CAROLINA POWER & LIGHT COMPANY

ROBINSON/DARLINGTON COUNTY FOSSIL GENERATING PLANT

T I T L E

ROBINSON IMPOUNDMENT OPERATION

OPERATING PROCEDURE

O.P.2.7

REVISION 5

DATE: July 15, 1999

RECOMMENDED BY: _____
Operations Supervisor

APPROVED: _____
Plant Manager



ENCLOSURE 2

CAROLINA POWER & LIGHT COMPANY
ROBINSON/DARLINGTON COUNTY FOSSIL GENERATING PLANT

TITLE: Robinson Impoundment Operation

APPLICABILITY: All Operating Personnel

PURPOSE: Provide Instruction for Controlling Impoundment Level and Stream Flows

1.0 OBJECTIVE:

Impoundment Operation is of extreme importance due to the mandatory requirement to supply adequate cooling water at all times to the Plant and due to the obligation to supply adequate water to downstream users. This procedure is to be followed as necessary to maintain proper impoundment level, stream flow, temperatures, and comply with Water Pollution Control Permits. The Operations Supervisor or the Plant Manager is to be notified of changes in the status of Robinson impoundment flow and level control (such as opening Howell-Bunger valves or Tainter Gates).

2.0 NORMAL LEVEL AND FLOW CONTROL

2.1 The spillage over "A" and "B" Tainter Gates will maintain proper downstream flow when Robinson impoundment levels are between elevation 220.7 and 221.5 feet mean sea level (MSL).

2.2 The normal downstream flow has a daily maximum temperature limit of 33°C. (91.4°F) measured at the gauging station located at SC Highway 23 bridge. The daily maximum temperature limit is a 24-hour average. The discharge from Robinson Impoundment Spillway during the months of June through September may need mixing of cooler water from "B" Howell-Bunger Valve to assure this temperature limit is not exceeded.

3.0 LOWER THAN NORMAL LEVEL AND FLOW

3.1 When Robinson impoundment level falls below 220.7 feet MSL, either "A" or "B" Howell-Bunger valve should be opened enough to maintain a downstream flow of approximately 65 CFS, measured at the gauging station located at SC Highway 23 bridge. Notify Unit 1 and Unit 2 shift management when the Howell-Bunger Valves are required.

3.2 When Robinson impoundment level is between 220.0 and 219.0 feet MSL, the downstream flow should be maintained at aproximately 30 CFS, measured at the gauging station located at SC Highway 23 bridge, using either "A" or "B" Howell-Bunger Valve.

3.3 When Robinson impoundment level reaches 219.0 feet MSL, Section and Department Management will be involved in decisions involved in spillway operation.

4.0 Higher than Normal/Flood Conditions

If Head flow exceeds 750 CFS and Lake Level is above 221.2 ft., increase Tail Flow discharge rates to equal Head Flow supply rate, Notify the Operations Supervisor or the Plant Manager.

4.1 If the Head Flow reaches 900 CFS and the Lake Level is still rising, notify the Operations Supervisor or the Plant Manager. When the Tail Flow Discharge Rates reach 900 CFS notify Unit #2 Emergency Preparedness Group. When the Lake Level reaches 221.5 ft. and the Head Flow is greater than 900 CFS, maintain the Lake Level between 221.5 to 221.65 ft., utilizing the Spillway Equipment. When the Tail Flow Discharge rate of 1100 CFS, notify the Operations Supervisor or the Plant Manager. **Note: Notify Unit #2 Shift Supervisor if and when the Tainter Gates are opened.** Operations Supervisor or the Plant Manager can change the Lake Level or discharge rates depending upon Hydrological Conditions.

6.0 TESTING

Both H-B valves are to be opened fully and both Tainter Gates partially operated (raised approximately one inch) once per month.

7.0 RECORDS

7.1 Log in the Unit #1 Shift Log and Control Operator's Logs all valve and gate position changes, recording the time and the new position.

7.2 In the event that the continuous temperature recorder(s) are inoperative for periods in excess of 8 hours, manual temperature observations shall be obtained at a frequency of not less than once per four hours at approximately equal time increments.

7.3 Upon notification that the Weir discharge temperature is out of service, verify that the backup is operative. If the backup recorder is out of service, the YSI is to be used to measure the Weir discharge temperature. This instrument is located in the Unit #1 Lab. During normal working hours, the lab personnel will obtain the necessary readings. On night shift and weekends Operations personnel will obtain, log, and route the necessary readings to the Unit #1 Lab.

8.0 See **Attachment 6** for the authorized discharge temperatures from outfall number 001 (Discharge Canal Weir Temperature Monitor).

ATTACHMENT 1

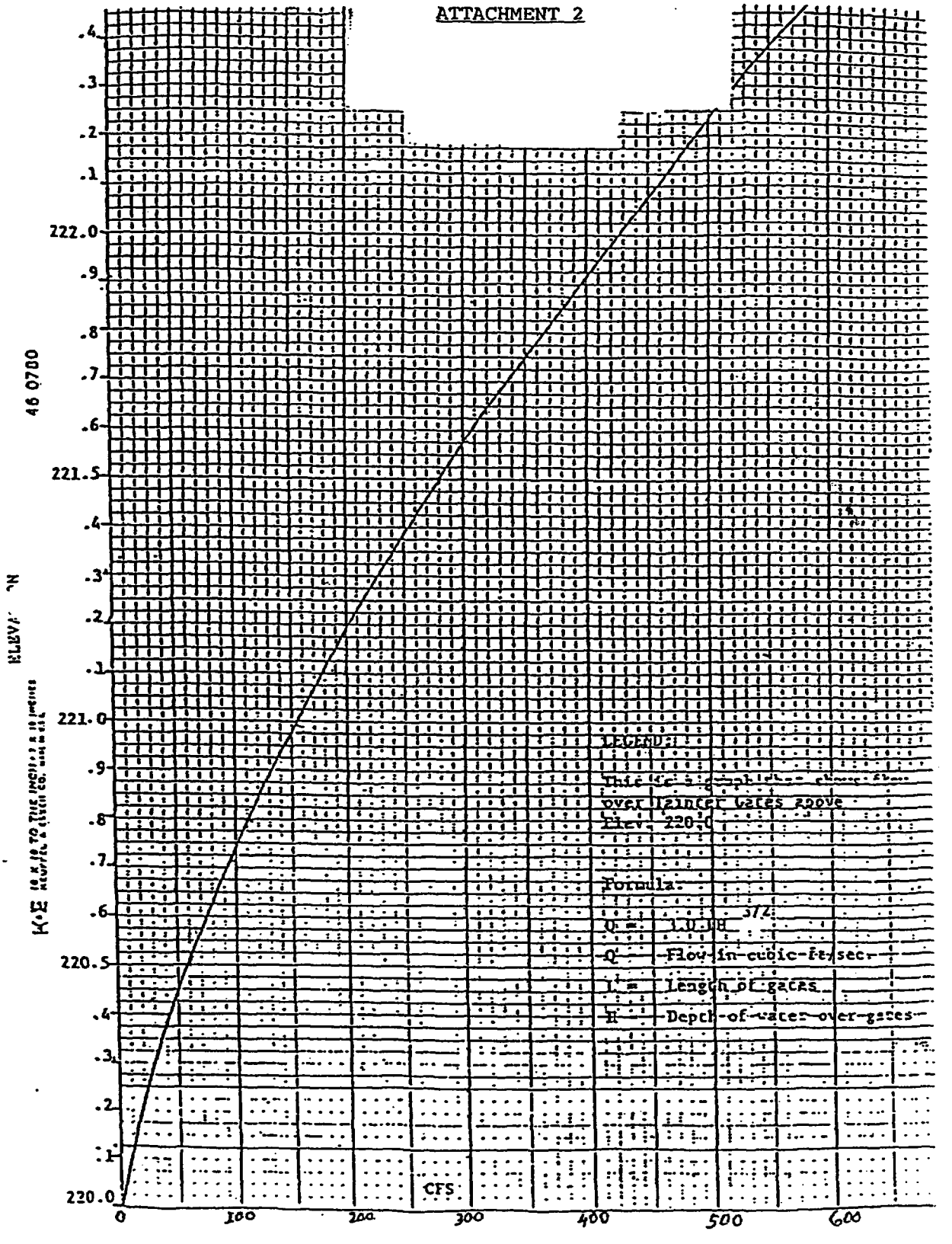
**Expected Spillway Valve Discharge Rates**
**"A" Spillway Valve Only**

| Lake Level | CFS | CFS | CFS | CFS | CFS | CFS | CFS | CFS | CFS | CFS |
|---|---|---|---|---|---|---|---|---|---|---|
| 222 | 50 | 87 | | 128 | 196 | 222 | 242 | 257 | 266 | 270 |
| 221.5 | 49 | 86 | 126 | 163 | 194 | 221 | 241 | 255 | 265 | 269 |
| 221 | 49 | 86 | 124 | 163 | 190 | 220 | 240 | 252 | 264 | 268 |
| 220.5 | 48 | 84 | 124 | 160 | 186 | 219 | 239 | 251 | 262 | 268 |
| 220 | 48 | 84 | 123 | 160 | 184 | 218 | 238 | 250 | 260 | 267 |
| Valve Opening | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

**"A" Spillway Valve Open 100% Plus "B" Spillway Valve**

| Lake Level | CFS | CFS | CFS | CFS | CFS | CFS | CFS | CFS | CFS | CFS |
|---|---|---|---|---|---|---|---|---|---|---|
| 222 | 314 | 362 | 398 | 430 | 458 | 482 | 500 | 510 | 519 | 525 |
| 221.5 | 310 | 361 | 395 | 428 | 454 | 480 | 499 | 509 | 517 | 524 |
| 221 | 309 | 359 | 390 | 426 | 450 | 478 | 497 | 507 | 515 | 523 |
| 220.5 | 308 | 358 | 386 | 424 | 448 | 474 | 495 | 504 | 512 | 521 |
| 220 | 308 | 354 | 385 | 422 | 446 | 470 | 490 | 502 | 511 | 520 |
| Valve Opening | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% |

ATTACHMENT 2



ATTACHMENT 3

# Expected Tainter Gate Discharge Flow Rate (Gate Raised)

| Gate Raised-Inches | One Gate | Two Gates |
|---|---|---|
| 1 | 260 | 680 |
| 2 | 400 | 900 |
| 3 | 445 | 1000 |
| 4 | 485 | 1085 |
| 5 | 510 | 1270 |
| 6 | 600 | 1375 |
| 7 | 685 | 1600 |
| 8 | 735 | 1700 |
| 9 | 750 | 1750 |
| 10 | 765 | 1780 |
| 11 | 825 | 1900 |
| 12 | 935 | 2070 |
| 15 | 1125 | 2500 |
| 18 | 1300 | 2865 |
| 21 | 1500 | 3250 |
| 24 | 1700 | 3625 |
| 27 | 1825 | 4000 |
| 30 | 2030 | 4375 |
| 33 | 2240 | 4750 |
| 36 | 2400 | 5100 |

ATTACHMENT 4 (Page 1 of4)

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY - WATER RESOURCES DIVISION PAGE 1
EXPANDED RATING TABLE TYPE: LOG
DATE PROCESSED: 02-11-1998 @ 10:53 BY bwchmrch

02130910
BLACK CREEK NEAR HARTSVILLE, SC DD: 4 TYPE: 001 RATING NO: 10.0
OFFSET: .00 START DATE/TIME: 10-01-80 (0030)

BASED ON _____ DISCHARGE MEASUREMENTS, NOS _____, AND _____, AND IS _____ WELL DEFINED BETWEEN _____ AND _____ CFS
COMP BY _____ DATE _____ CHK. BY _____ DATE _____
RATING REACTIVATED FOR USE BEGINNING 10/01/86

| GAGE HEIGHT (FEET) | .00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 | DIFF IN Q PER TENTH FT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DISCHARGE IN CUBIC FEET PER SECOND (EXPANDED PRECISION) | | | | | | | | | | |
| .70 | 28.00* | 28.21 | 28.41 | 28.61 | 28.82 | 29.02 | 29.22 | 29.41 | 29.61 | 29.81 | 2.000 |
| .80 | 30.00* | 30.20 | 30.41 | 30.61 | 30.81 | 31.01 | 31.21 | 31.41 | 31.61 | 31.80 | 2.000 |
| .90 | 32.00* | 32.20 | 32.41 | 32.61 | 32.81 | 33.01 | 33.21 | 33.41 | 33.61 | 33.80 | 2.000 |
| 1.00 | 34.00* | 34.22 | 34.43 | 34.65 | 34.87 | 35.08 | 35.29 | 35.51 | 35.72 | 35.93 | 2.140 |
| 1.10 | 36.14 | 36.35 | 36.56 | 36.77 | 36.98 | 37.19 | 37.40 | 37.60 | 37.81 | 38.01 | 2.080 |
| 1.20 | 38.22 | 38.42 | 38.63 | 38.83 | 39.03 | 39.23 | 39.43 | 39.63 | 39.83 | 40.03 | 2.010 |
| 1.30 | 40.23 | 40.43 | 40.63 | 40.83 | 41.02 | 41.22 | 41.41 | 41.61 | 41.80 | 42.00 | 1.960 |
| 1.40 | 42.19 | 42.38 | 42.58 | 42.77 | 42.96 | 43.15 | 43.34 | 43.53 | 43.72 | 43.91 | 1.910 |
| 1.50 | 44.10* | 44.34 | 44.59 | 44.83 | 45.07 | 45.32 | 45.56 | 45.80 | 46.04 | 46.29 | 2.430 |
| 1.60 | 46.53 | 46.77 | 47.01 | 47.25 | 47.49 | 47.73 | 47.97 | 48.21 | 48.45 | 48.69 | 2.400 |
| 1.70 | 48.93 | 49.17 | 49.41 | 49.65 | 49.88 | 50.12 | 50.36 | 50.60 | 50.83 | 51.07 | 2.380 |
| 1.80 | 51.31 | 51.55 | 51.78 | 52.02 | 52.25 | 52.49 | 52.72 | 52.96 | 53.20 | 53.43 | 2.350 |
| 1.90 | 53.66 | 53.90 | 54.13 | 54.37 | 54.60 | 54.83 | 55.07 | 55.30 | 55.53 | 55.77 | 2.340 |
| 2.00 | 56.00* | 56.30 | 56.60 | 56.89 | 57.19 | 57.49 | 57.79 | 58.09 | 58.39 | 58.68 | 2.980 |
| 2.10 | 58.98 | 59.28 | 59.58 | 59.88 | 60.18 | 60.48 | 60.78 | 61.08 | 61.38 | 61.67 | 2.990 |
| 2.20 | 61.97 | 62.27 | 62.57 | 62.87 | 63.17 | 63.47 | 63.77 | 64.07 | 64.37 | 64.67 | 3.000 |
| 2.30 | 64.97 | 65.28 | 65.58 | 65.88 | 66.18 | 66.48 | 66.78 | 67.08 | 67.38 | 67.68 | 3.010 |
| 2.40 | 67.98 | 68.28 | 68.59 | 68.89 | 69.19 | 69.49 | 69.79 | 70.09 | 70.40 | 70.70 | 3.020 |
| 2.50 | 71.00* | 71.37 | 71.74 | 72.11 | 72.48 | 72.85 | 73.22 | 73.60 | 73.97 | 74.34 | 3.720 |
| 2.60 | 74.72 | 75.09 | 75.46 | 75.84 | 76.21 | 76.59 | 76.97 | 77.34 | 77.72 | 78.10 | 3.750 |
| 2.70 | 78.47 | 78.85 | 79.23 | 79.61 | 79.99 | 80.37 | 80.75 | 81.13 | 81.51 | 81.89 | 3.810 |
| 2.80 | 82.28 | 82.66 | 83.04 | 83.42 | 83.81 | 84.19 | 84.58 | 84.96 | 85.35 | 85.73 | 3.840 |
| 2.90 | 86.12 | 86.50 | 86.89 | 87.28 | 87.67 | 88.05 | 88.44 | 88.83 | 89.22 | 89.61 | 3.880 |
| 3.00 | 90.00* | 90.38 | 90.77 | 91.15 | 91.54 | 91.92 | 92.31 | 92.69 | 93.08 | 93.47 | 3.850 |
| 3.10 | 93.85 | 94.24 | 94.63 | 95.01 | 95.40 | 95.79 | 96.18 | 96.57 | 96.96 | 97.35 | 3.890 |
| 3.20 | 97.74 | 98.13 | 98.52 | 98.91 | 99.30 | 99.70 | 100.1 | 100.5 | 100.9 | 101.3 | 3.960 |
| 3.30 | 101.7 | 102.1 | 102.4 | 102.8 | 103.2 | 103.6 | 104.0 | 104.4 | 104.8 | 105.2 | 3.900 |
| 3.40 | 105.6 | 106.0 | 106.4 | 106.8 | 107.2 | 107.6 | 108.0 | 108.4 | 108.8 | 109.2 | 4.000 |
| 3.50 | 109.6* | 110.0 | 110.4 | 110.8 | 111.2 | 111.6 | 112.0 | 112.4 | 112.8 | 113.2 | 4.000 |
| 3.60 | 113.6 | 114.0 | 114.4 | 114.8 | 115.2 | 115.6 | 116.0 | 116.5 | 116.9 | 117.3 | 4.100 |
| 3.70 | 117.7 | 118.1 | 118.5 | 118.9 | 119.3 | 119.7 | 120.1 | 120.5 | 120.9 | 121.3 | 4.000 |
| 3.80 | 121.7 | 122.2 | 122.6 | 123.0 | 123.4 | 123.8 | 124.2 | 124.6 | 125.0 | 125.4 | 4.200 |
| 3.90 | 125.9 | 126.3 | 126.7 | 127.1 | 127.5 | 127.9 | 128.3 | 128.8 | 129.2 | 129.6 | 4.100 |
| 4.00 | 130.0* | 130.5 | 131.0 | 131.4 | 131.9 | 132.4 | 132.9 | 133.4 | 133.9 | 134.3 | 4.800 |
| 4.10 | 134.8 | 135.3 | 135.8 | 136.3 | 136.8 | 137.3 | 137.8 | 138.2 | 138.7 | 139.2 | 4.900 |
| 4.20 | 139.7 | 140.2 | 140.7 | 141.2 | 141.7 | 142.2 | 142.7 | 143.2 | 143.7 | 144.2 | 5.000 |
| 4.30 | 144.7 | 145.2 | 145.6 | 146.1 | 146.6 | 147.1 | 147.6 | 148.1 | 148.6 | 149.1 | 4.900 |
| 4.40 | 149.6 | 150.2 | 150.7 | 151.2 | 151.7 | 152.2 | 152.7 | 153.2 | 153.7 | 154.2 | 5.100 |

ATTACHMENT 4 (Page 2 of 4)

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY - WATER RESOURCES DIVISION PAGE 2
EXPANDED RATING TABLE TYPE: LOG
DATE PROCESSED: 02-11-1998 @ 10:53 BY bwchurch

02130910
BLACK CREEK NEAR HARTSVILLE, SC
OFFSET: .00

DD: 4 TYPE: 001 RATING NO: 10.0
START DATE/TIME: 10-01-80 (0030)

RATING REACTIVATED FOR USE BEGINNING 10/01/86

| GAGE HEIGHT (FEET) | .00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 | DIFF IN Q PER TENTH FT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DISCHARGE IN CUBIC FEET PER SECOND (EXPANDED PRECISION) | | | | | | | | | | |
| 4.50 | 154.7* | 155.3 | 155.8 | 156.4 | 157.0 | 157.5 | 158.1 | 158.7 | 159.3 | 159.8 | 5.700 |
| 4.60 | 160.4 | 161.0 | 161.5 | 162.1 | 162.7 | 163.3 | 163.9 | 164.4 | 165.0 | 165.6 | 5.800 |
| 4.70 | 166.2 | 166.8 | 167.3 | 167.9 | 168.5 | 169.1 | 169.7 | 170.3 | 170.9 | 171.5 | 5.800 |
| 4.80 | 172.0 | 172.6 | 173.2 | 173.8 | 174.4 | 175.0 | 175.6 | 176.2 | 176.8 | 177.4 | 6.000 |
| 4.90 | 178.0 | 178.6 | 179.2 | 179.8 | 180.4 | 181.0 | 181.6 | 182.2 | 182.8 | 183.4 | 6.000 |
| 5.00 | 184.0* | 184.9 | 185.9 | 186.8 | 187.7 | 188.7 | 189.6 | 190.6 | 191.5 | 192.5 | 9.400 |
| 5.10 | 193.4 | 194.4 | 195.3 | 196.3 | 197.3 | 198.2 | 199.2 | 200.2 | 201.2 | 202.1 | 9.700 |
| 5.20 | 203.1 | 204.1 | 205.1 | 206.1 | 207.1 | 208.1 | 209.1 | 210.1 | 211.1 | 212.1 | 10.00 |
| 5.30 | 213.1 | 214.1 | 215.2 | 216.2 | 217.2 | 218.2 | 219.3 | 220.3 | 221.3 | 222.4 | 10.30 |
| 5.40 | 223.4 | 224.5 | 225.5 | 226.6 | 227.6 | 228.7 | 229.7 | 230.8 | 231.9 | 232.9 | 10.60 |
| 5.50 | 234.0* | 235.2 | 236.4 | 237.7 | 238.9 | 240.1 | 241.4 | 242.6 | 243.9 | 245.1 | 12.40 |
| 5.60 | 246.4 | 247.6 | 248.9 | 250.1 | 251.4 | 252.7 | 254.0 | 255.3 | 256.5 | 257.8 | 12.70 |
| 5.70 | 259.1 | 260.4 | 261.7 | 263.0 | 264.4 | 265.7 | 267.0 | 268.3 | 269.6 | 271.0 | 13.20 |
| 5.80 | 272.3 | 273.7 | 275.0 | 276.4 | 277.7 | 279.1 | 280.4 | 281.8 | 283.2 | 284.6 | 13.60 |
| 5.90 | 285.9 | 287.3 | 288.7 | 290.1 | 291.5 | 292.9 | 294.3 | 295.7 | 297.2 | 298.6 | 14.10 |
| 6.00 | 300.0* | 301.9 | 303.7 | 305.6 | 307.5 | 309.4 | 311.3 | 313.2 | 315.1 | 317.0 | 19.00 |
| 6.10 | 319.0 | 320.9 | 322.9 | 324.8 | 326.8 | 328.8 | 330.8 | 332.8 | 334.8 | 336.8 | 19.80 |
| 6.20 | 338.8 | 340.9 | 342.9 | 345.0 | 347.0 | 349.1 | 351.2 | 353.3 | 355.3 | 357.5 | 20.80 |
| 6.30 | 359.6 | 361.7 | 363.8 | 366.0 | 368.1 | 370.3 | 372.4 | 374.6 | 376.8 | 379.0 | 21.60 |
| 6.40 | 381.2 | 383.4 | 385.7 | 387.9 | 390.1 | 392.4 | 394.7 | 396.9 | 399.2 | 401.5 | 22.60 |
| 6.50 | 403.8* | 406.3 | 408.8 | 411.3 | 413.8 | 416.3 | 418.8 | 421.4 | 424.0 | 426.5 | 25.30 |
| 6.60 | 429.1 | 431.7 | 434.3 | 436.9 | 439.6 | 442.2 | 444.9 | 447.5 | 450.2 | 452.9 | 26.50 |
| 6.70 | 455.6 | 458.3 | 461.0 | 463.8 | 466.5 | 469.3 | 472.1 | 474.8 | 477.6 | 480.4 | 27.70 |
| 6.80 | 483.3 | 486.1 | 489.0 | 491.8 | 494.7 | 497.6 | 500.5 | 503.4 | 506.3 | 509.2 | 28.90 |
| 6.90 | 512.2 | 515.2 | 518.1 | 521.1 | 524.1 | 527.1 | 530.2 | 533.2 | 536.3 | 539.3 | 30.20 |
| 7.00 | 542.4* | 545.4 | 548.4 | 551.4 | 554.4 | 557.5 | 560.5 | 563.6 | 566.7 | 569.8 | 30.50 |
| 7.10 | 572.9 | 576.0 | 579.1 | 582.2 | 585.4 | 588.6 | 591.7 | 594.9 | 598.1 | 601.3 | 31.70 |
| 7.20 | 604.6 | 607.8 | 611.1 | 614.3 | 617.6 | 620.9 | 624.2 | 627.5 | 630.8 | 634.2 | 33.00 |
| 7.30 | 637.6 | 640.9 | 644.3 | 647.7 | 651.1 | 654.5 | 658.0 | 661.4 | 664.9 | 668.4 | 34.30 |
| 7.40 | 671.9 | 675.4 | 678.9 | 682.4 | 685.9 | 689.5 | 693.1 | 696.7 | 700.3 | 703.9 | 35.60 |
| 7.50 | 707.5* | 711.0 | 714.6 | 718.1 | 721.7 | 725.2 | 728.8 | 732.4 | 736.1 | 739.7 | 35.80 |
| 7.60 | 743.3 | 747.0 | 750.6 | 754.3 | 758.0 | 761.7 | 765.4 | 769.2 | 772.9 | 776.7 | 37.20 |
| 7.70 | 780.5 | 784.2 | 788.0 | 791.8 | 795.7 | 799.5 | 803.4 | 807.2 | 811.1 | 815.0 | 38.40 |
| 7.80 | 818.9 | 822.8 | 826.8 | 830.7 | 834.7 | 838.7 | 842.7 | 846.7 | 850.7 | 854.7 | 39.90 |
| 7.90 | 858.8 | 862.8 | 866.9 | 871.0 | 875.1 | 879.2 | 883.3 | 887.5 | 891.6 | 895.8 | 41.20 |
| 8.00 | 900.0* | 904.1 | 908.3 | 912.5 | 916.7 | 920.9 | 925.1 | 929.3 | 933.6 | 937.8 | 42.10 |
| 8.10 | 942.1 | 946.4 | 950.7 | 955.0 | 959.3 | 963.7 | 968.0 | 972.4 | 976.8 | 981.2 | 43.50 |
| 8.20 | 985.6 | 990.1 | 994.5 | 999.0 | 1003 | 1008 | 1012 | 1017 | 1021 | 1026 | 45.40 |

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY - WATER RESOURCES DIVISION

PAGE 3

EXPANDED RATING TABLE

TYPE: LOG

02130910

DATE PROCESSED: 02-11-1998 @ 10:53 BY twchurch

BLACK CREEK NEAR HARTSVILLE, SC

DD: 4 TYPE: 001 RATING NO: 10.0

OFFSET: .00

START DATE/TIME: 10-01-80 (0030)

RATING REACTIVATED FOR USE BEGINNING 10/01/86

| GAGE HEIGHT (FEET) | .00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 | DIFF IN Q PER TENTH FT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DISCHARGE IN CUBIC FEET PER SECOND (EXPANDED PRECISION) | | | | | | | | | | |
| 8.30 | 1031 | 1035 | 1040 | 1044 | 1049 | 1054 | 1058 | 1063 | 1068 | 1072 | 46.00 |
| 8.40 | 1077 | 1082 | 1087 | 1091 | 1096 | 1101 | 1106 | 1110 | 1115 | 1120 | 48.00 |
| 8.50 | 1125* | 1130 | 1135 | 1140 | 1145 | 1151 | 1156 | 1161 | 1166 | 1171 | 51.00 |
| 8.60 | 1176 | 1182 | 1187 | 1192 | 1198 | 1203 | 1208 | 1214 | 1219 | 1224 | 54.00 |
| 8.70 | 1230 | 1235 | 1241 | 1246 | 1251 | 1257 | 1262 | 1268 | 1274 | 1279 | 55.00 |
| 8.80 | 1285 | 1290 | 1296 | 1301 | 1307 | 1313 | 1318 | 1324 | 1330 | 1336 | 56.00 |
| 8.90 | 1341 | 1347 | 1353 | 1359 | 1365 | 1370 | 1376 | 1382 | 1388 | 1394 | 59.00 |
| 9.00 | 1400* | 1406 | 1411 | 1417 | 1422 | 1428 | 1433 | 1439 | 1445 | 1450 | 56.00 |
| 9.10 | 1456 | 1461 | 1467 | 1473 | 1479 | 1484 | 1490 | 1496 | 1502 | 1507 | 57.00 |
| 9.20 | 1513 | 1519 | 1525 | 1531 | 1537 | 1542 | 1548 | 1554 | 1560 | 1566 | 59.00 |
| 9.30 | 1572 | 1578 | 1584 | 1590 | 1596 | 1602 | 1608 | 1614 | 1620 | 1627 | 61.00 |
| 9.40 | 1633 | 1639 | 1645 | 1651 | 1657 | 1664 | 1670 | 1676 | 1682 | 1689 | 62.00 |
| 9.50 | 1695* | 1701 | 1708 | 1714 | 1720 | 1727 | 1733 | 1740 | 1746 | 1752 | 64.00 |
| 9.60 | 1759 | 1765 | 1772 | 1778 | 1785 | 1792 | 1798 | 1805 | 1811 | 1818 | 66.00 |
| 9.70 | 1825 | 1831 | 1838 | 1845 | 1851 | 1858 | 1865 | 1872 | 1878 | 1885 | 67.00 |
| 9.80 | 1892 | 1899 | 1906 | 1912 | 1919 | 1926 | 1933 | 1940 | 1947 | 1954 | 69.00 |
| 9.90 | 1961 | 1968 | 1975 | 1982 | 1989 | 1996 | 2003 | 2011 | 2018 | 2025 | 71.00 |
| 10.00 | 2032* | 2039 | 2046 | 2054 | 2061 | 2068 | 2076 | 2083 | 2090 | 2098 | 73.00 |
| 10.10 | 2105 | 2112 | 2120 | 2127 | 2135 | 2142 | 2150 | 2157 | 2165 | 2172 | 75.00 |
| 10.20 | 2180* | 2188 | 2195 | 2203 | 2210 | 2218 | 2226 | 2234 | 2241 | 2249 | 77.00 |
| 10.30 | 2257 | 2265 | 2272 | 2280 | 2288 | 2296 | 2304 | 2312 | 2320 | 2328 | 79.00 |
| 10.40 | 2336 | 2344 | 2352 | 2360 | 2368 | 2376 | 2384 | 2392 | 2400 | 2408 | 80.00 |
| 10.50 | 2416 | 2424 | 2433 | 2441 | 2449 | 2457 | 2466 | 2474 | 2482 | 2491 | 83.00 |
| 10.60 | 2499 | 2507 | 2516 | 2524 | 2533 | 2541 | 2549 | 2558 | 2566 | 2575 | 85.00 |
| 10.70 | 2584 | 2592 | 2601 | 2609 | 2618 | 2627 | 2635 | 2644 | 2653 | 2662 | 86.00 |
| 10.80 | 2670 | 2679 | 2688 | 2697 | 2706 | 2714 | 2723 | 2732 | 2741 | 2750 | 89.00 |
| 10.90 | 2759 | 2768 | 2777 | 2786 | 2795 | 2804 | 2813 | 2823 | 2832 | 2841 | 91.00 |
| 11.00 | 2850* | 2860 | 2870 | 2880 | 2891 | 2901 | 2911 | 2921 | 2932 | 2942 | 102.0 |
| 11.10 | 2952 | 2963 | 2973 | 2983 | 2994 | 3004 | 3015 | 3025 | 3036 | 3047 | 105.0 |
| 11.20 | 3057 | 3068 | 3079 | 3089 | 3100 | 3111 | 3122 | 3132 | 3143 | 3154 | 108.0 |
| 11.30 | 3165 | 3176 | 3187 | 3198 | 3209 | 3220 | 3231 | 3242 | 3253 | 3264 | 110.0 |
| 11.40 | 3275 | 3287 | 3298 | 3309 | 3320 | 3332 | 3343 | 3355 | 3366 | 3377 | 114.0 |
| 11.50 | 3389 | 3400 | 3412 | 3423 | 3435 | 3447 | 3458 | 3470 | 3482 | 3493 | 116.0 |
| 11.60 | 3505 | 3517 | 3529 | 3541 | 3552 | 3564 | 3576 | 3588 | 3600 | 3612 | 119.0 |
| 11.70 | 3624 | 3636 | 3649 | 3661 | 3673 | 3685 | 3697 | 3710 | 3722 | 3734 | 122.0 |
| 11.80 | 3746 | 3759 | 3771 | 3784 | 3796 | 3809 | 3821 | 3834 | 3846 | 3859 | 126.0 |
| 11.90 | 3872 | 3884 | 3897 | 3910 | 3923 | 3935 | 3948 | 3961 | 3974 | 3987 | 128.0 |

ATTACHMENT 4 (Page 3 of 4)

ATTACHMENT 4 (Page 4 of 4)

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY - WATER RESOURCES DIVISION PAGE 4

EXPANDED RATING TABLE TYPE: LOG

02130910

DATE PROCESSED: 02-11-1998 @ 10:53 BY bwchurch

BLACK CREEK NEAR HARTSVILLE, SC DD: 4 TYPE: 001 RATING NO: 10.0

OFFSET: .00 START DATE/TIME: 10-01-80 (0030)

RATING REACTIVATED FOR USE BEGINNING 10/01/86

| GAGE HEIGHT (FEET) | .00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 | DIFF IN Q PER TENTH FT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DISCHARGE IN CUBIC FEET PER SECOND (EXPANDED PRECISION) | | | | | | | | | | |
| 12.00 | 4000* | 4012 | 4025 | 4037 | 4049 | 4062 | 4074 | 4087 | 4099 | 4112 | 124.0 |
| 12.10 | 4124 | 4137 | 4150 | 4162 | 4175 | 4188 | 4200 | 4213 | 4226 | 4239 | 127.0 |
| 12.20 | 4251 | 4264 | 4277 | 4290 | 4303 | 4316 | 4329 | 4342 | 4355 | 4368 | 130.0 |
| 12.30 | 4381 | 4395 | 4408 | 4421 | 4434 | 4447 | 4461 | 4474 | 4487 | 4501 | 133.0 |
| 12.40 | 4514 | 4528 | 4541 | 4555 | 4568 | 4582 | 4595 | 4609 | 4623 | 4636 | 136.0* |
| 12.50 | 4650* | | | | | | | | | | |

ATTACHMENT 5 (Page 1 of 3)

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY - WATER RESOURCES DIVISION PAGE 1

EXPANDED RATING TABLE TYPE: LOG

02130900 DATE PROCESSED: 02-11-1998 @ 09:57 BY bwchurch

BLACK CREEK NEAR MCBEE, S. C. DO: 4 TYPE: 001 RATING NO: 10

OFFSET: .00 START DATE/TIME: 10-10-96 (1600)

BASED ON _____ DISCHARGE MEASUREMENTS, NOS _____, AND _____, AND IS _____ WELL DEFINED BETWEEN _____ AND _____ CFS

COMP BY _____ DATE _____ CHK. BY _____ DATE _____

Same as Rating No.9 above 8.00 ft G.H.

| GAGE HEIGHT (FEET) | .00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 | DIFF IN Q PER TENTH FT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DISCHARGE IN CUBIC FEET PER SECOND (EXPANDED PRECISION) | | | | | | | | | | |
| 2.90 | 19.00* | 19.10 | 19.20 | 19.30 | 19.40 | 19.50 | 19.60 | 19.70 | 19.80 | 19.90 | 1.000 |
| 3.00 | 20.00* | 20.15 | 20.29 | 20.44 | 20.59 | 20.73 | 20.88 | 21.03 | 21.18 | 21.33 | 1.480 |
| 3.10 | 21.48 | 21.64 | 21.79 | 21.94 | 22.09 | 22.25 | 22.40 | 22.56 | 22.71 | 22.87 | 1.550 |
| 3.20 | 23.03 | 23.18 | 23.34 | 23.50 | 23.66 | 23.82 | 23.98 | 24.14 | 24.30 | 24.46 | 1.600 |
| 3.30 | 24.63 | 24.79 | 24.95 | 25.12 | 25.28 | 25.45 | 25.61 | 25.78 | 25.95 | 26.11 | 1.650 |
| 3.40 | 26.28 | 26.45 | 26.62 | 26.79 | 26.96 | 27.13 | 27.31 | 27.48 | 27.65 | 27.83 | 1.720 |
| 3.50 | 28.00* | 28.18 | 28.37 | 28.55 | 28.74 | 28.92 | 29.11 | 29.30 | 29.49 | 29.67 | 1.860 |
| 3.60 | 29.86 | 30.05 | 30.24 | 30.44 | 30.63 | 30.82 | 31.01 | 31.21 | 31.40 | 31.60 | 1.930 |
| 3.70 | 31.79 | 31.99 | 32.19 | 32.39 | 32.59 | 32.79 | 32.99 | 33.19 | 33.39 | 33.59 | 2.000 |
| 3.80 | 33.79 | 34.00 | 34.20 | 34.41 | 34.61 | 34.82 | 35.03 | 35.23 | 35.44 | 35.65 | 2.070 |
| 3.90 | 35.86 | 36.07 | 36.28 | 36.50 | 36.71 | 36.92 | 37.14 | 37.35 | 37.57 | 37.78 | 2.140 |
| 4.00 | 38.00* | 38.24 | 38.48 | 38.72 | 38.96 | 39.20 | 39.44 | 39.68 | 39.93 | 40.17 | 2.420 |
| 4.10 | 40.42 | 40.66 | 40.91 | 41.16 | 41.41 | 41.66 | 41.91 | 42.16 | 42.42 | 42.67 | 2.510 |
| 4.20 | 42.93 | 43.18 | 43.44 | 43.70 | 43.95 | 44.21 | 44.47 | 44.74 | 45.00 | 45.26 | 2.590 |
| 4.30 | 45.52 | 45.79 | 46.06 | 46.32 | 46.59 | 46.86 | 47.13 | 47.40 | 47.67 | 47.94 | 2.700 |
| 4.40 | 48.22 | 48.49 | 48.77 | 49.04 | 49.32 | 49.60 | 49.88 | 50.15 | 50.44 | 50.72 | 2.780 |
| 4.50 | 51.00* | 51.28 | 51.56 | 51.84 | 52.12 | 52.40 | 52.68 | 52.96 | 53.25 | 53.53 | 2.820 |
| 4.60 | 53.82 | 54.10 | 54.39 | 54.68 | 54.97 | 55.26 | 55.55 | 55.84 | 56.14 | 56.43 | 2.910 |
| 4.70 | 56.73 | 57.02 | 57.32 | 57.62 | 57.91 | 58.21 | 58.51 | 58.82 | 59.12 | 59.42 | 3.000 |
| 4.80 | 59.73 | 60.03 | 60.34 | 60.64 | 60.95 | 61.26 | 61.57 | 61.88 | 62.19 | 62.50 | 3.090 |
| 4.90 | 62.82 | 63.13 | 63.45 | 63.76 | 64.08 | 64.40 | 64.72 | 65.04 | 65.36 | 65.68 | 3.180 |
| 5.00 | 66.00* | 66.30 | 66.60 | 66.91 | 67.21 | 67.51 | 67.82 | 68.12 | 68.43 | 68.74 | 3.040 |
| 5.10 | 69.04 | 69.35 | 69.66 | 69.97 | 70.28 | 70.60 | 70.91 | 71.22 | 71.54 | 71.85 | 3.130 |
| 5.20 | 72.17 | 72.48 | 72.80 | 73.12 | 73.44 | 73.76 | 74.08 | 74.40 | 74.72 | 75.04 | 3.200 |
| 5.30 | 75.37 | 75.69 | 76.02 | 76.34 | 76.67 | 77.00 | 77.32 | 77.65 | 77.98 | 78.31 | 3.270 |
| 5.40 | 78.64 | 78.98 | 79.31 | 79.64 | 79.98 | 80.31 | 80.65 | 80.98 | 81.32 | 81.66 | 3.360 |
| 5.50 | 82.00* | 82.41 | 82.82 | 83.23 | 83.64 | 84.05 | 84.47 | 84.88 | 85.30 | 85.72 | 4.140 |
| 5.60 | 86.14 | 86.56 | 86.98 | 87.40 | 87.83 | 88.25 | 88.68 | 89.11 | 89.54 | 89.97 | 4.260 |
| 5.70 | 90.40 | 90.84 | 91.27 | 91.71 | 92.15 | 92.59 | 93.03 | 93.47 | 93.91 | 94.36 | 4.400 |
| 5.80 | 94.80 | 95.25 | 95.70 | 96.15 | 96.60 | 97.05 | 97.50 | 97.96 | 98.42 | 98.87 | 4.530 |
| 5.90 | 99.33 | 99.79 | 100.3 | 100.7 | 101.2 | 101.6 | 102.1 | 102.6 | 103.1 | 103.5 | 4.670 |
| 6.00 | 104.0* | 104.5 | 105.0 | 105.5 | 105.9 | 106.4 | 106.9 | 107.4 | 107.9 | 108.4 | 4.900 |
| 6.10 | 108.9 | 109.4 | 109.9 | 110.4 | 110.9 | 111.4 | 111.9 | 112.4 | 112.9 | 113.4 | 5.100 |
| 6.20 | 114.0 | 114.5 | 115.0 | 115.5 | 116.0 | 116.5 | 117.1 | 117.6 | 118.1 | 118.6 | 5.200 |
| 6.30 | 119.2 | 119.7 | 120.2 | 120.7 | 121.3 | 121.8 | 122.3 | 122.9 | 123.4 | 124.0 | 5.300 |
| 6.40 | 124.5 | 125.0 | 125.6 | 126.1 | 126.7 | 127.2 | 127.8 | 128.3 | 128.9 | 129.4 | 5.500 |
| 6.50 | 130.0* | 130.6 | 131.1 | 131.7 | 132.3 | 132.8 | 133.4 | 134.0 | 134.5 | 135.1 | 5.700 |

ATTACHMENT 5 (Page 2 of 3)

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY - WATER RESOURCES DIVISION PAGE 2

EXPANDED RATING TABLE TYPE: LOG

02130900 DATE PROCESSED: 02-11-1998 @ 09:57 BY bwchurch

BLACK CREEK NEAR MCBEE, S. C. DD: 4 TYPE: 001 RATING NO: 10

OFFSET: .00 START DATE/TIME: 10-10-96 (1600)

Same as Rating No.9 above 8.00 ft G.H.

| GAGE HEIGHT (FEET) | .00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 | DIFF IN Q PER TENTH FT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DISCHARGE IN CUBIC FEET PER SECOND (EXPANDED PRECISION) | | | | | | | | | | |
| 6.60 | 135.7 | 136.3 | 136.8 | 137.4 | 138.0 | 138.6 | 139.2 | 139.8 | 140.3 | 140.9 | 5.800 |
| 6.70 | 141.5 | 142.1 | 142.7 | 143.3 | 143.9 | 144.5 | 145.1 | 145.7 | 146.3 | 146.9 | 6.000 |
| 6.80 | 147.5 | 148.1 | 148.7 | 149.3 | 150.0 | 150.6 | 151.2 | 151.8 | 152.4 | 153.1 | 6.200 |
| 6.90 | 153.7 | 154.3 | 154.9 | 155.6 | 156.2 | 156.8 | 157.5 | 158.1 | 158.7 | 159.4 | 6.300 |
| 7.00 | 160.0* | 160.7 | 161.5 | 162.2 | 163.0 | 163.7 | 164.5 | 165.2 | 166.0 | 166.7 | 7.500 |
| 7.10 | 167.5 | 168.3 | 169.0 | 169.8 | 170.6 | 171.4 | 172.1 | 172.9 | 173.7 | 174.5 | 7.800 |
| 7.20 | 175.3 | 176.1 | 176.8 | 177.6 | 178.4 | 179.2 | 180.0 | 180.8 | 181.6 | 182.4 | 8.000 |
| 7.30 | 183.3 | 184.1 | 184.9 | 185.7 | 186.5 | 187.3 | 188.2 | 189.0 | 189.8 | 190.7 | 8.200 |
| 7.40 | 191.5 | 192.3 | 193.2 | 194.0 | 194.9 | 195.7 | 196.6 | 197.4 | 198.3 | 199.1 | 8.500 |
| 7.50 | 200.0* | 200.8 | 201.6 | 202.5 | 203.3 | 204.1 | 205.0 | 205.8 | 206.6 | 207.5 | 8.300 |
| 7.60 | 208.3 | 209.2 | 210.0 | 210.9 | 211.7 | 212.6 | 213.4 | 214.3 | 215.2 | 216.0 | 8.600 |
| 7.70 | 216.9 | 217.8 | 218.6 | 219.5 | 220.4 | 221.3 | 222.1 | 223.0 | 223.9 | 224.8 | 8.800 |
| 7.80 | 225.7 | 226.6 | 227.5 | 228.4 | 229.3 | 230.2 | 231.1 | 232.0 | 232.9 | 233.8 | 9.000 |
| 7.90 | 234.7 | 235.6 | 236.6 | 237.5 | 238.4 | 239.3 | 240.3 | 241.2 | 242.1 | 243.1 | 9.300 |
| 8.00 | 244.0* | 245.5 | 247.1 | 248.6 | 250.1 | 251.7 | 253.3 | 254.8 | 256.4 | 258.0 | 15.60 |
| 8.10 | 259.6 | 261.2 | 262.8 | 264.4 | 266.1 | 267.7 | 269.3 | 271.0 | 272.7 | 274.3 | 16.40 |
| 8.20 | 276.0* | 277.9 | 279.8 | 281.7 | 283.6 | 285.6 | 287.5 | 289.5 | 291.5 | 293.5 | 19.40 |
| 8.30 | 295.4 | 297.4 | 299.5 | 301.5 | 303.5 | 305.6 | 307.6 | 309.7 | 311.8 | 313.9 | 20.60 |
| 8.40 | 316.0* | 318.3 | 320.7 | 323.0 | 325.4 | 327.8 | 330.2 | 332.6 | 335.1 | 337.5 | 24.00 |
| 8.50 | 340.0* | 342.6 | 345.1 | 347.7 | 350.4 | 353.0 | 355.6 | 358.3 | 361.0 | 363.7 | 26.40 |
| 8.60 | 366.4 | 369.1 | 371.9 | 374.7 | 377.4 | 380.2 | 383.1 | 385.9 | 388.7 | 391.6 | 28.10 |
| 8.70 | 394.5 | 397.4 | 400.3 | 403.3 | 406.3 | 409.2 | 412.2 | 415.3 | 418.3 | 421.3 | 29.90 |
| 8.80 | 424.4 | 427.5 | 430.6 | 433.8 | 436.9 | 440.1 | 443.3 | 446.5 | 449.7 | 452.9 | 31.80 |
| 8.90 | 456.2 | 459.5 | 462.8 | 466.1 | 469.5 | 472.9 | 476.2 | 479.7 | 483.1 | 486.5 | 33.80 |
| 9.00 | 490.0* | 493.3 | 496.6 | 499.9 | 503.3 | 506.7 | 510.0 | 513.5 | 516.9 | 520.3 | 33.80 |
| 9.10 | 523.8 | 527.3 | 530.8 | 534.3 | 537.8 | 541.4 | 545.0 | 548.6 | 552.2 | 555.8 | 35.70 |
| 9.20 | 559.5 | 563.2 | 566.9 | 570.6 | 574.3 | 578.1 | 581.9 | 585.7 | 589.5 | 593.3 | 37.70 |
| 9.30 | 597.2 | 601.1 | 605.0 | 608.9 | 612.9 | 616.9 | 620.8 | 624.9 | 628.9 | 632.9 | 39.80 |
| 9.40 | 637.0 | 641.1 | 645.3 | 649.4 | 653.6 | 657.7 | 662.0 | 666.2 | 670.5 | 674.7 | 42.00 |
| 9.50 | 679.0 | 683.4 | 687.7 | 692.1 | 696.5 | 700.9 | 705.3 | 709.8 | 714.3 | 718.8 | 44.30 |
| 9.60 | 723.3 | 727.9 | 732.5 | 737.1 | 741.7 | 746.4 | 751.0 | 755.7 | 760.5 | 765.2 | 46.70 |
| 9.70 | 770.0* | 774.3 | 778.6 | 783.0 | 787.4 | 791.7 | 796.2 | 800.6 | 805.0 | 809.5 | 44.00 |
| 9.80 | 814.0 | 818.5 | 823.0 | 827.6 | 832.1 | 836.7 | 841.3 | 846.0 | 850.6 | 855.3 | 46.00 |
| 9.90 | 860.0* | 864.6 | 869.2 | 873.8 | 878.5 | 883.2 | 887.9 | 892.6 | 897.3 | 902.1 | 46.90 |
| 10.00 | 906.9 | 911.7 | 916.5 | 921.3 | 926.2 | 931.1 | 936.0 | 940.9 | 945.8 | 950.8 | 48.90 |
| 10.10 | 955.8 | 960.8 | 965.8 | 970.8 | 975.9 | 981.0 | 986.1 | 991.3 | 996.4 | 1002 | 51.20 |
| 10.20 | 1007 | 1012 | 1017 | 1023 | 1028 | 1033 | 1038 | 1044 | 1049 | 1055 | 53.00 |
| 10.30 | 1060* | 1066 | 1071 | 1077 | 1082 | 1088 | 1093 | 1099 | 1105 | 1111 | 56.00 |

ATTACHMENT 5 (Page 3 of 3)

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY - WATER RESOURCES DIVISION PAGE 3

EXPANDED RATING TABLE TYPE: LOG

02130900 DATE PROCESSED: 02-11-1998 @ 09:57 BY bwchurch

BLACK CREEK NEAR MCBEE, S. C. DD: 4 TYPE: 001 RATING NO: 10

OFFSET: .00 START DATE/TIME: 10-10-96 (1600)

Same as Rating No.9 above 8.00 ft G.H.

| GAGE HEIGHT (FEET) | .00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 | DIFF IN Q PER TENTH FT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | DISCHARGE IN CUBIC FEET PER SECOND (EXPANDED PRECISION) | | | | | | | | | | |
| 10.40 | 1116 | 1122 | 1128 | 1134 | 1139 | 1145 | 1151 | 1157 | 1163 | 1169 | 59.00 |
| 10.50 | 1175* | 1181 | 1187 | 1194 | 1200 | 1206 | 1213 | 1219 | 1225 | 1232 | 63.00 |
| 10.60 | 1238 | 1245 | 1251 | 1258 | 1264 | 1271 | 1278 | 1284 | 1291 | 1298 | 66.00 |
| 10.70 | 1304 | 1311 | 1318 | 1325 | 1332 | 1338 | 1345 | 1352 | 1359 | 1366 | 69.00 |
| 10.80 | 1373 | 1380 | 1387 | 1394 | 1402 | 1409 | 1416 | 1423 | 1430 | 1438 | 72.00 |
| 10.90 | 1445 | 1452 | 1460 | 1467 | 1475 | 1482 | 1490 | 1497 | 1505 | 1512 | 75.00 |
| 11.00 | 1520* | 1528 | 1536 | 1544 | 1552 | 1559 | 1567 | 1575 | 1584 | 1592 | 80.00 |
| 11.10 | 1600 | 1608 | 1616 | 1624 | 1633 | 1641 | 1649 | 1658 | 1666 | 1674 | 83.00 |
| 11.20 | 1683 | 1691 | 1700 | 1709 | 1717 | 1726 | 1735 | 1743 | 1752 | 1761 | 87.00 |
| 11.30 | 1770 | 1779 | 1787 | 1796 | 1805 | 1814 | 1823 | 1833 | 1842 | 1851 | 90.00 |
| 11.40 | 1860* | 1870 | 1879 | 1889 | 1899 | 1909 | 1919 | 1929 | 1939 | 1949 | 99.00 |
| 11.50 | 1959 | 1969 | 1979 | 1989 | 1999 | 2010 | 2020 | 2030 | 2041 | 2051 | 103.0 |
| 11.60 | 2062 | 2072 | 2083 | 2093 | 2104 | 2115 | 2126 | 2136 | 2147 | 2158 | 107.0 |
| 11.70 | 2169 | 2180 | 2191 | 2202 | 2213 | 2225 | 2236 | 2247 | 2259 | 2270 | 112.0 |
| 11.80 | 2281 | 2293 | 2304 | 2316 | 2327 | 2339 | 2351 | 2363 | 2374 | 2386 | 117.0 |
| 11.90 | 2398 | 2410 | 2422 | 2434 | 2446 | 2458 | 2471 | 2483 | 2495 | 2508 | 122.0 |
| 12.00 | 2520* | 2534 | 2548 | 2562 | 2576 | 2590 | 2604 | 2619 | 2633 | 2648 | 142.0 |
| 12.10 | 2662 | 2677 | 2691 | 2706 | 2721 | 2736 | 2750 | 2765 | 2780 | 2796 | 149.0 |
| 12.20 | 2811 | 2826 | 2841 | 2857 | 2872 | 2888 | 2903 | 2919 | 2935 | 2951 | 155.0 |
| 12.30 | 2966 | 2982 | 2998 | 3015 | 3031 | 3047 | 3063 | 3080 | 3096 | 3113 | 163.0 |
| 12.40 | 3129 | 3146 | 3163 | 3180 | 3197 | 3214 | 3231 | 3248 | 3265 | 3283 | 171.0 |
| 12.50 | 3300* | 3319 | 3337 | 3356 | 3375 | 3394 | 3413 | 3432 | 3452 | 3471 | 191.0 |
| 12.60 | 3491 | 3510 | 3530 | 3549 | 3569 | 3589 | 3609 | 3629 | 3650 | 3670 | 199.0 |
| 12.70 | 3690 | 3711 | 3731 | 3752 | 3773 | 3794 | 3815 | 3836 | 3857 | 3879 | 210.0 |
| 12.80 | 3900 | 3921 | 3943 | 3965 | 3987 | 4009 | 4031 | 4053 | 4075 | 4097 | 220.0 |
| 12.90 | 4120 | 4142 | 4165 | 4188 | 4211 | 4234 | 4257 | 4280 | 4303 | 4326 | 230.0 |
| 13.00 | 4350* | 4372 | 4393 | 4415 | 4437 | 4459 | 4481 | 4503 | 4525 | 4548 | 220.0* |
| 13.10 | 4570* | | | | | | | | | | |

## ATTACHMENT 6

### WEIR DISCHARGE TEMPERATURE LIMITS

(Daily Maximum)

| Month | Limit (°F) |
|---|---|
| December - February | 90.0 |
| March | 92.0 |
| April | 100.0 |
| May | 106.0 |
| June - September | 111.2 |
| October | 108.0 |
| November | 100.0 |

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