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OF COUNSEL

July 17, 1985

DOCKETED  
USNRC

(202) 833-3500

CABLE ADDRESS: ATOMLAW

'85 JUL 22 10:00

OFFICE OF SECRETARY  
DOCKETING & SERVICE  
BRANCH

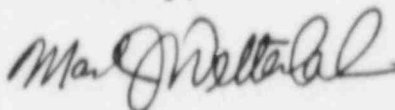
Mr. Samuel J. Chilk  
Secretary  
U.S. Nuclear Regulatory  
Commission  
Washington, D.C. 20555

In the Matter of  
Philadelphia Electric Company  
(Limerick Generating Station, Unit 1)  
Docket No. 50-352

Dear Mr. Chilk:

As a follow-up to my June 3, 1985 letter to you, I am enclosing copies of Philadelphia Electric Company's July 3, 1985 application under Section 3.8 of the Delaware River Basin Compact for the use of water from the Beechwood Pit at Limerick Generating Station, Unit 1.

Sincerely,



for Troy B. Conner, Jr.  
Counsel for the Applicant

TBC/dlf  
Enclosure  
cc: Service List

8509300397 850717  
PDR ADOCK 05000352  
P PDR



# DELAWARE RIVER BASIN COMMISSION

Type of Application: (Check one or more - see reverse side)

- (a) Addition to the Comprehensive Plan..... ( )
- (b) Change in a Comprehensive Plan Project..... ( )
- (c) Approval under Section 3.8 of the Compact..... (X)
- (d) Inclusion in "A-List" of the Water Resources Program..... ( )

Pursuant to the Delaware River Basin Compact and the Rules of Practice and Procedure of the Delaware River Basin Commission, application is hereby made for review of the project described below:

For Use of Commission

Docket No. \_\_\_\_\_

Date Received \_\_\_\_\_

Action by Commission \_\_\_\_\_

(A) Application From:

Name Philadelphia Electric Company

2301 Market St., Philadelphia, PA 19104

Reading Anthracite Co.

100 Lancaster St., Pottsville, PA 17870

Telephone 215-241-2100/215-241-2101

Name of Counsel Edward G. Bauer, Jr., Esq.

James J. Curran, Jr. (Reading)

Name of Engineer V. S. Boyer (PECo)

(B) Type of Project: (Check)

(1) Impoundment..... ( )

(2) Withdrawal of Water..... (X)

(3) Disposal of Wastes..... ( )

(4) Stream Encroachment..... ( )

(5) Well..... ( )

(6) Other..... Variance..... (X)

(C) Description of Project:

For 1985, withdrawal of water from the Schuylkill River for consumptive use at Limerick Generating Station Unit No. 1, when existing dissolved oxygen or flow constraints would otherwise prevent such withdrawal, in amounts not exceeding existing docket limits and not exceeding amounts released into the West Branch of the Schuylkill River from the Beechwood Pit, under a coordinated plan of release from Beechwood and withdrawal at Limerick, with existing dissolved oxygen and flow constraints to be inapplicable to such withdrawal.

Reading Anthracite Company

Signature of Authorized Person J. Curran

Title Asst. Vice President

Date 3/20/85 1985

Philadelphia Electric Company

Signature of Authorized Person V. S. Boyer

Name V. S. Boyer

Title Sr. Vice President

Date July 3, 1985

JUL 3 1985

Delaware River Basin Commission

ENVIRONMENTAL FORM

Applicant Philadelphia Electric Co./Reading Anthracite Co. Date JUL 3 1985  
Title of Project Interim Consumptive Water Supply - Beechwood Pit  
Location Limerick Generating Station DRBC Docket No. \_\_\_\_\_

1. List any significant environmental impacts, beneficial and adverse, caused by the proposed action.

The beneficial impact of the requested temporary withdrawal of water released under a variance from the Beechwood Pit will be to permit scheduled operation of Limerick, already evaluated by the DRBC. See DRBC FEA for Schuylkill Water Supply Systems (August 1980); DRBC Level 3 Study; and AEC/NEC FES for Limerick (November 1973 and April 1984). The release of water will increase the stream flow from the Beechwood Pit to the Limerick intake. There will be minimal adverse impacts from this release which will be in accordance with NPDES permit requirements and applicable water quality standards, or any appropriate variance therefrom. (See Paragraph 2, below) See Attachments 1 and 3.

2. What mitigating measures will be used to reduce or alleviate the adverse environmental impacts?

Under NPDES requirements and the variance applied for herein (See Attachment 3) the use of the consumptive water made available pursuant to this application will have minimum adverse impacts. While total dissolved solids in the Beechwood Pit are somewhat higher than DRBC limits the effects in the main stem of the Schuylkill due to the introduction of the Beechwood Pit water will be minimized due to mixing. The effect of the Beechwood water on the Schuylkill after its discharge at Limerick will also be minimal. As soon as seasonal conditions permit continuous use of natural stream flow, pumping from Beechwood will be stopped.

3. Summarize the alternatives considered.

The alternatives considered were (1) no action (2) release of water from the Ontelaunee Reservoir (3) release of water from Green Lane Reservoir (4) release of water from the Blue Marsh Reservoir or other basin water supply storages. See Attachment 2.

4. List any known objectors to the proposed action.

None.

**APPLICANT'S STATEMENT - PROJECT REVIEW FEE**  
(See Reverse Side For Additional Information)

1. Name and Address of Applicant Philadelphia Electric Co. - 2301 Market St., Phila., PA 19101  
Reading Anthracite Co. - 200 Mahantongo St., Pottsville, PA 17901
2. Name of Project Interim Consumptive Water Supply - Beechwood Pit  
Limerick Generating Station Docket #

3. Type of Project

Check Applicable Item(s)

- ☐ (a) impoundments  
☐ (b) diversions of water into or out of the Delaware River Basin  
☐ (c) industrial water use and waste treatment facilities  
☒ (d) electric generating and transmission facilities  
☐ (e) petroleum product pipelines  
☐ (f) stream encroachments; and  
☐ (g) withdrawal of ground water

4. Project Cost Factors (Complete all lines using Zero where applicable)

Item	Estimated Cost
a. Design	\$ 5,000
b. Supervision of Construction	\$ 5,000
c. Legal Services	\$ 5,000
d. Contract Administration	\$
e. Land	\$
f. Materials	\$
g. Construction and Fabrication	\$ 10,000
<b>TOTAL ESTIMATED PROJECT COST</b>	<b>\$ 25,000</b>

Footnotes/Remarks

5. Filing Fee Schedule (Check applicable item(s))

(The filing fee is the greater of (a) or (b))

- ☒ (a) minimum fee: \$100. for any project; or Computation: (a) \$ 100.  
☐ (b) alternative fee: (b)  
(1) 1/10 of 1% of estimated project cost up to \$1,000,000. (1) \$  
(2) 1/50 of 1% of remaining cost above \$1,000,000; but not to exceed a maximum fee of \$50,000 as to any one project, exclusive of added environmental fees. (2) \$  
Total \$ 100.00

6. Filing Fee Required with Application

\*Please enclose check in this amount with application. Check should be made payable to Delaware River Basin Commission.

NOTE: Should this project require an Environmental Impact Statement or an Environmental Assessment, you will be notified at a later date and an Applicant's Statement-Environmental Review Fee will be forwarded for completion and payment of applicable fee.

Signature of Certifying Official

Asst. Vice President

Date 3 JULY 85

Signature of Certifying Official

Senior Vice President, Nuclear Power

Title

## ACKNOWLEDGMENT BY DRBC OF FEE PAYMENT

Received Check No. , dated , Bank No.  
in amount of

COPIES: (1) Administrative Division Copy - white  
(2) APPLICANT - Retain This Copy - pink  
(3) Applicant - DRBC Receipted Copy - yellow  
(4) Project Review Copy - blue

Signature

ATTACHMENT 1

Application of Philadelphia Electric Company  
and Reading Anthracite Company for Temporary  
Source of Make-up Water  
(Beechwood Variance and PECO Withdrawal)

In view of the fact that there will be times when stream flow or dissolved oxygen (DO) constraints as described in DRBC Docket D-69-210 CP (Final) (Revised) (May 29, 1985) will prevent withdrawals from the Schuylkill River for consumptive use at Limerick Unit No. 1, another source of make-up water will be necessary for the remainder of 1985. Philadelphia Electric Company (PECO) has filed with the DRBC an application, dated May 30, 1985, under Section 3.8 of the Compact for coordinated use of the water allocation of Metropolitan Edison's Titus Station Units No. 1, 2, & 3, and PECO's Cromby Station Unit No. 2 for consumptive use at Limerick Generating Station Unit No. 1. This proposal will allow Limerick to resume its start-up and testing program, but will not provide enough water for the completion of the testing. Under those circumstances, Reading Anthracite Company (Reading) proposes to pump water from its Beechwood Pit into the West Branch of the Schuylkill River near Duncott, PA, under a National Pollutant Discharge Elimination System Permit for which application was made by Reading to the Pennsylvania Department of Environmental Resources (DER) on June 7, 1985 and under a variance from DRBC water

quality regulations for total dissolved solids (TDS), application for which is made herein (See Attachment 3). This water would then be conveyed via open channel flow to the Limerick intake, 82 miles downstream.

The Beechwood Pit is a former strip mine controlled by Reading. The pit, whose maximum dimensions are approximately 2500 feet long, 1000 feet wide, and 300 feet deep, is presently unused and has filled with approximately 2.2 billion gallons of water, a sufficient quantity of water to meet Limerick's consumptive needs for the remainder of the 1985 period when the Schuylkill River is otherwise unavailable. PECO has made arrangements with Reading for use of this water and its conveyance to the river.

It is proposed that water will be pumped from the pit and withdrawn for Limerick 1 when the DRBC Dockets would otherwise preclude using the Schuylkill River for consumptive purposes. Assuming all water for Limerick comes from the Beechwood Pit, the pumping rate at Beechwood will be equal to the consumptive use at Limerick, with a maximum pumping rate of 32.5 cfs (21.0 mgd) and an average rate of 12.8 cfs (8.3 mgd) during the 24 week startup and testing period. The stated pumping rates would be reduced by the requested authorization to use water allocated to the Titus and Cramby No. 2 units



Beneficial impacts to the environment. The availability of cooling water during 1985 for Limerick will enable the Limerick Generating Station to complete its start-up testing program without delay and to operate at full capacity in order to help meet electric power generation needs for southeastern Pennsylvania.

DRBC has previously determined that the supply of cooling water for Limerick provides a benefit to the environment. As DRBC stated in its most recent environmental review of the supply of supplemental cooling water for Limerick, "documents prepared after DRBC's Final EIS on the Point Pleasant Diversion Plan, issued in 1973, support the conclusion that the proposed project would be a feasible and beneficial use of water resources." See DRBC Final Environmental Assessment for the Neshaminy Water Supply System, Part III, p. 2-53 (August 1980). DRBC reached the same conclusion in granting final Section 3.8 approval to the Point Pleasant project in Docket No. D-79-52 CP at p. 5 (February 18, 1981). Accordingly, DRBC has recognized that the use of Basin water resources to provide cooling water for Limerick constitutes a beneficial use.

As to the specific need for the electrical power to be generated by the Limerick Generating Station, DRBC has relied upon the findings of the Nuclear Regulatory Commission (previously the Atomic Energy Commission) in its own environmental statements for Limerick. See Docket No. D-69-210 CP (Final) at pp. 1, 6-8 (November 5, 1975). In issuing construction permits for Limerick, the AEC determined that there is a need for the electrical power to be generated by Limerick. See AEC Final Environmental Statement Related to the Proposed Limerick

Generating Station, Units 1 and 2, Docket Nos. 50-352 and 50-353, Ch. 9 (November 1973). At the operating license stage, the NRC similarly found a substantial benefit to the environment to be derived from the operation of the Limerick Station in the annual production of approximately 10 billion KWh of base load electrical energy. See NRC Final Environmental Statement Related to the Operation of Limerick Generating Station, Units 1 and 2, Docket Nos. 50-352 and 50-353, Section 6.4.2 (April 1984).

Further, in an order entered August 27, 1982, the Pennsylvania PUC expressly stated that "(t)he public interest requires . . . (t)imely completion of Limerick Unit 1" and further stated "we encourage the Company to complete this unit as rapidly as possible consistent with the public safety." Pennsylvania PUC, Opinion and Order, Docket No. 1-80100341 (August 27, 1982) (emphasis added) (pp. 23-25). Accordingly, there exists a substantial benefit to the environment and the public in the commencement of commercial operations at Limerick as soon as possible.

The natural flow in the Schuylkill River will be enhanced by the release of the Beechwood Pit water from Pottsville to the Limerick intake.

Minimal adverse impact to the environment - Water analyses, performed from 1974 to 1984, indicated that the background Total Dissolved Solid, (TDS) in the Schuylkill River at Limerick averages 375 ppm at a flow of 360 cfs. The 360 cfs flow is the lowest flow for which sufficient data is available to analyze. For a flow of 360 cfs



and an average TDS background concentration of 375 ppm at Limerick, the release of 27.0 cfs of Beechwood water, with a TDS of 1670 ppm, will increase the TDS to approximately 465 ppm at Limerick. When this water is used at Limerick a portion will be reconcentrated in the cooling tower, and the discharge of the blowdown water will increase the TDS concentration in the Schuylkill immediately below Limerick to approximately 496 ppm. This final river TDS concentration meets the DRBC stream water quality objective since it is less than 133% of the river background TDS and less than 500 ppm.

The TDS are of concern in water quality due to imparting objectionable mineral tastes to drinking water and due to increasing the potential for corrosion. Both effects are related to specific ions that make up the TDS rather than the level of TDS itself. Most taste and corrosion problems are associated with the sodium and chloride ion rather than the calcium, magnesium, and sulfate ions that dominate the Beechwood water. In order to minimize the effects of increased TDS on users below Limerick, the TDS level at the Limerick intake will be monitored semi-weekly and the concentration after passing through the plant will be calculated. If the TDS level after concentration exceeds the DRBC objective of 500 ppm, plant operations would be reduced as required so that the 500 ppm objective is met.

The drawdown of the Beechwood Pit will have minimal impact on local groundwater levels. The strip mine was operational and dry until approximately 1966, and there were no noticeable changes in local ground water elevation. Recharge of the pit was estimated to be 200-500 gpm. This recharge rate is small compared to the proposed pumping rate and was not included in calculations of the useable

quantity of water in the pit. Nearby mines will not be affected by this pumping, as the other mines are geologically isolated by solid rock formations. It is a practice to cease mining in the direction of nearby mines before flow paths are created. The presence of the solid separation is evidenced by the fact that adjacent mines are presently pumped even lower than the Beechwood Pit and water is not flowing out of Beechwood. Conversely when Beechwood was working and the water was absent, water did not flow into the Beechwood pit at the ground water levels experienced at nearby mines.

## ATTACHMENT 2

### Application of Philadelphia Electric Company and Reading Anthracite Company for Temporary Source of Make-up Water (Beechwood Variance and PECO Withdrawal)

#### Alternatives Considered

PECO has considered various alternatives for a temporary supply of supplemental cooling water to Limerick for the period of 1985 when docket decision constraints preclude withdrawals from the Schuylkill and Perkiomen. An alternative is not realistic and need not be considered unless capable of being promptly implemented. Thus, an alternative cannot require construction or major modification of existing facilities. The alternatives considered and a brief discussion of each follow:

- (1) No action - Due to flow and DO constraints imposed by DRBC on withdrawals of water from the Schuylkill River for consumptive use, the Schuylkill will be largely unavailable for such withdrawals during the period June to October, 1985. Because the permanent supplemental water supply from the Point Pleasant project will be unavailable for this period, Limerick cannot continue with start-up and ascent to full power testing without an interim source. The cost of not operating Limerick for lack of water during that period is estimated to be \$49 million per month. See Affidavit of Vincent S. Boyer, Senior Vice President, Nuclear Power July 3, 1985 (attached).

## Exhibit 1

### Application of Philadelphia Electric Company and Reading Anthracite Company for Temporary Source of Make-up Water (Beechwood Variance and PECO Withdrawal)

#### Abstract of Proceedings Authorizing Project

DRBC Docket No. D-69-210 CP (Final) (November 5, 1975) approved the Limerick Generating Station Project pursuant to Section 3.8 of the Compact. Incorporated in this Docket were Schuylkill River flow and temperature restrictions which would largely prohibit consumptive water withdrawals, absent Point Pleasant, during the period June to October, 1985. The temperature restraints were temporarily suspended through December 31, 1985, and a dissolved oxygen monitoring program imposed in lieu thereof in Docket No. D-69-210 CP (Final) (Revised) (May 29, 1985). PECO has filed with the DRBC an application, dated May 30, 1985, under Section 3.8 of the Compact for temporary use of operational generating stations' water allocations. This application, if approved, will allow Limerick to resume its startup and testing program, but will not provide enough water for the completion of the testing. It is for this reason that this application is submitted for use of the Beechwood Pit water.

## Exhibit 2

### Application of Philadelphia Electric Company and Reading Anthracite Company for Temporary Source of Make-up Water (Beechwood Variance and PECO Withdrawal)

#### Standard or Policy Under Consideration

The primary purpose of the DRBC in establishing limits for consumptive use of water is to minimize the adverse environmental effects of withdrawals for consumptive use during periods of low natural stream flow and low dissolved oxygen levels. The proposal set forth in this Application is consistent with this purpose in that a supplemental source of water will be used to provide water to be used consumptively at Limerick Unit No. 1. No additional consumptive stress will be placed on the Schuylkill River.

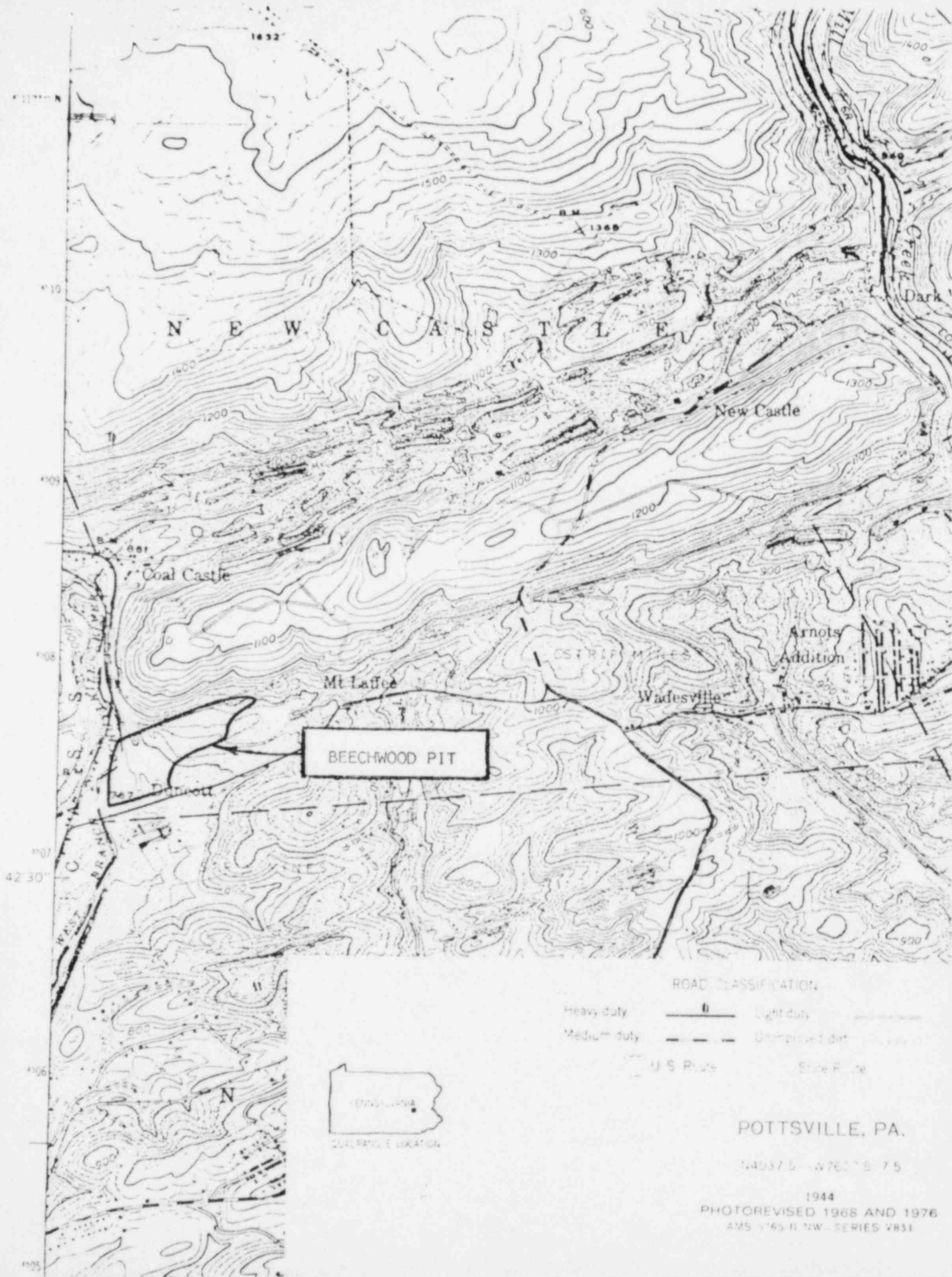
Exhibit 3

Application of Philadelphia Electric Company  
and Reading Anthracite Company for Temporary  
Source of Make-up Water  
(Beechwood Variance and PECO Withdrawal)

Section of the United States Geological  
Survey Topographic Map Showing the  
Territory and Watershed Affected

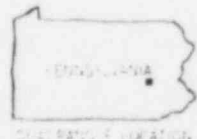
The maps attached detailing the location of the Beechwood Pit and  
Limerick Unit No. 1 were prepared from the United States Geological  
Survey Pottsville and Phoenixville Quadrangles, respectively.





ROAD CLASSIFICATION

- |             |  |                 |  |
|-------------|--|-----------------|--|
| Heavy duty  |  | Light duty      |  |
| Medium duty |  | Unimproved dirt |  |
| U.S. Route  |  | State Route     |  |



LOCATING MAP

POTTSVILLE, PA.

144375-147611-5 75

1944  
PHOTOREVISED 1968 AND 1976  
AMS 1765 II NW-SERIES V831

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY



Exhibit 4

Application of Philadelphia Electric Company  
and Reading Anthracite Company for Temporary  
Source of Make-up Water  
(Beechwood Variance and PECO Withdrawal)

Description of Specific Effects  
of Non-Structural Project

See Section 1 of Environmental Form and Attachment 1 hereto.

- (2) Ontelaunee Reservoir - This reservoir is located on Malden Creek, a tributary to the Schuylkill River upstream of the Limerick plant, and is owned by the City of Reading for use as a water supply source. Ontelaunee has 11,640 acre-feet of total storage. The City of Reading was granted an allocation of 35 million gallons per day of water by the DRBC on August 27, 1969 in Docket No. D-69-139 CP. The water supply system is presently reported to use an average of 20 mgd with a maximum usage of about 25 mgd. The City of Reading and the municipalities served by the water system are served by comprehensive systems of sewerage collection which discharge to complete treatment facilities and thence into tributary streams and the Schuylkill River.

Inquiries have been made to the City of Reading and a presentation was made to the City Council as to the city's interest in selling unused water from their allocation to PECO. An application for approval of such usage would have to be made by the City to the DRBC. To date, the City has not indicated an interest in making any water available to PECO for 1985, or any other period of time.

- (3) Green Lane Reservoir - This reservoir is located on the Perkiomen Creek. It is owned by the Philadelphia Suburban Water Company ("PSW Co.") and is used in combination with other reservoirs and wells for water supply. Total storage is 13,430 acre-feet. Green Lane is not large enough to meet the combined needs of PSW Co. and Limerick. (Letter to

Nicholas DeBenedictis, DER Secretary from Robert A Luksa, Executive Vice President, Philadelphia Suburban Water Company, June 4, 1984).

- (4) Blue Marsh Reservoir - This reservoir is located on the Tulpehocken Creek, a tributary to the Schuylkill River upstream of the Limerick plant. On March 15, 1985, PECO filed with the DRBC an application under Section 3.8 of the Compact for releases from Blue Marsh or other DRBC water supply storage during 1985 for use at Limerick Generating Station Unit No. 1. This request was rejected by the DRBC on May 29, 1985 in Docket No. D-69-210 CP (Final) (Revised).

COMMONWEALTH OF PENNSYLVANIA           :           ss.  
COUNTY OF PHILADELPHIA                :

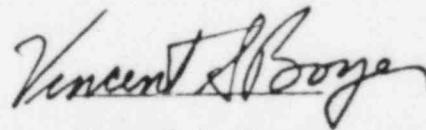
VINCENT S. BOYER, being first duly sworn, states as follows:

1. My name is Vincent S. Boyer, I am Senior Vice President, Nuclear Power of Philadelphia Electric Company ("the Company"), owner and operator of the Limerick Generating Station.
2. On October 26, 1984, the U. S. Nuclear Regulatory Commission issued a license authorizing fuel loading and a low power testing program for Limerick Unit No. 1, these have been completed. The schedule for the power ascension phase of operation is such that the Plant is now ready to proceed to power levels greater than allowed under our existing license. In view of the current status of the NRC licensing proceedings, issuance of a full power license can be anticipated by the third quarter, 1985.
3. In order to proceed with the power ascension program for Unit 1 after the issuance of a full power operating license by NRC, it is necessary to have in place a supplemental cooling water supply.
4. The partially constructed Point Pleasant diversion will not be completed in time to supply Unit 1's supplemental cooling water needs in the third quarter of 1985 when it is anticipated that the NRC will authorize the Company to proceed to full power operation.
5. Consequently, an interim supply of supplemental cooling water will be required to operate Unit 1 at sustained high power levels until the Point Pleasant Project is completed.



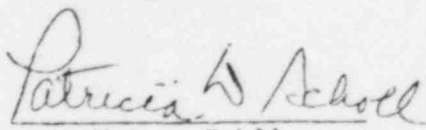
6. Delays in proceeding to full power will result in a delay in the commercial operation of the unit. Such delays will increase the costs of Limerick Unit 1 by \$34 million per month. This cost figure is made up of \$24 million per month Allowance for Funds Used During Construction (AFUDC) and \$10 million per month operational, security and maintenance costs. In addition, the fuel costs of the Company's customers will be increased by \$15 million a month for each month of delay.

7. Delays in the full power operation of Unit 1 may also impact on the restart of construction of Unit 2. The Pennsylvania Public Utility Commission has concluded hearings on whether construction at Unit 2 should be continued, but in compliance with a prior order issued by the PUC, construction of Unit 2 unit has been suspended until Unit 1 is placed in commercial operation.



Vincent S. Boyer

Subscribed and sworn to  
before me this 3<sup>rd</sup> day  
of July 1985.

  
Notary Public

PATRICIA D. SCHOLL  
Notary Public, Commonwealth of Pennsylvania  
My Commission Expires January 10, 1986

### ATTACHMENT 3

Application of Philadelphia Electric Company  
and Reading Anthracite Company for Temporary  
Source of Make-up Water  
(Beechwood Variance and PECO Withdrawal)

Variance From DRBC Water Quality Regulations

Water analyses indicate that the environmental impact of discharging the Beechwood Pit water into the West Branch Schuylkill River near Duncott, PA at a point about  $\frac{1}{2}$  mile downstream from the Pit will be a general improvement of the quality of the river downstream of the discharge. Reading Anthracite Co. has filed a National Pollutant Discharge Elimination System Permit application with the PA DER for this discharge of water. The DER has advised that it would impose the following total dissolved solids (TDS) limits on the discharge of Beechwood water at the point noted above which is near an existing outfall on the western side of the West Branch Schuylkill River. The limits would be based upon DRBC Stream Water quality criteria:

580 mg/l - 30 day average

1160 mg/l - maximum daily average

1450 mg/l - instantaneous maximum

In addition DRBC effluent quality requirements, Section 3.10.4 of "Basin Regulations-Water Quality", state that total dissolved solids shall not exceed 1000 mg/l, or a concentration established by the Commission which is compatible with designated water uses and stream quality objectives, and recognizes the need for reserve capacity to serve future dischargers.

Water quality analyses indicate that the Beechwood water would exceed these discharge limits somewhat. Six individual measurements of the TDS in the Beechwood water ranged from 1050 mg/l to 1670 mg/l. However, the PA DER has indicated that if a variance is granted by the DRBC, the DER would impose limits on TDS in accordance with the variance. The DER has its own criteria, but will impose DRBC criteria as they are more restrictive. The DER imposes water quality objectives for the same reasons as the DRBC, to preserve and improve the purity of the waters of the Commonwealth of Pennsylvania. The DER effluent limit for the TDS in the Beechwood Pit would be a 30 day average value of 2300 mg/l. The Beechwood Pit water does meet the DER criteria. We request a variance to discharge water containing TDS in the amount up to the concentration that would be allowed by the PA DER using their criteria. The limited water analyses indicated that the actual TDS in the Beechwood water will be significantly lower than levels allowed by the DER criteria.

TDS are of concern in water quality due to imparting objectionable mineral tastes to drinking water and due to increasing the potential for corrosion. Both effects are related to specific ions that make up the TDS rather than the level of TDS itself. Most taste and corrosion problems are associated with the sodium and chloride ion rather than the calcium, magnesium, and sulfate ions that dominate the Beechwood water.

When the Beechwood maximum discharge reaches the main stem Schuylkill, about 10 miles downstream, a yearly average flow would dilute this discharge by about 10 to 1. The discharge will therefore be diluted before reaching any municipal water intakes and will not contribute to taste or corrosion problems.

Water analyses, performed from 1974 to 1984, indicate that the background TDS at Limerick averages 375 mg/l at a flow of 360 cfs. The 360 cfs flow is the lowest flow that sufficient data is available to analyze. For a flow of 360 cfs and an average TDS background concentration of 375 mg/l at Limerick, a release of 27 cfs of Beechwood water, with a TDS of 1670 mg/l, would increase the TDS to approximately 465 mg/l at Limerick. The nearest downstream municipal water intake from the Beechwood Pit is the Pottstown Water Authority's treatment plant, which is approximately 8 miles upstream from Limerick. The release of the Beechwood water at a Schuylkill River flow of 360 cfs will cause the TDS of the water at the first downstream municipal water user to be within the DRBC stream water quality objectives of 133% of river background TDS or 500 mg/l. At higher river flows, the effect will be less, and it is concluded that the introduction of water from the Beechwood Pit will not adversely affect the quality of water in the Schuylkill River.

No aquatic life exists at the discharge location and therefore aquatic life would not be affected by the TDS level in the West Branch Schuylkill River. Aquatic life is present in the main stem Schuylkill River, but the increase in TDS due to the Beechwood release will have only a minimal effect on the aquatic life present.

All species of fish and other aquatic life must be tolerant of a range of dissolved solids in order to survive under natural conditions. Studies in Saskatchewan indicate that several common freshwater species survived 10,000 mg/l dissolved solids, whitefish and pikeperch survived 15,000 mg/l, and stickleback survived 20,000

mg/l dissolved solids. The increase in TDS of the Schuylkill River, due to the release from Beechwood is expected to be gradual and should not cause a shock to Schuylkill River fishes. When sodium chloride is the major constituent of TDS, levels in excess of 15,000 mg/l (sodium chloride) can cause mortality due to osmotic imbalance. In the Beechwood Pit, magnesium sulfate is the major constituent of TDS; thus there should be no mortality through osmotic imbalance.

Since PECO requires this water in the near future, an alternative to a variance is not realistic and need not be considered unless capable of being promptly implemented. Thus, an alternative cannot require construction or major modification of existing facilities. Treatment of the Beechwood water would require construction of facilities and is therefore not a realistic alternative. The only realistic alternative to obtaining the DRBC variance is to not use the water from the Beechwood Pit. The beneficial impact of using the water for use at Limerick Generating Station Unit No. 1 is fully described in Attachment 1.

## Exhibit 5

### Application of Philadelphia Electric Company and Reading Anthracite Company for Temporary Source of Make-up Water (Beechwood Variance and PECO Withdrawal)

#### Report of the Applicant's Engineer Showing the Proposed Plan of Operation of the Project

The resumption of the startup program and approach to full power for the Limerick Generating Station Unit No. 1 is expected to begin following issuance of a full power license by the Nuclear Regulatory Commission. A gradual ascension to full power is planned with tests being conducted at several discrete power levels. The total test program is estimated to require a period of approximately six months, including time for review and approval of test results and for some adjustment and tuning of control systems.

Based on the availability of consumptive water requirements, the following program is envisioned. For the first two months of the startup program, the unit will be operated at power levels progressively increasing to 50% of full power and the average consumptive water requirements will be about 10 cfs. During month three, testing will occur at power levels up to 75% of full power with the consumptive water requirements averaging about 17 cfs. During months four through six, it is planned to conduct tests at full power output with consumptive water needs averaging about 22 cfs. Thereafter, when operating at full power, the average consumptive usage amounts to 27 cfs, which figure might increase to 32.5 cfs under extreme meteorological conditions.



During the test program, PECO will utilize withdrawals from the Schuylkill River and Perkiomen Creek as authorized by DRBC. When withdrawals from the Schuylkill River and Perkiomen Creek are precluded by the DRBC docket decision flow or DO constraints, PECO would use the consumptive water made available pursuant to its Titus - Cromby application to DRBC. In addition, PECO would use the consumptive water from the Beechwood Pit for the same purpose. In order to minimize the quantity of water pumped from the Beechwood Pit, the amount of Beechwood water pumped will equal Limerick's scheduled consumptive use minus the water available from Titus and Cromby 2. The flow and DO constraints imposed in Docket No. D-69-210 CP (Final) (Revised) (May 29, 1985) would be inapplicable to this plan of operation.

Based on the projected operating schedule, the estimated consumptive water requirements for Limerick will be calculated two weeks in advance, and a running schedule of estimated consumptive water needs will be maintained. The expected sources of this water will then be identified and the estimated daily pumping requirements from the Beechwood Pit will be calculated. Taking into consideration the river flow time between Beechwood and Limerick, a daily pumpage schedule will be formulated and initiated with pumpage rates normally adjusted on a daily basis. Based upon USGS studies, the travel time from Beechwood to Limerick at a 520 cfs Schuylkill River flow is approximately 8 days; at 340 cfs, the travel time increases to 10 days. The quantity of water being added to the West Branch of the Schuylkill River will be measured by a standard scientific method.

To insure that the water added to the stream actually meets the requirements and consumptive useage of Limerick, a second set of calculations will be made. Each day the actual consumptive usage of water for the previous day will be calculated based on unit output, cooling tower makeup and blowdown quantities, and cooling tower basin level changes. Based on the sources of water available to us by docket decisions, the quantity of water required from the Beechwood Pit will be calculated. This will be compared to the actual amount pumped from the Beechwood Pool some days earlier, allowing for travel time in the river between the point of addition and the Limerick Station. A running seven-day total of the actual pumping requirements and the amount pumped will then be made. The target value for the difference in these values will be that the amount pumped shall be 3% greater than the requirements. Any diversion from this figure will be corrected by an adjustment to the pumping rate for the current day. A procedure detailing the calculational steps will be prepared and records of the calculation will be retained and available for inspection.

In summary, the consumptive water usage at Limerick, as furnished from the Beechwood Pit, will be projected and the Beechwood pumping will be adjusted to be in concert with the actual requirements. On a retrospective basis, pumped quantities will be 3% over actual usage.

Dissolved oxygen content of the Schuylkill River will be continuously monitored as required by DRBC Docket No. D-69-210 CP (Final) (Revised), dated May 29, 1985, and experience will be gained regarding the correlation of D.O., temperature, and flow. During the time periods that the DO levels permit withdrawal from the river and Beechwood Pit water is not required, future DO levels will be predicted 10 days in advance. If predicted river flows or other conditions lead us to believe that the DO levels will drop below permissible withdrawal limits, pumping will be initiated at Beechwood so that the water will reach Limerick when needed. In fact, some base level pumping may be maintained (such as the level of 25% of full power needs) as insurance against a forced plant shutdown or power reduction. When the DO level drops below the permit levels, the consumptive water usage of Limerick and the power output which results in this usage will be adjusted so that on a daily basis the consumptive usage will not exceed permit requirements.

Exhibit 6

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Map of Any Lands to be Acquired or Occupied

The consumptive water withdrawal at Limerick is a non-structural proposal with no lands to be acquired. The pipeline which will carry the water pumped from the Beechwood Pit to the West Branch Schuylkill River will be over lands owned or controlled by Reading.

Exhibit 7

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Estimate of Cost of Completing  
the Proposed Project

The consumptive water withdrawal is a non-structural proposal which involves no expenditures for its completion. The release of water from the Beechwood Pit will require installation of pumps in the Beechwood Pit and release lines from the Pit to the West Branch Schuylkill River at an estimated cost of \$25,000.00, plus monthly operational and rental costs.

## Exhibit 8

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#### Description of Construction Procedures

The consumptive water withdrawal is a non-structural proposal which involves no construction activity. The installation of pumps in the Beechwood Pit and release lines from the Pit to the West Branch Schuylkill River will be in accordance with standard procedures for such installations. The pumps and discharge lines will be rented. The number of pumps will depend on the capacities of the pumps available at the time of rental. The discharge line will be 24 inches in diameter, approximately 3300 feet in length and laid on the surface along the bank of the West Branch Schuylkill River.