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QUESTION E290.28

What erosion control practices and revegetation efforts will be implemented during and after construction of the water pipeline from the Point Pleasant Pumping Station to Bradshaw Reservoir? Specifically, address erosion control practices on steep slope areas up slope of highway 32.

RESPONSE

During construction of the combined transmission main, erosion and sediment control measures will consist of the use, as applicable, of sedimentation basins, straw bale dikes, perimeter dikes, and stabilized construction entrances, together with temporary mulching, netting, and seeding. These measures shall be particularly concentrated along the 66" combined transmission main alignment traversing the steep hill side west of River Road (state route #32). Granular trench backfill shall be capped with an impervious soil blanket which shall project approximately 12" above the natural growth surface. The blanket shall serve to control surface drainage along the alignment of the main, as well as cross-slope drainage along the main installation. Straw bale dikes are to be utilized as necessary to retard and/or divert runoff and to permit the establishment of a permanent grass cover on the blanket.

Stream crossings will be installed using temporary cofferdams and/or bypass channels as necessary, including the use of temporary settling basins to minimize the stream sediment load resulting from excavation and backfill operations.

QUESTION E290.38

Please provide the July, 1982, report by Neil Moiseev on ambient noise measurements (update of July, 1973, report). I believe its subject refers to ventilating equipment at Point Pleasant.

RESPONSE

The report dated July 19, 1982, prepared by Neil Moiseev of Cerami and Associates, Inc., evaluates certain operational sound levels at Bradshaw Reservoir. Please refer to the October 20, 1981, report by Neil Moiseev of Cerami and Associates, Inc. which is an ambient noise survey of the Point Pleasant Pumping Station site; this is included as Exhibit E290.24-1, in response to question E290.24.

QUESTION E290.39

What is the projected frequency of operation of the equipment in the pumphouse on a monthly basis?

RESPONSE

Table E290.39-1 provides a monthly breakdown of the projected frequency of operation of the Point Pleasant pumps for average withdrawal in the year 2010. The fourth pump will operate only during periods of maximum withdrawal.

Backwashing of the intake screens requires operation of the air compressors. While backwashing may not be required at all due to the self cleaning nature of the screens, it is possible that during the leaf season backwashing may be necessary two or three times per week.

During periods when backwashing of the intake screens is not required, operability testing of the backwashing system, including the air compressors, is expected to occur with an average frequency of about once per week.

TABLE E290.39-1
ESTIMATED PUMP RUNNING TIME IN HOURS FOR YEAR 2010(1)

	Pump No. 1	Pump No. 2	Pump No. 3	Pump No. 4
January	213	Off	Off	Off
February	192	Off	Off	Off
March	239	Off	Off	Off
April	345	Off	Off	Off
May	744	Off	Off	Off
June	720	720	604	10 (2)
July	744	744	589	10 (2)
August	744	744	550	10 (2)
September	720	396	Off	Off
October	744	496	Off	Off
November	329	Off	Off	Off
December	308	Off	Off	Off

Notes: (1) Year 2010 represents maximum monthly average water needs anticipated by NWRA, and as such, is representative of maximum monthly pump operation.

(2) Pump No. 4 will operate only during periods of maximum demand. Because monthly average withdrawals are used as the basis for this table, an accurate estimate of the few hours this pump will operate is difficult. 10 hours per month is considered reasonable.

QUESTION E291.1

Section 2.4.6 indicates that Philadelphia Electric Company has no plans for upstream development of compensating water storage capacity on the Schuylkill River. However, a request for a determination of need for such capacity has been submitted to the Delaware River Basin Commission. Indicate the status of this request and describe any determinations that have been made as a result.

RESPONSE

Section 2.4.6 refers to supplementing water available from the Schuykill River with water from a reservoir on the Delaware River. Philadelphia Electric Company has no plans for upstream development of compensating water storage capacity on the Schuylkill River. Application has been made to the Delaware River Basin Commission for a compensating water storage facility for the Delaware River which is the proposed Merrill Creek Reservoir. Further discussion of Merrill Creek can be found in Philadelphia Electric Company's answer to question E240.9.

QUESTION E291.2 (Section 2.4.7)

The water quality data in Tables 2.4-12, 2.4-13 and 2.4-14 are for the period 1975-1978. Provide similar data for the period 1979 to the present, if available. Indicate the number of samples represented by the data in these tables. Also indicate whether the data represent grab samples or composite samples (i.e., depth and/or transect composites).

RESPONSE

Water quality data similar to that provided in the EROL but for the period March 1979 to 10 June 1982 are attached. No additional data are provided for the East Branch Perkiomen Creek because sampling in this stream was discontinued in 1979. All data are from single subsurface grab samples taken approximately biweekly. The number of parameters measured is less for the period starting in 1979 than the 1975-1978 period due to elimination of parameters, particularly heavy metals, which the sampling program had demonstrated were not detected at all, or were present only in trace quantities.

TABLE E291.2-1

SUMMARY OF SCHUYLKILL RIVER WATER QUALITY 1979 THROUGH 10 JUNE 1982. (UPDATE OF EROL TABLE 2.4-12)

STATION S 77660

	DEC, JAN, FEB			MAR, APR, MAY			JUN, JUL, AUG			SEP, OCT, NOV			# OF
PARAMETER	MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX	SAMPLES
ALKALINITY,TOTAL (MG/L)	14.2	68.9	130.6	28.9	54.8	70.6	2.7	66.2	105.5	14.2	84.5	126.9	84
CONDUCTANCE,SPECIFIC (USM/CM)	159	343	537	181	292	384	242	369	550	224	450	513	84
FLOW (CMS)	21	37	53	31	64	157	12	25	58	10	48	117	40
HARDNESS,TOTAL (MG/L)	67.4	129.7	687.1	37.0	107.1	156.4	88.7	156.4	786.6	88.0	173.0	255.0	83
OXYGEN,DISSOLVED (MG/L)	7.4	10.3	14.2	6.2	9.8	12.4	5.0	8.4	15.4	6.4	8.6	10.8	84
PH	7.10	7.61	8.20	7.15	7.60	8.48	7.23	7.78	8.58	7.38	7.67	8.08	84
SOLIDS,TOTAL DISSOLVED (MG/L)	142	242	388	101	222	346	77	280	495	146	330	425	84
SOLIDS,TOTAL SUSPENDED (MG/L)	0	4	138	0	14	34	2	11	273	0	1	42	84
TEMPERATURE (C)	-1.0	1.2	7.0	4.5	11.0	19.0	14.0	23.5	30.0	3.0	15.0	24.0	79
AMMONIA-NITROGEN (MG/L)	0.030	0.422	2.100	0.000	0.200	1.200	0.000	0.068	0.560	0.000	0.077	0.560	84
CARBON,TOTAL INORGANIC (MG/L)	55.1	75.0	136.3	31.5	57.2	64.3	50.0	74.2	108.2	15.3	78.7	132.7	47
CHLORIDE (MG/L)	12.0	25.6	62.0	11.3	16.8	31.8	10.6	24.4	41.2	10.8	35.3	51.5	84
NITRATE NITROGEN (MG/L)	1.37	3.04	3.97	1.71	2.31	3.59	0.00	2.25	2.91	0.00	2.83	9.96	84
NITRITE NITROGEN (MG/L)	0.019	0.040	0.060	0.026	0.070	0.171	0.000	0.063	0.170	0.030	0.072	0.420	84
PHOSPHORUS,ORTHO PHOSPHATE (MG/L)	0.00	0.19	1.60	0.00	0.10	0.26	0.00	0.14	0.29	0.00	0.23	0.35	84
PHOSPHORUS,TOTAL PHOSPHATE (MG/L)	0.00	0.27	0.67	0.04	0.17	2.45	0.04	0.26	3.48	0.00	0.28	0.43	82
SULFATE (MG/L)	46.8	74.8	146.0	34.8	60.6	105.9	40.8	98.8	141.9	41.4	102.7	141.9	84
CALCIUM (MG/L)	16.9	33.3	63.6	12.0	25.0	41.7	15.2	29.9	43.8	22.7	36.7	56.6	84
CHROMIUM (MG/L)	0.001	0.009	0.075	0.001	0.007	0.139	0.002	0.007	0.194	0.000	0.007	0.104	83
COPPER (MG/L)	0.000	0.008	0.048	0.003	0.012	0.031	0.004	0.008	0.295	0.000	0.009	0.030	84
IRON (MG/L)	0.00	0.23	4.06	0.22	0.42	1.32	0.06	0.27	3.75	0.07	0.19	0.87	84
LEAD (MG/L)	0.000	0.002	0.018	0.000	0.005	0.041	0.000	0.002	0.171	0.000	0.000	0.028	84
MAGNESIUM (MG/L)	7.30	15.30	29.00	6.30	12.90	19.30	10.70	17.95	25.90	8.48	19.50	28.60	84
MANGANESE (MG/L)	0.05	0.30	0.74	0.20	0.29	0.68	0.02	0.09	0.41	0.00	0.05	0.29	84
POTASSIUM (MG/L)	2.0	3.0	4.8	1.5	2.0	2.9	1.4	2.5	7.0	1.2	3.3	5.5	84
SODIUM (MG/L)	8.70	19.30	46.90	7.15	13.30	26.40	10.00	19.20	38.20	9.48	28.35	40.40	84
ZINC (MG/L)	0.00	0.04	0.81	0.01	0.05	1.20	0.01	0.04	8.34	0.00	0.03	0.62	84
BIOCHEMICAL OXYGEN DEMAND (MG/L)	0.9	2.7	6.7	1.0	3.1	6.2	1.1	3.0	7.3	0.9	1.7	5.9	84
CARBON,TOTAL ORGANIC (MG/L)	0.0	3.2	20.9	0.0	0.6	15.3	0.0	4.4	19.0	0.0	4.4	14.5	82

TABLE E291.2-1

SUMMARY OF PERKIOMEN CREEK WATER QUALITY 1979 THROUGH 10 JUNE 1982. (UPDATE OF EROL TABLE 2.4-13)

STATION P 14396

	DEC, JAN, FEB			MAR, APR, MAY			JUN, JUL, AUG			SEP, OCT, NOV			
PARAMETER	MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX	# OF SAMPLES
ALKALINITY,TOTAL (MG/L)	16.5	55.2	104.2	9.3	45.4	57.6	17.8	62.0	79.3	47.0	68.6	89.4	84
CONDUCTANCE,SPECIFIC (USM/CM)	127	222	411	116	197	254	135	241	307	187	271	426	84
FLOW (CMS)	3	7	12	6	9	71	2	4	29	2	6	11	40
HARDNESS,TOTAL (MG/L)	67.7	89.2	507.7	52.1	74.1	102.0	70.0	92.2	133.0	62.5	97.3	140.6	83
OXYGEN,DISSOLVED (MG/L)	7.6	12.6	14.8	8.9	12.2	16.5	6.0	9.3	13.4	7.3	10.5	14.2	84
PH	7.34	7.68	9.95	7.28	8.04	9.08	7.01	8.12	9.23	7.24	8.07	9.02	84
SOLIDS,TOTAL DISSOLVED (MG/L)	141	179	277	124	164	221	85	177	266	116	173	324	84
SOLIDS,TOTAL SUSPENDED (MG/L)	0	2	131	0	5	80	1	13	383	0	3	29	84
TEMPERATURE (C)	-0.5	1.0	6.0	3.0	11.5	24.0	14.0	23.5	28.0	3.0	14.0	23.0	80
AMMONIA-NITROGEN (MG/L)	0.000	0.110	0.800	0.000	0.020	0.430	0.000	0.021	0.140	0.000	0.000	0.590	84
CARBON,TOTAL INORGANIC (MG/L)	45.5	58.1	107.8	10.0	47.4	56.1	19.2	57.7	68.8	48.7	67.5	90.6	47
CHLORIDE (MG/L)	11.4	26.5	56.1	11.0	18.3	31.2	9.2	23.7	31.3	13.4	27.0	102.4	84
NITRATE NITROGEN (MG/L)	0.95	2.35	4.01	0.37	1.53	3.03	0.00	1.07	2.28	0.00	1.37	3.41	84
NITRITE NITROGEN (MG/L)	0.010	0.020	0.049	0.020	0.030	0.070	0.000	0.020	0.110	0.000	0.010	0.220	84
PHOSPHORUS,ORTHO PHOSPHATE (MG/L)	0.00	0.09	0.14	0.00	0.06	0.20	0.00	0.09	0.23	0.00	0.03	0.42	84
PHOSPHORUS,TOTAL PHOSPHATE (MG/L)	0.03	0.09	0.66	0.00	0.06	0.13	0.00	0.11	2.98	0.00	0.09	0.35	82
SULFATE (MG/L)	18.5	44.4	72.6	23.8	32.0	44.3	7.4	34.9	101.0	24.7	41.4	76.3	84
CALCIUM (MG/L)	12.7	21.7	41.6	8.8	16.7	34.2	12.7	18.0	27.4	17.5	22.7	34.9	84
CHROMIUM (MG/L)	0.000	0.004	0.014	0.000	0.003	0.020	0.000	0.001	0.048	0.000	0.001	0.029	83
COPPER (MG/L)	0.000	0.003	0.053	0.000	0.003	0.031	0.000	0.005	0.053	0.000	0.002	0.015	84
IRON (MG/L)	0.00	0.22	4.12	0.04	0.26	1.77	0.10	0.36	3.88	0.13	0.27	1.59	84
LEAD (MG/L)	0.000	0.000	0.007	0.000	0.000	0.024	0.000	0.000	5.368	0.000	0.000	0.013	84
MAGNESIUM (MG/L)	6.65	9.80	15.00	2.90	8.80	11.80	5.00	8.90	13.40	6.55	9.54	14.40	84
MANGANESE (MG/L)	0.00	0.05	0.50	0.00	0.04	0.12	0.00	0.06	0.38	0.00	0.00	0.08	84
POTASSIUM (MG/L)	2.7	3.6	7.6	1.0	3.0	5.1	1.7	3.5	11.0	2.5	4.4	12.0	84
SODIUM (MG/L)	8.10	15.60	35.20	3.20	12.10	18.80	6.00	15.25	26.90	9.58	17.77	41.00	84
ZINC (MG/L)	0.00	0.01	0.34	0.00	0.01	0.13	0.00	0.01	0.53	0.00	0.01	0.23	84
BIOCHEMICAL OXYGEN DEMAND (MG/L)	0.2	2.2	5.4	0.0	2.2	3.6	0.5	2.3	6.1	0.3	1.8	7.0	84
CARBON,TOTAL ORGANIC (MG/L)	0.0	5.8	12.3	0.0	1.7	12.1	0.0	5.7	19.2	0.0	6.0	12.2	82

QUESTION E291.3 (Section 2.4.7)

If water quality data for the period of 1979 to the present are available, discuss the trends, if any, evident in these data that would tend to support or contradict the conclusions drawn from the earlier data as to the conditions of the water bodies in question, the water quality stresses present and their status relative to applicable water quality standards.

RESPONSE

The water quality data for the Schuylkill River and the Perkiomen Creek tabulated in EROL Tables 2.4-12 and 2.4-13 respectively, were compared to those tabulated in response to question E291.2.

No significant differences were found in any of the water quality parameters. Therefore, the EROL conclusions still apply.

QUESTION E291.4

On Table 3.3-1, the physical capability of the Delaware/Perkiomen makeup system is given as 42 mgd. The impact statement of the Delaware River Basin Commission gives this figure as 46 mgd (including expected in transit losses of about 10%). Clarify this discrepancy.

RESPONSE

As reviewed and approved by the DRBC, and as indicated on Table 3.3-1, the maximum water requirement from the Delaware/Perkiomen makeup system is 42 mgd. This is the amount of water needed for consumptive makeup for both units at full power under the most extreme environmental conditions when water from the Schuylkill River is unavailable. A ten percent (10%) transit loss is added to allow for evaporation and seepage between the Delaware River and Perkiomen intake, resulting in a total withdrawal from the Delaware of 46 mgd.

QUESTION E291.12

Provide a discussion of the volume, timing, and duration of pumping of water through the Point Pleasant Diversion/Perkiomen Creek system to the Limerick Generating Station.

RESPONSE

The maximum quanity of water to be withdrawn from the Delaware River and pumped to the East Branch Perkiomen Creek is 46 mgd (71 cfs). Once pumping commences in the Spring, the DRBC requires that it be continued during the entire low flow season at a rate of at least 27 cfs, whether the water is needed at Limerick or not, to protect the aquatic life in the East Branch Perkiomen Creek. For the remainder of the year a flow of at least 10 cfs must be maintained in the East Branch Perkiomen Creek. During periods of high natural flow in the East Branch Perkiomen Creek, all pumping will be stopped. Water will be withdrawn from the Perkiomen Creek at Graterford at a maximum rate of 42 mgd and pumped to Limerick. The Point Pleasant/ Perkiomen Creek system will be used during the Summer months (normally mid-May to mid-October) when the flow and temperature in the Schuylkill River prohibit withdrawal in compliance with DRBC Docket No. D-69-210-CP.

As requested in the August 18, 1982, meeting, a copy of the Pennsylvania Department of Environmental Resources Water Quality Management Permit No. 4671202 is provided in exhibit E291.12-1.

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF ENVIRONMENTAL RESOURCES
POST OFFICE BOX 2063
HARRISBURG, PENNSYLVANIA 17120

Philadelphia Electric Company
1000 Chestnut Street
Philadelphia, Pennsylvania 19105

Attention: Mr. Vincent Boyer, Vice President

Gentlemen:

Enclosed is a Water Quality Management Permit No. 4671202 for the Limerick Nuclear Steam Electric Generating Station. Please note that the permit has a number of standard conditions and a number of special conditions.

In issuing the attached permit, the Department determined that the facilities proposed in your application, if operated properly, will meet the water quality standards for the Schuylkill River. Although the permit deals primarily with the impact of the discharge on the Schuylkill, the Department is concerned about the availability of water to operate this generating station. The Delaware River Basin Commission also expressed concern over the availability of water for this station and in November, 1975 resolved the problem by conditionally approving your application for the withdrawal of surface water. Therefore, we must qualify this permit to discharge by requiring you to comply with the DRBC approval as specified in Docket D-69-210CP, dated November 5, 1975.

Sincerely yours,

Ernest F. Giovannitti, Chief
Division of Industrial Wastes
and Erosion Regulation

Attachment

EXHIBIT E 291.12-1

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
BUREAU OF WATER QUALITY MANAGEMENT

WATER QUALITY MANAGEMENT PERMIT

NO 4671202

A. PERMITTEE (Name and Address)

Philadelphia Electric Company
1000 Chestnut Street
Philadelphia, Pennsylvania 19105

B. PROJECT LOCATION

Municipality: Limerick Township

County: Montgomery

C. TYPE OF FACILITY OR ESTABLISHMENT

Nuclear steam-electric generating station

D. NAME OF MINE OPERATION OR AREA SERVE

Limerick Generating Station

E. THIS PERMIT APPROVES

1. Plans For Construction of

a. ☐ PUMP STATIONS, SEWERS AND APPURTENANCES

b. ☐ SEWAGE TREATMENT FACILITIES

c. ☐ MINE DRAINAGE TREATMENT FACILITIES

d. ☒ INDUSTRIAL WASTE TREATMENT FACILITIES

e. ☐ OUTFALL & HEADWALL

f. ☐ STREAM CROSSING

2. The Discharge of:

a. ☒ TREATED

☐ UNTREATED

b. ☒ INDUSTRIAL WASTE

☐ MINE DRAINAGE

☐ SEWAGE

3. The Operation of:

☐ MINE
MAXIMUM AREA TO BE DEEP MINED _____

☐ DAM

4. An Erosion and Sedimentation Control Plan ☐
PROJECT AREA IS _____ ACRES.

5. Nature of Discharge or Impoundment:

☒ DISCHARGE TO SURFACE WATER ☐ DISCHARGE TO GROUND WATER

☐ IMPOUNDMENT

Schuylkill River
(Name of Stream to which discharge or drainage area on which ground water discharge takes place or impoundment is located)

F. You are hereby authorized to construct, operate or discharge, as indicated above, provided that you comply with the following:

1. All representations regarding operations, construction, maintenance and closing procedures as well as all other matters set forth in your application and its supporting documents (Application No. 4671202 dated March 30, 1971), and amendments dated 9 & 11/24/71, 2/14, 4/10, & 6/13/7
Such application, it's supporting documents and amendments are hereby made a part of this permit.
2. Conditions ~~numbered~~ All of the Industrial Wastes Standard Conditions dated October 1, 1971 which conditions are attached hereto and are made a part of this permit.
3. Special condition(s) designated A, B, C, D, E, F, & G. which are attached hereto and are made a part of this permit.

G. The Authority granted by this permit is subject to the following further qualifications:

1. If there is a conflict between the application or its supporting documents and amendments and the standard or special conditions, the standard or special conditions shall apply.
2. Failure to comply with the Rules and Regulations of the Department or the terms or conditions of this permit shall void the authority given to the permittee by the issuance of the permit.
3. This permit is issued pursuant to the Clean Streams Law, The Act of June 22, 1937, P.L. 1987 as amended and/or the Water Obstruction Act of June 25, 1913, P.L. 555 as amended.
Issuance of this permit shall not relieve the permittee of any responsibility under any other law.

PERMIT ISSUED

DATE [illegible] 1976

BY DEPARTMENT OF ENVIRONMENTAL RESOURCES

Ernest F. Giovannitti

Ernest F. Giovannitti, Chief

TITLE Division of Industrial Wastes & Erosion Regulati

INDUSTRIAL WASTES
PERMIT NO. 6671202

This permit is issued subject to all Rules and Regulations now in force, and the following Special Conditions:

A. The effluent discharged to the waters of the Commonwealth shall not be acid, shall have a pH of not less than 6.0 nor greater than 9.0, and shall not contain more than 7.0 mg/l of dissolved iron.

B. Within six months after the herein approved waste treatment works are constructed and placed in operation, the permittee shall submit to the Department evidence of the efficiency and adequacy of such works in treating the waste discharges from this establishment.

C. All bio-degradable wastes shall be given a minimum of secondary treatment or its equivalent for industrial wastes. Secondary treatment is that treatment which shall accomplish the following:

(1) Reduce the organic waste load as measured by the biochemical oxygen demand test by at least 85% during the period May 1 to October 31 and by at least 75% during the remainder of the year based on a five consecutive day average of values.

(2) Remove practically all of the suspended solids.

(3) Provide effective disinfection to control disease producing organisms.

(4) Provide satisfactory disposal of sludge.

(5) Reduce the quantities of oils, greases, acids, alkalis, toxics, tastes and odor producing substances, color and other substances inimical to the public interest to levels which shall not pollute the receiving stream.

An equivalent of the treatment prescribed above shall be required for non-biodegradable wastes.

D. The effluent shall also be limited to concentrations of total dissolved solids not more than 570 mg/l, total suspended solids not more than 30 mg/l, copper not more than 0.1 mg/l and chlorine not more than 0.25 mg/l.

E. Waterborne releases of radioactive material to unrestricted areas shall conform to criteria set forth in Title 10 Code of Federal Regulation Part 50 Appendix I - Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low As Practicable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents, as implemented through the Environmental Technical Specifications.

The intended effect of the standard condition is the reiteration of federal criteria and license conditions. The federal criteria are expressed in Title 10 Code of Federal Regulation Part 50 Appendix I. These criteria are implemented at a particular facility through Environmental Technical Specifications which are developed by the facility operator. These specifications become conditions for operation upon review and eventual approval by the Nuclear Regulatory Commission (NRC). The specifications are a part of the facility operating license from NRC.

F. The facility operator shall provide the Department with copies of reports specifying the quantities of radioactive materials released to unrestricted areas in liquid effluents.

G. The facility operator shall provide the Department with copies of reports of the results of environmental surveillance activities and such other reports as necessary for the estimation of the dose consequential to facility operation.

October 1, 1971

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF ENVIRONMENTAL RESOURCES

STANDARD CONDITIONS RELATING TO INDUSTRIAL WASTES

For use in Water Quality Management Permits

1971

General

1. The plans for which this permit is issued are approved subject to the condition that the waste treatment plant constructed under said plans will produce an effluent satisfactory to the Department. By this approval, neither the Department nor the Commonwealth of Pennsylvania assumes any responsibility for the feasibility of the plans or the operation of the plant to be constructed thereunder.

2. All relevant and non-superseded conditions of any prior water quality management permits, decrees, or orders issued to the herein permittee or his predecessor shall be continued in full force and effect and together with the provisions of this permit shall apply to his successors, lessees, heirs and assigns.

3. The responsibility for the carrying out of the conditions of this permit shall rest upon the owner, lessee, assignee, or other party in responsible managerial charge of the operation producing the wastewaters and of the waste treatment works herein approved, such responsibility passing with each succession in said control. Approval of a discharge or facilities under a permit shall not be effective as to a new owner until a transfer has been executed and filed on forms provided by the Department and the transfer is approved by the Department.

4. The permittee shall secure any necessary permission from the proper federal authority for any outfall or industrial waste treatment structure which discharges into or enters navigable waters and shall obtain approval of any stream crossing, encroachment or change of natural stream conditions coming within the jurisdiction of the Department.

5. In order to avoid obsolescence of the plans of waste treatment works, the approval of the plans herein granted, and the authority granted in the permit, if not specifically extended, shall cease and be null and void two years from the date of this permit unless the works covered by said plans shall have been completed and placed in operation on or before that date.

12. The outfall sewer or drain shall be extended to low water mark of the receiving body of water in such a manner as to insure the satisfactory dispersion of its effluent thereinto; insofar as practicable it shall have its outlet submerged; and shall be constructed of cast iron, concrete, or other material approved by the Department; and shall be so protected against the effects of flood water, ice, or other hazards as to reasonably insure its structural stability and freedom from stoppage.

13. When the herein approved industrial waste treatment works is completed and before it is placed in operation, the permittee shall notify the Department so that an inspection of the works may be made by a representative of the Department.

Operation and Maintenance

14. No matter how well designed and carefully constructed a waste treatment works may be, full effectiveness cannot be developed unless it is efficiently operated. In order to secure such efficiency, protect the waters of the Commonwealth, and insure the most effective and economical dosage when chemicals are used, the permittee is required to place the works under the regular charge of a responsible plant official, and its operation under the control of the designer of the works or other qualified person approved by the Department, for at least one year after completion. Moreover, upon written notice from the Department, the permittee shall maintain one or more skilled operators regularly on duty for such daily periods as the Department may direct.

15. The right to discharge the effluent from the herein approved industrial waste treatment works into the waters of the Commonwealth is contingent upon such operation of these works as will at all times produce an effluent of a quality satisfactory to the Department. If, in the opinion of the Department, these works are not so operated or if by reason of change in the character of wastes or increased load upon the works, or changed use or condition of the receiving body of water, or otherwise, the said effluent ceases to be satisfactory for such discharge, then upon notice by the Department the right herein granted to discharge such effluent shall cease and become null and void unless within the time specified by the Department, the permittee shall adopt such remedial measures as will produce an effluent which, in the opinion of the Department, will be satisfactory for discharge into the said receiving body of water.

16. No untreated or ineffectively treated wastewaters shall at any time be discharged into the waters of the Commonwealth, and especial care shall be used to prevent accidental "spills" or similar unusual discharges of all raw, finished and waste materials.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
BUREAU OF WATER QUALITY MANAGEMENT
REGIONAL OFFICES

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QUESTION E291.13

State, based on the results of available confirmed field monitoring programs, whether or not Corbicula sp. (Asiatic clam) is present in the vicinity of the Delaware River, Perkiomen Creek, and Schuylkill River intake structures. Provide the latest sample date of the monitoring program that was used to make the determination of presence or absence and provide a brief description of the monitoring program. If no recent monitoring has been conducted in the vicinity of the station that could reasonably be expected to detect these organisms this should be stated. If the species is present provide any available information on its density in the vicinity of the intake structures.

RESPONSE

Field monitoring of benthic macroinvertebrates conducted approximately monthly from 1972 thorugh 1976 on the Schuylkill River, Perkiomen Creek, and East Branch Perkiomen Creek did not indicate the presence of Corbicula sp. These studies are fully described in the LGS EROL. A field survey of benthic macroinvertebrates of the Delaware River near Point Pleasant conducted in July and September 1972 did not indicate the presence of Corbicula sp. The Delaware River survey involved qualitative samples collected with a dip net and by hand picking invertebrates from the substrate.

No more recent sampling for macroinvertebrates has been completed near the Schuylkill, Perkiomen or Delaware intakes.

QUESTION E291.17 (Section 5.1.3)

In Section 5.1.3, page 5.1-4 the statement is made under the heading Schuylkill River that "the river near LGS is not of unique importance for the life-sustaining activities of resident aquatic organisms, ...". The statement, in reference to the Perkiomen Creek, is again made in the next paragraph. In the following paragraph discussing the East Branch of the Perkiomen Creek the statement is not made. Explain what is meant by this statement and indicate why it is not applicable to the East Branch of the Perkiomen Creek.

RESPONSE

As discussed in Section 5.1.3 of the EROL, very small areas of the Schuylkill River and Perkiomen Creek will be potentially affected by station operation.

The statement was not applied to the East Branch Perkiomen Creek because virtually the entire reach of the stream is potentially affected by diversion. As stated in section 5.1.3, the changes related to flow augmentation in the East Branch will generally be beneficial to the creek ecosystem through enhancement of community productivity and diversity.

QUESTION E291.19 (Section 5.1.3.3)

Provide in Section 5.1.3.3 an estimate of the volume of sediment that will be washed from the East Branch of the Perkiomen Creek and discuss the fate of this sediment. Also provide in this section an assessment of the impact that this sediment will have on aquatic biota inhabiting areas of sediment deposition.

RESPONSE

This matter is discussed in DRBC's Final Environmental Assessment on page IV-63 and IV-64 from which the following discussion is extracted:

> East Branch Perkiomen Creek. -- All of the channel sections listed on Table IV-10, (page IV-58), except section 14, indicate that for median flow plus average pumping velocities would be in the 1.0 - 2.0 fps range; the average velocity would be about 1.4 fps. Except for a short reach near Perkasie, the East Branch channel is cut through Bowmansville silt loam which was described previously in connection with the North Branch Neshaminy channel. Materials along the short reach near Perkasie are classified as Rowland silt loam which is about the same as Bowmansville except slightly coarser, and Urban Land-Lansdale complex which is a mixture of several types of soils. It is expected that there would be minor enlargement of the low flow channel at the upper limit of the East Branch but the remainder of the reach would be only slightly, if at all, affected by the pumpages. Flow velocities of the three floods shown on Table IV-10 show averages ranging from 5.4 fps to 7.6 fps. It should be evident that the channel geometry on the East Branch would be established by floods - not by pumped flows, except for minor one-time adjustment at the upper end.

No estimate was made of the amount of sediment that will result from this minor one-time adjustment. The referenced table shows that even at the most upstream station (No. 14), the flow velocity during a one year annual flood will be greater than that which will occur under median flow plus maximum pumping conditions (3.75 fps vs. 3.0 fps). Because erosion increases as velocity increases, it is obvious that this initial sedimentary load will be less than that which occurs during the flood flow which can be expected to occur or be exceeded at least once each year. Therefore, impact on aquatic biota is expected to be less than that experienced due to annual flood flows.