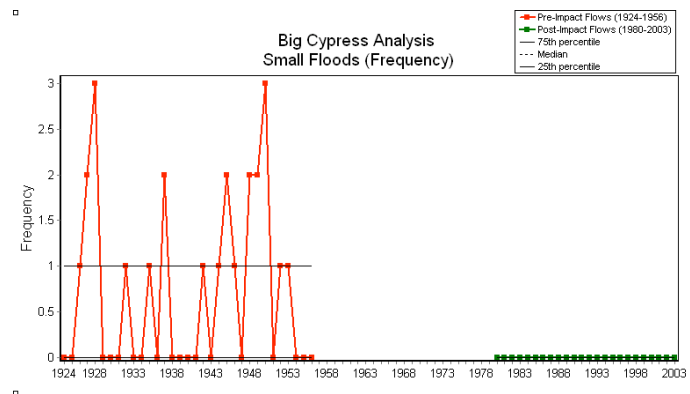
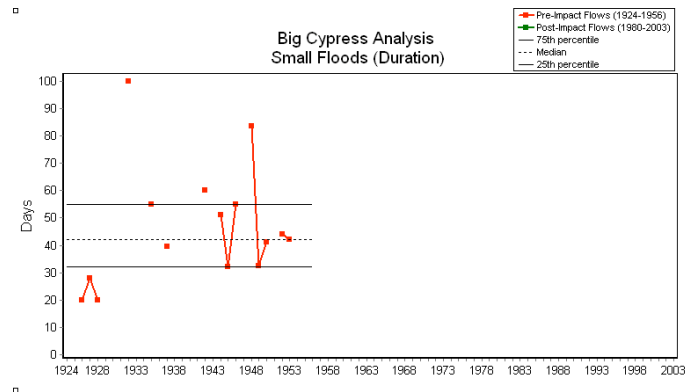
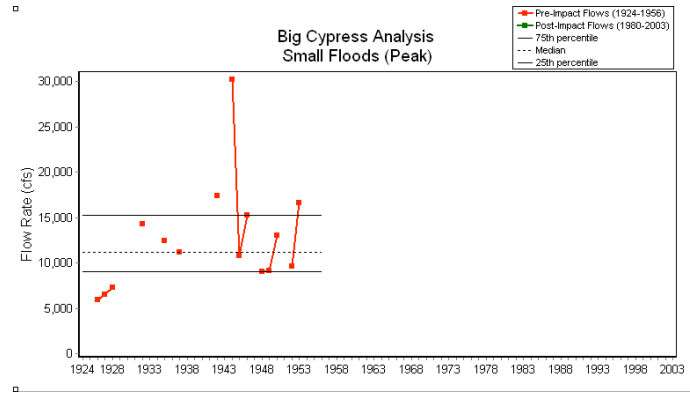


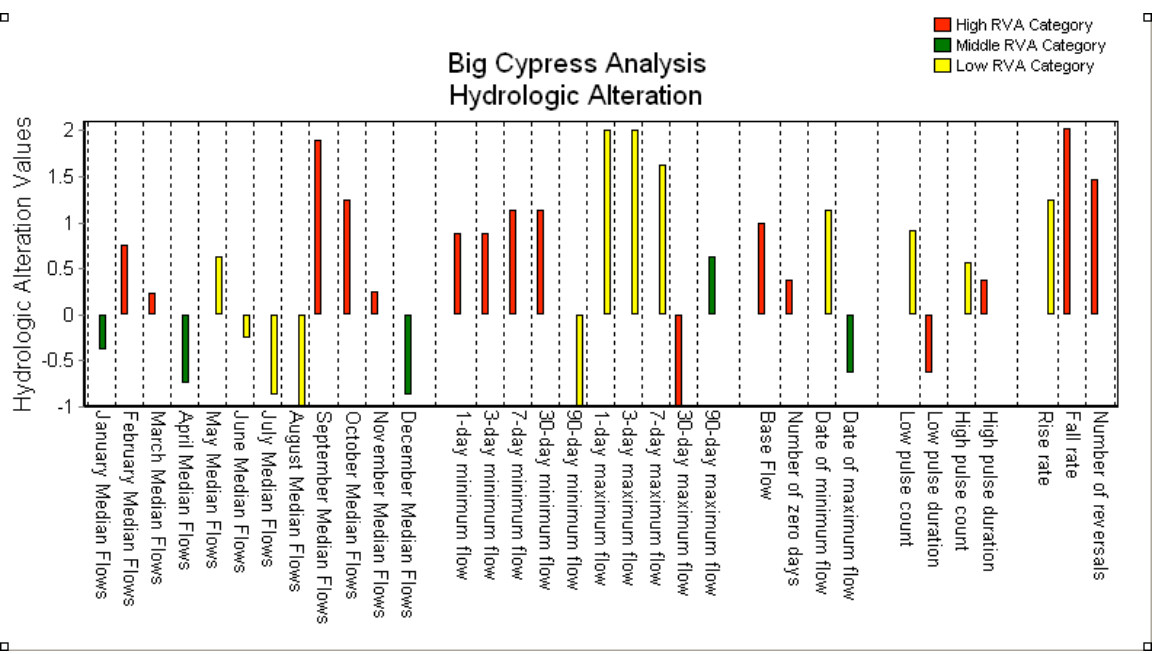
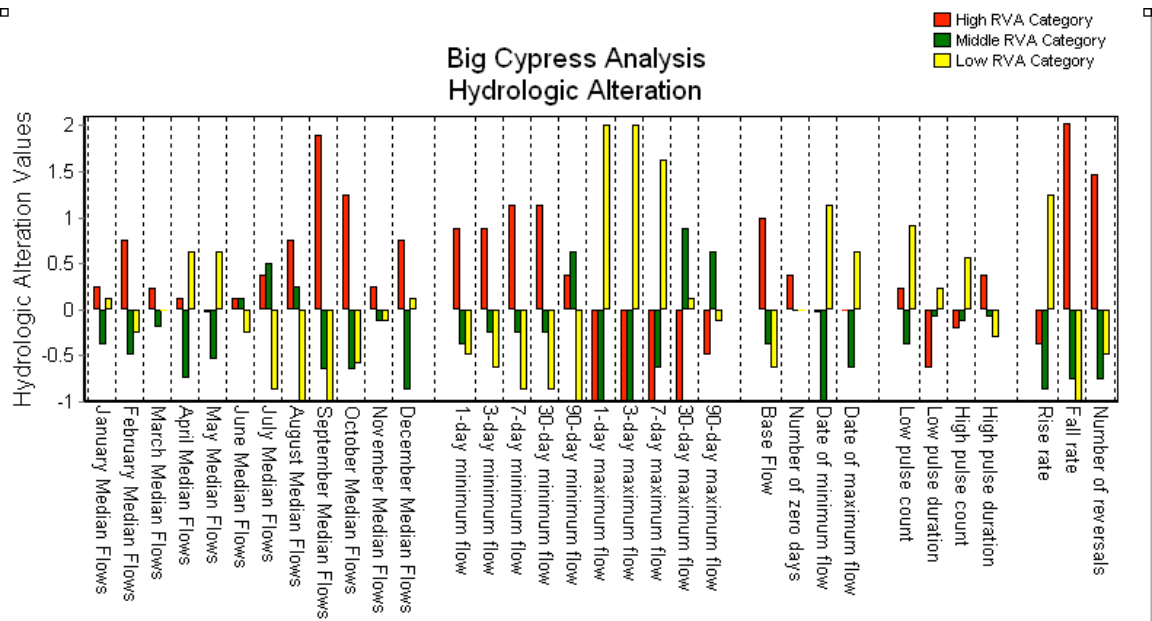
# HIGH FLOW PULSE ANALYSIS





# SMALL FLOODS





## **Appendix C**

### **Tabular output of Flow Analyses**

**Non-Parametric IHA Scorecard  
Big Cypress Analysis**

**Season from Julian date 1.to 366.**

|                           | Pre-impact period:<br><u>1924-1956 (33 years)</u> | Post-impact period:<br><u>1980-2003 (24 years)</u> |
|---------------------------|---|--|
| Watershed area            | 1.00  | 1.00   |
| Mean annual flow          | 635.12  | 644.63   |
| Mean flow/area            | 635.12  | 644.63   |
| Annual C. V.              | 0.83  | 1.25   |
| Flow predictability       | 0.31  | 0.29   |
| Constancy/predictability  | 0.42  | 0.49   |
| % of floods in 60d period | 0.35  | 0.34   |
| Flood-free season         | 17.00   | 45.00  |

## IHA Percentile Data Big Cypress Analysis

Season from Julian date 1.to 366.

| Parameter Group #1        | Pre-impact period: 1924-1956 (33 years) |         |         |          |          |            | Post-impact period: 1980-2003 (24 years) |         |         |         |         |            |
|---------------------------|---|---------|---------|----------|----------|------------|--|---------|---------|---------|---------|------------|
|                           | Pre-Impact                              |         |         |          |          |            | Post-Impact                              |         |         |         |         |            |
|                           | 10%                                     | 25%     | 50%     | 75%      | 90%      | (75-25)/50 | 10%                                      | 25%     | 50%     | 75%     | 90%     | (75-25)/50 |
| January                   | 100.00                                  | 224.00  | 564.00  | 1200.00  | 1710.00  | 1.73       | 17.10                                    | 78.75   | 525.50  | 2117.50 | 2680.00 | 3.88       |
| February                  | 195.80                                  | 416.00  | 661.00  | 1175.00  | 2060.00  | 1.15       | 114.00                                   | 465.63  | 1179.50 | 2628.75 | 2705.00 | 1.83       |
| March                     | 159.60                                  | 378.00  | 800.00  | 1355.00  | 1906.00  | 1.22       | 115.50                                   | 427.25  | 965.00  | 2215.00 | 2705.00 | 1.85       |
| April                     | 141.40                                  | 267.50  | 733.00  | 1247.50  | 1917.00  | 1.34       | 120.25                                   | 197.00  | 492.25  | 2241.25 | 2895.00 | 4.15       |
| May                       | 135.20                                  | 212.00  | 710.00  | 1430.00  | 2380.00  | 1.72       | 31.50                                    | 49.00   | 168.50  | 1280.00 | 2530.00 | 7.31       |
| June                      | 16.00                                   | 50.50   | 137.00  | 438.00   | 831.70   | 2.83       | 36.00                                    | 62.38   | 137.50  | 1537.13 | 2605.00 | 10.73      |
| July                      | 5.50                                    | 12.50   | 42.00   | 115.00   | 232.40   | 2.44       | 17.50                                    | 27.75   | 65.50   | 150.25  | 278.50  | 1.87       |
| August                    | 1.24                                    | 3.65    | 11.00   | 46.00    | 63.80    | 3.85       | 16.50                                    | 25.50   | 39.00   | 60.25   | 78.00   | 0.89       |
| September                 | 0.88                                    | 3.00    | 12.00   | 36.50    | 68.50    | 2.79       | 19.00                                    | 31.63   | 41.50   | 65.50   | 73.00   | 0.82       |
| October                   | 1.14                                    | 5.30    | 22.00   | 54.00    | 258.20   | 2.21       | 3.20                                     | 28.75   | 51.50   | 179.50  | 309.50  | 2.93       |
| November                  | 8.19                                    | 24.75   | 79.00   | 168.50   | 385.90   | 1.82       | 12.90                                    | 34.25   | 59.25   | 474.38  | 837.25  | 7.43       |
| December                  | 29.80                                   | 97.50   | 163.00  | 607.50   | 1254.00  | 3.13       | 9.90                                     | 44.00   | 545.50  | 1051.75 | 1495.00 | 1.85       |
| <b>Parameter Group #2</b> |   |         |         |          |          |            |  |         |         |         |         |            |
| 1-day minimum             | 0.14                                    | 0.50    | 3.80    | 8.00     | 15.60    | 1.97       | 0.55                                     | 1.98    | 13.00   | 23.00   | 32.50   | 1.62       |
| 3-day minimum             | 0.14                                    | 0.70    | 4.03    | 8.08     | 16.87    | 1.83       | 0.60                                     | 2.11    | 13.33   | 25.42   | 32.50   | 1.75       |
| 7-day minimum             | 0.16                                    | 0.86    | 4.41    | 8.73     | 18.37    | 1.78       | 2.27                                     | 3.92    | 20.29   | 28.17   | 36.14   | 1.20       |
| 30-day minimum            | 0.60                                    | 1.54    | 6.00    | 18.69    | 39.21    | 2.86       | 3.04                                     | 9.84    | 25.68   | 37.04   | 52.77   | 1.06       |
| 90-day minimum            | 1.87                                    | 5.48    | 20.45   | 62.96    | 120.34   | 2.81       | 13.62                                    | 28.94   | 37.45   | 66.75   | 128.60  | 1.01       |
| 1-day maximum             | 1778.00                                 | 3090.00 | 5900.00 | 16000.00 | 32179.99 | 2.19       | 1775.00                                  | 2585.00 | 2770.00 | 2990.00 | 3215.00 | 0.15       |
| 3-day maximum             | 1699.33                                 | 3125.00 | 5340.00 | 13883.33 | 25046.67 | 2.01       | 1740.00                                  | 2573.33 | 2750.00 | 2939.17 | 3188.33 | 0.13       |
| 7-day maximum             | 1414.40                                 | 2847.14 | 4594.29 | 9654.29  | 16129.14 | 1.48       | 1831.43                                  | 2404.29 | 2727.14 | 2863.21 | 3177.14 | 0.17       |
| 30-day maximum            | 825.03                                  | 1766.58 | 2786.43 | 4417.50  | 6019.44  | 0.95       | 1200.33                                  | 1717.86 | 2492.67 | 2732.00 | 2953.33 | 0.41       |
| 90-day maximum            | 842.40                                  | 1260.76 | 1729.00 | 2736.68  | 3006.30  | 0.85       | 1017.79                                  | 1257.54 | 1983.28 | 2363.01 | 2484.61 | 0.56       |
| Number of zero days       | 0                                       | 0       | 0       | 0        | 0        | 0          | 0  | 0       | 0       | 0       | 2.00    | 0          |
| Base flow                 | 0                                       | 0       | 0.01    | 0.02     | 0.03     | 1.87       | 0  | 0.01    | 0.03    | 0.05    | 0.08    | 1.28       |
| <b>Parameter Group #3</b> |   |         |         |          |          |            |  |         |         |         |         |            |
| Date of minimum           | 224.80                                  | 235.50  | 246.00  | 270.00   | 285.80   | 0.09       | 10.00                                    | 66.25   | 206.00  | 290.75  | 346.00  | 0.39       |
| Date of maximum           | 8.80                                    | 58.50   | 125.00  | 183.00   | 357.80   | 0.34       | 350.50                                   | 8.50    | 63.00   | 110.00  | 165.50  | 0.28       |
| <b>Parameter Group #4</b> |   |         |         |          |          |            |  |         |         |         |         |            |
| Low pulse count           | 1.00                                    | 2.00    | 3.00    | 4.50     | 6.60     | 0.83       | 0  | 1.00    | 3.00    | 4.00    | 7.00    | 1.00       |
| Low pulse duration        | 3.30                                    | 6.00    | 11.75   | 26.25    | 111.85   | 1.72       | 1.60                                     | 4.25    | 9.50    | 18.63   | 52.40   | 1.51       |
| High pulse count          | 2.00                                    | 4.00    | 5.00    | 6.00     | 8.60     | 0.40       | 1.50                                     | 2.25    | 5.00    | 6.00    | 8.00    | 0.75       |
| High pulse duration       | 7.65                                    | 9.63    | 14.00   | 19.38    | 26.45    | 0.70       | 6.50                                     | 11.00   | 16.50   | 25.50   | 36.00   | 0.88       |

| Parameter Group #5           | Pre-impact period: 1924-1956 (33 years) |          |          |          |          |            | Post-impact period: 1980-2003 (24 years) |         |         |         |         |            |
|------------------------------|---|----------|----------|----------|----------|------------|--|---------|---------|---------|---------|------------|
|                              | Pre-Impact                              |          |          |          |          |            | Post-Impact                              |         |         |         |         |            |
|                              | 10%                                     | 25%      | 50%      | 75%      | 90%      | (75-25)/50 | 10%                                      | 25%     | 50%     | 75%     | 90%     | (75-25)/50 |
| Rise rate                    | 10.76                                   | 20.50    | 30.00    | 47.50    | 67.60    | 0.90       | 2.25                                     | 4.35    | 10.00   | 24.88   | 44.00   | 2.05       |
| Fall rate                    | -52.10                                  | -30.50   | -14.50   | -9.00    | -5.60    | -1.48      | -15.00                                   | -10.00  | -10.00  | -4.25   | -2.30   | -0.57      |
| Number of reversals          | 46.80                                   | 56.50    | 61.00    | 65.50    | 69.60    | 0.15       | 55.50                                    | 64.25   | 76.00   | 82.50   | 93.50   | 0.24       |
| <b>EFC Monthly Low Flows</b> |   |          |          |          |          |            |  |         |         |         |         |            |
| January-Low Flow             | 79.60                                   | 116.13   | 267.75   | 395.88   | 540.70   | 1.04       | 4.52                                     | 33.25   | 105.00  | 275.88  | 493.00  | 2.31       |
| February-Low Flow            | 140.90                                  | 195.13   | 346.50   | 500.00   | 521.50   | 0.88       | 20.04                                    | 44.63   | 320.75  | 480.88  | 524.80  | 1.36       |
| March-Low Flow               | 153.90                                  | 218.25   | 389.00   | 535.50   | 629.00   | 0.82       | 31.70                                    | 40.50   | 165.00  | 399.63  | 523.45  | 2.18       |
| April-Low Flow               | 130.60                                  | 197.50   | 332.50   | 444.00   | 511.60   | 0.74       | 25.20                                    | 51.00   | 152.00  | 292.75  | 538.20  | 1.59       |
| May-Low Flow                 | 96.10                                   | 113.50   | 150.00   | 263.50   | 478.60   | 1.00       | 21.40                                    | 40.50   | 56.00   | 147.50  | 159.60  | 1.91       |
| June-Low Flow                | 24.40                                   | 48.88    | 79.00    | 139.63   | 383.30   | 1.15       | 26.90                                    | 36.50   | 59.50   | 197.00  | 443.30  | 2.70       |
| July-Low Flow                | 7.69                                    | 12.50    | 39.00    | 69.50    | 117.20   | 1.46       | 20.40                                    | 29.00   | 65.00   | 92.00   | 146.60  | 0.97       |
| August- Low Flow             | 3.22                                    | 5.80     | 11.50    | 41.00    | 62.00    | 3.06       | 16.50                                    | 25.50   | 39.00   | 59.50   | 78.00   | 0.87       |
| September-Low Flow           | 2.65                                    | 5.65     | 12.25    | 31.50    | 62.15    | 2.11       | 13.73                                    | 26.00   | 41.25   | 54.75   | 73.00   | 0.70       |
| October-Low Flow             | 3.92                                    | 6.07     | 26.00    | 49.00    | 109.15   | 1.65       | 5.01                                     | 25.00   | 38.00   | 59.50   | 73.40   | 0.91       |
| November-Low Flow            | 10.42                                   | 26.00    | 56.00    | 93.50    | 306.00   | 1.21       | 12.90                                    | 23.75   | 39.50   | 109.00  | 292.25  | 2.16       |
| December-Low Flow            | 29.10                                   | 61.25    | 117.00   | 274.75   | 410.40   | 1.82       | 4.63                                     | 30.00   | 58.50   | 341.38  | 447.70  | 5.32       |
| <b>EFC Flow Parameters</b>   |   |          |          |          |          |            |  |         |         |         |         |            |
| Extreme low peak             | 0.14                                    | 0.32     | 0.70     | 1.35     | 1.58     | 1.46       | 0  | 0       | 1.15    | 1.65    | 2.10    | 1.43       |
| Extreme low duration         | 3.20                                    | 5.50     | 9.00     | 24.50    | 48.10    | 2.11       | 2.00                                     | 2.00    | 2.50    | 7.75    | 19.00   | 2.30       |
| Extreme low timing           | 224.20                                  | 245.50   | 268.50   | 288.50   | 309.60   | 0.12       | 3.00                                     | 49.50   | 205.50  | 289.75  | 334.00  | 0.34       |
| Extreme low freq.            | 0                                       | 0        | 0        | 2.00     | 3.60     | 0          | 0  | 0       | 0       | 0.75    | 2.00    | 0          |
| High flow peak               | 375.45                                  | 526.25   | 747.50   | 1037.50  | 2244.00  | 0.68       | 767.25                                   | 984.50  | 1507.50 | 1795.00 | 2327.50 | 0.54       |
| High flow duration           | 5.15                                    | 9.25     | 11.00    | 15.13    | 25.60    | 0.53       | 11.50                                    | 13.88   | 19.00   | 22.75   | 39.75   | 0.47       |
| High flow timing             | 55.65                                   | 79.00    | 150.00   | 276.50   | 318.80   | 0.46       | 299.00                                   | 18.38   | 77.50   | 102.50  | 161.00  | 0.23       |
| High flow frequency          | 3.40                                    | 5.00     | 7.00     | 9.00     | 11.00    | 0.57       | 2.50                                     | 4.00    | 6.50    | 9.00    | 10.00   | 0.77       |
| High flow rise rate          | 47.24                                   | 63.85    | 82.17    | 109.62   | 150.14   | 0.56       | 55.64                                    | 83.37   | 115.86  | 160.77  | 195.17  | 0.67       |
| High flow fall rate          | -108.14                                 | -88.35   | -75.18   | -60.28   | -37.93   | -0.37      | -163.85                                  | -145.72 | -99.26  | -67.08  | -53.78  | -0.79      |
| Small Flood peak             | 6266.00                                 | 9040.00  | 11165.00 | 15200.00 | 22520.00 | 0.55       |  |         |         |         |         |            |
| Small Flood duration         | 20.00                                   | 32.00    | 42.00    | 55.00    | 90.10    | 0.55       |  |         |         |         |         |            |
| Small Flood timing           | 10.70                                   | 87.50    | 125.00   | 155.00   | 259.40   | 0.18       |  |         |         |         |         |            |
| Small Flood freq.            | 0                                       | 0        | 0        | 1.00     | 2.00     | 0          | 0  | 0       | 0       | 0       | 0       | 0          |
| Small Flood riserate         | 365.44                                  | 518.89   | 675.14   | 951.71   | 4087.26  | 0.64       |  |         |         |         |         |            |
| Small Flood fallrate         | -813.78                                 | -666.79  | -526.29  | -313.62  | -249.46  | -0.67      |  |         |         |         |         |            |
| Large flood peak             | 33500.00                                | 33500.00 | 36800.00 | 55400.00 | 55400.00 | 0.60       |  |         |         |         |         |            |
| Large flood duration         | 21.00                                   | 21.00    | 30.00    | 81.00    | 81.00    | 2.00       |  |         |         |         |         |            |
| Large flood timing           | 26.00                                   | 26.00    | 92.00    | 141.00   | 141.00   | 0.31       |  |         |         |         |         |            |
| Large flood freq.            | 0                                       | 0        | 0        | 0        | 0.60     | 0          | 0  | 0       | 0       | 0       | 0       | 0          |
| Large flood rise             | 1216.53                                 | 1216.53  | 2602.86  | 8275.00  | 8275.00  | 2.71       |  |         |         |         |         |            |
| Large flood fall             | -2149.35                                | -2149.35 | -1832.44 | -1451.03 | -1451.03 | -0.38      |  |         |         |         |         |            |

**IHA Non-Parametric RVA Scorecard  
Big Cypress Analysis**

**Assessment of Hydrologic Alteration**

|                           | Middle RVA Category |          |        | High RVA Category |          |        | Low RVA Category |          |        |
|---------------------------|---------------------|----------|--------|-------------------|----------|--------|------------------|----------|--------|
|                           | Expected            | Observed | Alter. | Expected          | Observed | Alter. | Expected         | Observed | Alter. |
| <b>Parameter Group #1</b> |                     |          |        |                   |          |        |                  |          |        |
| January                   | 8.00                | 5.00     | -0.38  | 8.00              | 10.00    | 0.25   | 8.00             | 9.00     | 0.13   |
| February                  | 8.00                | 4.00     | -0.50  | 8.00              | 14.00    | 0.75   | 8.00             | 6.00     | -0.25  |
| March                     | 8.73                | 7.00     | -0.20  | 7.27              | 9.00     | 0.24   | 8.00             | 8.00     | 0      |
| April                     | 8.00                | 2.00     | -0.75  | 8.00              | 9.00     | 0.13   | 8.00             | 13.00    | 0.63   |
| May                       | 8.73                | 4.00     | -0.54  | 7.27              | 7.00     | -0.04  | 8.00             | 13.00    | 0.63   |
| June                      | 8.00                | 9.00     | 0.13   | 8.00              | 9.00     | 0.13   | 8.00             | 6.00     | -0.25  |
| July                      | 8.00                | 12.00    | 0.50   | 8.00              | 11.00    | 0.38   | 8.00             | 1.00     | -0.88  |
| August                    | 8.00                | 10.00    | 0.25   | 8.00              | 14.00    | 0.75   | 8.00             | 0        | -1.00  |
| September                 | 8.73                | 3.00     | -0.66  | 7.27              | 21.00    | 1.89   | 8.00             | 0        | -1.00  |
| October                   | 8.73                | 3.00     | -0.66  | 8.00              | 18.00    | 1.25   | 7.27             | 3.00     | -0.59  |
| November                  | 8.00                | 7.00     | -0.13  | 8.00              | 10.00    | 0.25   | 8.00             | 7.00     | -0.13  |
| December                  | 8.00                | 1.00     | -0.88  | 8.00              | 14.00    | 0.75   | 8.00             | 9.00     | 0.13   |
| <b>Parameter Group #2</b> |                     |          |        |                   |          |        |                  |          |        |
| 1-day minimum             | 8.00                | 5.00     | -0.38  | 8.00              | 15.00    | 0.88   | 8.00             | 4.00     | -0.50  |
| 3-day minimum             | 8.00                | 6.00     | -0.25  | 8.00              | 15.00    | 0.88   | 8.00             | 3.00     | -0.63  |
| 7-day minimum             | 8.00                | 6.00     | -0.25  | 8.00              | 17.00    | 1.13   | 8.00             | 1.00     | -0.88  |
| 30-day minimum            | 8.00                | 6.00     | -0.25  | 8.00              | 17.00    | 1.13   | 8.00             | 1.00     | -0.88  |
| 90-day minimum            | 8.00                | 13.00    | 0.63   | 8.00              | 11.00    | 0.38   | 8.00             | 0        | -1.00  |
| 1-day maximum             | 8.00                | 0        | -1.00  | 8.00              | 0        | -1.00  | 8.00             | 24.00    | 2.00   |
| 3-day maximum             | 8.00                | 0        | -1.00  | 8.00              | 0        | -1.00  | 8.00             | 24.00    | 2.00   |
| 7-day maximum             | 8.00                | 3.00     | -0.63  | 8.00              | 0        | -1.00  | 8.00             | 21.00    | 1.63   |
| 30-day maximum            | 8.00                | 15.00    | 0.88   | 8.00              | 0        | -1.00  | 8.00             | 9.00     | 0.13   |
| 90-day maximum            | 8.00                | 13.00    | 0.63   | 8.00              | 4.00     | -0.50  | 8.00             | 7.00     | -0.13  |
| Number of zero days       | 22.55               | 22.00    | -0.02  | 1.45              | 2.00     | 0.37   | 0                | 0        | 0      |
| Base flow                 | 8.00                | 5.00     | -0.38  | 8.00              | 16.00    | 1.00   | 8.00             | 3.00     | -0.63  |

|                           | Middle RVA Category |          |        | High RVA Category |          |        | Low RVA Category |          |        |
|---------------------------|---------------------|----------|--------|-------------------|----------|--------|------------------|----------|--------|
|                           | Expected            | Observed | Alter. | Expected          | Observed | Alter. | Expected         | Observed | Alter. |
| <b>Parameter Group #3</b> |                     |          |        |                   |          |        |                  |          |        |
| Date of minimum           | 8.73                | 0        | -1.00  | 7.27              | 7.00     | -0.04  | 8.00             | 17.00    | 1.13   |
| Date of maximum           | 8.00                | 3.00     | -0.63  | 8.00              | 8.00     | 0      | 8.00             | 13.00    | 0.63   |
| <b>Parameter Group #4</b> |                     |          |        |                   |          |        |                  |          |        |
| Low pulse count           | 13.09               | 8.00     | -0.39  | 7.27              | 9.00     | 0.24   | 3.64             | 7.00     | 0.92   |
| Low pulse duration        | 8.73                | 8.00     | -0.08  | 8.00              | 3.00     | -0.63  | 7.27             | 9.00     | 0.24   |
| High pulse count          | 13.82               | 12.00    | -0.13  | 5.09              | 4.00     | -0.21  | 5.09             | 8.00     | 0.57   |
| High pulse duration       | 8.73                | 8.00     | -0.08  | 8.00              | 11.00    | 0.38   | 7.27             | 5.00     | -0.31  |
| <b>Parameter Group #5</b> |                     |          |        |                   |          |        |                  |          |        |
| Rise rate                 | 8.00                | 1.00     | -0.88  | 8.00              | 5.00     | -0.38  | 8.00             | 18.00    | 1.25   |
| Fall rate                 | 8.73                | 2.00     | -0.77  | 7.27              | 22.00    | 2.02   | 8.00             | 0        | -1.00  |
| Number of reversals       | 8.73                | 2.00     | -0.77  | 7.27              | 18.00    | 1.47   | 8.00             | 4.00     | -0.50  |



# IHA Non-Parametric RVA Scorecard Big Cypress Analysis

Season from Julian date 1.to 366.

**Pre-impact period: 1924-1956**

**Post-impact period: 1980-2003**

|                           | Pre-impact period: 1924-1956 |                      |         |          | Post-impact period: 1980-2003 |                      |         |         | RVA Boundaries |          | Hydrologic Alteration (Middle Category) |
|---------------------------|------------------------------|----------------------|---------|----------|-------------------------------|----------------------|---------|---------|----------------|----------|---|
|                           | Medians                      | Coeff. of Dispersion | Minimum | Maximum  | Medians                       | Coeff. of Dispersion | Minimum | Maximum | Low            | High     |   |
| <b>Parameter Group #1</b> |                              |                      |         |          |                               |                      |         |         |                |          |   |
| January                   | 564.00                       | 1.73                 | 1.20    | 3340.00  | 525.50                        | 3.88                 | 4.00    | 3000.00 | 334.18         | 895.34   | -0.38                                   |
| February                  | 661.00                       | 1.15                 | 1.20    | 3430.00  | 1179.50                       | 1.83                 | 27.00   | 2800.00 | 500.02         | 1023.86  | -0.50                                   |
| March                     | 800.00                       | 1.22                 | 1.20    | 3250.00  | 9650.00                       | 1.85                 | 32.00   | 3050.00 | 541.12         | 1150.00  | -0.20                                   |
| April                     | 733.00                       | 1.34                 | 1.20    | 2650.00  | 492.30                        | 4.15                 | 50.50   | 3380.00 | 556.28         | 1059.74  | -0.75                                   |
| May                       | 710.00                       | 1.72                 | 1.20    | 2980.00  | 168.50                        | 7.31                 | 15.00   | 2590.00 | 335.88         | 1190.00  | -0.54                                   |
| June                      | 137.00                       | 2.83                 | 1.20    | 1375.00  | 137.50                        | 10.73                | 26.00   | 2950.00 | 67.37          | 272.30   | 0.13                                    |
| July                      | 42.00                        | 2.44                 | 1.20    | 622.00   | 65.50                         | 1.87                 | 0       | 2760.00 | 15.88          | 73.78    | 0.50                                    |
| August                    | 11.00                        | 3.85                 | 0.70    | 128.00   | 39.00                         | 0.89                 | 13.00   | 85.00   | 5.47           | 31.56    | 0.25                                    |
| September                 | 12.00                        | 2.79                 | 0       | 990.00   | 41.50                         | 0.82                 | 6.80    | 99.00   | 5.63           | 22.00    | -0.66                                   |
| October                   | 22.00                        | 2.21                 | 0       | 925.00   | 51.50                         | 2.93                 | 0       | 597.00  | 6.10           | 36.90    | -0.66                                   |
| November                  | 79.00                        | 1.82                 | 0.80    | 1695.00  | 59.30                         | 7.43                 | 3.60    | 2655.00 | 38.33          | 137.53   | -0.13                                   |
| December                  | 163.00                       | 3.13                 | 4.90    | 2120.00  | 545.50                        | 1.85                 | 4.30    | 1690.00 | 118.28         | 493.18   | -0.88                                   |
| <b>Parameter Group #2</b> |                              |                      |         |          |                               |                      |         |         |                |          |   |
| 1-day minimum             | 3.80                         | 1.97                 | 0       | 48.00    | 13.00                         | 1.62                 | 0       | 34.00   | 1.24           | 5.18     | -0.38                                   |
| 3-day minimum             | 4.00                         | 1.83                 | 0       | 48.30    | 13.30                         | 1.75                 | 0       | 34.00   | 1.38           | 5.54     | -0.25                                   |
| 7-day minimum             | 4.40                         | 1.78                 | 0       | 49.70    | 20.30                         | 1.20                 | 0       | 42.70   | 1.53           | 6.31     | -0.25                                   |
| 30-day minimum            | 6.00                         | 2.86                 | 0       | 102.90   | 25.70                         | 1.06                 | 0       | 57.40   | 2.66           | 13.05    | -0.25                                   |
| 90-day minimum            | 20.40                        | 2.81                 | 0.20    | 156.30   | 37.40                         | 1.01                 | 10.20   | 220.00  | 8.22           | 40.57    | 0.63                                    |
| 1-day maximum             | 5900.00                      | 2.19                 | 88.00   | 55400.00 | 2770.00                       | 0.15                 | 1200.00 | 3450.00 | 4160.60        | 13882.00 | -1.00                                   |
| 3-day maximum             | 5340.00                      | 2.01                 | 51.70   | 43533.30 | 2750.00                       | 0.13                 | 1196.70 | 3446.70 | 3789.87        | 11775.40 | -1.00                                   |
| 7-day maximum             | 4594.30                      | 1.48                 | 56.40   | 27842.90 | 2727.10                       | 0.17                 | 1192.90 | 3441.40 | 3061.91        | 8652.63  | -0.63                                   |
| 30-day maximum            | 2786.40                      | 0.95                 | 194.00  | 8931.70  | 2492.70                       | 0.41                 | 855.30  | 3377.70 | 2025.97        | 3854.44  | 0.88                                    |
| 90-day maximum            | 1729.00                      | 0.85                 | 145.30  | 4434.30  | 1983.30                       | 0.56                 | 745.20  | 2820.00 | 1374.51        | 2390.10  | 0.63                                    |
| Number of zero days       | 0                            | 0                    | 0       | 63.00    | 0                             | 0                    | 0       | 57.00   | 0              | 0        | -0.02                                   |
| Base flow                 | 0.01                         | 1.87                 | 0       | 0.04     | 0.03                          | 1.28                 | 0       | 0.23    | 0              | 0.01     | -0.38                                   |

**Pre-impact period: 1924-1956**

**Post-impact period: 1980-2003**

|                            | Pre-impact period: 1924-1956 |                      |         |         | Post-impact period: 1980-2003 |                      |         |         | RVA Boundaries |        | Hydrologic Alteration (Middle Category) |
|----------------------------|------------------------------|----------------------|---------|---------|-------------------------------|----------------------|---------|---------|----------------|--------|---|
|                            | Medians                      | Coeff. of Dispersion | Minimum | Maximum | Medians                       | Coeff. of Dispersion | Minimum | Maximum | Low            | High   |   |
| <b>Parameter Group #3</b>  |                              |                      |         |         |                               |                      |         |         |                |        |   |
| Date of minimum            | 246.00                       | 0.09                 | 195.00  | 297.00  | 206.00                        | 0.39                 | 1.00    | 366.00  | 237.44         | 267.00 | -1.00                                   |
| Date of maximum            | 125.00                       | 0.34                 | 2.00    | 365.00  | 63.00                         | 0.28                 | 1.00    | 366.00  | 91.22          | 140.78 | -0.63                                   |
| <b>Parameter Group #4</b>  |                              |                      |         |         |                               |                      |         |         |                |        |   |
| Low pulse count            | 3.00                         | 0.83                 | 0       | 12.00   | 3.00                          | 1.00                 | 0       | 9.00    | 2.00           | 3.00   | -0.39                                   |
| Low pulse duration         | 11.8.00                      | 1.72                 | 3.00    | 218.00  | 9.50                          | 1.51                 | 1.50    | 104.00  | 8.78           | 21.39  | -0.08                                   |
| High pulse count           | 5.00                         | 0.40                 | 0       | 11.00   | 5.00                          | 0.75                 | 1.00    | 9.00    | 4.00           | 6.00   | -0.13                                   |
| High pulse duration        | 14.00                        | 0.70                 | 6.00    | 51.00   | 16.50                         | 0.88                 | 4.00    | 40.00   | 10.89          | 17.11  | -0.08                                   |
| The low pulse threshold is |                              |                      | 27.00   |         |                               |                      |         |         |                |        |   |
| The high pulse level is    |                              |                      | 688.00  |         |                               |                      |         |         |                |        |   |
| <b>Parameter Group #5</b>  |                              |                      |         |         |                               |                      |         |         |                |        |   |
| Rise rate                  | 30.00                        | 0.90                 | 1.10    | 99.00   | 10.00                         | 2.05                 | 2.00    | 108.00  | 22.72          | 39.67  | -0.88                                   |
| Fall rate                  | -14.50                       | -1.48                | -80.00  | -0.70   | -10.00                        | -0.57                | -20.00  | -2.00   | -21.39         | -12.00 | -0.77                                   |
| Number of reversals        | 61.00                        | 0.15                 | 28.00   | 80.00   | 76.00                         | 0.24                 | 51.00   | 96.00   | 58.22          | 64.00  | -0.77                                   |

**Non-Parametric IHA Scorecard  
Big Cypress Analysis**

**Season from Julian date 1.to 366.**

|                           | Medians |         | Coeff. of Disp. |       | Deviation Factor |      | Significance Count |      |
|---------------------------|---------|---------|-----------------|-------|------------------|------|--------------------|------|
|                           | Pre     | Post    | Pre             | Post  | Medians          | C.V. | Medians            | C.V. |
| <b>Parameter Group #1</b> |         |         |                 |       |                  |      |                    |      |
| January                   | 564.00  | 525.50  | 1.73            | 3.88  | 0.07             | 1.24 | 0.90               | 0.01 |
| February                  | 661.00  | 1179.50 | 1.15            | 1.83  | 0.78             | 0.60 | 0.08               | 0.13 |
| March                     | 800.00  | 965.00  | 1.22            | 1.85  | 0.21             | 0.52 | 0.56               | 0.15 |
| April                     | 733.00  | 492.25  | 1.34            | 4.15  | 0.33             | 2.11 | 0.22               | 0    |
| May                       | 710.00  | 168.50  | 1.72            | 7.31  | 0.76             | 3.26 | 0.31               | 0    |
| June                      | 137.00  | 137.50  | 2.83            | 10.73 | 0                | 2.79 | 1.00               | 0    |
| July                      | 42.00   | 65.50   | 2.44            | 1.87  | 0.56             | 0.23 | 0.25               | 0.53 |
| August                    | 11.00   | 39.00   | 3.85            | 0.89  | 2.55             | 0.77 | 0                  | 0.06 |
| September                 | 12.00   | 41.50   | 2.79            | 0.82  | 2.46             | 0.71 | 0                  | 0.16 |
| October                   | 22.00   | 51.50   | 2.21            | 2.93  | 1.34             | 0.32 | 0.01               | 0.76 |
| November                  | 79.00   | 59.25   | 1.82            | 7.43  | 0.25             | 3.08 | 0.63               | 0    |
| December                  | 163.00  | 545.50  | 3.13            | 1.85  | 2.35             | 0.41 | 0.04               | 0.57 |
| <b>Parameter Group #2</b> |         |         |                 |       |                  |      |                    |      |
| 1-day minimum             | 3.80    | 13.00   | 1.97            | 1.62  | 2.42             | 0.18 | 0.01               | 0.61 |
| 3-day minimum             | 4.03    | 13.33   | 1.83            | 1.75  | 2.31             | 0.05 | 0.01               | 0.89 |
| 7-day minimum             | 4.41    | 20.29   | 1.78            | 1.20  | 3.60             | 0.33 | 0                  | 0.38 |
| 30-day minimum            | 6.00    | 25.68   | 2.86            | 1.06  | 3.28             | 0.63 | 0                  | 0.20 |
| 90-day minimum            | 20.45   | 37.45   | 2.81            | 1.01  | 0.83             | 0.64 | 0.01               | 0.08 |
| 1-day maximum             | 5900.00 | 2770.00 | 2.19            | 0.15  | 0.53             | 0.93 | 0.06               | 0.32 |
| 3-day maximum             | 5340.00 | 2750.00 | 2.01            | 0.13  | 0.49             | 0.93 | 0.04               | 0.35 |
| 7-day maximum             | 4594.29 | 2727.14 | 1.48            | 0.17  | 0.41             | 0.89 | 0.01               | 0.36 |
| 30-day maximum            | 2786.43 | 2492.67 | 0.95            | 0.41  | 0.11             | 0.57 | 0.49               | 0.20 |
| 90-day maximum            | 1729.00 | 1983.28 | 0.85            | 0.56  | 0.15             | 0.35 | 0.63               | 0.22 |
| Number of zero days       | 0       | 0       | 0               | 0     |                  |      | 0                  | 0    |
| Base flow                 | 0.01    | 0.03    | 1.87            | 1.28  | 3.21             | 0.31 | 0                  | 0.43 |

|                           | Medians |        | Coeff. of Disp. |       | Deviation Factor |      | Significance Count |      |
|---------------------------|---------|--------|-----------------|-------|------------------|------|--------------------|------|
|                           | Pre     | Post   | Pre             | Post  | Medians          | C.V. | Medians            | C.V. |
| <b>Parameter Group #3</b> |         |        |                 |       |                  |      |                    |      |
| Date of minimum           | 246.00  | 206.00 | 0.09            | 0.39  | 0.22             | 3.10 | 0                  | 0    |
| Date of maximum           | 125.00  | 63.00  | 0.34            | 0.28  | 0.34             | 0.18 | 0.35               | 0.38 |
| <b>Parameter Group #4</b> |         |        |                 |       |                  |      |                    |      |
| Low pulse count           | 3.00    | 3.00   | 0.83            | 1.00  | 0                | 0.20 | 0.67               | 0.69 |
| Low pulse duration        | 11.75   | 9.50   | 1.72            | 1.51  | 0.19             | 0.12 | 0.61               | 0.80 |
| High pulse count          | 5.00    | 5.00   | 0.40            | 0.75  | 0                | 0.88 | 0.71               | 0.11 |
| High pulse duration       | 14.00   | 16.50  | 0.70            | 0.88  | 0.18             | 0.26 | 0.23               | 0.40 |
| Low Pulse Threshold       | 27.00   |        |                 |       |                  |      |                    |      |
| High Pulse Level          | 688.00  |        |                 |       |                  |      |                    |      |
| <b>Parameter Group #5</b> |         |        |                 |       |                  |      |                    |      |
| Rise rate                 | 30.00   | 10.00  | 0.90            | 2.05  | 0.67             | 1.28 | 0.04               | 0.01 |
| Fall rate                 | -14.50  | -10.00 | -1.48           | -0.57 | 0.31             | 0.61 | 0.07               | 0.21 |
| Number of reversals       | 61.00   | 76.00  | 0.15            | 0.24  | 0.25             | 0.63 | 0                  | 0.06 |
| <b>EFC Low Flow</b>       |         |        |                 |       |                  |      |                    |      |
| January-Low Flow          | 267.75  | 105.00 | 1.04            | 2.31  | 0.61             | 1.21 | 0.14               | 0.05 |
| February-Low Flow         | 346.50  | 320.75 | 0.88            | 1.36  | 0.07             | 0.55 | 0.84               | 0.15 |
| March-Low Flow            | 389.00  | 165.00 | 0.82            | 2.18  | 0.58             | 1.67 | 0.22               | 0.01 |
| April-Low Flow            | 332.50  | 152.00 | 0.74            | 1.59  | 0.54             | 1.15 | 0.09               | 0.04 |
| May-Low Flow              | 150.00  | 56.00  | 1.00            | 1.91  | 0.63             | 0.91 | 0.01               | 0.12 |
| June-Low Flow             | 79.00   | 59.50  | 1.15            | 2.70  | 0.25             | 1.35 | 0.35               | 0.07 |
| July-Low Flow             | 39.00   | 65.00  | 1.46            | 0.97  | 0.67             | 0.34 | 0.06               | 0.38 |
| August-Low Flow           | 11.50   | 39.00  | 3.06            | 0.87  | 2.39             | 0.72 | 0                  | 0.05 |
| September-Low Flow        | 12.25   | 41.25  | 2.11            | 0.70  | 2.37             | 0.67 | 0                  | 0.11 |
| October-Low Flow          | 26.00   | 38.00  | 1.65            | 0.91  | 0.46             | 0.45 | 0.08               | 0.23 |
| November-Low Flow         | 56.00   | 39.50  | 1.21            | 2.16  | 0.29             | 0.79 | 0.34               | 0.11 |
| December-Low Flow         | 117.00  | 58.50  | 1.82            | 5.32  | 0.50             | 1.92 | 0.35               | 0    |

|                       | Medians  |         | Coeff. of Disp. |       | Deviation Factor |      | Significance Count |      |
|-----------------------|----------|---------|-----------------|-------|------------------|------|--------------------|------|
|                       | Pre      | Post    | Pre             | Post  | Medians          | C.V. | Medians            | C.V. |
| <b>EFC Parameters</b> |          |         |                 |       |                  |      |                    |      |
| Extreme low peak      | 0.70     | 1.15    | 1.46            | 1.43  | 0.64             | 0.02 | 0.32               | 0.97 |
| Extreme low duration  | 9.00     | 2.50    | 2.11            | 2.30  | 0.72             | 0.09 | 0.13               | 0.92 |
| Extreme low timing    | 268.50   | 205.50  | 0.12            | 0.34  | 0.34             | 1.92 | 0.01               | 0.07 |
| Extreme low freq.     | 0        | 0       | 0               | 0     |                  |      | 0                  | 0    |
| High flow peak        | 747.50   | 1507.50 | 0.68            | 0.54  | 1.02             | 0.21 | 0                  | 0.47 |
| High flow duration    | 11.00    | 19.00   | 0.53            | 0.47  | 0.73             | 0.13 | 0                  | 0.60 |
| High flow timing      | 150.00   | 77.50   | 0.46            | 0.23  | 0.40             | 0.50 | 0.33               | 0.21 |
| High flow frequency   | 7.00     | 6.50    | 0.57            | 0.77  | 0.07             | 0.35 | 0.52               | 0.12 |
| High flow rise rate   | 82.17    | 115.86  | 0.56            | 0.67  | 0.41             | 0.20 | 0                  | 0.61 |
| High flow fall rate   | -75.18   | -99.26  | -0.37           | -0.79 | 0.32             | 1.12 | 0.02               | 0.02 |
| Small Flood peak      | 11165.00 |         | 0.55            |       |                  |      | 0                  | 0    |
| Small Flood duration  | 42.00    |         | 0.55            |       |                  |      | 0                  | 0    |
| Small Flood timing    | 125.00   |         | 0.18            |       |                  |      | 0                  | 0    |
| Small Flood freq.     | 0        | 0       | 0               | 0     |                  |      | 0                  | 0    |
| Small Flood riserate  | 675.14   |         | 0.64            |       |                  |      | 0                  | 0    |
| Small Flood fallrate  | -526.29  |         | -0.67           |       |                  |      | 0                  | 0    |
| Large flood peak      | 36800.00 |         | 0.60            |       |                  |      | 0                  | 0    |
| Large flood duration  | 30.00    |         | 2.00            |       |                  |      | 0                  | 0    |
| Large flood timing    | 92.00    |         | 0.31            |       |                  |      | 0                  | 0    |
| Large flood freq.     | 0        | 0       | 0               | 0     |                  |      | 0                  | 0    |
| Large flood rise      | 2602.86  |         | 2.71            |       |                  |      | 0                  | 0    |
| Large flood fall      | -1832.44 |         | -0.38           |       |                  |      | 0                  | 0    |

## **Appendix D**

**List of fish species reported for Big Cypress Bayou/Caddo Lake drainage**

Appendix D. List of fish species reported for Big Cypress Bayou/Caddo Lake drainage. “Exotics” were introduced into the basin, “migratory” fishes perform longitudinal migrations during their life cycles, “abundance” is based on surveys from 1950-2002, “last surveyed” is the most recent date of survey in which specimen was collected, “habitat dependent” is based on Schramm (2005)<sup>1</sup> with r=riverine and bw=backwater, “probably habitat” is the habitat where most individuals are likely to occur (mc=main channel, cb=channel bank, bw=backwater; Schramm 2005), and threatened is based on TPWD state designations. “?” designates species that have never been reported from regional surveys, but probably listed in reports as present in the basin based on range maps.

| Family<br><i>Species</i>                         | Exotic? | Migratory?       | Abundance         | Last<br>Surveyed | Habitat<br>Dependent <sup>1</sup> | Probable<br>Habitat <sup>1</sup> | Threatened? |
|--|---------|------------------|-------------------|------------------|-----------------------------------|----------------------------------|-------------|
| Petromyzontidae                                  |         |                  |                   |                  |                                   |                                  |             |
| <i>Ichthyomyzon castaneus</i> , chestnut lamprey |         |                  | yes               | rare             | 1964                              |                                  | mc,cb       |
| Polyodontidae                                    |         |                  |                   |                  |                                   |                                  |             |
| <i>Polyodon spathula</i> , paddlefish            |         | yes <sup>2</sup> | rare <sup>3</sup> | 1954             | r                                 | mc, cb, bw                       | yes         |
| Lepisosteidae                                    |         |                  |                   |                  |                                   |                                  |             |
| <i>Atractosteus spatula</i> , alligator gar      |         |                  | rare              | 1955             | bw                                | bw                               |             |
| <i>Lepisosteus oculatus</i> , spotted gar        |         |                  | common            | 2002             | bw                                | bw                               |             |
| <i>L. osseus</i> , longnose gar                  |         |                  | common            | 2002             | bw                                | mc, cb, bw                       |             |
| <i>L. platostomus</i> , shortnose gar            |         |                  | rare              | 1959             | bw                                | mc, cb, bw                       |             |
| Amiidae  |         |                  |                   |                  |                                   |                                  |             |
| <i>Amia calva</i> , bowfin                       |         |                  | common            | 1995             | bw                                | bw                               |             |
| Anguillidae                                      |         |                  |                   |                  |                                   |                                  |             |
| <i>Anguilla rostrata</i> , American eel          |         | yes              | rare              | 1955             |                                   | cb                               |             |
| Clupeidae  |         |                  |                   |                  |                                   |                                  |             |
| <i>Alosa chrysochloris</i> , skipjack herring    |         | yes              | rare              | 1955             |                                   | mc, cb, bw                       |             |
| <i>Dorosoma cepedianum</i> , gizzard shad        |         |                  | common            | 2002             | bw                                | mc, cb, bw                       |             |
| <i>D. petenense</i> , threadfin shad             |         |                  | common            | 2002             | bw                                | cb, bw                           |             |

|  |        |      |      |              |          |
|--|--------|------|------|--------------|----------|
| Hiodontidae                                      |        |      |      |              |          |
| <i>Hiodon alosoides</i> , goldeye                | ?      | ?    | (r)  | (mc, cb, bw) |          |
| <i>H. tergisus</i> , mooneye                     | ?      | ?    | (r)  | (mc, cb, bw) |          |
| Cyprinidae                                       |        |      |      |              |          |
| <i>Cyprinella lutrensis</i> , red shiner         | common | 1992 | bw   | cb, bw       |          |
| <i>C. venusta</i> , blacktail shiner             | common | 1995 |      | cb, bw       |          |
| <i>Cyprinus carpio</i> , common carp             | yes    | 2002 | bw   | cb, bw       |          |
| <i>Hybognathus hayi</i> , cypress minnow         | common | 1992 | bw   | bw           |          |
| <i>H. nuchalis</i> , silvery minnow              | common | 1992 | bw   | cb, bw       |          |
| <i>Luxilus chrysocephalus</i> , striped shiner   | common | 1992 |      | (cb, bw)     |          |
| <i>L. fumeus</i> , ribbon shiner                 | common | 1992 |      | bw           |          |
| <i>L. umbratilis</i> , redfin shiner             | common | 1992 |      | cb, bw       |          |
| <i>Notemigonus crysoleucas</i> , golden shiner   | common | 1992 | bw   | bw           |          |
| <i>Notropis amnis</i> , pallid shiner            | common | 1992 |      | cb           |          |
| <i>N. atherinoides</i> , emerald shiner          | common | 1995 |      | cb, bw       |          |
| <i>N. atrocaudalis</i> , blackspot shiner        | ?      | ?    | (bw) | (cb, bw)     |          |
| <i>N. chalybaeus</i> , ironcolor shiner          | common | 1993 | (bw) | (bw)         |          |
| <i>N. hubbsi</i> , bluehead shiner               | common | 1992 | (bw) | (bw)         | yes      |
| <i>N. maculatus</i> , taillight shiner           | common | 1992 | (bw) | (bw)         |          |
| <i>N. stramineus</i> , sand shiner               | rare   | 1959 |      | cb           |          |
| <i>N. texanus</i> , weed shiner                  | common | 1992 |      | cb, bw       |          |
| <i>N. volucellus</i> , mimic shiner              | common | 1995 |      | bw           |          |
| <i>Opsopoeodus emiliae</i> , pugnose minnow      | common | 1993 | bw   | bw           |          |
| <i>Pimephales vigilax</i> , bullhead minnow      | common | 1995 | bw   | (cb)         |          |
| Catostomidae                                     |        |      |      |              |          |
| <i>Carpoides carpio</i> , river carpsucker       | common | 1992 | r    | cb, bw       |          |
| <i>Erimyzon oblongus</i> , creek chubsucker      | rare   | 1956 |      | bw           | yes      |
| <i>E. succetta</i> , lake chubsucker             | common | 2002 |      | bw           |          |
| <i>Ictiobus bubalus</i> , smallmouth buffalo     | common | 1995 | bw   | mc, cb, bw   |          |
| <i>I. cyprinellus</i> , bigmouth buffalo         | common | 1992 | bw   | cb, bw       |          |
| <i>I. niger</i> , black buffalo                  | ?      | ?    | bw   | cb, bw       |          |
| <i>Minytrema melanops</i> , spotted sucker       | common | 2002 | bw   | cb, bw       |          |
| <i>Moxostoma peocilurum</i> , blacktail redhorse |        | rare | 1959 |              | (cb, bw) |



|   |     |        |      |    |          |
|---|-----|--------|------|----|----------|
| Ictaluridae   |     |        |      |    |          |
| <i>Ameiurus melas</i> , black bullhead              |     | common | 1992 | bw | bw       |
| <i>A. natalis</i> , yellow bullhead                 |     | common | 1995 | bw | bw       |
| <i>A. nebulosus</i> , brown bullhead                |     | rare   | 1995 | bw | bw       |
| <i>Ictalurus furcatus</i> , blue catfish            |     | common | 1998 |    | mc, bw   |
| <i>I. punctatus</i> , channel catfish               |     | common | 2002 |    | cb, bw   |
| <i>Noturus gyrinus</i> , tadpole madtom             |     | common | 1992 | bw | bw       |
| <i>N. nocturnus</i> , freckled madtom               |     | common | 1992 |    | bw       |
| <i>Pylodictus olivaris</i> , flathead catfish       |     | common | 2002 |    | mc, cb   |
| Escocidae   |     |        |      |    |          |
| <i>Esox americanus</i> , grass pickerel             |     | common | 2002 | bw | bw       |
| <i>E. niger</i> , chain pickerel                    |     | common | 2002 | bw | bw       |
| Aphredoderidae                                      |     |        |      |    |          |
| <i>Aphredoderus sayanus</i> , pirate perch          |     | common | 2002 | bw | bw       |
| Cyprinodontidae                                     |     |        |      |    |          |
| <i>Fundulus chrysotus</i> , golden topminnow        |     | common | 1993 | bw | bw       |
| <i>F. dispar</i> , starhead topminnow               |     | common | 1992 |    | bw       |
| <i>F. notatus</i> , blackstripe topminnow           |     | common | 1995 | bw | bw       |
| <i>F. olivaceus</i> , blackspotted topminnow        |     | common | 1992 | bw | bw       |
| Poeciliidae   |     |        |      |    |          |
| <i>Gambusia affinis</i> , western mosquitofish      |     | common | 1995 | bw | bw       |
| Atherinidae   |     |        |      |    |          |
| <i>Labidesthes sicculus</i> , brook silverside      |     | common | 2002 |    | bw       |
| <i>Menidia beryllina</i> , inland silverside        |     | common | 1992 |    | cb, bw   |
| Moronidae   |     |        |      |    |          |
| <i>Morone chrysops</i> , white bass                 | yes | common | 2002 |    | cb, bw   |
| <i>M. mississippiensis</i> , yellow bass            | yes | common | 2002 |    | bw       |
| <i>M. saxatilis</i> , striped bass                  | yes | ?      | ?    |    | mc, cb   |
| <i>M. chrysops</i> x <i>saxatilis</i> , hybrid bass | yes | common | 2002 |    | (cb, bw) |

|  |      |        |        |      |          |     |
|--|------|--------|--------|------|----------|-----|
| Centrarchidae                                  |      |        |        |      |          |     |
| <i>Centrarchus macropterus</i> , flier         | rare | 1960   | bw     | bw   |          |     |
| <i>Lepomis auritus</i> , redbreast sunfish     | yes  | rare   | 1964   | bw   | bw       |     |
| <i>L. cyanellus</i> , green sunfish            |      | common | 1992   | bw   | bw       |     |
| <i>L. gulosus</i> , warmouth                   |      | common | 2002   | bw   | bw       |     |
| <i>L. humilis</i> , orangespotted sunfish      |      | common | 1992   | bw   | bw       |     |
| <i>L. macrochirus</i> , bluegill sunfish       |      | common | 2002   | bw   | bw       |     |
| <i>L. marginatus</i> , dollar sunfish          |      | common | 1995   | bw   | bw       |     |
| <i>L. megalotis</i> , longear sunfish          |      | common | 2002   | bw   | bw       |     |
| <i>L. microlophus</i> , redear sunfish         |      | common | 2002   | bw   | bw       |     |
| <i>L. punctatus</i> , spotted sunfish          |      | common | 2002   | bw   | bw       |     |
| <i>L. symmetricus</i> , bantam sunfish         |      | common | 1995   | bw   | bw       |     |
| <i>Micropterus punctulatus</i> , spotted bass  |      | common | 2002   |      | cb, bw   |     |
| <i>M. salmoides</i> , largemouth bass          |      | common | 2002   | bw   | bw       |     |
| <i>Pomoxis annularis</i> , white crappie       |      | common | 2002   | bw   | bw       |     |
| <i>P. nigromaculatus</i> , black crappie       |      | common | 2002   | bw   | bw       |     |
| Elassomatidae                                  |      |        |        |      |          |     |
| <i>Elassoma zonatum</i> , banded pygmy sunfish |      |        | common | 1992 | bw       | bw  |
| Percidae                                       |      |        |        |      |          |     |
| <i>Ammocrypta vivax</i> , scaly sand darter    |      | common | 1992   | (r)  | (cb, bw) |     |
| <i>Etheostoma asprigene</i> , mud darter       |      | common | 1992   |      | bw       |     |
| <i>E. chlorosomum</i> , bluntnose darter       |      | common | 1992   |      | bw       |     |
| <i>E. fusiforme</i> , swamp darter             |      | common | 1995   | bw   | bw       |     |
| <i>E. gracile</i> , slough darter              |      | common | 1956   |      | bw       |     |
| <i>E. histrio</i> , harlequin darter           |      | common | 1992   |      | (cb, bw) |     |
| <i>E. parvipinne</i> , goldstripe darter       |      | rare   | 1956   |      | (bw)     |     |
| <i>E. proliare</i> , cypress darter            |      | common | 1992   |      | bw       |     |
| <i>E. whipplei</i> , redbfin darter            |      | rare   | 1956   |      | (cb, bw) |     |
| <i>Percina caprodes</i> , logperch             |      | common | 2002   | bw   | cb, bw   |     |
| <i>P. maculata</i> , blackside darter          |      | common | 1992   |      | (cb, bw) | yes |
| <i>P. sciera</i> , dusky darter                |      | common | 1992   |      | cb, bw   |     |
| <i>P. shumardi</i> , river darter              |      | rare   | 1955   |      | cb, bw   |     |
| Sciaenidae                                     |      |        |        |      |          |     |
| <i>Aplodinotus grunniens</i> , freshwater drum |      | common | 2002   | r    | cb, bw   |     |

<sup>1</sup> Schramm, H.L., Jr. 2005. Status and management of Mississippi River fisheries. Pages 301-334 in: R.L. Welcomme & T. Petr, eds., *Proceedings of the Second International Symposium on the Management of Large Rivers for Fisheries Volume 1*. Mekong River Commission, Phnom Penh.

<sup>2</sup> Robison & Buchanan (1988) cite Purkett (1961) for the following information on paddlefish reproduction in the Osage River, Missouri.

“Spawning occurs in early spring when the river is high and muddy. The adults move upstream into swift currents over gravel bars when the water temperature reaches about 60°F (15.7°C). Spawning takes place in midstream over the gravel substrate and the adhesive eggs stick to the first object they touch, normally stones on the stream bottom. After hatching, the fry are swept downstream out of the shallows into deep pools”

<sup>3</sup> A reproducing population of paddlefish in Cypress Creek and Caddo Lake that supported a small commercial fishery apparently was extirpated following construction of Ferrell’s Bridge Dam (1955-1959). In 1994 and 1998, TPWD stocked 14,745 fingerling paddlefish into Caddo Lake, but no evidence of reproduction has been observed in the system.

## **Appendix E**

**Amphibian and Reptile Information from a Survey of the Longhorn Army Ammunition Plant  
(from Autrey 1997)**

Appendix E. Numbers of amphibians and reptiles by species and total numbers of species from both groups recorded in the bottomland hardwood (BH), sideslope hardwood (SH) mixed pine-hardwood (MX), and pure pine (PP) study areas (from Autrey 1997).

| Species                             | BH  | SH  | Mx  | PP | Total |
|-------------------------------------|-----|-----|-----|----|-------|
| Salamanders                         |     |     |     |    |       |
| <i>Eurycea quadridigitata</i>       | -   | -   | -   | 02 | 02    |
| <i>Ambystoma maculatum</i>          | 02  | 06  | 03  | 02 | 13    |
| <i>Ambystoma opacum</i>             | 03  | 32  | 05  | 06 | 46    |
| <i>Ambystoma talpoideum</i>         | 11  | 07  | -   | 05 | 23    |
| <i>Amphiurna tridactylum</i>        | 01  | -   | -   | -  | 01    |
| <i>Siren intermedia</i>             | 18  | -   | -   | -  | 18    |
| Subtotal salamanders                | 35  | 45  | 08  | 15 | 103   |
| Anurans                             |     |     |     |    |       |
| <i>Acris crepitans</i>              | 46  | 28  | 41  | 01 | 116   |
| <i>Pseudacris streckeri</i>         | 01  | -   | -   | -  | 01    |
| <i>Pseudacris triseriata</i>        | 05  | 36  | 12  | -  | 53    |
| <i>Hyla cinerea</i>                 | 35  | 74  | 64  | 16 | 189   |
| <i>Hyla chrysoscelis/versicolor</i> | 04  | 16  | 03  | 16 | 39    |
| <i>Rana catesbeiana</i>             | 28  | 36  | 05  | 01 | 70    |
| <i>Rana clamitans</i>               | 535 | 619 | 84  | 07 | 1245  |
| <i>Rana utricularia</i>             | 58  | 17  | 02  | 03 | 80    |
| <i>Gastrophryne carolinensis</i>    | 05  | 11  | -   | 06 | 22    |
| <i>Bufo valliceps</i>               | 57  | 35  | 03  | 05 | 100   |
| <i>Bufo woodhousei</i>              | 03  | 07  | -   | -  | 100   |
| Subtotal anurans                    | 777 | 879 | 214 | 55 | 1925  |
| Subtotal amphibians                 | 812 | 924 | 222 | 70 | 2028  |
| Turtles                             |     |     |     |    |       |
| <i>Terrapene carolina</i>           | 02  | 03  | 02  | 04 | 11    |
| <i>Trachemys scripta</i>            | 09  | 06  | -   | -  | 15    |
| <i>Graptemys pseudogeographica</i>  | 01  | -   | -   | -  | 01    |
| <i>Chelydra serpentine</i>          | 02  | -   | -   | -  | 02    |

|                                  |      |      |     |     |      |
|----------------------------------|------|------|-----|-----|------|
| <i>Macroclemys temminckii</i>    | 01   | -    | -   | -   | 01   |
| Subtotal turtles                 | 15   | 09   | 02  | 04  | 30   |
| Lizards                          |      |      |     |     |      |
| <i>Anolis carolinensis</i>       | 20   | 58   | 31  | 42  | 151  |
| <i>Eumeces fasciatus</i>         | 26   | 31   | 36  | 30  | 123  |
| <i>Eumeces laticeps</i>          | 36   | 85   | 77  | 55  | 253  |
| <i>Scincella lateralis</i>       | 28   | 62   | 13  | 57  | 160  |
| Subtotal lizards                 | 110  | 236  | 157 | 184 | 687  |
| Snakes                           |      |      |     |     |      |
| <i>Storeria dekayi</i>           | 06   | 03   | -   | -   | 09   |
| <i>Storeria occipitomaculata</i> | -    | 01   | -   | 01  | 02   |
| <i>Virginia striatula</i>        | -    | -    | -   | 02  | 02   |
| <i>Lampropeltis calligaster</i>  | -    | 02   | -   | -   | 02   |
| <i>Lampropeltis getula</i>       | 15   | 08   | 20  | 06  | 49   |
| <i>Lampropeltis triangulum</i>   | -    | 02   | 08  | 05  | 15   |
| <i>Coluber constrictor</i>       | 18   | 14   | 20  | 14  | 66   |
| <i>Opheodrys aestivus</i>        | -    | 01   | -   | 01  | 02   |
| <i>Elaphe obsoleta</i>           | 09   | 18   | 13  | 06  | 46   |
| <i>Heterodon platirhinos</i>     | -    | -    | 01  | -   | 01   |
| <i>Thamnophis proximus</i>       | 38   | 57   | 27  | 23  | 145  |
| <i>Farancia abacura</i>          | 04   | 02   | 01  | -   | 07   |
| <i>Nerodia cyclopion</i>         | 10   | 01   | 01  | -   | 50   |
| <i>Nerodia erythrogaster</i>     | 26   | 14   | 09  | 01  | 50   |
| <i>Nerodia fasciata</i>          | 57   | 18   | 15  | -   | 90   |
| <i>Nerodia rhombifera</i>        | 05   | 01   | 03  | -   | 09   |
| <i>Regina rigida</i>             | 03   | -    | -   | -   | 03   |
| <i>Agkistrodon contortrix</i>    | 29   | 44   | 25  | 19  | 117  |
| <i>Agkistrodon piscivorus</i>    | 31   | 18   | 02  | 02  | 53   |
| Subtotal Snakes                  | 251  | 204  | 145 | 80  | 680  |
| Subtotal reptiles                | 376  | 449  | 304 | 268 | 1397 |
| Total reptiles and amphibians    | 1188 | 1373 | 526 | 338 | 3425 |

## **Appendix F**

### **Bird Species Lists and Life History Information**

The following table was taken from the website [http://members.tripod.com/caddobirds/bird\\_checklist.htm](http://members.tripod.com/caddobirds/bird_checklist.htm) and scientific names were taken from Ingold 1995

## Birds of Caddo Lake - Field Checklist

**LEGEND**

**A** - Abundant - Should see, numerous, easily observed or heard.

**C** - Common - Should see or hear in suitable habitat.

**U** - Uncommon - Present, but easily overlooked because of specific habitat, secretive habits or low numbers.

**O** - Occasional - Seen infrequently during a season.

**R** - Rare - Seen infrequently annually, or seldom seen, except by chance or special search; few records.

**I** - Irregular - Not expected annually, sporadic appearances and variable populations.

**Cas** - Casual - Out of normal range, very seldom seen over several years, but can be expected again.

**Acc** - Accidental - Out of normal range, very few records, not expected to be seen again.

**T** - Transient - Occurs in variable numbers, usually flying overhead.

**M** - Migratory

**P** - Permanent Resident

| Common Name                 | Scientific Name                  | Spring | Summer | Fall | Winter | Status |
|-----------------------------|----------------------------------|--------|--------|------|--------|--------|
| Common Loon                 | <i>Gavia immer</i>               | .      | .      | I    | R      | M      |
| Pied-billed Grebe           | <i>Podilymbus podiceps</i>       | U      | R      | U    | C      | M      |
| Horned Grebe                | <i>Podiceps auritus</i>          | .      | .      | .    | R      | M      |
| Eared Grebe                 | <i>Podiceps nigricollis</i>      | .      | .      | .    | R      | M      |
| Neotropic Cormorant         | <i>Phalacrocorax brasilianus</i> | Cas    | .      | .    | .      | M      |
| Double-crested Cormorant    | <i>Phalacrocorax auritus</i>     | U      | .      | C    | A      | M      |
| Anhinga                     | <i>Anhinga anhinga</i>           | U      | C      | U    | .      | M      |
| American White Pelican      | <i>Pelecanus erythrorhynchos</i> | R/I    | .      | R/I  | O      | M      |
| Ruddy Duck                  | <i>Oxyura jamaicensis</i>        | U      | .      | U    | U      | M      |
| Greater White-fronted Goose | <i>Anser albifrons</i>           | T      | .      | T    | .      | M      |
| Snow Goose                  | <i>Chen caerulescens</i>         | .      | .      | T    | T      | M      |
| Ross's Goose                | <i>Chen rossii</i>               | .      | .      | .    | T      | M      |



|                        |                              |     |     |       |     |     |
|------------------------|------------------------------|-----|-----|-------|-----|-----|
| Canada Goose           | <i>Branta canadensis</i>     | .   | .   | T     | T   | M   |
| Wood Duck              | <i>Aix sponsa</i>            | C   | U   | C     | C   | P   |
| American Wigeon        | <i>Anas americana</i>        | U   | .   | U     | U   | M   |
| Gadwall                | <i>Anas strepera</i>         | U   | .   | U     | U   | M   |
| Green-winged Teal      | <i>Anas crecca</i>           | U   | .   | U     | U   | M   |
| Mallard                | <i>Anas platyrhynchos</i>    | C   | U   | C     | C   | P/M |
| Mottled Duck           | <i>Anas fulvigula</i>        | .   | .   | .     | Cas | P?  |
| Northern Pintail       | <i>Anas acuta</i>            | .   | .   | R/I/T | .   | M   |
| Blue-winged Teal       | <i>Anas discors</i>          | U   | .   | U     | R   | M   |
| Northern Shoveler      | <i>Anas clypeata</i>         | O   | .   | O     | U   | M   |
| Canvasback             | <i>Aythya valisineria</i>    | O   | .   | O     | U   | M   |
| Redhead                | <i>Aythya americana</i>      | .   | .   | R     | O   | M   |
| Ring-necked Duck       | <i>Aythya collaris</i>       | U   | .   | U     | C   | M   |
| Greater Scaup          | <i>Aythya marilla</i>        | I   | .   | I     | I   | M   |
| Lesser Scaup           | <i>Aythya affinis</i>        | U   | Cas | U     | C   | M   |
| Common Goldeneye       | <i>Bucephala clangula</i>    | .   | .   | .     | R/I | M   |
| Bufflehead             | <i>Bucephala albeola</i>     | R/I | .   | R/I   | U   | M   |
| Hooded Merganser       | <i>Lophodytes cucullatus</i> | .   | .   | R     | O   | M   |
| Red-breasted Merganser | <i>Mergus serrator</i>       | .   | .   | .     | Cas | M   |
| Tricolored Heron       | <i>Egretta tricolor</i>      | Cas | Cas | R     | .   | M   |
| Little Blue Heron      | <i>Egretta caerulea</i>      | U   | C   | U     | .   | M   |
| Snowy Egret            | <i>Egretta thula</i>         | U   | U   | U     | .   | M   |
| Great Blue Heron       | <i>Ardea herodias</i>        | C   | C   | C     | C   | P/M |

|                            |                                 |     |     |       |       |     |
|----------------------------|---------------------------------|-----|-----|-------|-------|-----|
| Great Egret                | <i>Casmerodius albus</i>        | C   | C   | C     | U     | P/M |
| Cattle Egret               | <i>Bubulcus ibis</i>            | C   | A   | C     | I     | M   |
| Green Heron                | <i>Butorides virescens</i>      | U   | C   | U     | .     | M   |
| Yellow-crowned Night-Heron | <i>Nyctanassa violacea</i>      | U   | C   | U     | Cas   | M   |
| Black-crowned Night-Heron  | <i>Nycticorax nycticorax</i>    | U   | U   | Cas   | Cas   | M   |
| White Ibis                 | <i>Eudocimus albus</i>          | .   | U   | U     | Cas   | M   |
| Roseate Spoonbill          | <i>Ajaia ajaja</i>              | .   | R/I | R/I   | .     | M   |
| Wood Stork                 | <i>Mycteria americana</i>       | Cas | U   | U     | .     | M   |
| Black Vulture              | <i>Coragyps atratus</i>         | C   | C   | C     | C     | P   |
| Turkey Vulture             | <i>Cathartes aura</i>           | C   | C   | C     | C     | P   |
| Osprey                     | <i>Pandion haliaetus</i>        | O   | .   | U     | O     | M   |
| Mississippi Kite           | <i>Ictinia mississippiensis</i> | U   | U   | O     | .     | M   |
| Bald Eagle                 | <i>Haliaeetus leucocephalus</i> | R   | .   | R     | U     | M   |
| Northern Harrier           | <i>Circus cyaneus</i>           | R   | .   | U     | U     | M   |
| Sharp-shinned Hawk         | <i>Accipiter striatus</i>       | O   | .   | U     | U     | M   |
| Cooper's Hawk              | <i>Accipiter cooperii</i>       | O   | O   | U     | U     | P/M |
| Red-shouldered Hawk        | <i>Buteo lineatus</i>           | C   | C   | C     | C     | P   |
| Broad-winged Hawk          | <i>Buteo platypterus</i>        | C/T | I   | C/T   | .     | M   |
| Swainson's Hawk            | <i>Buteo swainsoni</i>          | R/T | .   | R/T   | .     | M   |
| Red-tailed Hawk            | <i>Buteo jamaicensis</i>        | C   | U   | C     | C     | P   |
| Ferruginous Hawk           | <i>Buteo regalis</i>            | .   | .   | Acc/T | .     | M   |
| Golden Eagle               | <i>Aquila chrysetos</i>         | .   | .   | .     | Cas/T | M   |
| American Kestrel           | <i>Falco sparverius</i>         | O   | .   | U     | C     | M   |

|                        |                                    |     |     |       |       |   |
|------------------------|------------------------------------|-----|-----|-------|-------|---|
| Merlin                 | <i>Falco columbaris</i>            | .   | .   | R/I/T | .     | M |
| Peregrine Falcon       | <i>Falco peregrinus</i>            | .   | .   | R/I/T | R/I/T | M |
| Wild Turkey            | <i>Meleagris gallopavo</i>         | O   | O   | R     | R     | P |
| Northern Bobwhite      | <i>Colinus virginianus</i>         | U   | O   | O     | O     | P |
| King Rail              | <i>Rallus elegans</i>              | .   | .   | R/I   | .     | M |
| Virginia Rail          | <i>Rallus limicola</i>             | .   | .   | R/I   | R/I   | M |
| Sora                   | <i>Porzana carolina</i>            | R/I | .   | R/I   | R/I   | M |
| Purple Gallinule       | <i>Porphyryla martinica</i>        | R/I | R/I | .     | .     | M |
| Common Moorhen         | <i>Gallinula chloropus</i>         | R/I | R/I | R/I   | .     | M |
| American Coot          | <i>Fulica americana</i>            | C   | .   | C     | A     | M |
| American Woodcock      | <i>Scolopax minor</i>              | O   | .   | U     | U     | M |
| Common Snipe           | <i>Gallinago gallinago</i>         | O   | .   | U     | U     | M |
| Greater Yellowlegs     | <i>Tringa melanoleuca</i>          | R/I | .   | R/I   | .     | M |
| Lesser Yellowlegs      | <i>Tringa flavipes</i>             | R/I | .   | R/I   | .     | M |
| Solitary Sandpiper     | <i>Tringa solitaria</i>            | R/I | .   | R/I   | .     | M |
| Spotted Sandpiper      | <i>Actitis macularia</i>           | U   | O   | U     | O     | M |
| Willet                 | <i>Catoptrophorus semipalmatus</i> | R/I | .   | .     | .     | M |
| Long-billed Dowitcher  | <i>Limnodromus scolopaceus</i>     | .   | .   | R/I   | .     | M |
| Semipalmated Sandpiper | <i>Calidris pusilla</i>            | .   | .   | R/I   | .     | M |
| Western Sandpiper      | <i>Calidris mauri</i>              | .   | .   | R/I   | .     | M |
| Least Sandpiper        | <i>Calidris minutilla</i>          | .   | .   | R/I   | .     | M |
| Pectoral Sandpiper     | <i>Calidris melanotos</i>          | R/I | .   | R/I   | .     | M |
| American Avocet        | <i>Recurvirostra american</i>      | .   | .   | R/I   | .     | M |

|                        |                                  |     |   |     |     |      |
|------------------------|----------------------------------|-----|---|-----|-----|------|
| Black-bellied Plover   | <i>Pluvialis squatarola</i>      | .   | . | R/I | .   | M    |
| Killdeer               | <i>Charadrius vociferous</i>     | U   | U | U   | C   | P/M  |
| Ring-billed Gull       | <i>Larus delawarensis</i>        | U   | . | U   | C   | M    |
| Herring Gull           | <i>Larus argentatus</i>          | .   | . | .   | R   | M    |
| Bonaparte's Gull       | <i>Larus philadelphia</i>        | .   | . | R   | O   | M    |
| Franklin's Gull        | <i>Larus pipixcan</i>            | .   | . | R   | .   | M    |
| Black Tern             | <i>Sterna antillarum</i>         | R/I | . | .   | .   | M    |
| Forster's Tern         | <i>Sterna forsteri</i>           | .   | . | O   | U   | M    |
| Rock Dove              | <i>Columba livia</i>             | U   | U | U   | U   | P    |
| Eurasian Collared-Dove | <i>Streptopelia decaocto</i>     | .   | . | .   | R/I | P(?) |
| Mourning Dove          | <i>Zenaida macroura</i>          | C   | C | C   | C   | P/M  |
| Inca Dove              | <i>Columbina inca</i>            | U   | U | U   | U   | P    |
| Common Ground-Dove     | <i>Columbina passerine</i>       | .   | . | Cas | .   | M    |
| Black-billed Cuckoo    | <i>Coccyzus erythrophthalmus</i> | I   | . | .   | .   | M    |
| Yellow-billed Cuckoo   | <i>Coccyzus americanus</i>       | U   | C | U   | .   | M    |
| Greater Roadrunner     | <i>Geococcyx californianus</i>   | R   | R | R   | R   | P    |
| Barn Owl               | <i>Tyto alba</i>                 | R   | R | R   | R   | P    |
| Eastern Screech-Owl    | <i>Otus asio</i>                 | U   | U | U   | U   | P    |
| Great Horned Owl       | <i>Bubo virginianus</i>          | U   | U | U   | U   | P    |
| Barred Owl             | <i>Strix varia</i>               | C   | C | C   | C   | P    |
| Common Nighthawk       | <i>Chordeiles minor</i>          | U   | . | R   | .   | M    |
| Chuck-will's-widow     | <i>Caprimulgus carolinensis</i>  | O   | U | .   | .   | M    |
| Whip-poor-will         | <i>Caprimulgus vociferous</i>    | R/I | . | .   | .   | M    |

|                           |                                   |     |   |     |   |     |
|---------------------------|-----------------------------------|-----|---|-----|---|-----|
| Chimney Swift             | <i>Chaetura pelagica</i>          | U   | U | U   | . | M   |
| Ruby-throated Hummingbird | <i>Archilochus colubris</i>       | U   | U | U   | . | M   |
| Belted Kingfisher         | <i>Ceryle alcyon</i>              | U   | U | U   | U | P   |
| Red-headed Woodpecker     | <i>Melanerpes erythrocephalus</i> | U   | U | U   | U | P   |
| Red-bellied Woodpecker    | <i>Melanerpes carolinus</i>       | C   | C | C   | C | P   |
| Yellow-bellied Sapsucker  | <i>Sphyrapicus varius</i>         | U   | . | U   | C | M   |
| Downy Woodpecker          | <i>Picoides pubescens</i>         | C   | C | C   | C | P   |
| Red-cockaded Woodpecker   | <i>Picoides borealis</i>          | .   | . | R/I | . | P/T |
| Hairy Woodpecker          | <i>Picoides villosus</i>          | O   | O | U   | U | P/M |
| Northern Flicker          | <i>Colaptes auratus</i>           | U   | . | U   | C | M   |
| Pileated Woodpecker       | <i>Dryocopus pileatus</i>         | C   | C | C   | C | P   |
| Olive-sided Flycatcher    | <i>Contopus borealis</i>          | R   | . | R   | . | M   |
| Eastern Wood-Pewee        | <i>Contopus virens</i>            | U   | U | U   | . | M   |
| Yellow-bellied Flycatcher | <i>Empidonax flaviventris</i>     | R   | . | .   | . | M   |
| Acadian Flycatcher        | <i>Empidonax virescens</i>        | U   | U | U   | . | M   |
| Willow Flycatcher         | <i>Empidonax traillii</i>         | R   | . | R   | . | M   |
| Least Flycatcher          | <i>Empidonax minimus</i>          | R   | . | R   | . | M   |
| Eastern Phoebe            | <i>Sayornis phoebe</i>            | U   | U | U   | C | P/M |
| Ash-throated Flycatcher   | <i>Myiarchus cinerascens</i>      | Cas | . | Cas | . | M   |
| Great Crested Flycatcher  | <i>Myiarchus crinitus</i>         | U   | U | U   | . | M   |
| Western Kingbird          | <i>Tyrannus verticalis</i>        | Cas | . | .   | . | M   |
| Scissor-tailed Flycatcher | <i>Tyrannus forficatus</i>        | U   | U | U   | . | M   |

|                       |                              |     |   |     |   |     |
|-----------------------|------------------------------|-----|---|-----|---|-----|
| Eastern Kingbird      | <i>Tyrannus tyrannus</i>     | U   | U | R   | . | M   |
| Blue Jay              | <i>Cyanocitta cristata</i>   | C   | C | C   | C | P/M |
| American Crow         | <i>Corvus brachyrhynchos</i> | C   | C | C   | C | P/M |
| Fish Crow             | <i>Corvus ossifragus</i>     | C   | C | C   | U | P   |
| White-eyed Vireo      | <i>Vireo griseus</i>         | U   | C | U   | . | M   |
| Blue-headed Vireo     | <i>Vireo solitarius</i>      | R   | . | R   | O | M   |
| Yellow-throated Vireo | <i>Vireo flavifrons</i>      | U   | U | U   | . | M   |
| Philadelphia Vireo    | <i>Vireo philadelphicus</i>  | R   | . | .   | . | M   |
| Red-eyed Vireo        | <i>Vireo olivaceus</i>       | U   | C | U   | . | M   |
| Warbling Vireo        | <i>Vireo gilvus</i>          | R   | . | R   | . | M   |
| Loggerhead Shrike     | <i>Lanius ludovicianus</i>   | U   | U | U   | U | P/M |
| Cedar Waxwing         | <i>Bombycilla cedrorum</i>   | U   | . | U   | U | M   |
| Eastern Bluebird      | <i>Sialia sialis</i>         | C   | C | C   | C | P   |
| Veery                 | <i>Catharus fuscescens</i>   | R/I | . | R/I | . | M   |
| Gray-cheeked Thrush   | <i>Catharus minimus</i>      | R   | . | R/I | . | M   |
| Swainson's Thrush     | <i>Catharus ustulatus</i>    | R   | . | R/I | . | M   |
| Hermit Thrush         | <i>Catharus guttatus</i>     | U   | . | U   | U | M   |
| Wood Thrush           | <i>Hylocichla mustelina</i>  | U   | U | O   | . | M   |

|                               |                                   |     |   |     |     |     |
|-------------------------------|-----------------------------------|-----|---|-----|-----|-----|
| American Robin                | <i>Turdus migratorius</i>         | U   | U | U   | C   | P/M |
| Gray Catbird                  | <i>Dumetella carolinensis</i>     | U   | O | U   | O   | M   |
| Northern Mockingbird          | <i>Mimus polyglottos</i>          | C   | C | C   | C   | P   |
| Brown Thrasher                | <i>Toxostoma rufum</i>            | U   | U | U   | C   | P/M |
| European Starling             | <i>Sturnus vulgaris</i>           | U   | U | U   | U   | P   |
| Brown-headed Nuthatch         | <i>Sitta pusilla</i>              | U   | U | U   | U   | P   |
| Red-breasted Nuthatch         | <i>Sitta Canadensis</i>           | R/I | . | R/I | R/I | M   |
| White-breasted Nuthatch       | <i>Sitta carolinensis</i>         | U   | U | U   | U   | P   |
| Brown Creeper                 | <i>Certhia Americana</i>          | U   | . | U   | U   | M   |
| Sedge Wren                    | <i>Cistothorus platensis</i>      | .   | . | O   | O   | M   |
| Marsh Wren                    | <i>Cistothorus palustris</i>      | R   | . | .   | O   | M   |
| Bewick's Wren                 | <i>Thryomanes bewickii</i>        | .   | . | R   | R   | M   |
| Carolina Wren                 | <i>Thryothorus ludovicianus</i>   | C   | C | C   | C   | P   |
| Winter Wren                   | <i>Troglodytes troglodytes</i>    | .   | . | U   | U   | M   |
| House Wren                    | <i>Troglodytes aedon</i>          | .   | . | O   | U   | M   |
| Blue-gray Gnatcatcher         | <i>Poliophtila caerulea</i>       | U   | C | U   | R/I | M   |
| Tree Swallow                  | <i>Tachycineta bicolor</i>        | R/T | . | .   | .   | M   |
| Purple Martin                 | <i>Progne subis</i>               | U   | U | .   | .   | M   |
| Northern Rough-winged Swallow | <i>Stelgidopteryx serripennis</i> | U/T | . | U/T | .   | M   |
| Bank Swallow                  | <i>Riparia riparia</i>            | .   | . | R/T | .   | M   |
| Barn Swallow                  | <i>Hirundo rustica</i>            | U   | C | U   | .   | M   |
| Cliff Swallow                 | <i>Hirundo pyrrhonota</i>         | R/T | . | .   | .   | M   |

|                              |                               |     |   |     |     |     |
|------------------------------|-------------------------------|-----|---|-----|-----|-----|
| Ruby-crowned Kinglet         | <i>Regulus calendula</i>      | U   | . | U   | C   | M   |
| Golden-crowned Kinglet       | <i>Regulus satrapa</i>        | O   | . | U   | U   | M   |
| Carolina Chickadee           | <i>Parus carolinensis</i>     | C   | C | C   | C   | P   |
| Tufted Titmouse              | <i>Parus bicolor</i>          | C   | C | C   | C   | P   |
| House Sparrow                | <i>Passer domesticus</i>      | U   | U | U   | U   | P   |
| American Pipit               | <i>Anthus rubescens</i>       | .   | . | R   | R   | M   |
| Pine Siskin                  | <i>Carduelis pinus</i>        | .   | . | .   | R/I | M   |
| American Goldfinch           | <i>Carduelis tristis</i>      | U   | . | U   | C   | M   |
| Purple Finch                 | <i>Carpodacus purpureus</i>   | R/I | . | .   | R/I | M   |
| House Finch                  | <i>Carpodacus mexicanus</i>   | R   | . | R   | R   | P/M |
| Red Crossbill                | <i>Loxia curvirostra</i>      | .   | . | .   | R/I | M   |
| Blue-winged Warbler          | <i>Vermivora pinus</i>        | R   | . | R   | .   | M   |
| Tennessee Warbler            | <i>Vermivora peregrina</i>    | U   | . | R   | .   | M   |
| Orange-crowned Warbler       | <i>Vermivora celata</i>       | R   | . | U   | U   | M   |
| Nashville Warbler            | <i>Vermivora ruficapilla</i>  | O   | . | U   | .   | M   |
| Northern Parula              | <i>Parula americana</i>       | C   | C | U   | .   | M   |
| Yellow Warbler               | <i>Dendroica petechia</i>     | U   | R | O   | .   | M   |
| Chestnut-sided Warbler       | <i>Dendroica pensylvanica</i> | R/I | . | R/I | .   | M   |
| Magnolia Warbler             | <i>Dendroica magnolia</i>     | O   | . | R/I | .   | M   |
| Cape May Warbler             | <i>Dendroica tigrina</i>      | Cas | . | Cas | .   | M   |
| Yellow-rumped Warbler        | <i>Dendroica coronata</i>     | U   | . | U   | C   | M   |
| Black-throated Green Warbler | <i>Dendroica virens</i>       | U   | . | O   | .   | M   |



|                         |                                |       |     |       |     |      |
|-------------------------|--------------------------------|-------|-----|-------|-----|------|
| Blackburnian Warbler    | <i>Dendroica fusca</i>         | O     | .   | R/I   | .   | M    |
| Yellow-throated Warbler | <i>Dendroica dominica</i>      | C     | C   | U     | .   | M    |
| Pine Warbler            | <i>Dendroica pinus</i>         | C     | C   | C     | C   | P    |
| Prairie Warbler         | <i>Dendroica discolor</i>      | U     | O   | .     | .   | M    |
| Bay-breasted Warbler    | <i>Dendroica castanea</i>      | R/I   | .   | R/I   | .   | M    |
| Blackpoll Warbler       | <i>Dendroica striata</i>       | R     | .   | R/I   | .   | M    |
| Cerulean Warbler        | <i>Dendroica cerulea</i>       | Cas/I | .   | Cas/I | .   | M    |
| Black-and-white Warbler | <i>Mniotilta varia</i>         | C     | U   | U     | .   | M    |
| American Redstart       | <i>Setophaga ruticilla</i>     | O     | O   | O     | .   | M    |
| Prothonotary Warbler    | <i>Protonotaria citrea</i>     | C     | C   | O     | .   | M    |
| Worm-eating Warbler     | <i>Helmitheros vermivorus</i>  | .     | R/I | R/I   | .   | M    |
| Swainson's Warbler      | <i>Limnithlypis swainsonii</i> | U     | O   | .     | .   | M    |
| Ovenbird                | <i>Seiurus aurocapillus</i>    | R/I   | .   | R/I   | .   | M    |
| Northern Waterthrush    | <i>Seiurus noveboracensis</i>  | O     | .   | R/I   | .   | M    |
| Louisiana Waterthrush   | <i>Seiurus motacilla</i>       | U     | U   | R     | .   | M    |
| Kentucky Warbler        | <i>Oporornis formosus</i>      | U     | U   | .     | .   | M    |
| Common Yellowthroat     | <i>Geothlypis trichas</i>      | C     | C   | U     | R/I | M    |
| Hooded Warbler          | <i>Wilsonia citrina</i>        | U     | U   | U     | .   | M    |
| Wilson's Warbler        | <i>Wilsonia pusilla</i>        | O     | .   | O     | .   | M    |
| Canada Warbler          | <i>Wilsonia pusilla</i>        | R     | .   | R     | .   | M    |
| Yellow-breasted Chat    | <i>Icteria virens</i>          | C     | U   | O     | .   | M    |
| Bachman's Sparrow       | <i>Aimophila aestivalis</i>    | .     | .   | R/I   | .   | P(?) |
| Fox Sparrow             | <i>Passerella iliaca</i>       | O     | .   | U     | U   | M    |

|                        |                                  |     |     |     |     |   |
|------------------------|----------------------------------|-----|-----|-----|-----|---|
| Song Sparrow           | <i>Melospiza melodia</i>         | U   | .   | U   | C   | M |
| Lincoln's Sparrow      | <i>Melospiza lincolnii</i>       | O   | .   | O   | U   | M |
| Swamp Sparrow          | <i>Melospiza georgiana</i>       | U   | .   | U   | C   | M |
| Harris's Sparrow       | <i>Zonotrichia querula</i>       | .   | .   | .   | R/I | M |
| White-crowned Sparrow  | <i>Zonotrichia leucophrys</i>    | U   | .   | U   | U   | M |
| White-throated Sparrow | <i>Zonotrichia albicollis</i>    | C   | .   | C   | C   | M |
| Dark-eyed Junco        | <i>Junco hyemalis</i>            | U   | .   | U   | C   | M |
| Savannah Sparrow       | <i>Passerculus sandwichensis</i> | U   | .   | U   | U   | M |
| Le Conte's Sparrow     | <i>Ammospiza leconteii</i>       | U   | .   | O   | U   | M |
| Henslow's Sparrow      | <i>Ammodramus henslowii</i>      | O   | .   | O   | O   | M |
| Grasshopper Sparrow    | <i>Ammodramus savannrum</i>      | .   | .   | R/I | .   | M |
| Chipping Sparrow       | <i>Spizella passerina</i>        | U   | U   | U   | C   | P |
| Field Sparrow          | <i>Spizella pusilla</i>          | U   | R   | U   | C   | M |
| Vesper Sparrow         | <i>Pooecetes gramineus</i>       | .   | .   | O   | O   | M |
| Lark Sparrow           | <i>Chondestes grammacus</i>      | R/I | R/I | .   | R/I | M |
| Eastern Towhee         | <i>Pipilo erythrophthalmus</i>   | U   | R/I | U   | U   | M |
| Spotted Towhee         | <i>Pipilo maculatus</i>          | R/I | .   | .   | R   | M |
| Summer Tanager         | <i>Piranga rubra</i>             | C   | C   | U   | .   | M |
| Scarlet Tanager        | <i>Piranga olivacea</i>          | R   | .   | R/I | .   | M |
| Dickcissel             | <i>Spiza americana</i>           | O   | R/I | R/I | .   | M |
| Rose-breasted Grosbeak | <i>Pheucticus ludovicianus</i>   | R   | .   | R/I | .   | M |
| Northern Cardinal      | <i>Cardinalis cardinalis</i>     | C   | C   | C   | C   | P |
| Blue Grosbeak          | <i>Guiraca caerulea</i>          | U   | U   | R/I | .   | M |

|                         |                                      |     |     |     |     |     |
|-------------------------|--------------------------------------|-----|-----|-----|-----|-----|
| Indigo Bunting          | <i>Passerina cyanea</i>              | C   | C   | U   | .   | M   |
| Painted Bunting         | <i>Passerina ciris</i>               | U   | U   | o   | .   | M   |
| Baltimore Oriole        | <i>Icterus galbula</i>               | U   | R/I | U   | .   | M   |
| Orchard Oriole          | <i>Icterus spurius</i>               | U   | U   | .   | .   | M   |
| Yellow-headed Blackbird | <i>Xanthocephalus xanthocephalus</i> | R/I | .   | .   | .   | M   |
| Red-winged Blackbird    | <i>Agelaius phoeniceus</i>           | C   | C   | C   | A   | P   |
| Eastern Meadowlark      | <i>Sturnella neglecta</i>            | U   | U   | U   | U   | P/M |
| Common Grackle          | <i>Quiscalus quiscula</i>            | C   | U   | C   | A   | P/M |
| Rusty Blackbird         | <i>Euphagus carolinus</i>            | .   | .   | R/I | U/I | M   |
| Brewer's Blackbird      | <i>Euphagus cyanocephalus</i>        | .   | .   | .   | R/I | M   |
| Brown-headed Cowbird    | <i>Molothrus ater</i>                | C   | U   | U   | U   | P/M |

Total: 246 species recorded at Caddo Lake since 1980.