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January 24, 1986

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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 06

Dear Mr. Chilk:

As a follow-up to my letter of September 23, 1985 to you, I am enclosing a copy of an application filed with the Delaware River Basin Commission under Section 3.8 of the Compact for approval, during 1986, of the temporary substitution of in-stream monitoring of dissolved oxygen levels in place of the 59°F temperature constraint on withdrawals for the Limerick Generating Station incorporated in DRBC Docket No. D-69-210 CP (Final) (November 5, 1975) and of the transfer of the existing consumptive use allocations of Titus Generating Station Units 1, 2 and 3 and Cromby Generating Station Unit 2 to Limerick Unit 1 when docket limitations in effect would otherwise preclude the consumptive use of Schuylkill River water for Limerick.

For your information, the attached application was considered by DRBC at a hearing on January 22, 1986. The DRBC indicated it would act on the application at its next meeting on February 26, 1986.

Sincerely,

Troy B. Conner, Jr.

Troy B. Conner, Jr.
Counsel for Philadelphia
Electric Company

TBC/dlf
Enclosure
cc: Service List

8603040515 860124
PDR ADDCK 05000352
P PDR

~~DS03~~

PHILADELPHIA ELECTRIC COMPANY

2301 MARKET STREET

P.O. BOX 8699

PHILADELPHIA, PA. 19101

(215) 841-4500

~~V. S. BOYER~~
SR. VICE PRESIDENT
NUCLEAR POWER

December 16, 1985

Ms. Susan Weisman, Secretary
Delaware River Basin Commission
P. O. Box 7360

Dear Ms. Weisman:

Transmitted herewith for filing with the Commission is Philadelphia Electric Company's Application under Section 3.8 of the Compact for approval of the temporary substitution, during 1986, of in-stream monitoring of dissolved oxygen levels in place of the 59°F temperature constraint on withdrawals for Limerick Generating Station Unit No. 1 incorporated in Docket Decision 69-210-CP (Final) November 5, 1975, and of the transfer of the existing consumptive use allocations of Titus Generating Station Units 1, 2, and 3 and and Cromby Generating Station Unit 2 to Limerick Unit 1 when docket limitations in effect would otherwise preclude the consumptive use of the Schuylkill River water for Limerick.

A similar substitution of dissolved oxygen monitoring was granted by the DRBC in Docket No. D-69-210 CP (Final) (Revised) (May 29, 1985) and a transfer of the consumptive use allocations was granted in Docket No. D-69-210 (Final) (Revision No. 2) (August 9, 1985). The said substitution and transfer were for the year 1985 only.

This filing consists of six copies of the following documents:
a) completed DRBC application form, including Attachments 1 and 2 and Exhibits 1 through 8 thereto; b) completed DRBC Environmental Form; and c) completed Applicant's Statement - Project Review Fee Form.

Enclosed is Philadelphia Electric Company's check in the amount of \$100 to cover the Project Review Fee.

The affidavit of Vincent S. Boyer, Senior Vice President, Nuclear Power, Philadelphia Electric Company, which is part of Attachment 2 of the application states that issuance of a full power license by the Nuclear Regulatory Commission for Limerick Unit No. 1 occurred on August 8, 1985, power ascension and testing began immediately, and

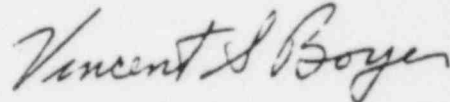
commercial operation is expected by mid-February 1986. It is further stated that the cost of not operating the unit for lack of water is estimated to be \$800,000 per day in replacement fuel costs.

Accordingly, the Company requests immediate action on its Application, pursuant to Section 2-3.9(d) of the Commission's Rules of Practice and Procedure to protect the public interest and to avoid substantial and irreparable injury to the public and to the Company.

Communications regarding this Application should be directed to the undersigned.

We are currently holding discussions with Metropolitan Edison Company, the owner and operator of the Titus Generating Station, regarding this Application to the extent it relates to the continuation of our present agreement concerning the operation of the Titus facility.

Very truly yours,



Vincent S. Boyer

WHD/bls/12168501

Enclosures

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.....(X)
- (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
 Mailing Address 2301 Market Street,
Philadelphia, PA 19101
 Telephone (215) 841-4000
 Name of Counsel Edward G. Bauer, Jr.
and Eugene J. Bradley
 Name of Engineer V. S. Boyer

- (B) Type of Project: (Check)
- | | |
|---------------------------------|---------------------------------|
| (1) Impoundment.....() | (4) Stream Encroachment.....() |
| (2) Withdrawal of Water.....(X) | (5) Well.....() |
| (3) Disposal of Wastes.....() | (6) Other.....() |

(C) Description of Project:

For 1986, the withdrawal of water from the Schuylkill River for consumptive use at Limerick Generating Station Unit No. 1 by temporary substitution of in-stream monitoring of dissolved oxygen levels in place of the 59°F temperature constraint, similar to the substitution granted in Docket No. D-69-210 CP (Final) (Revised) (May 29, 1985); and by transfer of the existing consumptive use allocations of Titus Generating Station Units 1, 2, and 3 and Cromby Generating Station Unit 2 to Limerick Unit 1 when existing docket limitations would otherwise preclude the consumptive use of the Schuylkill River water for Limerick, said transfer originally granted in Docket No. D-69-210 CP (Final) (Revision No. 2) (August 9, 1985).

Signature of Authorized Person Vincent A. Boyer
 Name V. S. Boyer
 Title Senior Vice President,
 Date Nuclear Power

DEC 16 1985

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

1. Name and Address of Applicant Philadelphia Electric Company
 2301 Market St., Philadelphia, PA 19101

2. Name of Project Limerick Generating Station
 Interim Consumptive Water Supply 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	\$ 0
b. Supervision of Construction	\$ 0
c. Legal Services	\$ 0
d. Contract Administration	\$ 0
e. Land	\$ 0
f. Materials	\$ 0
g. Construction and Fabrication	\$ 0
TOTAL ESTIMATED PROJECT COST	\$ 0

Footnotes/Remarks non-structural - D. O. monitors are already constructed in accordance with authorization and approval thereof.

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.

Vincent S. Boyer
 Signature of Certifying Official

DEC 16 1985

Date _____ 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 _____

Delaware River Basin Commission

ENVIRONMENTAL FORM

Date DEC 16 1985

Applicant Philadelphia Electric Co.

Title of Project Interim Consumptive Water Supply

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 substitution of instream monitoring of dissolved oxygen levels in place of the 59°F temperature constraint and the requested transfer of water allocations for consumptive purposes will be to permit scheduled operation of Limerick Unit 1, already evaluated by the DRBC. See, DRBC FEA for Neshaminy Water Supply System (August 1980); DRBC, Level B Study; and AEC/NRC FES for Limerick (November 1973 and March 1984) and DER EA (August 1982). There will be no adverse impacts from the temporary suspension of the 59°F temperature constraint. (See paragraph 2 below). Use of Titus Station's water will enhance the 23 mile reach between Titus and Limerick due to the delay in consumptive use of the water. Use of Crosby Station's water allocation will have minimum impact on the 9 mile reach between Limerick and Crosby. (See Attachment 1.)

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

There will be no adverse impacts from the temporary suspension of the 59°F temperature constraint. Degradation of water quality of the Schuylkill River below Limerick Generating Station will be precluded by in-stream monitoring of dissolved oxygen levels. The proposed use of operational stations' water will not change the intended purpose of the present water allocations. The impact on the Schuylkill River will be minimal. Thus, no mitigating measures need be undertaken.

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 Blue Marsh Reservoir or other DRBC water supply storage.

4. List any known objectors to the proposed action.

None.

ATTACHMENT 1

Application of Philadelphia Electric Company
For Temporary Suspension of 59°F Temperature Constraint
and For Authorization of Consumptive Water Use During
Coordinated Operation of Certain Schuylkill River
Generating Facilities

Beneficial impacts to the environment. The availability of cooling water for Limerick during 1986 will enable Limerick Unit 1 to be placed in commercial operation and to operate at full capacity to meet electric power generation needs for southeastern Pennsylvania in the most economic manner.

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, 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 50-3535, 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 (March 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. I-80100341 (August 27, 1982) (emphasis added) (pp. 23-25). Accordingly, there exists a substantial benefit to the environment and the public in the maximum availability of Limerick Unit 1 for power production.

No adverse impact by temporary suspension of 59°F temperature constraint. DRBC Docket No. D-69-210 CP (March 29, 1973) precludes Schuylkill River withdrawals for consumptive use by Limerick whenever river water temperatures below Limerick exceed 59°F, except during April, May, and June when flows measured at Pottstown exceed 1,792 cfs. DRBC's decision to limit Schuylkill River withdrawals when temperatures are above 59°F is intended to reduce stresses on stream water quality caused by consumptive losses at Limerick when water quality is significantly affected by organic waste assimilation. When temperatures in the river exceed 59°F, the biological oxygen demand accelerates and the dissolved oxygen (D.O.) necessary for waste assimilation becomes more critical.

PECO proposes to monitor the Schuylkill River for DO at several locations below Limerick and to substitute a suitable DO value as the limit on withdrawals from the natural river flow for the present 59°F temperature limit. This substitution of DO for temperature is proposed for calendar year 1985. PECO will regularly transmit the DO information to the offices of the DRBC so that it can be evaluated by them. With this monitoring program in effect, PECO will be permitted to continue operations at Limerick regardless of river water temperature.

Substitution of direct measurement of DO readings was previously evaluated and approved for 1985 by the DRBC. See DRBC Docket No. D-69-210 CP (Final) (Revised) (May 29, 1985). From June 15, 1985 through the end of the year, D.O. was monitored every four hours at six different locations between Limerick (R.M. 48.0) and the Fairmount Dam (R.M. 8.5) in Philadelphia. The monitoring of data was accomplished manually. In November, 1985, after all necessary permits had been received,

Installation of six automatic DO monitoring facilities was begun. The monitoring and transmittal of data will be accomplished, beginning early in 1986, with the newly installed automatic equipment. When automatic equipment is out of service due to necessary maintenance or failure, manual means will be utilized. Regardless of the means of monitoring, data will be transmitted to the DRBC daily and DRBC also will have ready access to all data by phone at any intervening time.

Depressed DO levels usually occur in the pools behind the dams across the Schuylkill River. Pursuant to the terms of Docket No. D-69-210 CP (Final) (Revised) (May 29, 1985), a sampling station was established within 200 feet of each of the following six dams: Fairmount Dam (R.M. 8.5), Flat Rock Dam (R.M. 15.6), Plymouth Dam (R.M. 20.7), Norristown Dam (R. M. 23.9), Black Rock Dam (R. M. 36.6), and Vincent Dam (R.M. 44.7). At each of these stations a single probe has been installed. The probe has been positioned vertically in the water column below the mid-point so that it will not be subject to surface effects.

This monitoring program, when substituted for a single temperature measurement, will provide satisfactory water quality protection because of the relationship between DO and organic waste assimilation and also because the entire downriver stretch will be monitored.

DRBC Docket D-69-210 CP (Final) (Revised) (May 29, 1985) established water quality standards for DO in the Schuylkill River for the period ending December 31, 1985. The Docket set a 5.1 mg/l minimum daily average value and a 4.2 mg/l minimum instantaneous value at any one or more of the monitoring locations for the period beginning June 15 to

the end of the year. These values represent a margin of safety above the Chapter 93 water quality standards, as incorporated in the Pennsylvania Department of Environmental Resources Rules and Regulations. FECo proposes that these two values again be established as the critical values limiting withdrawals from natural river flow.

In addition to the above mentioned trigger values, the DRBC Docket established a 7.0 mg/l minimum instantaneous trigger value during the period March 1 to June 15. This restriction was recommended by the PA Fish Commission to protect aquatic life during their spawning period. The Commission cited a 6 to 8 mg/l D.O. level as being necessary to insure successful spawning and incubation for most game species. It also said that flows are usually high enough during this time period so that this D.O. level can be maintained. We feel this value is unnecessarily high and propose it be lowered to 5.1 mg/l minimum daily average and 4.2 mg/l minimum instantaneous values. This change will establish a uniform set of criteria for the entire year.

Data collected by Radiation Management Corporation (RMC) and the U.S.G.S. shows that the D.O. is not always above 7 ppm. In late April 1985 D.O. levels were much below this value, and in several previous years the D.O. often was below 7 ppm in May and June.

The present D.O. measurements are made about 200 ft. upstream from the dams which form the six mainstem impoundments below Limerick. Readings at these locations provide a conservatively low indication of D.O. conditions in the free-flowing reaches of the Schuylkill River. The DRBC stated that at these locations the minimum level of D.O. should occur. See Docket D-69-210 CP (Final) (Revised) (May 29, 1985), Physical Features, p.2.

At conditions of low flow and warm water temperature the D.O. concentration decreases substantially as the water passes slowly through the Impoundments. Oxygen demands are greater in the pools and reaeration is much reduced.

Actual D.O. readings taken at the Vincent Pool in April 1985 show that there can be a difference of greater than 1.0 to 1.5 mg/l between the head of the Pool and the near-dam location where the monitoring takes place. Prior D.O. surveys at Vincent Pool also support this finding.

The mainstem of the Schuylkill River is inhabited by a warmwater fish community characterized by carp, goldfish, white sucker, brown bullhead (channel catfish in lower reaches), three species of sunfish, several species of minnows, and smallmouth bass. Largemouth bass are less common than smallmouth bass. Muskellunge are present but not at all numerous; stocking and escapes from large reservoirs maintain the limited fishery. Walleye are virtually absent.

The smallmouth bass is probably the most important game fish in the Schuylkill River as well as in large tributary streams such as the Perkiomen Creek. Although highly sought after by anglers, it is not a dominant component of the fish community in terms of numbers or biomass.

The smallmouth is suggested as a representative species to be protected by the D.O. limitation on water use at Limerick since this species is present, important to anglers, and spawns in the Schuylkill River.

Important habitat variables which influence reproductive success included: temperature, because temperature fluctuations can disrupt spawning; fluctuations in water level, stranding or scouring can occur; substrate, bass spawn over a specific type of bottom material; cover, bass usually nest near some form of cover; and dissolved oxygen, critical for early embryo development.

Sampling conducted by RMC indicates that smallmouth bass preferentially spawn in the unimpounded reaches of the Schuylkill River and its tributaries, although the very upper or head end of the impoundments may be used also. Overall the impoundments do not appear to contain the substrate most preferred by smallmouth for spawning. Most preferred is a bottom material of gravel, broken rock, and boulder with adequate interstitial space; secondarily they will select a pebble material. Silt-sand and bedrock substrates are much less desirable.

The predominate substrate in most of the pools is unconsolidated gravel-rubble overlain by or mixed with silt and sand-coal fines. The persistent silt problem in the Schuylkill River dates back to the 1800's when coal silt or culm was discharged to the Schuylkill River from many active mining sources in the upper Basin.

Smallmouth bass spawns in May and June at water temperatures of 57-81 F in the Schuylkill River. This species builds a nest, preferably over clean gravel, and some 3000 to 7000 eggs are attached to clean stone within the nest.

Habitat suitability information developed by the U. S. Fish and Wildlife Service indicates that D.O. levels of 6 mg/l and higher are assumed to be optimal for embryo and fry survival. One research project found in our recent literature review showed that egg survival

to 14 days at 68 F was 50% at 8.7 mg/l, at 68 F survival was 39-42% at 4.4 mg/l, and at 77 F 29-31% at 4.4 mg/l. (Hatching usually occurs within 7 days at temperatures of 59 F and higher.) Also to be noted, as mentioned above, many factors besides D.O. are involved with egg and fry loss. Since the smallmouth spawns in areas that can be expected to have a D.O. level higher than that indicated by the D.O. monitors, the imposition of a 7.0 mg/l limitation is overly conservative.

Thus, it can be concluded that the 5.1/4.2 mg/l D.O. limitations are appropriate to assure that consumptive water use does not degrade water quality to the point where reproduction of game fishes is endangered. No higher limit is necessary to protect the reproduction of game fish in the Schuylkill River below Limerick.

Lowering of the D.O. limitation from 7.0 mg/l during the period March 1 to June 15, to 5.1 mg/l average and 4.2 mg/l instantaneous values would substantially increase the river availability for use at Limerick during this period. With the 7.0 mg/l limitation in effect the river typically becomes unavailable in mid-May and stays unavailable until the limit is lowered in mid-June. In some years the river would become unavailable as early as the beginning of May. With the lower D.O. limitations in place the river would be available virtually all of May and approximately 90%-100% of the first half of June.

In addition to the present 59°F temperature constraint on withdrawals at Limerick, there is a minimum flow constraint of 530 cfs for one unit. This constraint operates independently of the 59°F temperature constraint. Frequently, the flow constraint would preclude withdrawals from the Schuylkill, regardless of the temperature constraint. For

example, during the drought of 1965, the flow constraint of 530 cfs would have prohibited Schuylkill River withdrawals 167 days, while the temperature constraint would have prohibited withdrawals for only an additional 29 days. The historic record for the Schuylkill River over the past 55 years shows that, on average, withdrawals for one unit at Limerick would have been prohibited by flow 54 days per year. Temperature restricts withdrawals approximately 120 days each year. There is overlap of restraints each year but on average water may not be withdrawn due to flow and temperature approximately 150 days per year. See DER "59°F Restriction on the Schuylkill River Water Withdrawal, Limerick Nuclear Power Plant" at pp.4, 7 (September 1983). The temporary suspension of the 59°F temperature constraint and substitution of D.O. monitoring would have permitted Schuylkill River withdrawals for an additional 58 days during the period June 15, 1985 to November 30, 1985, if the plant had been available for operation during the entire period. The full power operating license for Limerick was granted August 8, 1985. From August 9, 1985 to November 30, 1985, there were 31 days of river availability gained due to the substitution of D.O. monitoring for the temperature criteria. The 530 cfs trigger flow criteria was considered to apply throughout this period.

As the plant proceeded with its startup-testing program and ascended to higher power levels, there were 15 days that operation was restricted because of insufficient makeup water. During those 15 days the restriction resulted from low D.O. levels, flow below 530 cfs for the period August 9 to October 2 or flow below 415 cfs for the period October 3 to November 30. During much of the early testing period when flow and D.O. levels were low the transfer of allocations from Titus and Cromby allowed the plant to operate unrestricted.

No adverse impact by authorization of consumptive water use during coordinated operation of certain Schuylkill River generating facilities. Under DRBC Docket No. D-69-210 CP (Final) (November 5, 1975), Philadelphia Electric Company ("PECo") is largely prohibited from taking water from the Schuylkill River for consumptive use at Limerick Generating Station Unit 1 during the period June to October. While the requested substitution of direct monitoring of dissolved oxygen (DO) in place of temperature will increase the days of water availability, water available for consumptive use will be insufficient to operate Limerick during all of 1986. PECo therefore proposes to obtain a partial supply of cooling water for the unit during 1986 by coordinating the operation of Limerick Unit 1 with certain other electric generating units on the Schuylkill, (Cramby Unit 2, owned and operated by PECo, and Titus Units 1, 2 and 3 owned and operated by Metropolitan Edison Company) in such a manner as not to exceed consumptive use withdrawals now authorized for the Titus and Cramby Units, when the flow and/or⁴ the proposed DO constraints prevent the withdrawal of water. This coordinated use of consumptive allocations was previously evaluated and approved by the DRBC for 1985. See Docket No. D-69-210 CP Final (Revision No. 2) (August 9, 1985).

Titus Units 1, 2, and 3 are three coal fired steam electric generating units having a total electric generating capacity of 234 MWe. Titus is located on the west bank of the Schuylkill River two miles downstream from Reading, PA and approximately twenty-three miles upstream from Limerick. In July 1976, the DRBC granted a certificate of entitlement to Titus to use, withdraw or divert surface water of the Basin pursuant to Section 5-1.3 of Commission Resolution No. 74-6 in

the amounts of 54.834 million gallons per month for consumptive use and 5212.582 mg/month for non-consumptive use. With the addition of a cooling tower to Titus in 1979, DRBC issued Docket Decision No. D-74-32, revised October 1980, which stated that the addition of the cooling tower would result in a 3.5 mgd maximum consumptive use. In relation to Limerick operations, this 3.5 mgd would enable operation of Limerick Unit 1 up to approximately 15% of full power.

Cramby Unit 2 is an oil fired generating unit with a capacity of 201 MWe, located on the west bank of the Schuylkill River approximately nine miles downstream from Limerick. In July 1976, the DRBC granted a certificate of entitlement to Cramby for 88.410 mg/month for consumptive use and 11,074.470 mg/month for non-consumptive use. Using the capacity ratio of Cramby Unit 1 to Cramby Unit 2 (150 MWe to 201 MWe respectively), Cramby Unit 2 has a maximum consumptive usage of 50.628 mg/month (1.7 mgd).

Together, Cramby Unit 2 and Titus Units 1, 2, and 3 have been authorized to use Schuylkill water³ for consumptive uses equivalent to a maximum withdrawal of 5.2 mgd. This daily amount of water, when used during 1986 for operation of Limerick Unit 1, would enable the unit to generate power at levels up to approximately 25% of full power and would enable the unit to operate at a base capacity throughout the summer.

PECo is requesting that the above described 5.2 mgd consumptive use allocation for Cramby Unit 2 and Titus Units be transferred for use by Limerick Unit 1, to be used by Limerick Unit 1 as warranted. Thus, if Limerick is available for operation but its operation would otherwise be prohibited because of existing flow or the proposed DO consumptive use restrictions, Limerick would be permitted to operate to the extent

that its consumptive use would not exceed the consumptive use allocations of the Cramby and/or Titus Units. Whenever the resultant power generation at Limerick is less than the power which would have been supplied from the Titus and/or Cramby units, the difference in power generation will not be produced by units utilizing consumptive water from the Delaware River Basin.

The plan of operation would be to continuously schedule the operating program for Limerick Unit 1 three days in advance, updating the program each day. The consumptive water requirements for each day's operation would then be calculated taking into account the expected meteorological conditions. This calculation would recognize the availability of the 3.5 mgd available for consumptive uses from the Titus units and the 1.7 mgd from Cramby Unit 2.

As Limerick is downstream of Titus, the Schuylkill River will be enhanced in the 23-mile reach between the two stations by a maximum of 105 mg/month due to the delay in consumptive use of the water. While Limerick is upstream from Cramby, the adverse impact of the reach in between the two stations should be minimal, as the distance is only 9 miles and the consumptive use only 1.7 mgd. It is emphasized that the flow in the Schuylkill River below Cramby Station would be unaltered.

The proposed coordinated use of consumptive water among the Schuylkill River Generating Stations will not result in any additional environmental or overall consumptive water effects on the basin.

As indicated above, a substitution of D.O. monitoring and the transfer of water allocations from Titus and Cramby stations were approved by the DRBC for 1985. During the periods in 1985 when Limerick was operated under the above described criteria no adverse affects to the

Schuylkill River basin were observed. The changes requested for 1986 are very similar to the changes previously approved for 1985. They will allow the plant to operate at a minimum base load of approximately 25% for the entire year and at full power a greater percentage of time than the existing flow and temperature constraints would allow.

ATTACHMENT 2

Application of Philadelphia Electric Company For Temporary Suspension of 59°F Temperature Constraint and For Authorization of Consumptive Water Use During Coordinated Operation of Certain Schuylkill River Generating Facilities

Alternatives Considered

PECo has considered various alternatives for a temporary supply of supplemental cooling water to Limerick for the summer of 1986 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 temperature 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, 1986. Because the permanent supplemental water supply from the Point Pleasant project will be unavailable for this period, Limerick would not be able to operate during these months without interim supplemental cooling water. The cost of not operating Limerick for lack of water during that period is estimated to be \$800,000 per day. See Affidavit of Vincent S. Boyer, Senior Vice President, Nuclear Power December 16, 1985 (attached).

- (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 to PECO with approval of such usage by the DRBC. To date, the City has not indicated an interest in making any water available to PECO for 1986, 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) due to drought conditions in the basin.

COMMONWEALTH OF PENNSYLVANIA :
COUNTY OF PHILADELPHIA : ss.

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 August 8, 1985, the NRC issued a full power operating license for Limerick Generating Station Unit 1.
3. The power ascension and testing program at Limerick was begun immediately, and commercial operation is expected to be attained by mid-February 1986.
4. The partially constructed Point Pleasant diversion will not be completed in time to supply Unit 1's supplemental cooling water needs for 1986.
5. Consequently, an interim supply of supplemental cooling water is required during those periods of 1986 when the flow and temperature constraints would prevent plant operation.
6. After commercial operation, any shutdown due to inadequate cooling water will result in an increased cost to the customer of \$800,000 per day in replacement fuel costs. The transfer of Cromby-Titus water allocations to Limerick will allow Unit 1 to

operate at 25% of full power and will reduce the cost to the customer to \$650,000 per day. Approval of the proposed dissolved oxygen standards in place of the 59°F temperature limit would, on an average year, permit full power operation of Unit 1 for an additional 90 to 100 days per year.

Vincent S. Boyer
Vincent S. Boyer

Subscribed and sworn to
before me this 16th day
of December, 1985

Patricia D. Scholl

PATRICIA D. SCHOLL
Notary Public, Philadelphia, Philadelphia Co.
My Commission Expires February 10, 1986

Exhibit 1

Application of Philadelphia Electric Company For Temporary Suspension of 59°F Temperature Constraint and For Authorization of Consumptive Water Use During Coordinated Operation of Certain Schuylkill River Generating Facilities

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 during the period June to October, 1986. The 59°F temperature constraint is specifically included in DRBC Docket No. D-69-210 CP at p.5 (March 29, 1973). While this temperature constraint has been reviewed by DRBC and DER and deemed appropriate to provide a margin of safety in maintaining desired dissolved oxygen (DO) levels, those conclusions were based upon long-term consumptive use of Schuylkill River water without alternative measures to assure that DO objectives are met. The DO monitoring program, when substituted for a single temperature measurement, is consistent with the DRBC objective to assure adequate DO levels.

In July 1976, both Titus and Cromby Generating Stations were granted certificates of entitlement to use, withdraw or divert surface water of the Basin pursuant to Section 5-1.3 of Commission Resolution No. 74-6. DRBC Docket No. D-74-32, revised October 1980, states that the addition of the cooling tower to Titus resulted in increased consumptive use.

Exhibit 2

Application of Philadelphia Electric Company
For Temporary Suspension of 59°F Temperature Constraint
and For Authorization of Consumptive Water Use During
Coordinated Operation of Certain Schuylkill River
Generating Facilities

Standard Regarding Temporary Suspension
of 59°F Temperature Constraint on
Schuylkill Withdrawals

The DRBC's objective in imposing the 59°F temperature constraint on Schuylkill withdrawals is to reduce stresses on stream water quality caused by consumptive losses at Limerick when water quality is significantly affected by organic waste assimilation. So long as the stream capacity to assimilate organic waste is not impaired by Limerick withdrawals above 59°F, as assured by PECO's instream monitoring, DRBC's objective will be achieved (see Attachment 1). There is no indication in the history of DRBC's consideration of this criterion that it has any significance apart from indirectly maintaining control over desired DO levels in the lower reaches of the Schuylkill and the Delaware estuary.

Standard Regarding Authorization of
Consumptive Water Use During Coordinated
Operation of Certain Schuylkill River Generating Facilities

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 the purpose in that the level of consumptive use presently authorized for Titus and Cromby will not be increased with the operation of Limerick Unit 1 as proposed herein.

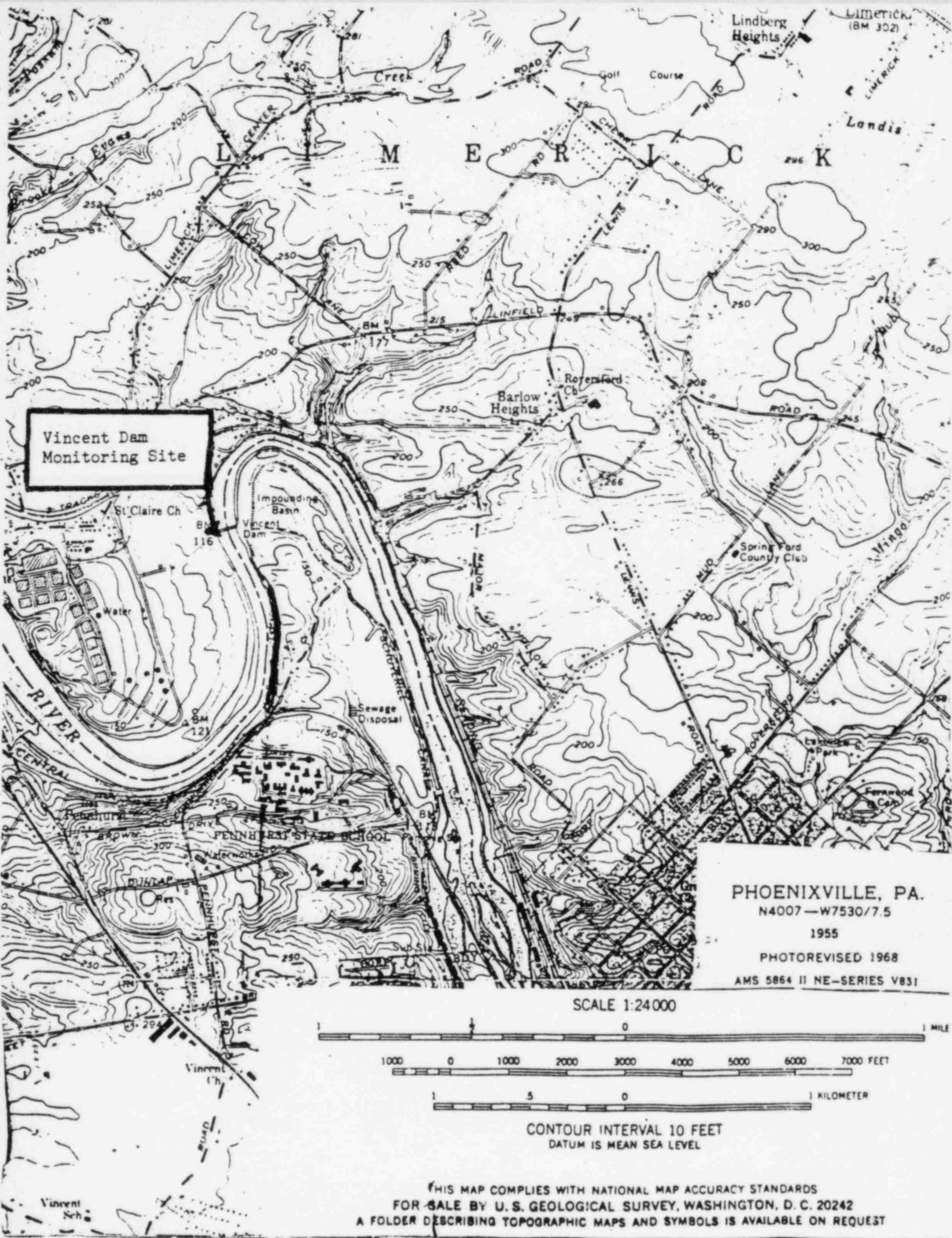
Exhibit 3

Application of Philadelphia Electric Company
For Temporary Suspension of 59°F Temperature Constraint
and For Authorization of Consumptive Water Use During
Coordinated Operation of Certain Schuylkill River
Generating Facilities

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

The maps attached detailing the locations of the six dissolved oxygen monitors at the Vincent, Black Rock, Norristown, Plymouth, Flat Rock, and Fairmount Dams were prepared from the United States Geological Survey Phoenixville, Norristown, Germantown and Philadelphia Quadrangles.

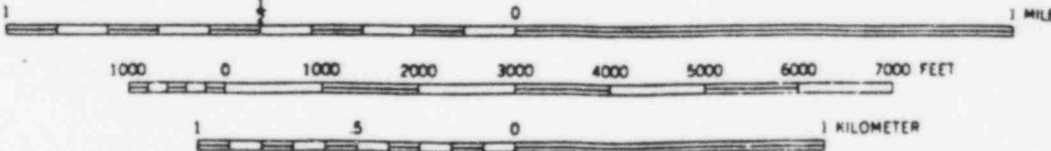
The maps attached detailing the location of Titus Station and Cromby Station were prepared from the United States Geological Survey Reading and Phoenixville Quadrangles, respectively.



Vincent Dam
Monitoring Site

PHOENIXVILLE, PA.
N4007—W7530/7.5
1955
PHOTOREVISED 1968
AMS 5864 II NE—SERIES V831

SCALE 1:24000



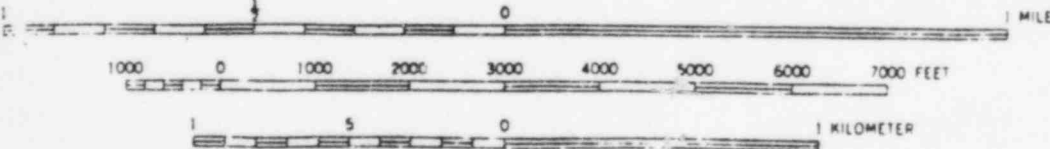
CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST



Black Rock Dam
Monitoring Site

SCALE 1:24000



CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

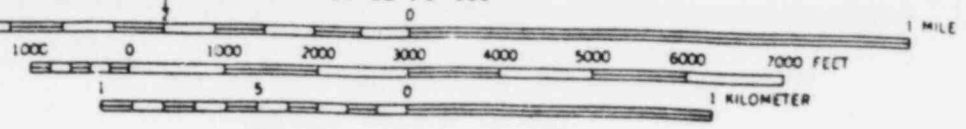
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

PHOENIXVILLE, PA.
N4007 5 - W7530 7 5

1955
PHOTOREVISED 1968 AND 1973
AMS 5864 II NE - SERIES V831

NORRISTOWN, PA.
SE/4 NORRISTOWN 15' QUADRANGLE
N4000—W7515/7.5

SCALE 1:24,000



1966

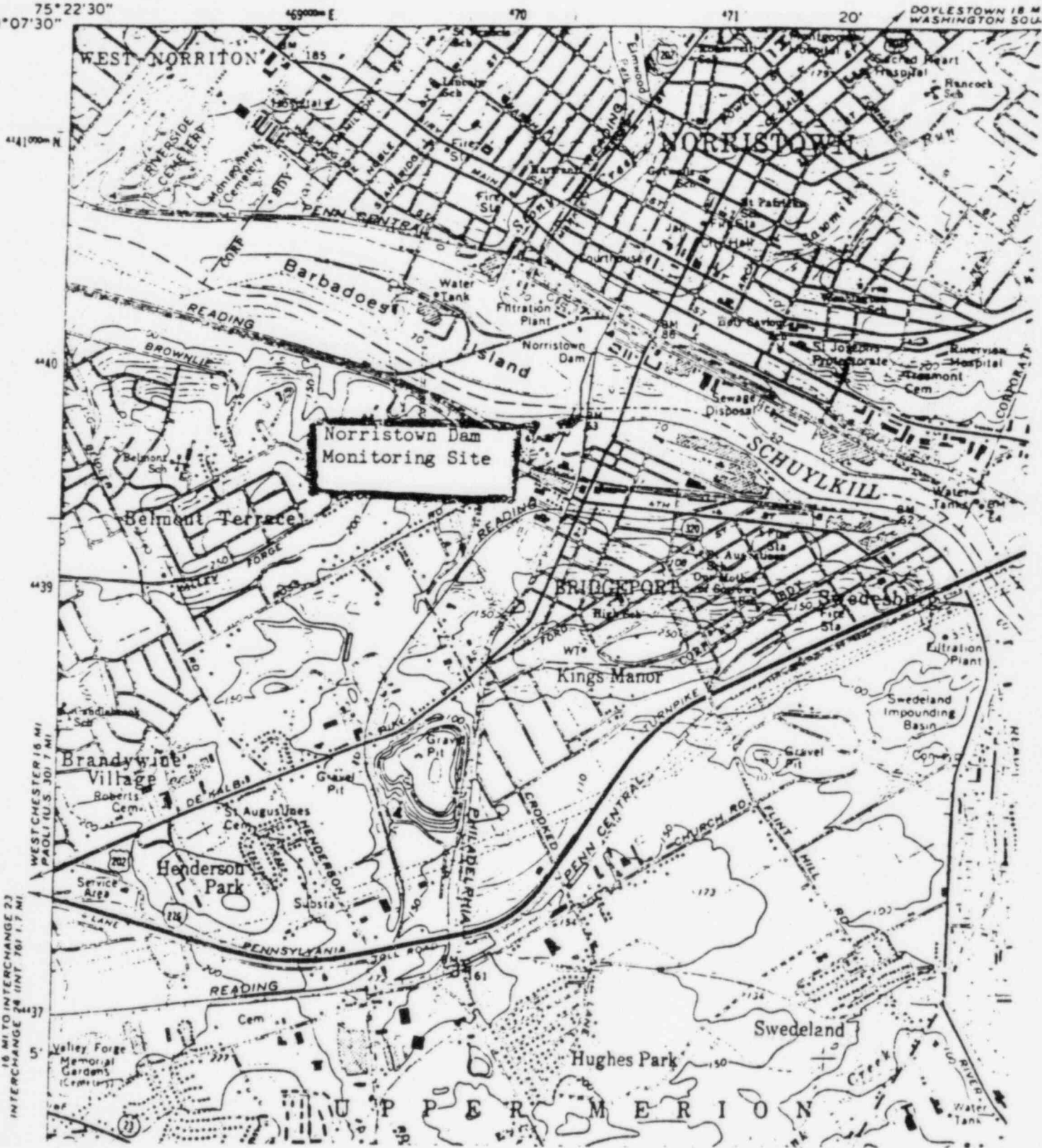
AMS 5964 III SE—SERIES V831

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

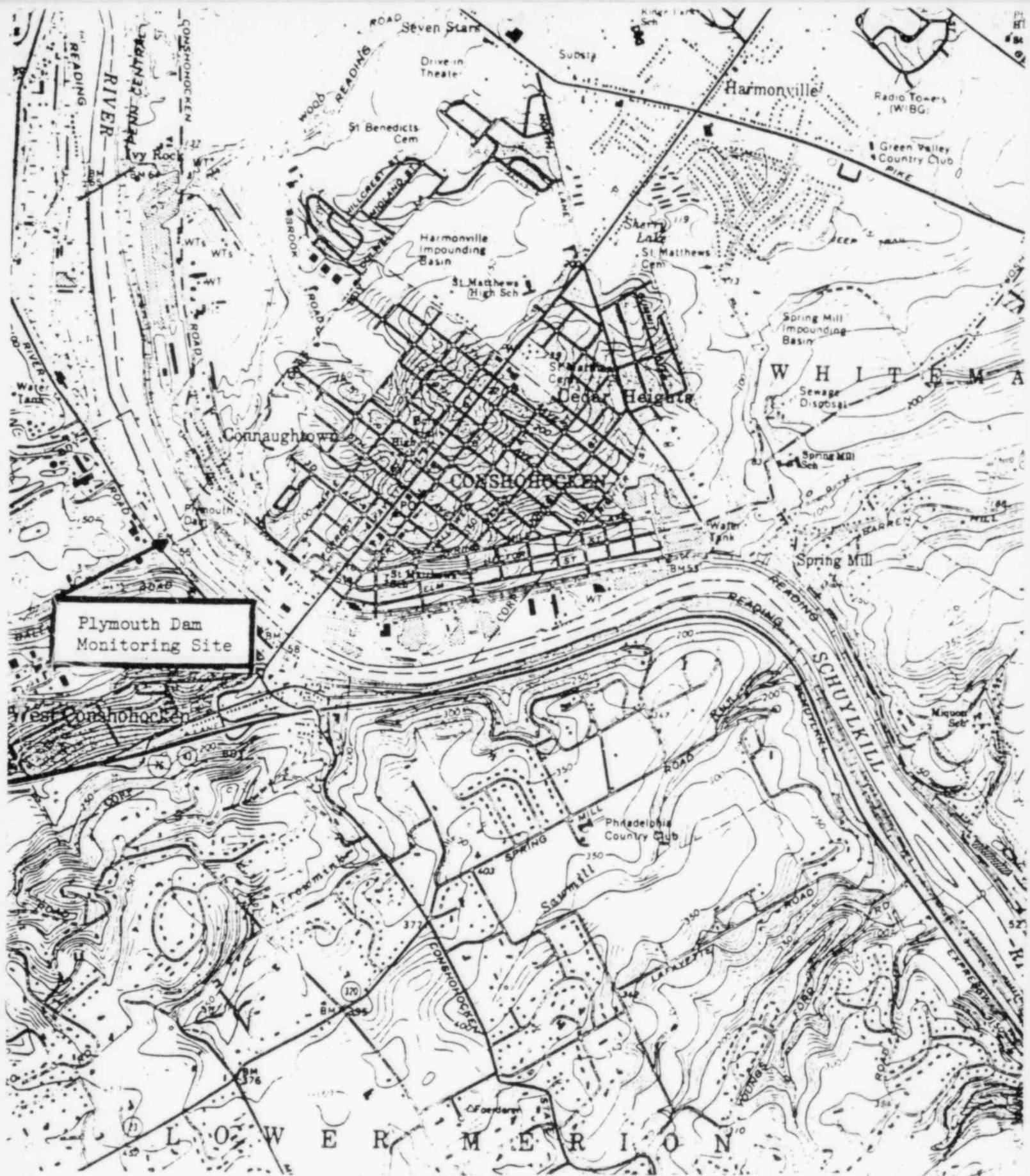
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

75° 22' 30"
40° 07' 30"

5964 III SE NW
(COLLEGEVILLE)

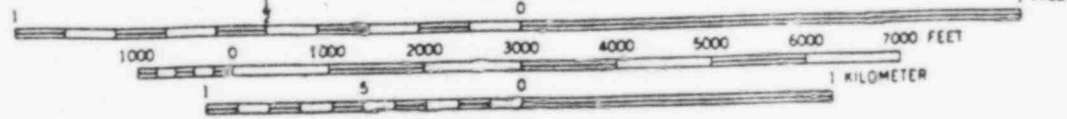


WESTCHESTER 18 MI
PAOLI (U.S. 30) 7 MI
16 MI TO INTERCHANGE 23
INTERCHANGE 24 (INT 76) 1.7 MI



Plymouth Dam
Monitoring Site

SCALE 1:24 000



CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

NORRISTOWN, PA
SE/4 NORRISTOWN 15' QUADRANG
N4000—W7515/7 5

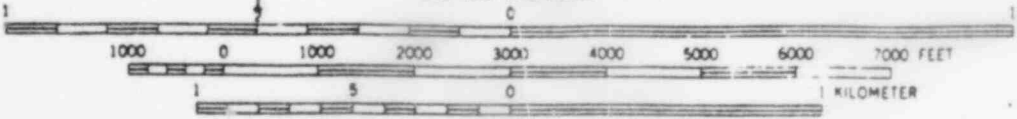
1966

AMS 5964 III SE—SERIES V8:



Fairmount Dam
Monitoring Site

SCALE 1:24 000



CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL
DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS APPROXIMATELY 5.8 FEET

PHILADELPHIA, PA. — N. 1
N3952 5—W7507 5/7 5

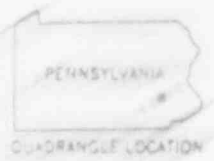
1967
PHOTOREVISED 1973
AMS 5963 I NW—SERIES V831



ROAD CLASSIFICATION

- | | | | |
|--------------------|--------------|-----------------|-------|
| Heavy duty | ————— | Light duty | ————— |
| Med. un. duty | ————— | Unimproved dirt | |
| ○ Interstate Route | ○ U.S. Route | ○ State Route | |

SCALE 1:24000



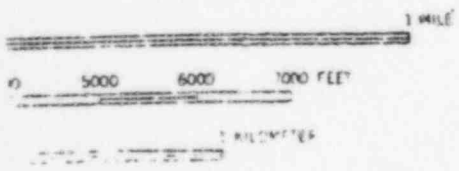
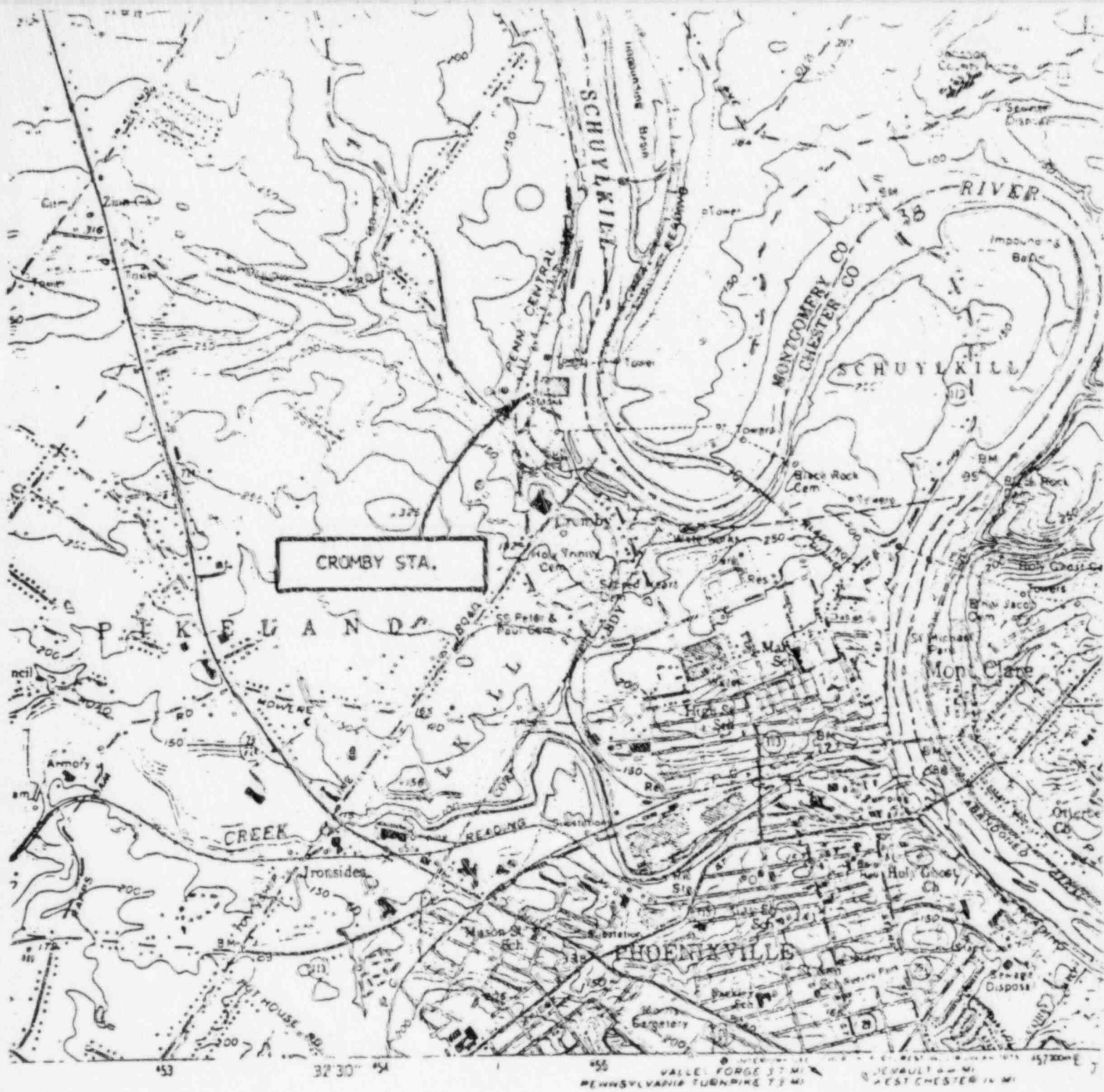
READING, PA.

84045-W7552 5/7 5

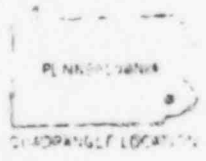
1955

PHOTO REVISION 1945

AMS 5864 IV SW-SERIES V83



FEET
 TUM OF 1929
 ACCURACY STANDARDS
 ESTON, VIRGINIA 22092
 FOLS IS AVAILABLE ON REQUEST



VALLE FORGE 37 MI
 PENNSYLVANIA TURNPIKE 73 MI
 CHEWYLTOWN MI
 WEST CHESTER 14 MI

ROAD CLASSIFICATION

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

PHOENIXVILLE, PA.
 N4007 5—W7530/7.5
 1955
 PHOTOREVISED 1968 AND 197
 RMS 5864 11 NE—SERIES V831

Exhibit 4

Application of Philadelphia Electric Company
For Temporary Suspension of 59°F Temperature Constraint
and For Authorization of Consumptive Water Use During
Coordinated Operation of Certain Schuylkill River
Generating Facilities

Description of Specific Effects
of Non-Structural Projects

The specific effects of the non-structural projects are discussed
in Section 1 of Environmental Form and Attachment 1 hereto.

Exhibit 5

Application of Philadelphia Electric Company
For Temporary Suspension of 59°F Temperature Constraint
and For Authorization of Consumptive Water Use During
Coordinated Operation of Certain Schuylkill River
Generating Facilities

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

Commercial operation of Limerick Unit No. 1 is expected to be attained by February 1986. Based on the availability of consumptive water the following plan of operation is envisioned. When the river is available based on the flow and the proposed D.O. constraints PECO will operate the plant at rated capacity or as the system Load Dispatcher requires. D.O. will be monitored at the six dam sites described in attachment 1. Samples will be taken automatically every two hours. Any two consecutive two hour readings at or below the 4.2 mg/l instantaneous minimum or a 24 hour running average value at or below 5.1 mg/l average, will require the plant to revise operation so as to stop consumptive water withdrawals. During periods when the river is unavailable because of flow and D.O. consumptive use restrictions, Limerick would be operated to the extent that its consumptive uses would be compensated for by equal reductions in the consumptive uses of the Cronby and/or Titus units. Whenever the resultant power generation at Limerick is less than the power which would have been supplied from the Titus and/or Cronby units, the difference in power generation will not be produced by units utilizing consumptive water from the Delaware River Basin.

The operating program for Limerick Unit 1 would be continuously scheduled for three days in advance, updating the program each day. The consumptive water requirements for each day's operation would then be calculated taking into account the expected meteorological conditions. This calculation would recognize the availability of the 3.5 mgd available for consumptive uses from the Titus units and the 1.7 mgd from Cromby Unit 2. The flow and dissolved oxygen constraints described in Attachment 1 would be inapplicable to the periods when Titus and Cromby units are shutdown.

Exhibit 6

Application of Philadelphia Electric Company
For Temporary Suspension of 59°F Temperature Constraint
and For Authorization of Consumptive Water Use During
Coordinated Operation of Certain Schuylkill River
Generating Facilities

Map of Any Lands to be Acquired or Occupied

This is a non-structural proposal. There are no lands to be
acquired.

Exhibit 7

Application of Philadelphia Electric Company
For Temporary Suspension of 55°F Temperature Constraint
and For Authorization of Consumptive Water Use During
Coordinated Operation of Certain Schuylkill River
Generating Facilities

Estimate of Cost of Completing
the Proposed Project

This is a non-structural proposal which involves no expenditures
for its completion. D.O. monitoring equipment is already in place.

Application of Philadelphia Electric Company
For Temporary Suspension of 59°F Temperature Constraint
and For Authorization of Consumptive Water Use During
Coordinated Operation of Certain Schuylkill River
Generating Facilities

Description of Construction Procedures

This is a non-structural proposal which involves no construction activity.