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

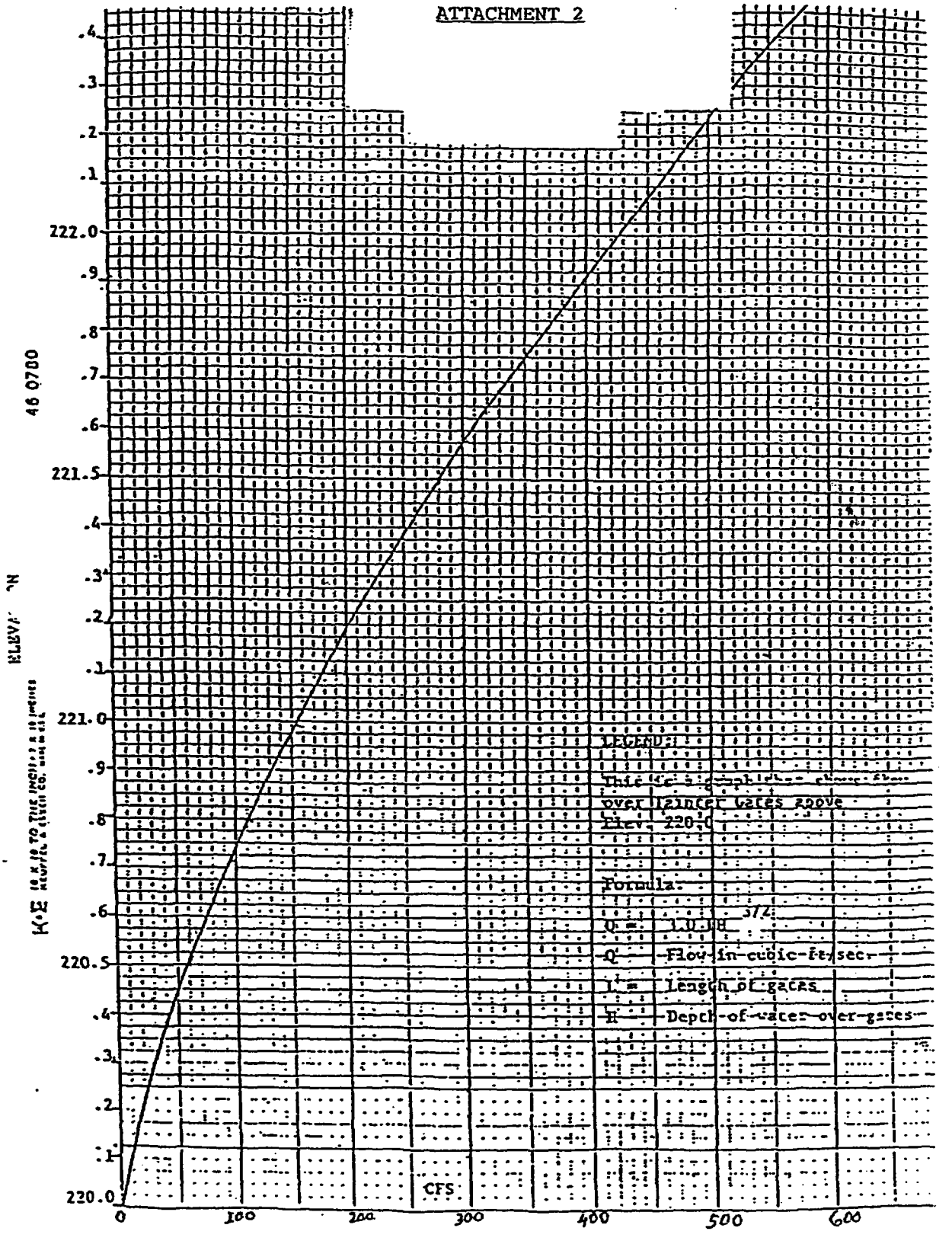
Expected Spillway Valve Discharge Rates
"A" Spillway Valve Only

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

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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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