2799-8001

DEEP CREEK HYDROELECTRIC STATION
MDNR WATER APPROPRIATION PERMIT NO. GA92S009 (01)
GARRETT COUNTY, MARYLAND

ANNUAL REPORT for 1998

January 1999

BY

PENNSYLVANIA ELECTRIC COMPANY
JOHNSTOWN, PA

DEEP CREEK HYDROELECTRIC STATION
MDNR WATER APPROPRIATION PERMIT NO. GA92S009 (01)
ANNUAL REPORT PER PERMIT CONDITION NO. 23

TABLE OF CONTENTS

APPENDICES

DEEP CREEK HYDROELECTRIC STATION
MDNR WATER APPROPRIATION PERMIT NO. GA92S009 (01)
ANNUAL REPORT PER PERMIT CONDITION NO. 23

1.0 SUMMARY

The Pennsylvania Electric Company (Permittee) holds Water Appropriation Permit GA92S009(01) issued by the Maryland Department of Natural Resources (MDNR) and now administered by the Maryland Department of the Environment (Department). This report is submitted in accordance with Permit Condition 23, which requires the Permittee to submit an annual report to the Department. including data and information as specified in Permit Conditions 15-19 and 21.

1.1 Lake Level Monitoring

Permit Condition 15 requires the Permittee to report the results of water level monitoring at Deep Creek Lake. Appendix A contains daily water level data and a plot depicting lake levels for 1998. Occasional heavy rainfall and associated runoff caused the lake to exceed the Upper Rule Band on several dates in 1998. Lake levels never fell below the lower rule band.

1.2 Temperature Monitoring

Permit Condition 16 requires the Permittee to report the results of temperature monitoring. The Department approved a "Water Temperature Enhancement Plan" designed to maintain river water temperatures below 25°C in the Youghiogheny River by letter dated June 8. 1996. In accordance with the Plan, the Permittee monitored river water temperature at the Sang Run Bridge from June 1 through

August 31, 1998. Data are not available from June 19 through June 23 due to lightning damage to the data recorder.

River water temperatures exceeded 25°C on eight days in 1998 despite full compliance with the temperature enhancement plan. The Permittee notified the Department as required by the permit and discussed options for preventing additional temperature exceedances. No additional requirements were placed on the Permittee. Data collected during 1998 and copies of the daily log sheets for the eight days are included in Appendix B.

1.3 Minimum Flow Release Monitoring

Permit Condition 17 requires the Permittee to report flow measurements and the occurrence of bypass releases. Low water conditions in the Youghiogheny River required flow bypass releases on several days in 1998. A summary is provided in Appendix C. The Permittee operated the flow bypass in accordance to the "Deep Creek Station Flow Bypass Operation Protocol, May 1995". A record of the U.S. Geological Survey data from the Oakland gaging station also is presented in Appendix C.

1.4 Dissolved Oxygen (DO) Monitoring

Permit Condition 18 requires the Permittee to report the results of dissolved oxygen monitoring. The weir was operated in 1998 in accordance with the "Dissolved Oxygen (DO) Enhancement Operations and Monitoring Protocol" approved by the Department on January 6, 1995. The Department, by letter dated December 1, 1997 approved a request to delete winter DO monitoring starting in 1998. Data obtained from monitoring DO in 1998 is included in Appendix D.

In accordance with the DO enhancement protocol. Deep Creek Station operated the tailrace weir with all gates open until DO levels fell below 6.0 mg/l. This occurred at 1025 hours on August 3 when Deep Creek Station measured DO levels of 5.58 mg/l. By 1125 hours. DO climbed to 6.43 mg/l in the tailrace with two sluice gates closed and two open about one foot.

1.5 Releases Unsuitable For Whitewater Recreation

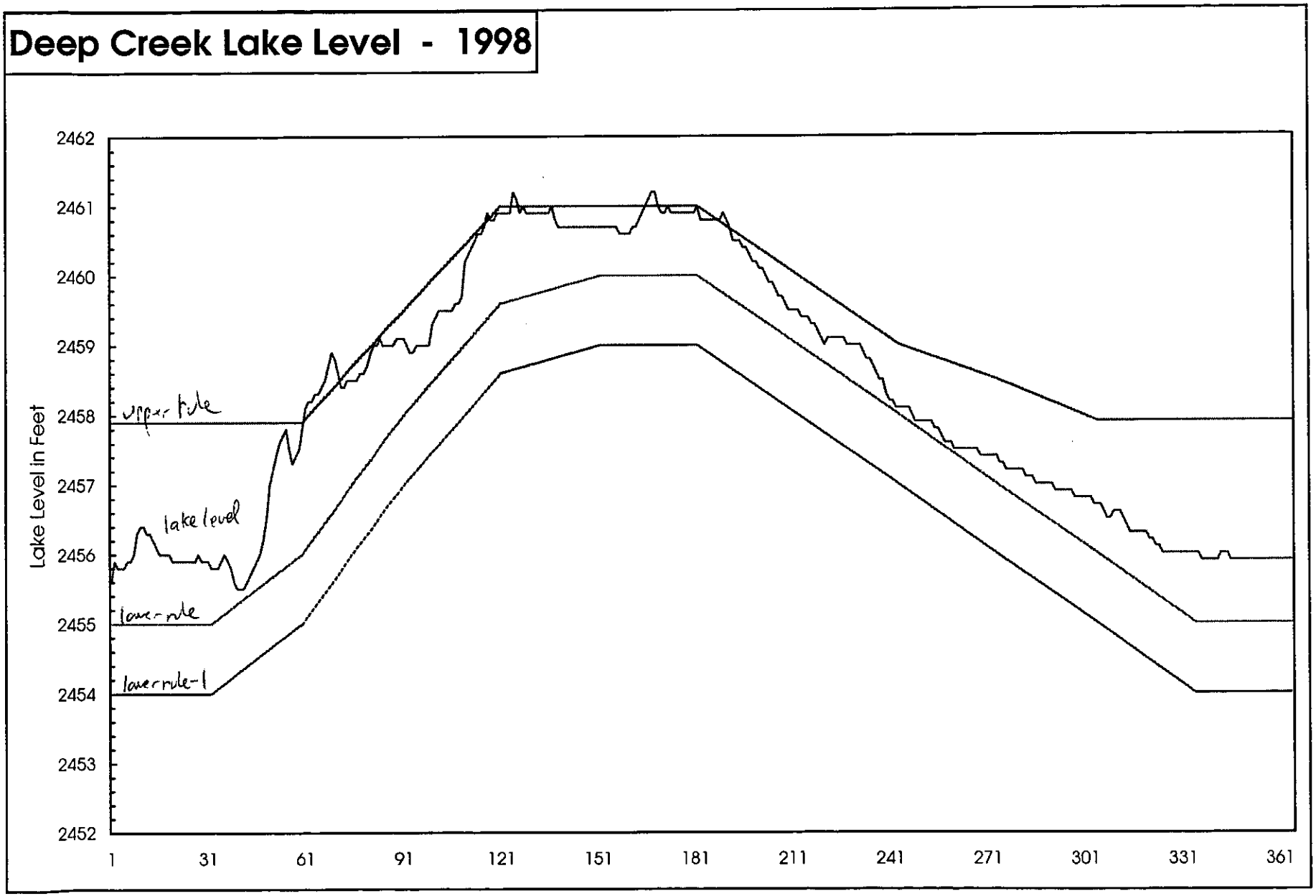
Permit Condition 19 requires Permittee to document the "times and dates when generation releases not suitable for whitewater recreation occurred." Such times and dates are presented in Appendix E.

1.6 Zebra Mussel Monitoring

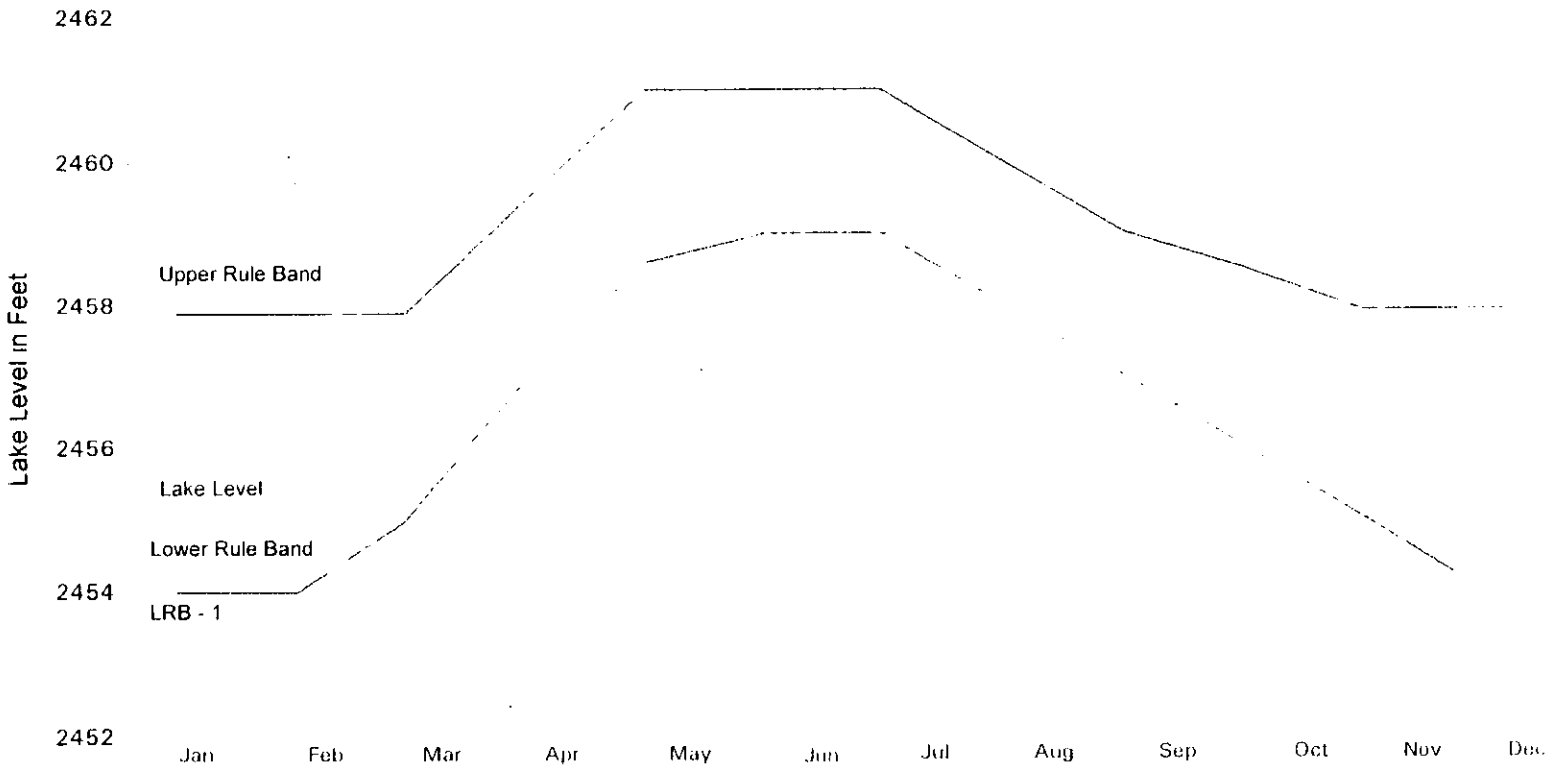
Permit Condition 21 requires the Permittee to submit the results of its zebra mussel monitoring program. Appendix F is a memorandum report presenting the results of zebra mussel monitoring at Deep Creek Lake. Artificial substrates placed at the station intake area have shown no signs of the zebra mussel to date.

APPENDIX A

LAKE LEVEL DATA AND PLOT


Deep Creek Lake Level - 1998
Lake Level in Feet
2462
2461
2460
2459
2458
2457
2456
2455
2454
2453
2452
1
31
61
91
121
151
181
211
241
271
301
331
361
upper rule
lake level
lower rule
lower rule-1

Deep Creek Lake Level - 1998



Deep Creek Lake Level 1998

Month	Day	Lake Level	In Fall
Jan	1	2455.6	0.00
	2	2455.9	0.00
	3	2455.8	0.00
	4	2455.8	0.00
	5	2455.8	0.00
	6	2455.9	0.25
	7	2455.9	0.83
	8	2456.0	0.92
	9	2456.3	0.40
	10	2456.4	0.00
	11	2456.4	0.00
	12	2456.3	0.00
	13	2456.3	0.10
	14	2456.2	0.20
	15	2456.1	0.10
	16	2456.0	0.08
	17	2456.0	0.20
	18	2456.0	0.08
	19	2456.0	0.03
	20	2455.9	0.03
	21	2455.9	0.00
	22	2455.9	0.30
	23	2455.9	0.70
	24	2455.9	0.17
	25	2455.9	0.10
	26	2455.9	0.00
	27	2455.9	0.35
	28	2456.0	0.50
	29	2455.9	0.00
	30	2455.9	0.15
	31	2455.9	0.00
Total			5.49

Month	Day	Lake Level	In Fall
Feb	1	2455.8	0.00
	2	2455.8	0.00
	3	2455.8	0.00
	4	2455.9	1.00
	5	2456.0	0.45
	6	2455.9	0.00
	7	2455.8	0.00
	8	2455.8	0.00
	9	2455.5	0.00
	10	2455.5	0.00
	11	2455.5	0.15
	12	2455.6	0.42
	13	2455.7	0.00
	14	2455.8	0.00
	15	2455.9	0.02
	16	2456.0	0.20
	17	2456.2	0.90
	18	2456.5	0.45
	19	2457.0	0.20
	20	2457.2	0.50
	21	2457.4	0.10
	22	2457.6	0.00
	23	2457.7	0.82
	24	2457.8	0.10
	25	2457.5	0.02
	26	2457.3	0.00
	27	2457.4	0.00
	28	2457.5	0.37
			5.7

Month	Day	Lake Level	In Fall
Mar	1	2457.8	0.10
	2	2458.1	0.12
	3	2458.2	0.08
	4	2458.2	0.10
	5	2458.3	0.00
	6	2458.3	0.00
	7	2458.4	0.00
	8	2458.5	0.93
	9	2458.7	0.58
	10	2458.9	0.16
	11	2458.8	0.07
	12	2458.6	0.03
	13	2458.4	0.02
	14	2458.4	0.20
	15	2458.5	0.03
	16	2458.5	0.00
	17	2458.5	0.15
	18	2458.5	0.60
	19	2458.6	0.10
	20	2458.6	0.42
	21	2458.7	0.82
	22	2458.9	0.12
	23	2459.0	0.00
	24	2459.0	0.17
	25	2459.1	0.00
	26	2459.0	0.00
	27	2459.0	0.00
	28	2459.0	0.00
	29	2459.0	0.15
	30	2459.1	0.00
	31	2459.1	0.00
			4.95

Month	Day	Lake Level	In Fall
Apr	1	2459.1	0.40
	2	2459.0	0.00
	3	2458.9	0.00
	4	2458.9	0.35
	5	2459.0	0.00
	6	2459.0	0.00
	7	2459.0	0.00
	8	2459.0	0.30
	9	2459.0	1.48
	10	2459.3	0.20
	11	2459.4	0.00
	12	2459.5	0.00
	13	2459.5	0.00
	14	2459.5	0.01
	15	2459.5	0.00
	16	2459.5	0.08
	17	2459.6	0.08
	18	2459.6	0.07
	19	2459.7	2.35
	20	2460.2	0.15
	21	2460.3	0.00
	22	2460.4	0.00
	23	2460.5	0.00
	24	2460.6	0.07
	25	2460.6	0.00
	26	2460.7	1.45
	27	2460.9	0.00
	28	2460.8	0.00
	29	2460.8	0.00
	30	2460.9	0.10
Total			7.09

Month	Day	Lake Level	In Fall
May	1	2460.9	0.38
	2	2460.9	0.27
	3	2460.9	0.16
	4	2460.9	1.00
	5	2461.2	0.08
	6	2461.1	0.00
	7	2460.9	0.28
	8	2461.0	0.31
	9	2460.9	0.02
	10	2460.9	0.03
	11	2460.9	0.26
	12	2460.9	0.07
	13	2460.9	0.00
	14	2460.9	0.00
	15	2460.9	0.00
	16	2460.9	0.35
	17	2461.0	0.03
	18	2460.9	0.00
	19	2460.7	0.22
	20	2460.7	0.00
	21	2460.7	0.58
	22	2460.7	0.00
	23	2460.7	0.00
	24	2460.7	1.20
	25	2460.7	0.03
	26	2460.7	0.00
	27	2460.7	0.00
	28	2460.7	0.00
	29	2460.7	0.00
	30	2460.7	0.00
	31	2460.7	0.25
			5.52

Month	Day	Lake Level	In Fall
Jun	1	2460.7	0.05
	2	2460.7	0.08
	3	2460.7	0.00
	4	2460.7	0.00
	5	2460.7	0.07
	6	2460.7	0.00
	7	2460.6	0.03
	8	2460.6	0.00
	9	2460.6	0.35
	10	2460.6	0.27
	11	2460.7	0.25
	12	2460.7	1.45
	13	2460.8	0.78
	14	2460.9	0.03
	15	2461.0	0.80
	16	2461.1	1.65
	17	2461.2	0.44
	18	2461.2	0.00
	19	2461.0	0.46
	20	2460.9	0.00
	21	2460.9	0.00
	22	2461.0	0.07
	23	2460.9	0.00
	24	2460.9	0.00
	25	2460.9	0.00
	26	2460.9	0.05
	27	2460.9	0.40
	28	2460.9	1.15
	29	2460.9	0.10
	30	2460.9	0.90
			9.38

Deep Creek Lake Level 1998

Month	Day	Lake Level	in Fall
Jul	1	2461.0	0.00
	2	2460.8	0.00
	3	2460.8	0.00
	4	2460.8	0.00
	5	2460.8	0.00
	6	2460.8	0.00
	7	2460.8	0.00
	8	2460.8	0.75
	9	2460.9	0.00
	10	2460.8	0.00
	11	2460.7	0.00
	12	2460.6	0.00
	13	2460.5	0.00
	14	2460.5	0.00
	15	2460.4	0.00
	16	2460.4	0.07
	17	2460.3	0.00
	18	2460.2	0.00
	19	2460.2	0.00
	20	2460.1	0.00
	21	2460.1	0.00
	22	2460.0	0.00
	23	2459.9	0.70
	24	2459.9	0.07
	25	2459.8	0.00
	26	2459.7	0.00
	27	2459.7	0.00
	28	2459.6	0.00
	29	2459.5	0.00
	30	2459.6	0.25
	31	2459.5	0.55
Total			2.39

Month	Day	Lake Level	in Fall
Aug	1	2459.5	0.00
	2	2459.4	0.00
	3	2459.4	0.00
	4	2459.4	0.00
	5	2459.3	0.00
	6	2459.3	0.00
	7	2459.2	0.00
	8	2459.1	0.00
	9	2459.0	0.10
	10	2459.1	1.40
	11	2459.1	0.00
	12	2459.1	0.00
	13	2459.1	0.00
	14	2459.1	0.15
	15	2459.1	0.10
	16	2459.0	0.00
	17	2459.0	0.60
	18	2459.0	0.10
	19	2459.0	0.00
	20	2459.0	0.00
	21	2458.9	0.00
	22	2458.8	0.00
	23	2458.8	0.00
	24	2458.7	0.25
	25	2458.6	0.12
	26	2458.5	0.02
	27	2458.5	0.00
	28	2458.3	0.00
	29	2458.2	0.00
	30	2458.2	0.00
	31	2458.1	0.00
			2.84

Month	Day	Lake Level	in Fall
Sep	1	2458.1	0.00
	2	2458.1	0.00
	3	2458.1	0.00
	4	2458.1	0.00
	5	2458.0	0.00
	6	2457.9	0.00
	7	2457.9	0.60
	8	2457.9	0.12
	9	2457.9	0.21
	10	2457.9	0.00
	11	2457.9	0.00
	12	2457.8	0.00
	13	2457.8	0.00
	14	2457.7	0.00
	15	2457.6	0.00
	16	2457.6	0.00
	17	2457.6	0.00
	18	2457.5	0.00
	19	2457.5	0.37
	20	2457.5	0.20
	21	2457.5	0.90
	22	2457.5	0.40
	23	2457.5	0.00
	24	2457.5	0.00
	25	2457.5	0.08
	26	2457.4	0.00
	27	2457.4	0.93
	28	2457.4	0.02
	29	2457.4	0.00
	30	2457.4	0.55
			4.38

Month	Day	Lake Level	in Fall
Oct	1	2457.4	0.00
	2	2457.3	0.00
	3	2457.3	0.55
	4	2457.2	0.05
	5	2457.2	0.00
	6	2457.2	0.00
	7	2457.2	0.20
	8	2457.2	0.50
	9	2457.2	0.22
	10	2457.1	0.03
	11	2457.1	0.00
	12	2457.1	0.00
	13	2457.0	0.00
	14	2457.0	0.00
	15	2457.0	0.00
	16	2457.0	0.00
	17	2457.0	0.00
	18	2457.0	0.00
	19	2456.9	0.10
	20	2456.9	0.00
	21	2456.9	0.65
	22	2456.9	0.12
	23	2456.9	0.00
	24	2456.9	0.00
	25	2456.8	0.00
	26	2456.8	0.00
	27	2456.8	0.00
	28	2456.8	0.09
	29	2456.8	0.00
	30	2456.8	0.00
	31	2456.7	0.00
Total			2.51

Month	Day	Lake Level	in Fall
Nov	1	2456.7	0.00
	2	2456.7	0.00
	3	2456.6	0.05
	4	2456.5	0.00
	5	2456.5	0.02
	6	2456.6	0.06
	7	2456.6	0.00
	8	2456.6	0.00
	9	2456.5	0.00
	10	2456.4	0.03
	11	2456.3	0.00
	12	2456.3	0.00
	13	2456.3	0.00
	14	2456.3	0.00
	15	2456.3	0.00
	16	2456.3	0.00
	17	2456.2	0.00
	18	2456.2	0.00
	19	2456.1	0.00
	20	2456.1	0.12
	21	2456.0	0.03
	22	2456.0	0.00
	23	2456.0	0.03
	24	2456.0	0.00
	25	2456.0	0.00
	26	2456.0	0.05
	27	2456.0	0.00
	28	2456.0	0.00
	29	2456.0	0.00
	30	2456.0	0.00
			0.39

Month	Day	Lake Level	in Fall
Dec	1	2456.0	0.05
	2	2456.0	0.00
	3	2455.9	0.00
	4	2455.9	0.17
	5	2455.9	0.00
	6	2455.9	0.00
	7	2455.9	0.25
	8	2455.9	0.65
	9	2456.0	0.00
	10	2456.0	0.00
	11	2456.0	0.02
	12	2455.9	0.00
	13	2455.9	0.05
	14	2455.9	0.00
	15	2455.9	0.00
	16	2455.9	0.05
	17	2455.9	0.40
	18	2455.9	0.09
	19	2455.9	0.05
	20	2455.9	0.02
	21	2455.9	0.00
	22	2455.9	0.70
	23	2455.9	0.00
	24	2455.9	0.00
	25	2455.9	0.00
	26	2455.9	0.00
	27	2455.9	0.00
	28	2455.9	0.10
	29	2455.9	0.05
	30	2455.9	0.22
	31	2455.9	0.05
			2.92
		Year Total	53.56

APPENDIX B

TEMPERATURE MONITORING AND RELEASE REPORTS

MAXIMUM DAILY RIVER WATER TEMPERATURES

Daily maximum river water temperatures in the Youghiogheny River at Sang Run are presented on the following table. The data were collated and provided by Versar. Inc., consultant to the MDNR Power Plant Assessment Division (PPAD).

The column labeled "SMAX" lists the arithmetic means of the daily maximum water temperatures, in degrees C, measured by two "Tempmentors" placed in the river by the MDNR. The column labeled "PenMAX" lists the maximum water temperatures, in degrees C, measured by the Permittee's temperature monitor at the Sang Run Bridge. PPAD and Versar analyze the data to evaluate the Water Temperature Enhancement Plan used by the Permittee to determine the need and timing of daily temperature releases.

Despite full compliance with the plan, temperatures at Sang Run exceeded 25°C on July 23 (25.1°), July 26 (25.3°), July 30 (25.5°), August 2 (26.6°), August 4 (26.0°), August 5 (27.1°), August 13 (25.5°) and August 26 (25.2°). Copies of the temperature enhancement data sheets for the eight days are enclosed. Releases were required on 7 of the eight days when river temperatures exceeded 25°C. The protocol did not require a temperature enhancement releases on August 13.

Deep Creek Station

Youghiogheny River Temperature Data - 1998

June	Smax	PenSmax	July	Smax	PenSmax	August	Smax	PenSmax
1			1		17.4	1	23.0	23.7
2			2		18.7	2	26.6	26.6
3			3		20.2	3	23.5	24.2
4			4		18.5	4	26.4	26.0
5			5		20.7	5	26.7	27.1
6		15.8	6		20.9	6	25.3	24.5
7		15.8	7		22.3	7	23.4	24.1
8		16.8	8	22.3	22.5	8	23.2	23.7
9		14.4	9	20.8	20.7	9	23.9	23.9
10		17.3	10	20.5	20.6	10	21.3	21.3
11		17.0	11	19.5	19.5	11	24.2	24.2
12		19.4	12	24.7	24.7	12	24.5	24.4
13		17.6	13	23.2	24.0	13	25.5	25.5
14		16.4	14	24.4	23.5	14	20.7	20.9
15		16.4	15	23.2	23.2	15	24.5	24.5
16		16.3	16	22.5	22.4	16	23.9	23.8
17		15.6	17	22.1	21.8	17	22.6	23.1
18		16.7	18	22.1	22.0	18	23.0	23.2
19		NA	19	23.5	23.6	19	22.6	23.1
20		NA	20	22.3	22.1	20	22.4	23.7
21		NA	21	22.4	21.8	21	22.2	23.5
22		NA	22	23.1	22.7	22	22.7	23.1
23		NA	23	25.4	25.1	23	25.2	24.8
24		22.5	24	23.5	23.6	24	21.8	21.5
25		20.9	25	23.9	23.9	25	24.5	24.1
26		21.3	26	25.8	25.3	26	25.7	25.2
27		21.8	27	20.9	20.0	27	21.4	21.6
28		20.6	28	24.0	23.5	28	21.1	21.0
29		19.4	29	22.9	22.2	29	21.6	21.7
30		18.7	30	25.7	25.5	30	22.1	22.6
			31	22.3	22.9	31	21.8	22.4

Youghiogheny River Water Temperature Enhancement Plan

23-Jul-98

45.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	24.93	Check again at 0900
	<=30	25.53	Check again at 0900
0900	> 30	24.87	Check again at 1100
	<=30	25.47	Check again at 1100
1100	All	24.89	Check again at 1200
1200	All	25.27	Check again at 1400
1400	All	26.26	Release ASAP - not later than 1430 for 1 hour
1500	All	2.53	No further predictions necessary today

Tair	28.9	Air Temp, Elkins WV - Degree C
CCF	100	Cloud Cover Factor, Elkins WV
T7	21.28	River Temp Sang Run @700
T9	21.31	River Temp Sang Run @900
T11	21.68	River Temp Sang Run @1100
T12	22.53	River Temp Sang Run @1200
T14	24.52	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	45.0	River Flow at Oakland

84 Air Temp, Elkins WV - Degre
TSTRMS Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan 26-Jul-98

53.0 **= CFS River Flow at Oakland**

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	23.98	Check again at 0900
	<=30	24.90	Check again at 0900
0900	> 30	23.73	Check again at 1100
	<=30	24.65	Check again at 1100
1100	All	24.51	Check again at 1200
1200	All	24.47	Check again at 1400
1400	All	25.51	Release ASAP - not later than 1430 for 1 hour
1500	All	25.72	Release ASAP - not later than 1530 for 1 hour

Tair	26.1	Air Temp, Elkins WV - Degree C
CCF	36	Cloud Cover Factor, Elkins WV
T7	18.48	River Temp Sang Run @700
T9	18.37	River Temp Sang Run @900
T11	19.69	River Temp Sang Run @1100
T12	20.61	River Temp Sang Run @1200
T14	23.33	River Temp Sang Run @1400
T15	24.37	River Temp Sang Run @1500
Q	53.0	River Flow at Oakland

79 Air Temp, Elkins WV - Degre
MOCLDY Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan 30-Jul-98

31.0 **= CFS River Flow at Oakland**

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	25.05	Check again at 0900
	<=30	25.09	Check again at 0900
0900	> 30	24.94	Check again at 1100
	<=30	24.98	Check again at 1100
1100	All	24.93	Check again at 1200
1200	All	24.96	Check again at 1400
1400	All	26.41	Release ASAP - not later than 1430 for 1 hour
1500	All	-2.28	No further predictions necessary today

Tair	28.9	Air Temp, Elkins WV - Degree C	84 Air Temp, Elkins WV - Degre
CCF	100	Cloud Cover Factor, Elkins WV	TSTRMS Cloud Cover, Elkins WV
T7	20.01	River Temp Sang Run @700	
T9	20.08	River Temp Sang Run @900	
T11	20.98	River Temp Sang Run @1100	
T12	21.71	River Temp Sang Run @1200	
T14	24.27	River Temp Sang Run @1400	
T15	0.00	River Temp Sang Run @1500	
Q	31.0	River Flow at Oakland	

Youghiogheny River Water Temperature Enhancement Plan

02-Aug-98

47.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	24.35	Check again at 0900
	<=30	25.03	Check again at 0900
0900	> 30	23.92	Check again at 1100
	<=30	24.60	Check again at 1100
1100	All	24.46	Check again at 1200
1200	All	24.36	Check again at 1400
1400	All	25.07	Check again at 1500
1500	All	26.37	Release ASAP - not later than 1530 for 1 hour

Tair	28.3	Air Temp, Elkins WV - Degree C
CCF	36	Cloud Cover Factor, Elkins WV
T7	16.75	River Temp Sang Run @700
T9	16.69	River Temp Sang Run @900
T11	18.26	River Temp Sang Run @1100
T12	19.34	River Temp Sang Run @1200
T14	22.27	River Temp Sang Run @1400
T15	24.51	River Temp Sang Run @1500
Q	47.0	River Flow at Oakland

83 Air Temp, Elkins WV - Degre
PTCLDY Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan

04-Aug-98

26.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	25.62	Check again at 0900
	<=30	25.46	Check again at 0900
0900	> 30	25.01	Check again at 1100
	<=30	24.85	Check again at 1100
1100	All	24.99	Check again at 1200
1200	All	24.96	Check again at 1400
1400	All	25.57	Release ASAP - not later than 1430 for 1 hour
1500	All	-1.63	No further predictions necessary today

Tair	29.4	Air Temp, Elkins WV - Degree C	85 Air Temp, Elkins WV - Degre
CCF	36	Cloud Cover Factor, Elkins WV	PTCLDY Cloud Cover, Elkins WV
T7	16.97	River Temp Sang Run @700	
T9	16.77	River Temp Sang Run @900	
T11	18.50	River Temp Sang Run @1100	
T12	19.72	River Temp Sang Run @1200	
T14	22.72	River Temp Sang Run @1400	
T15	0.00	River Temp Sang Run @1500	
Q	26.0	River Flow at Oakland	

Youghiogheny River Water Temperature Enhancement Plan

05-Aug 98

24.0 **= CFS River Flow at Oakland**

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	25.63	Check again at 0900
	<=30	25.39	Check again at 0900
0900	> 30	25.34	Check again at 1100
	<=30	25.10	Check again at 1100
1100	All	25.30	Check again at 1200
1200	All	25.26	Check again at 1400
1400	All	25.01	Check again at 1500
1500	All	26.59	Release ASAP - not later than 1530 for 1 hour

Tair	28.9	Air Temp, Elkins WV - Degree C
CCF	36	Cloud Cover Factor, Elkins WV
T7	17.28	River Temp Sang Run @700
T9	17.31	River Temp Sang Run @900
T11	19.13	River Temp Sang Run @1100
T12	20.34	River Temp Sang Run @1200
T14	22.63	River Temp Sang Run @1400
T15	24.95	River Temp Sang Run @1500
Q	24.0	River Flow at Oakland

84 Air Temp, Elkins WV - Degre
PTCLDY Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan

11 Aug 98

71.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	24.00	Check again at 0900
	<=30	25.64	Check again at 0900
0900	> 30	23.82	Check again at 1100
	<=30	25.46	Check again at 1100
1100	All	25.13	Check again at 1200
1200	All	25.27	Check again at 1400
1400	All	24.97	Check again at 1500
1500	All	24.14	No further predictions necessary today

Tair	27.8	Air Temp, Elkins WV - Degree C
CCF	36	Cloud Cover Factor, Elkins WV
T7	19.09	River Temp Sang Run @700
T9	19.03	River Temp Sang Run @900
T11	20.23	River Temp Sang Run @1100
T12	21.30	River Temp Sang Run @1200
T14	23.11	River Temp Sang Run @1400
T15	23.11	River Temp Sang Run @1500
Q	71.0	River Flow at Oakland

82 Air Temp, Elkins WV - Degree
PTCLDY Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan

26 Aug-98

P.01

58.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	25.36	Check again at 0900
	<=30	26.48	Release at 1100 for 2 hours
0900	> 30	25.57	Check again at 1100
	<=30	26.69	Release at 1100 for 2 hours
1100	All	25.88	Release at 1230 for 2 hours
1200	All	2.85	No further predictions necessary today
1400	All	6.65	No further predictions necessary today
1500	All	4.55	No further predictions necessary today

Tair	30.0	Air Temp, Elkins WV - Degree C
CCF	36	Cloud Cover Factor, Elkins WV
T7	19.46	River Temp Sang Run @700
T9	19.78	River Temp Sang Run @900
T11	20.82	River Temp Sang Run @1100
T12	0.00	River Temp Sang Run @1200
T14	0.00	River Temp Sang Run @1400
T15	0.00	River Temp Sang Run @1500
Q	58.0	River Flow at Oakland

86 Air Temp, Elkins WV - Degree
PTCLDY Cloud Cover, Elkins WV

DISPATCH GPU E WEST

SEP-03-1998 12:07

UNIT RUN 12:30 TO 17:30

APPENDIX C

FLOW BYPASS OPERATION RECORD

FLOW BYPASS OPERATION

The flow bypass protocol requires Deep Creek Station to maintain a minimum flow of 40 cfs in the Youghiogheny River immediately downstream of the tailrace. Starting June 1 and continuing through November 30, Deep Creek Station must monitor the river flows at the Oakland gage. When flows at the Oakland gage fall below 26 cfs, Deep Creek Station must open the bypass valve to release enough water to maintain 40 cfs in the river immediately below the tailrace. The protocol contains a table listing the valve opening required to maintain the 40 cfs.

Table 1 summarizes flow bypass data for June through November, 1998, when flows in the Youghiogheny River were 26 cfs or less. Data from the USGS gaging station at Oakland also are provided.

Deep Creek Station
Flow Bypass Operation - 1998

			Units Offline		Units Condensing	
Month	Day	Flow at Oakland	Bypass Flow	% Open	Bypass Flow	% Open
August	4	26.0	0	CLOSED	0	CLOSED
August	5	24.0	3	23	0	CLOSED
August	6	21.0	8	30	0	CLOSED
August	7	19.0	11	35	2	22
August	8	24.0	3	23	0	CLOSED
August	9	17.0	14	39	5	26
September	1	25.0	2	22	0	CLOSED
September	2	23.0	5	26	0	CLOSED
September	3	21.0	8	30	0	CLOSED
September	4	19.0	11	35	2	22
September	5	18.0	12	36	3	23
September	6	17.0	14	39	5	26
September	7	17.0	14	39	5	26
September	8	24.0	3	23	0	CLOSED
September	11	26.0	0	CLOSED	0	CLOSED
September	12	21.0	8	30	0	CLOSED
September	13	19.0	11	35	2	22
September	14	19.0	11	35	2	22
September	15	14.0	18	44	9	32
September	16	15.0	17	42	8	30
September	17	14.0	18	44	9	32
September	18	15.0	17	42	8	30
September	19	16.0	15	40	6	27
September	20	21.0	8	30	0	CLOSED
September	30	21.0	8	30	0	CLOSED
October	17	25.0	2	22	0	CLOSED
October	18	25.0	2	22	0	CLOSED
October	20	26.0	0	CLOSED	0	CLOSED
October	27	26.0	0	CLOSED	0	CLOSED
October	28	23.0	5	26	0	CLOSED
October	29	24.0	3	23	0	CLOSED
October	30	24.0	3	23	0	CLOSED
October	31	23.0	5	26	0	CLOSED
November	1	21.0	8	30	0	CLOSED
November	2	19.0	11	35	2	22
November	3	20.0	9	32	0	CLOSED

Deep Creek Station
Flow Bypass Operation - 1998

			Units Offline		Units Condensing	
Month	Day	Flow at Oakland	Bypass Flow	% Open	Bypass Flow	% Open
November	4	24.0	3	23	0	CLOSED
November	5	24.0	3	23	0	CLOSED
November	6	23.0	5	26	0	CLOSED
November	7	0.0	40	88	31	64
November	8	0.0	40	88	31	64
November	9	21.0	8	30	0	CLOSED
November	10	21.0	8	30	0	CLOSED
November	11	24.0	3	23	0	CLOSED
November	12	26.0	0	CLOSED	0	CLOSED
November	13	25.0	2	22	0	CLOSED
November	14	25.0	2	22	0	CLOSED
November	15	25.0	2	22	0	CLOSED
November	16	21.0	8	30	0	CLOSED
November	17	21.0	8	30	0	CLOSED
November	18	21.0	8	30	0	CLOSED
November	19	18.0	12	36	3	23
November	20	19.0	11	35	2	22
November	21	19.0	11	35	2	22
November	22	20.0	9	32	0	CLOSED
November	23	19.0	11	35	2	22
November	24	18.0	12	36	3	23
November	25	18.0	12	36	3	23
November	26	18.0	12	36	3	23
November	29	25.0	2	22	0	CLOSED
November	30	23.0	5	26	0	CLOSED

STATION NUMBER 03075500 YOUGHIOGHENY R BR OAKLAND, MD STREAM SOURCE AGENCY USGS
LATITUDE 392519 LONGITUDE 0792532 DRAINAGE AREA 134.00 DATUM 2353.61 STATE 24 COUNTY 023
PROVISIONAL DATA SUBJECT TO REVISION

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	124	979	206	304	1430	273	294	194	1830	59	33
2	134	460	690	186	279	1150	256	416	107	902	37	21
3	92	369	505	193	243	915	196	388	82	551	30	20
4	79	244	484	446	239	711	236	484	74	348	27	19
5	67	189	455	727	281	564	232	1480	68	262	24	18
6	61	158	352	876	489	447	188	908	71	195	22	17
7	54	1860	296	947	359	424	171	689	62	161	20	18
8	49	1510	255	3180	292	685	164	730	54	356	23	29
9	44	1020	235	2290	267	1100	407	720	53	260	19	31
10	43	697	590	1570	261	1140	809	508	127	165	131	38
11	47	482	1190	998	314	855	608	436	99	129	146	24
12	41	383	815	733	778	655	438	631	819	108	86	20
13	39	294	575	643	959	495	337	443	702	95	53	19
14	37	444	406	519	687	418	276	333	808	86	43	17
15	38	692	292	419	496	341	232	257	696	77	75	14
16	37	484	234	449	401	264	212	207	1410	71	73	15
17	34	356	205	384	668	240	194	184	1050	69	494	15
18	33	282	181	355	1870	531	171	150	855	63	411	16
19	33	244	166	308	2000	1300	1510	129	1080	54	191	18
20	33	231	157	275	1570	921	2610	121	959	49	115	32
21	32	256	148	233	1550	1490	1200	254	596	46	82	87
22	31	740	143	214	1140	1340	770	160	452	43	63	104
23	29	657	239	681	912	983	555	122	311	90	53	69
24	28	472	293	969	767	805	405	114	216	104	47	46
25	53	350	612	709	634	672	299	337	170	58	48	36
26	63	302	540	508	609	602	253	171	149	44	46	34
27	112	292	447	394	699	588	808	139	166	39	38	31
28	76	246	361	358	1020	484	465	120	506	36	32	45
29	56	268	284	322	-	405	357	104	958	32	29	31
30	47	478	263	493		330	303	97	993	30	27	58
31	45		215	387	-	271		85	---	98	26	-
TOTAL	1694	14584	12196	19972	19970	22633	14939	11211	11387	6441	2370	957
MEAN	54.6	486	400	644	713	730	498	362	446	208	76.5	31.9
MAX	137	1860	1190	2290	2000	1490	2610	1480	1410	1820	431	104
MIN	28	124	143	186	239	240	164	85	53	30	19	14
CFSM	.41	3.63	2.98	4.81	5.32	5.45	3.72	2.70	3.33	1.55	.57	.24
IN.	.47	4.05	3.44	5.54	5.54	6.28	4.15	3.11	3.72	1.79	.66	.27

UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY MD DEL BC INSTALLATION 01/29/1999

STATION NUMBER 03075500 YOUGHIOGHENY R DR OAKLAND, MD STORAG SOURCE AGENCY USGS
LATITUDE 392519 LONGITUDE 0792532 DRAINAGE AREA 134.00 DATUM 2353.61 STATE 24 COUNTY 023
PROVISIONAL DATA DAY DISCHARGE SUBJECT TO REVISION
DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	22	23	54								
2	35	20	23	51								
3	27	22	21	64								
4	56	24	21	99								
5	54	23	22	82								
6	38	22	23	71								
7	31	22	26	72								
8	53	22	63	69								
9	98	22	159	546								
10	70	22	89	779								
11	61	25	65	168								
12	49	26	52	367								
13	40	25	46	705								
14	35	23	45	1220								
15	31	22	40	1370								
16	28	22	37	882								
17	25	21	39	669								
18	23	21	40	1050								
19	25	19	37	1080								
20	37	19	47	693								
21	25	20	78	561								
22	38	20	168	574								
23	45	19	163	931								
24	34	18		1860								
25	29	18	94	1240								
26	27	23	74	768								
27	25	37	66	566								
28	23	29	65	491								
29	24	23	65									
30	23	22	68									
31	22		60									
TOTAL	1185	673										
MEAN	38.2	22.4										
MAX	98	37										
MIN	22	18										
AC-FT	2350	1330										
CFSM	.29	.17										
IN.	.33	.19										

APPENDIX D

RECORD OF
DISSOLVED OXYGEN MONITORING

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION CAL. READINGS TIME	TEMP °C	DO (mg/l)	DO MEASUREMENTS DOWNSTREAM FROM WEIR TIME	TEMP °C	DO (mg/l)	NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM WEIR TIME	TEMP °C	DO (mg/l)	HOH OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
6-1-98	10:00	23.0°	7.56	10:30	14.5°	8.27	2 @ 100%	10:00 To 13:00	Full (21 ft)					
6-2-98								Non Scheduled	"					
6-3-98								Non Scheduled	"					
6-4-98								Non Scheduled	"					
6-5-98	10:00	23.0°	7.54	10:30	14.5°	7.35	2 @ 100%	10:00 To 13:00	"					
6-6-98								10:00 To 13:00	"					
6-7-98									"					
6-8-98	10:00	23.0°	6.97	10:30	14.5°	7.53	2 @ 100%	10:00 To 13:00	"					
6-9-98								Non Scheduled	"					
6-10-98								Non Scheduled	"					
6-11-98								Non Scheduled	"					
6-12-98							2 @ 100%	07:30 To 13:00 Unscheduled	"					
6-13-98									"					
6-14-98									"					
6-15-98								10:00 To 13:00	"					
6-16-98							2 @ 100%	07:00 To 23:00 Unscheduled	"					
6-17-98							2 @ 100%	07:30 To 23:30 Unscheduled	"				2021.1	2030.1
6-18-98							2 @ 100%	07:00 To 23:00 Unscheduled	"				2021.5	2031.1
6-19-98							2 @ 100%	04:00 To 10:00 13:00 To Unscheduled	"				2023.6	2032.1
6-20-98									"				2023.3	2032.1

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 FT. MSL)

DATE	INSTRUMENT CALIBRATION CAL. READINGS TIME	TEMP °C	DO (mg/l)	DO MEASUREMENTS DOWNSTREAM FROM WEIR TIME	TEMP °C	DO (mg/l)	NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM WEIR TIME	TEMP °C	DO (mg/l)	HOR OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
6-21-98			STATION	NOT	ATTENDED		NONE		NO OPEN					
6-22-98	08:30	22.0°	7.01	08:40	16.1°	7.05	2 @ 100%	07:00 To 07:30 08:10 To 24:00	"					
6-23-98	13:50	22.4°	6.54	13:30	16.8°	7.43	2 @ 100%	Several Unscheduled 13:00 To 15:40 Closed.	"					
6-24-98								Unscheduled 08:00 To 09:15 (09:55 To 11:00	"					
6-25-98								Unscheduled 08:00 To 10:05	"					
6-26-98								Unscheduled 07:00 To 13:00	"					
6-27-98			STATION	NOT	ATTENDED				"					
6-28-98			"	"	"				"					
6-29-98	10:25	22.4°	6.80	10:35	16.5°	7.11	2 @ 100%	10:00 To 13:00 + 03:25 To 03:30	"					
6-30-98								Unscheduled 13:20 To 14:10	"					
7-1-98								Unscheduled 08:00 To 24:00	"					
7-2-98								Unscheduled 07:05 To 07:20	"					
7-3-98								(Holiday) 10:00 To 13:00	"					
7-4-98			STATION	NOT	ATTENDED				"					
7-5-98			"	"	"			10:00 To 13:00	"					
7-6-98	10:15	26.3°	6.99	10:30	16.3	7.11	2 @ 100%	None 10:00 To 13:00	"					
7-7-98							1 @ 100%	Unscheduled 10:00 To 11:45	"				2022.4	2022.1
7-8-98								NONE	"				2022.3	2021.6
7-9-98							1 Unit @ 100%	Unscheduled 10:00 To 22:00	"				2022.3	
7-10-98	09:50	26.1°	6.71	08:00	16.0	7.32	2 Units @ 100%	Unscheduled 07:35 To	"				2022.2	2021.9

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION CAL. READINGS TIME	TEMP °C	DO (mg/l)	DO MEASUREMENTS DOWNSTREAM FROM WEIR TIME	TEMP °C	DO (mg/l)	NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM WEIR TIME	TEMP °C	DO (mg/l)	HOW OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
7-11-98								09:00 To 21:00	Full Open					
7-12-98			"	"		"		None	"					
7-13-98	10:30	25.2°	7.13	10:35	17.4°	6.51	2@100%	10:00 To 15:00	"				2021.9	2021.1
7-14-98								Unscheduled 10:30 To 12:30	"				2021.9	"
7-15-98								Unscheduled 08:30 To 14:30	"				2021.9	"
7-16-98								Unscheduled 13:08 To	"				2021.9	"
7-17-98	10:25	26.1°	6.89	10:35	17.2°	6.42	2@100%	10:00 To 17:00	"				2021.9	"
7-18-98								10:00 To 13:00	"					"
7-19-98			"	"		"		11:00 To 13:00	"					"
7-20-98	10:25	27.7°	7.09	10:35	18.2°	7.01	2@100%	07:00 To 09:15 10:00 To 16:30	"				2021.8	"
7-21-98	10:30	27.7°	7.13	10:35	17.2°	6.94	2@100%	Unscheduled 10:00 To 11:00	"				2021.7	"
7-22-98								Unscheduled 09:30 To 15:33	"				2021.7	"
7-23-98								Unscheduled 14:15 To 15:15	"				2021.7	"
7-24-98	10:25	23.8°	7.00	10:35	17.1°	6.80	2@100%	10:00 To 13:00	"				2021.1	"
7-25-98								07:00 To 08:08 10:30 To 10:56 14:05 To 15:05	"					"
7-26-98			"	"		"			"					"
7-27-98	10:25	25.3°	7.00	10:35	17.3°	6.33	2@100%	10:00 To 16:30	"				2021.8	"
7-28-98								Unscheduled 08:35 To 08:45 14:30 To 15:00	"				2021.7	"
7-29-98								Unscheduled 11:00 To 14:00	"				2021.6	"
7-30-98								Unscheduled 14:30 To					2021.6	"

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 FT. MSL)

DATE	INSTRUMENT CALIBRATION CAL. READINGS TIME	TEMP °C	DO (mg/l)	DO MEASUREMENTS DOWNSTREAM FROM WEIR TIME	TEMP °C	DO (mg/l)	NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM WEIR TIME	TEMP °C	DO (mg/l)	NOW OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
7-31-98	10:15	25.0°	7.34	10:35	17.0°	6.39	2 @ 100%	10:00 To 15:00	Automatic	—	—	—	2051.2	2048.1
8-1-98	—	—	—	—	—	—	"	10:00 To 13:00	"	—	—	—		"
8-2-98	—	—	—	—	—	—	"	15:00 To 11:00	"	—	—	—		"
8-3-98	10:15	26.0°	7.52	10:35	18.2°	5.52	2 @ 105%	10:00 To 13:00	"	—	—	—	2051.6	"
8-3-98	11:25	22.1°	7.19	11:30	18.2°	6.43	"	"	1 Closed 2 Open 15%	—	—	—	"	2048.5
8-4-98	—	—	—	—	—	—	2 @ 100%	UNSCHEDULED 14:30 To 15:30	"	—	—	—	"	"
8-5-98	—	—	—	—	—	—	—	UNSCHEDULED 15:45 To 16:25	"	—	—	—	"	"
8-6-98	—	—	—	—	—	—	—	UNSCHEDULED 10:30 To 14:30	"	—	—	—	"	"
8-7-98	10:15	24.3°	7.15	10:35	18.3°	6.37	2 @ 100%	UNSCHEDULED 08:10 To 08:40 10:00 To 13:00	"	—	—	—	"	"
8-8-98	—	"	Station	Not	Attended		—	11:00 To 13:00	"	—	—	—		"
8-9-98	—	"	"	"	"	"	"	11:00 To 14:30	"	—	—	—		"
8-10-98	10:15	27.6°	7.08	10:35	18.0°	6.45	2 @ 100%	07:35 To 09:45 — UNSCHEDULED And 10:00 To 13:00	"	—	—	—	2051.7	"
8-11-98	—	—	—	—	—	—	2 @ 100%	UNSCHEDULED 10:30 To 11:30	"	—	—	—	2051.3	"
8-12-98	—	—	—	—	—	—	—	None	"	—	—	—	2051.9	
8-13-98	—	—	—	—	—	—	2 to 105%	UNSCHEDULED 11:35 To 11:30	"	—	—	—	2052.8	"
8-14-98	10:15	24.9°	6.24	10:35	18.2°	6.50	2 @ 100%	10:00 To 13:00	"	—	—	—	2051.7	"
8-15-98	—	—	Station	Not	Attended		—	—	"	—	—	—	—	—
8-16-98	—	—	"	"	"	"	—	—	"	—	—	—	—	—
8-17-98	—	—	Inclement	Weather	—	—	2 @ 100%	10:00 To 13:00	"	—	—	—	2052.9	"
8-18-98	—	—	—	—	—	—	2 @ 100%	UNSCHEDULED 08:10 To 08:50 15:00 To 17:00	"	—	—	—	2052.0	"

(Instrument Calibrated to 2000 ft. MSL)

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

DATE	INSTRUMENT CALIBRATION CAL. READINGS TIME	TEMP °C	DO (mg/l)	DO MEASUREMENTS DOWNSTREAM FROM WEIR TIME	TEMP °C	DO (mg/l)	NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM WEIR TIME	TEMP °C	DO (mg/l)	NON OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
8-19-98	-	-	-	-	-	-	-	-	CLOSED	-	-	-	-	
8-20-98								NONE	OVER 16M				2033.3	
8-21-98	10:25	25.5°	6.93	10:35	18.6°	6.61	2 @ 100%	UNSCHEDULED 10:00 TO 13:00	"	-	-	-	2032.2	2028.5
8-22-98		SUNDAY		NOT	TAKEN			10:00 TO 13:00	"	-	-	-	2032.2	2028.5
8-23-98		"		"	"				"	-	-	-	-	"
8-24-98	10:25	20.6°	7.03	10:35	18.6°	6.73	2 @ 100%	10:00 TO 16:00	"	-	-	-	-	"
8-25-98	-	-	-	-	-	-	2 @ 100%	UNSCHEDULED 13:15 TO 18:05	"	-	-	-	2031.7	"
8-26-98	-	-	-	-	-	-	2 @ 100%	UNSCHEDULED 15:30 TO 17:30	"	-	-	-	2031.8	"
8-27-98	9:25	23.2°	7.41	9:35	19.0°	6.55	2 @ 100%	09:00 TO 15:00	"	-	-	-	2031.8	"
8-28-98	10:25	23.8°	7.39	10:35	19.1°	6.57	2 @ 100%	10:00 TO 16:00	"	-	-	-	2031.7	"
8-29-98		SUNDAY		NOT	TAKEN				"	-	-	-	2031.7	"
8-30-98		"		"	"				"	-	-	-	-	"
8-31-98	10:25	24.1°	7.06	10:35	19.3°	6.14	2 @ 100%	10:00 TO 13:00	"	-	-	-	-	"
9-1-98	-	-	-	-	-	-	-	NONE	"	-	-	-	2031.6	"
9-2-98	-	-	-	-	-	-	-	NONE	"	-	-	-	2031.6	
9-3-98	-	-	-	-	-	-	-	NONE	"	-	-	-	2031.6	
9-4-98	10:25	21.7°	6.89	10:35	19.3°	6.06	2 @ 100%	10:00 TO 13:25	"	-	-	-	2031.6	
9-5-98		SUNDAY		NOT	TAKEN			10:00 TO 13:00	"	-	-	-	2031.5	2028.5
9-6-98		"		"	"			NONE	"	-	-	-	-	"
9-7-98	-	-	"HOLIDAY"		"			17:00 TO 13:30	"	-	-	-	-	-
													-	2028.5

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION CAL. READINGS: TIME	TEMP °C	DO (mg/l)	DO MEASUREMENTS DOWNSTREAM FROM WEIR: TIME	TEMP °C	DO (mg/l)	NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM WEIR: TIME	TEMP °C	DO (mg/l)	NON OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
9-8-98	—	—	—	—	—	—	—	NONE	CLOSED	—	—	—	2021.7	
9-9-98	—	—	—	—	—	—	2 @ 100%	UNSCHEDULED 06:30 TO 06:30	"	—	—	—	2021.8	2020.2
9-10-98	—	—	—	—	—	—	2 @ 100%	UNSCHEDULED 19:35 TO 20:30	"	—	—	—	2021.7	2018.7
9-11-98	10:25	19.3°	7.89	10:35	12.4°	6.45	2 @ 100%	10:00 TO 13:00	"	—	—	—	2021.6	2018.4
9-12-98		STATION		NOT	ATTENDED			NONE	"	—	—	—		
9-13-98		"		"			2 @ 100%	16:25 TO 17:15	"	—	—	—		2018.4
9-14-98	10:30	24.1°	6.93	10:35	19.1°	6.37	2 @ 100%	10:00 TO 15:20	"	—	—	—	2021.6	2018.5
9-15-98	—	—	—	—	—	—	2 @ 100%	UNSCHEDULED 21:15 TO 21:30	"	—	—	—	2021.6	"
9-16-98	—	—	—	—	—	—	—	NONE.	"	—	—	—	2021.6	
9-17-98	—	—	—	—	—	—	—	NONE	"	—	—	—	2021.6	
9-18-98	10:30	24.4°	6.98	10:35	19.3°	6.18	2 @ 100%	10:00 TO 13:00	"	—	—	—	2021.6	2018.4
9-19-98		STATION		NOT	ATTENDED		"	(21:24 TO 00:31)	"	—	—	—	—	"
9-20-98		"		"	"			NONE	"	—	—	—		
9-21-98	— INSTRUMENT MALFUNCTION						2 @ 100%	10:00 TO 13:00	"	—	—	—	2021.7	2018.5
9-22-98	—	—	—	—	—	—	2 @ 100%	UNSCHEDULED 09:30 TO 09:30	"	—	—	—	2022.0	"
9-23-98	—	—	—	—	—	—	—	NONE	"	—	—	—	2021.9	—
9-24-98	—	—	—	—	—	—	2 @ 100%	UNSCHEDULED 13:20 TO 13:35	"	—	—	—	2021.7	2018.5
9-25-98	10:25	22.3°	7.21	10:35	18.8	6.29	2 @ 100%	10:00 TO 13:00	"	—	—	—	2021.7	"
9-26-98		STATION		NOT	ATTENDED		2 @ 100%		"	—	—	—	—	"
9-27-98		"		"	"		—	NONE	"	—	—	—		

DEEP CREEK STATION
DISSOLVED OXYGEN MONITORING LOG

(Instrument Calibrated to 2000 ft. MSL)

DATE	INSTRUMENT CALIBRATION CAL. READINGS			DO MEASUREMENTS DOWNSTREAM FROM WEIR			NO. UNITS GENERATING	TIMES OF GENERATION	SLUICE GATE POSITION	DO MEASUREMENTS UPSTREAM FROM WEIR			NON OPERATING TAILRACE ELEV	OPERATING TAILRACE ELEV
	TIME	TEMP °C	DO (mg/l)	TIME	TEMP °C	DO (mg/l)				TIME	TEMP °C	DO (mg/l)		
9-28-98	10:55	[illegible]4.5°	7.16	10:35	12.8°	9.41	[illegible] @ 100%	10:00 To 14:00	Closed / Open 1 Foot	—		—	2001.8	[illegible]
9-29-98	—	—	—	—	—	—	—	None	"	—		—	2001.7	
9-30-98	—	—	—	—	—	—	[illegible] @ 100%	Unscheduled — 06:10 To 06:30	"	—		—	2001.9	[illegible]

APPENDIX E

REPORT ON RELEASES UNSUITABLE FOR WHITEWATER RECREATION

REPORT OF RELEASES NOT SUITABLE FOR WHITEWATER RECREATION

Condition 19 outlines several operating rules designed to enhance whitewater boating opportunities in the Youghiogheny River. Two operating rules restrict generation during certain natural Youghiogheny River flows.

> "THE PERMITTEE SHALL NOT OPERATE THE PROJECT FOR HYDROELETRIC GENERATION BEFORE 1300 HOURS WHEN NATURAL FLOWS AT FRIENDSVILLE ARE BETWEEN 1300 AND 2500 CFS, AS ESTIMATED USING USGS GAGE 03075500 NEAR OAKLAND (OAKLAND GAGE), UNLESS AN UNUSUAL OR EMERGENCY CONDITION EXISTS, OR THE LAKE ELEVATION EXCEEDS THE UPPER RULE BAND.
>
> WHEN NATURAL FLOWS AT FRIENDSVILLE, AS ESTIMATED USING THE OAKLAND GAGE, ARE GREATER THAN 600 BUT LESS THAN 1300 CFS, AND THE LAKE IS BELOW THE UPPER RULE BAND SPECIFIED IN CONDITION 14, GENERATION SHALL BE RESTRICTED TO SINGLE-TURBINE OPERATION FOR THE FIRST THREE HOURS OF SCHEDULED GENERATION."

Another operating rule restricts generation during certain hours of the day.

> "WHEN LAKE LEVELS ARE BETWEEN THE UPPER AND LOWER RULE BANDS, NO RELEASES SHALL BE MADE BETWEEN THE 1600 HOURS AND 0800 HOURS OF THE FOLLOWING MORNING, UNLESS THE RELEASE ALSO PROVIDES THREE CONSECUTIVE HOURS OF FLOWS SUITABLE FOR WHITEWATER BOATING DURING THE HOURS BETWEEN 0800 HOURS AND 1600 HOURS. THE TIMES AND DATES WHEN GENERATION RELEASES NOT SUITABLE FOR WHITEWATER RECREATION OCCURRED SHALL BE DOCUMENTED IN AN ANNUAL REPORT."

Condition 14 of the permit further provides:

> "IN THE EVENT OF UNUSUAL OR EMERGENCY CONDITIONS, THE NORMAL MONTHLY OPERATING RULES MAY BE MODIFIED OR SUSPENDED UNTIL SUCH TIME AS UNUSUAL OR EMERGENCY CONDITIONS NO LONGER EXIST. UNUSUAL OR EMERGENCY CONDITIONS ARE DEFINED AS:
>
> (A) A SYSTEM EMERGENCY, DEFINED AS MAXIMUM EMERGENCY GENERATION UNDER THE PENNSYLVANIA - NEW JERSEY - MARYLAND INTERCONNECTION (PJM) HIERARCHY OF EMERGENCY ORDERS, OR EMERGENCY LOADING OF SPINNING RESERVE CAPACITY, OR EMERGENCY CONTROL OF TRANSMISSION FACILITY LOADING. (Continued)

The whitewater boating season is defined in Condition 19 as the period from April 15 through October 15. Information in this section is limited to this time period.

Releases Not Suitable for Whitewater Recreation

Youghiogheny River flows were between 600 and 1300 cfs on 9 dates and between 1300 and 2500 cfs on 5 dates in 1998. Releases not suitable for whitewater recreation per Condition 19 on those dates included:

- April 21 - River flows at the Oakland gage were 1479 cfs. Deep Creek Station operated before 1300 hours for about 1 hour and 10 minutes, from 0650-0800 hours. The area received 2.5 inches of rain over the previous two days. The lake was 0.2' below the Upper Rule Band (URB) and rising.
- July 1 - River flows at the Oakland gage were 2335 cfs. Deep Creek Station operated both units from 0800 to 2400 hours to maintain the lake within the rule band. The area received 0.9 inch of rain the day before and over 2.5 inches within the previous four days. The lake elevation was rising and reached the URB of 2461' msl by 0700 hours on July 1. Although additional lake elevations were not recorded, the lake elevation likely exceeded the URB due to the high rainfall.

The following table lists all releases from the Deep Creek Lake made between the hours of 1600 and 0800 hours when the above permit conditions were not met.

Date	Time	Duration	Reason/Issues
20-Apr	1600-2100	5 h	Cost
21-Apr	0650-0800	1 h. 10 m	Cost
26-Apr	1800-2200	4 h	Cost
11-Jun	2045-2205	1 h. 20 m	Cost
20-Jun	0700-0800, 1600-1630	1 h. 30 m	Ran 6 hours total between 0700 & 1630 but not consecutively (loaded at 0700-1000 & 1330-1630)
15-Aug	2005-2200	1 h. 55 m	Cost
16-Aug	1950-2130	1 h. 40 m	Cost
18-Aug	1600-1700	1 h	Cost (loaded at 1500-1700)
25-Aug	1600-1805	2 h. 5 m	Cost (loaded at 1315 - missed 3 h release by 15 minutes)
1-Oct	0650-0800	1 h. 10 m	Cost
13-Oct	1820-1900	40 m	Cost

APPENDIX F

ZEBRA MUSSEL MONITORING PROGRAM

Memorandum

GPU NUCLEAR

Subject:	GPU ZEBRA MUSSEL MONITORING PROGRAM – DEEP CREEK HYDROELECTRIC STATION	**Date:**	January 12, 1999
From:	R. L. Grove – Sr. Chemist, E&CS	**Location:**	Reading E740-99-0002
To:	T. R. Teitt – Water Resources, GENCO		

This memo on the results of GPU's Zebra Mussel Monitoring Program at the Deep Creek Hydroelectric Station in 1998 is provided in accordance with Permit Condition 21 with the State of Maryland Department of Natural Resources.

GPU Nuclear Environmental & Chemistry Services (GPUN E&CS) began a Zebra Mussel Monitoring Program at Deep Creek in 1992. A star substrate has been placed at the Station intake area in Deep Creek Lake which is checked monthly by station personnel for the presence and/or attachment of zebra mussels. Water temperatures are recorded monthly for the substrate location as well as at the Station tailrace location. Water samples are taken annually to trend calcium levels in Deep Creek Lake. Copies of the monthly "Field Collection Sheets" for the Zebra Mussel Monitoring Program as supplied by station personnel are available upon request.

GPUN E&CS conducted monthly zebra mussel veliger sampling via plankton net/microscopic identification from June through September 1998 at the Deep Creek Hydroelectric Station. Field observations have indicated no presence of zebra mussels at Deep Creek Lake.

Zebra mussels have been confirmed in western Pennsylvania in the Allegheny, Monongahela and Ohio Rivers, therefore the spread of the mussels into other fresh waters of Pennsylvania and Maryland appears inevitable. Projected activities for 1999 include monthly zebra mussel veliger sampling via plankton net/microscopic identification from June through October 1999 at the Deep Creek Hydroelectric Station. The substrate will continue to be monitored monthly by station personnel. Water samples will be collected and analyzed for calcium as an indicator of zebra mussel colonization potential. During 1999 GPUN E&CS will develop an action plan for the Deep Creek Hydroelectric Station. This includes a review of the operational water uses at the facility and mitigation strategies for control of zebra mussels at the station.

Should you have any questions concerning the GPU Zebra Mussel Monitoring Program, contact me at (610) 375-5046.

R. L. Grove

cc: R. C. Bosold

GPU GENCO

GPU Generation, inc.
1001 Broad Street
Johnstown, PA 15907
Tel 814-533-8111

February 5, 1998

Mr. Matthew G. Pajerowski, Chief
Water Rights Division
Maryland Dept. of the Environment
2500 Broening Highway
Baltimore, MD 21224

Re: Water Allocation and Use Permit No. GA92S009 (01)
Addendum to the 1997 Annual Report

Mr. Pajerowski:

Several temperature enhancement calculation log sheets were inadvertently omitted from Appendix B of the 1997 Annual Report for Deep Creek Station. Copies of these log sheets and a summary table are attached. Many of the releases required by the temperature enhancement protocol coincided with releases made on the same day for other reasons, including scheduled whitewater releases and high system cost. Releases made solely for temperature enhancement totaled eleven for the year and are shown in bold on the table. Log sheets for days with scheduled whitewater releases are not included in accordance with the temperature enhancement protocol.

I regret any inconvenience this omission may have caused.

Sincerely,

Thomas R. Teitt

Thomas R. Teitt
Environmental Scientist

cc: T. A. Atherton, Esq. w/o att.
D. Bassage
R. I. McLean
S. P. Schreiner
S. L. Taylor

Summary of 1997 Temperature Enhancement Releases

Date	Release Period	Duration	Release Description
June 24	1100-1300 1430-1830	6 hours	Temperature enhancement High system cost
July 8	**1420-1520**	**1 hour**	**Temperature enhancement only**
July 12	**1200-1300**	**1 hour**	**Temperature enhancement only**
July 13	1100-1300 1430-1830	6 hours	Temperature enhancement High system cost
July 15	1100-1700	6 hours	High system cost Temperature protocol required release
July 16	1230-1830	6 hours	High system cost Temperature protocol required 2-hour release
July 17	1100-1700	6 hours	High system cost Temperature protocol required 2-hour release
July 18	1100-1700	6 hours	Whitewater High system cost Temperature protocol required 2-hour release
July 19	1000-1330	3.5 hours	Whitewater Temperature protocol required release
July 20	**1400-1500**	**1 hour**	**Temperature enhancement only**
July 21	1000-1605	6 hours	Whitewater High system cost Temperature protocol required 1-hour release
July 27	**1405-1605**	**2 hours**	**Temperature enhancement only**
July 29	**1230-1430**	**2 hours**	**Temperature enhancement only**
July 30	**1505-1605**	**1 hour**	**Temperature enhancement only**
July 31	**1515-1615**	**1 hour**	**Temperature enhancement only**
Aug. 3	**1200-1300**	**1 hour**	**Temperature enhancement only**
Aug. 10	**1415-1515**	**1 hour**	**Temperature enhancement only**
Aug. 12	**1415-1515**	**1 hour**	**Temperature enhancement only**
Aug. 17	**1230-1430**	**2 hours**	**Temperature enhancement only**

Youghiogheny River Water Temperature Enhancement Plan

24-Jun-97

UA = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	27.81	Release at 1100 for 2 hours
	<=30	26.61	Release at 1100 for 2 hours
0900	> 30	27.64	Release at 1100 for 2 hours
	<=30	26.44	Release at 1100 for 2 hours
1100	All	26.06	Release at 1230 for 2 hours
1200	All	25.94	Release ASAP - not later than 1230 for 1 hour
1400	All	19.25	No further predictions necessary today
1500	All	19.41	No further predictions necessary today

Tair	31.1	Air Temp, Elkins WV - Degree C
CCF	36	Cloud Cover Factor, Elkins WV
T7	18.78	River Temp Sang Run @700
T9	18.87	River Temp Sang Run @900
T11	20.21	River Temp Sang Run @1100
T12	21.20	River Temp Sang Run @1200
T14	18.59	River Temp Sang Run @1400
T15	18.79	River Temp Sang Run @1500
Q	UA	River Flow at Oakland

88 Air Temp, Elkins WV - Degree F
PTCLDY Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan

08-Jul-97

58.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	24.01	Check again at 0900
	<=30	25.13	Check again at 0900
0900	> 30	23.71	Check again at 1100
	<=30	24.83	Check again at 1100
1100	All	24.67	Check again at 1200
1200	All	24.48	Check again at 1400
1400	All	25.63	Release ASAP - not later than 1430 for 1 hour
1500	All	25.99	Release ASAP - not later than 1530 for 1 hour

Tair	28.3	Air Temp, Elkins WV - Degree C
CCF	36	Cloud Cover Factor, Elkins WV
T7	17.04	River Temp Sang Run @700
T9	17.06	River Temp Sang Run @900
T11	18.63	River Temp Sang Run @1100
T12	19.61	River Temp Sang Run @1200
T14	22.80	River Temp Sang Run @1400
T15	24.24	River Temp Sang Run @1500
Q	58.0	River Flow at Oakland

83 Air Temp, Elkins WV - Degre
PTCLDY Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan

12-Jul-97

56.0 = **CFS River Flow at Oakland**

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	25.37	Check again at 0900
	<=30	26.41	Release at 1100 for 2 hours
0900	> 30	25.47	Check again at 1100
	<=30	26.51	Release at 1100 for 2 hours
1100	All	25.61	Release at 1230 for 2 hours
1200	All	25.59	Release ASAP - not later than 1230 for 1 hour
1400	All	26.02	Release ASAP - not later than 1430 for 1 hour
1500	All	22.15	No further predictions necessary today

Tair	30.0	Air Temp, Elkins WV - Degree C
CCF	1	Cloud Cover Factor, Elkins WV
T7	17.28	River Temp Sang Run @700
T9	17.60	River Temp Sang Run @900
T11	19.09	River Temp Sang Run @1100
T12	20.29	River Temp Sang Run @1200
T14	23.26	River Temp Sang Run @1400
T15	20.99	River Temp Sang Run @1500
Q	56.0	River Flow at Oakland

86 Air Temp, Elkins WV - Degre
SUNNY Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan

13-Jul-97

45.0 = **CFS River Flow at Oakland**

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	26.79	Release at 1100 for 2 hours
	<=30	27.39	Release at 1100 for 2 hours
0900	> 30	26.64	Release at 1100 for 2 hours
	<=30	27.24	Release at 1100 for 2 hours
1100	All	26.36	Release at 1230 for 2 hours
1200	All	26.80	Release ASAP - not later than 1230 for 1 hour
1400	All	19.37	No further predictions necessary today
1500	All	19.53	No further predictions necessary today

Tair	32.2	Air Temp, Elkins WV - Degree C
CCF	1	Cloud Cover Factor, Elkins WV
T7	18.06	River Temp Sang Run @700
T9	18.19	River Temp Sang Run @900
T11	19.58	River Temp Sang Run @1100
T12	21.23	River Temp Sang Run @1200
T14	18.61	River Temp Sang Run @1400
T15	18.86	River Temp Sang Run @1500
Q	45.0	River Flow at Oakland

90 Air Temp, Elkins WV - Degre
SUNNY Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan 15-Jul-97

45.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	24.05	Check again at 0900
	<=30	24.65	Check again at 0900
0900	> 30	24.21	Check again at 1100
	<=30	24.81	Check again at 1100
1100	All	25.50	Release at 1230 for 2 hours
1200	All	25.50	Release ASAP - not later than 1230 for 1 hour
1400	All	19.89	No further predictions necessary today
1500	All	19.40	No further predictions necessary today

Tair	30.0	Air Temp, Elkins WV - Degree C
CCF	100	Cloud Cover Factor, Elkins WV
T7	17.65	River Temp Sang Run @700
T9	18.16	River Temp Sang Run @900
T11	20.05	River Temp Sang Run @1100
T12	21.19	River Temp Sang Run @1200
T14	19.14	River Temp Sang Run @1400
T15	18.83	River Temp Sang Run @1500
Q	45.0	River Flow at Oakland

86 Air Temp, Elkins WV - Degre
TSTRMS Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan

16-Jul-97

31.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	24.33	Check again at 0900
	<=30	24.37	Check again at 0900
0900	> 30	24.40	Check again at 1100
	<=30	24.44	Check again at 1100
1100	All	25.57	Release at 1230 for 2 hours
1200	All	25.10	Check again at 1400
1400	All	26.26	Release ASAP - not later than 1430 for 1 hour
1500	All	26.23	Release ASAP - not later than 1530 for 1 hour

Tair	28.3	Air Temp, Elkins WV - Degree C
CCF	100	Cloud Cover Factor, Elkins WV
T7	18.38	River Temp Sang Run @700
T9	18.72	River Temp Sang Run @900
T11	20.73	River Temp Sang Run @1100
T12	21.38	River Temp Sang Run @1200
T14	24.05	River Temp Sang Run @1400
T15	24.94	River Temp Sang Run @1500
Q	31.0	River Flow at Oakland

83 Air Temp, Elkins WV - Degre
ISTRMS Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan 17-Jul-97

29.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	25.79	Check again at 0900
	<=30	25.75	Check again at 0900
0900	> 30	26.19	Release at 1100 for 2 hours
	<=30	26.15	Release at 1100 for 2 hours
1100	All	26.55	Release at 1230 for 2 hours
1200	All	26.99	Release ASAP - not later than 1230 for 1 hour
1400	All	19.76	No further predictions necessary today
1500	All	19.19	No further predictions necessary today

Tair	30.6	Air Temp, Elkins WV - Degree C
CCF	36	Cloud Cover Factor, Elkins WV
T7	16.75	River Temp Sang Run @700
T9	17.45	River Temp Sang Run @900
T11	19.82	River Temp Sang Run @1100
T12	21.70	River Temp Sang Run @1200
T14	19.23	River Temp Sang Run @1400
T15	18.76	River Temp Sang Run @1500
Q	29.0	River Flow at Oakland

87 Air Temp, Elkins WV - Degre
PTCLDY Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan

20-Jul-97

45.0 = CFS River Flow at Oakland

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	25.18	Check again at 0900
	<=30	25.78	Check again at 0900
0900	> 30	25.00	Check again at 1100
	<=30	25.60	Check again at 1100
1100	All	25.36	Check again at 1200
1200	All	25.10	Check again at 1400
1400	All	26.00	Release ASAP - not later than 1430 for 1 hour
1500	All	26.63	Release ASAP - not later than 1530 for 1 hour

Tair	28.3	Air Temp, Elkins WV - Degree C
CCF	1	Cloud Cover Factor, Elkins WV
T7	17.01	River Temp Sang Run @700
T9	17.08	River Temp Sang Run @900
T11	18.89	River Temp Sang Run @1100
T12	19.94	River Temp Sang Run @1200
T14	23.22	River Temp Sang Run @1400
T15	24.90	River Temp Sang Run @1500
Q	45.0	River Flow at Oakland

83 Air Temp, Elkins WV - Degre
SUNNY Cloud Cover, Elkins WV

Youghiogheny River Water Temperature Enhancement Plan

30-Jul-97

60.0 = **CFS River Flow at Oakland**

Time	Oakland Flow CFS	Predicted Maximum River Water Temperature Degree C	Deep Creek Action
0700	> 30	23.08	Check again at 0900
	< =30	24.28	Check again at 0900
0900	> 30	23.15	Check again at 1100
	< =30	24.35	Check again at 1100
1100	All	23.81	Check again at 1200
1200	All	23.77	Check again at 1400
1400	All	25.06	Check again at 1500
1500	All	25.74	Release ASAP - not later than 1530 for 1 hour

Tair	25.0	Air Temp, Elkins WV - Degree C
CCF	36	Cloud Cover Factor, Elkins WV
T7	17.71	River Temp Sang Run @700
T9	17.89	River Temp Sang Run @900
T11	19.10	River Temp Sang Run @1100
T12	19.96	River Temp Sang Run @1200
T14	22.79	River Temp Sang Run @1400
T15	24.27	River Temp Sang Run @1500
Q	60.0	River Flow at Oakland

77 Air Temp, Elkins WV - Degree F
PTCLDY Cloud Cover, Elkins WV