

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
PHILADELPHIA ELECTRIC COMPANY)
)
(Limerick Generating Station,)
Units 1 and 2))

Docket Nos. 50-352
50-353

TRIAL BRIEF OF
INTERVENOR DEL-AWARE UNLIMITED, INC.

Pursuant to the Board's order of August 23, 1982, Del-Aware Unlimited, Inc., herein presents its intended factual case concerning the admitted contentions, and pending Request.

For ease of reference, this brief is organized to place the factual matters by contention, and then to provide a general discussion of the legal context. Finally a report on pending permits and reviews is provided.

CONTENTION V-15 and V-16a

Del-Aware will show that as presently relocated, the intake will have a significant adverse effect on American Shad and Shortnose Sturgeon, and will adversely affect the major fish resources and boating and recreation area. It should be noted that since this contention was written, the intake was further relocated. As originally planned, the intake was located on the bank of the river, and when the contention was written, it was located approximately 200 feet off shore. It is now proposed to be built 245 off shore.

As stated by staff member Masnick at his deposition, there is no evaluation available concerning the impacts of the original location. The DRBC EIS in 1973 stated that the design was not advanced to the point where the impacts could be evaluated.

In 1980, fish agencies protested the location of the intake as being in the spawning pool and nursery area constituted by the eddy and surrounding flow water areas and pool in the known as the Upper Black Eddy, and the NWRA agreed to relocate the intake into the main channel. However, for whatever reason, possibly fear of crossing the state line, the relocated intake did not leave the pool, and was still located in the pool. However, the fish agencies

were assured that the intake had been located out of the pool, as was the Corps of Engineers.

In June, 1981, Del-Aware commissioned a survey by Ezra Golub which established that the intake was still located in the pool. Thereafter, in January, 1982, the intake was relocated further out into the river in an effort to locate it in the channel. However, at its present location, the intake is still not entirely out of the pool area at all times, and therefore will continue to have the effects that it would have had at the 200 foot distance from shore.

In addition, in 1975, after the DRBC EIS and the NRC Order the DRBC Order allowing the withdrawal was amended inter alia to permit the utilization of the intake at any river flow, no matter how low, as long as Philadelphia Electric replaced the water from an upstream source (Boyer Dep.). While this replacement would protect the river from net loss of river flow, it would not protect the fish at the intake, for whom the relevant variable was velocity, which is controlled by total, not net, river flow.

The adverse impact of the operation of the intake on fish is attributable to several factors, including the attractiveness and likelihood of presence of fish in the area at sizes small enough to be entrained or impinged on the intake, the relative velocity of the intake versus the ambient water, the continued presence of the fish in the area of the intake, due to the operational mode of the

intake (constant vs on/off, seasonality, back flushing etc.), and the location of the intake in the vertical water column.

Witnesses Kaufmann, Miller, and Emery will testify to all portions of the the foregoing. In addition, reports by Harmon and Brundage and DRBC memoranda and Bourquard's letter of January 22, 1982, to the Corps of Engineers, will support all portions of the foregoing.

With velocity being the key component of the variables which determines the potential impact of the intake, the next point is to determine the velocity of the water. The velocity is principally controlled by the flow, and lower flow causes lower velocity. No measurements have been taken of the velocity in the intake area below 3,000 CFS, but velocity will be lower as flows get lower than 3,000 CFS, and past flow records in the Delaware River show that flows frequently drop below 3,000 CFS at all seasons, including the seasons at which American Shad and Shortnose Sturgeon can be expected to be using the eddy at life stages where they will be most susceptible to entrainment and impingement. These life stages include the egg, larva, and young fish stages. Records show that the Delaware River regularly reaches flows substantially below 3,000 CFS, and does so periodically in every season of the year. Phillippe will so testify.

Maximum withdrawal velocities can be anticipated frequently according to the plan of operations of the pumps prepared by Bourquard, and provided in PECO's Supplemental Answers to Interrogatories. PECO's Supplemental Answers to Interrogatories also discloses that no velocity measurements have been made at flows below 3,000 CFS. (The Trenton Flow Records are used a surrogate for Point Pleasant flows, so that 3,000 CFS refers to the flow of Trenton.)

The hydraulic and hydrologic characteristics of the pool have not been systematically studied. Furthermore, neither PECO nor NWRA nor the Engineers have systematically determined the cross-section of the river from shore to shore. Both of these matters have a substantial impact on the velocity of the ambient water at various flows at areas surrounding the intake. The cross-sections of the river have been established by Delaware witnesses, and they show that, contrary to Bourquard's conceptualization, the bottom of the river has a deep channel on the eastern (New Jersey) side of the river. The impact of this cross-section determination is that the operation of the intake will cause more water from the eddy to move more rapidly towards the intake, and thus constitute a pull of the water toward the intake, with resultant adverse effect on the fisheries.

The minimum elevation of the river at Point Pleasant cannot be sustained at 70 feet during times of maximum operation of the facility, contrary to PECO and NWRA claims.

indeed, historical data shows that the areas upstream of the eddy have been measured at below 70 feet elevation, and there is every reason to suppose that at low flows, the eddy will be as low as 69 feet or less. Moreover, because of the deep cut, the area in the eddy pool will likely be pulled down through the operation of the intake even further.

Conduct of an appropriate hydrologic and hydraulic study would help establish some of these matters more definitively. Such a study would be a relatively simple and easy thing to do. Mr. Phillippe will testify to the foregoing.

The Point Pleasant area is an important nursery area for the American Shad in a likely spawning area, and in the future, will become more and more important as a spawning and nursery area for the American Shad in the Delaware River. American Shad in the Delaware River is an extremely important species, having commercial and recreational value. Although it suffered substantial decline in the Delaware River during the first part of the century, it has recently begun to return in force to the river due to major pollution clean-ups and other restorative measures. Miller, McCoy, and Kaufmann will testify to this.

In addition to the impacts of the intake on the Shad at Point Pleasant, it and other species will be adversely affected by the location of the intake at Point Pleasant, through the depletion of dissolved oxygen in the river

between Point Pleasant and Philadelphia, due to the removal of clean water, and to the extent of the NWRA diversion, the return of polluted organically loaded material in the creeks between Point Pleasant and Philadelphia. With respect to the PECO withdrawal, it will be a total consumptive loss, and thus will substantially lower dissolved oxygen levels causing a pollution block, which will prevent Shad from getting up the river, or will cause substantial fish kills.

Finally, the location of the intake as proposed, as compared with a Schuylkill River withdrawal, will cause increases in salinity in the river, thus adversely affecting other species as well. Messrs. McCoy, Kaufmann, and Miller will so testify.

The Shortnose Sturgeon are presumptively located at Point Pleasant during all cycles, including spawning, and would be subject to entrainment and impingement because of the lower velocities than those assumed in the Brundage study and relied upon NMFS Determination, which itself recognize the paucity of data and the necessity for further data collection. In addition, the on-off operation of the pumps was not considered in the Study or the Assessment.

The Point Pleasant area (the Lower Black's Eddy area) in which the intake will be located is also an extremely important fishing spot, attracting anglers from all over the area, and representing a major fishing recreation resource. Change in current patterns and dangers to the fish in the

eddy as well as the impediment of the structure, and the danger to fish from the on-off operation will cause loss of this area thereby depriving the area of a major resource.

The operation of the intake during low flow periods will further affect the area as a boating recreation area, because of the danger created to tubers, and the danger to boat anchors, and to the intake from boat anchors, operated by the boats that frequently use the area for fishing. Messrs. Pleviak, Kaufmann, and Emery will so testify.

CONTENTION V-16a

The installation of the station will lead to ongoing maintenance, dredging and the pump operations and substation operation which will adversely affect the peace and tranquility of the Point Pleasant proposed historic district. This area includes not the district itself but the National Historic Landmark in a major archaeological area which are geographically within the district. The maintenance of an ambience of historic character in a historic landmark and district is important to the maintenance to the district. When an area is rendered unpleasant or unattractive for persons and organizations capable of caring for the facilities, there is a tendency for historic districts to become neglected and to lose their

historic character and vitality. Messrs Lewis and Landis will so testify.

Witnesses Landis and Lewis will testify to the potential impact of this project for the Point Pleasant area, which includes not only direct loss of the historic quality, but also loss of the motivation for preservation. Mr. McNutt will testify to the likelihood of damage, requiring frequent maintenance. Documents showing the need for a maintenance bridge, despite existing crossing, will emphasize this point.

CONTENTION V-16b

Bradshaw Reservoir will be subject to slumping and consequent release of water in the area of the proposed intake into the Bradshaw Reservoir. Plans disclosed by the Philadelphia Electric Company at its depositions showed that the slope of the reservoir will be only 2 to 1 at the intake area, whereas for the drawdown conditions anticipated, the manual utilized by Philadelphia Electric requires a slope of 3 to 1 in order to prevent slumping. Slumping of the reservoir dikes will cause groundwater pollution as well as other public risks to health and safety throughout the area.

It should be noted that contentions related to seepage through the more normal seepage actions have been obviated

by further inquiry since the time that the contentions were filed, and by the substitution by Philadelphia Electric of off-site borrow material with higher degrees of compactness and imperviousness.

PENDING REQUESTS TO AMEND

Del-Aware has filed requests to amend its contentions to deal with the effects of Merrill Creek as a new integral part of the project, the new DRBC findings of inadequate water to supply this and other diversions, and the reduction of the present Limerick project to one unit.

Del-Aware will rely on the documents presenting these new facts, i.e., the Merrill Creek draft EIS of July, 1982, the DRBC Level B study (accepted at some unknown date, as disclosed by Mr. Hansler on August 31, 1982) and the Pa. PUC Order of August 27, 1982. Del-Aware will also rely on the testimony of Messrs. McCoy and Kaufmann, and documents produced by the DRBC and Corps.

ALTERNATIVES

Finally, Del-Aware will show that Schuylkill River alternatives are preferable in light of all the contentions, and that the Philadelphia Northeast Treatment Plant

alternative is also preferable, if Delaware River water must be used. Messrs. McCoy and Kaufmann will so testify.

LEGAL CONTEXT

I. The Burden of Proof Is On The Applicant

Commission regulations and prior proceedings establish firmly that the Applicant Philadelphia Electric Company has the burden of proof on the water diversion issues.

The regulations provide (40 CFR §2.732):
"Unless otherwise ordered by the presiding officer, the applicant or the proponent of an order has burden of proof."

This is consistent with the standards of proof generally given to an applicant seeking approval of a project affecting or utilizing public resources. The NRC, in fulfilling its NEPA duties, acts as a fiduciary in protecting the rights of citizens and the environment, and determining whether a proposed project's impacts are acceptable. E.g., City of Davis v. Coleman, 521 F. 2d 661 (9th Cir. 1975). When an agency acts as a fiduciary of a public resource, public intervenors in a proceeding on a license application have no burden on them to "prove" their "charges." The burden is on the applicant to show that it is in the public interest to issue the desired license. Office of Communications of the United Church of Christ v. FCC, 425 F-2d 543 (D.C. Cir. 1969) , cited in In re-

Consolidated Edison Co. (Indian Point Generating Station, Unit 2), 7 AEC 323, 356 n. 143 (1974).

To the extent that Intervenor Del-Aware bears any burden in this proceeding, it is simply the burden of going forward, to establish a prima facie case.

This burden is not upon a "showing sufficient to require reasonable minds to inquire further." Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519 (1978). Such a showing can be established by reliance on a factual document relevant to the contested issue. See, 13 NRC 257, 265 (Corps study). The materials and testimony introduced and already a part of the record clearly satisfy this relatively low requirement.

The measure of Applicant's burden is proof made by the preponderance of the evidence. "With regard to whether an applicant has sustained its burden of proof as contested issues, the quantum of proof which must be adduced is a preponderance of the evidence." In re Consolidated Edison Co. (Indian Point, Unit 2), 7 AEC 323, 356-57 (1974).

II. The Applicant Must Prove That Operation Using Point Pleasant Has Insignificant Impact and Has Less Impact Than Available Alternatives.

In a licensing proceeding, the burden is on the Applicant to prove that the adverse impacts of the proposed cooling system are insignificant impacts or else prove that the alternative cooling systems available would have a worse effect.

In the Indian Point proceedings, the applicant was required to change its cooling system because of the probable impact on striped bass and the aquatic environment generally. The Appeal Board required the applicant to prove "that the adverse impact of the once-through cooling is not serious or that the most acceptable alternative will have a more seriously adverse impact." In re Consolidated Edison Co. of New York, Inc. (Indian Point Station, Unit 3), 2 NRC 379, 387 (1975). The Applicant was unable to make this showing, and was therefore required to construct a closed-cycle cooling system. The Applicant was required to totally cut-off direct cooling

water withdrawals from the Hudson River.

The similarly severe impacts on the Delaware River shad fishery and aquatic environment require that the present application for operation of the Limerick facility not be approved unless one of the alternative, less damaging supplemental water sources is used.

This is especially clear in that, to the extent the decision at the Construction Permit stage touched on these issues at all, it considered them only superficially, based on the 46 page DRBC EIS which said these impacts of the intake could not be assessed because of the design stage (page 34) and which gave no recognition to Merrill Creek as an impact nor to the one unit alternative. In re Philadelphia Electric Co. (Limerick Generating Station, Units 1 & 2) 1 NRC 163, 182-84 (1975). This limited prior consideration influences not only the need for, but also the depth of the required inquiry, as developed in the following section.

III. Consideration of the Acceptability of the Adverse Impacts of the Point Pleasant Diversion Must Extend to the Full Impact.

In considering the acceptability or seriousness of the adverse effects that would be caused by operation of the Limerick facility using cooling water diverted at Point Pleasant, the Applicant's proffered proof must be evaluated com-

prehensively. The Applicant's proposed operations will cause not just some impact, not just impacts that have been changed as a result of alterations in the plans made since the Construction Permit stage. Operation will of course cause all the impacts of operation. These are the simple parameters of the analysis required at the Operating License stage.

- A. Erroneous or incomplete data and modelling of affected resources requires a fresh consideration of all environmental effects.

At the time of the earlier proceedings, and on the presently undeveloped record, especially absent environmental studies, there existed no clear understanding of the resources that would be affected by the proposed operations at Point Pleasant and along the diversion. For example, no hydrologic study had been done of the river currents and eddy at the intake site. The Pennsylvania Legislature had not designated restoration of the Delaware River shad resource as "an enterprise of vast importance to this Commonwealth." (30 Pa.C.S.A. §7301). The Point Pleasant historic district and the archaeology of the area were not recognized, much less evaluated, and the Canal was not a Landmark, Mercer's studies lay buried in archives, the recent discoveries made in preliminary probes near the site lay buried in the river's banks, and Congress had not passed the 1980 Amendments to the National Historic Preservation Act, 16 U.S.C. §110(f), requiring agencies to take action to minimize harm to Landmarks. Where major changes such as these

develop, and the paucity and inaccuracy of prior models and inventories of affected resources are discovered, a mere patching of of the assessment of environmental impacts is inadequate. Full review and a fresh analysis is required.

For example, in the Indian Point proceedings, supra, the Appeal Board concluded that modelling of impacts on fish were inaccurate and reflected too much damage. Natural fish mortality had not been factored in, zonal distributions and different concentrations of eggs, larvae, and juveniles had not been understood until additional reports made and submitted by the Applicant.

The Appeal Board said (7 AEC at 407):

"[W]e conclude that they are so fundamental as to require a fresh look at certain of the staff's positions and reconsideration of the portions of the Final Environmental Impact Statement to which they relate."

Del-AWARE will show that similarly fundamental inaccuracies and gaps existed in the understanding of the affected resources at issue in the contentions to be considered here. These fundamental errors and gaps also require a complete fresh look at those elements of the contentions to which they relate, for example the historic, archaeological and hydrologic effects.

B. Appreciable changes that have occurred in the recognition of the need to protect the affected resources require a new NEPA balancing.

Not only is there a greater understanding of the more immediate impacts and the value of the resources at stake in licensing operation of the Point Pleasant diversion, but additionally there have been changes in the background factual situation against which the impacts must be assessed.

Since 1975, for example, the shad fishery has been reestablished as a viable and important commercial enterprise in this reach of the Delaware River. The need to--and the benefits from--protecting this fishery resource are increasingly apparent. See Pennsylvania Fish Law, 30 PA.C.S.A. §7301. In such circumstances, evaluation of the impact on such resources must include an inquiry into the present circumstances, and a fresh NEPA balance struck which takes account of that inquiry, and the preferability of alternatives in light of it.

In In re Consolidated Edison Co. (La Salle County Station, Units 1 & 2), 6 AEC 821 (1973), the determination that construction and operation of a 4500 acre cooling lake would have an acceptable impact on farmland resources was reversed on appeal.

"The difficulty with the Licensing Board's analysis is that it is founded upon old facts in a rapidly changing world." 6 AEC at 823.

The Appeal Board took notice of the "evident change in national circumstances," including potential food shortages, crop land depletion and agricultural export reduction. These changes, (as any other "appreciable, and material, change in the

factual situation") which followed upon initial review of the impacts and thereby precluded the initial review from taking them into account would require remand. "On remand, the Board is to inquire into the matter of the present and projected need for the land in issue for agricultural purposes; and is then to strike a fresh NEPA balance which takes into account the results of that inquiry." 6 AEC at 824.

Similarly, recognition of threats to the shad fishery, the Landmark, and other historical resources, which will be shown to be "appreciable, and material," require a fresh NEPA balancing in our circumstances. So also very recent changes in the need for the project as a result of the Pennsylvania PUC's order to stop construction of Unit 2, and the DRBC's new finding of inadequate supplies to provide for the diversion, require a new balancing. See Boston Edison (1981). And the Applicant must prove that its operations should proceed as proposed notwithstanding these developments.

- C. Total impacts, and not just the impacts of design changes, must be considered because no decision has been made on the supplemental cooling water alternatives based on the full plan and present circumstances.

In addition to, and independent of, the legal requirements discussed above, the decision at the Construction Permit stage explicitly reserved judgment on alternatives

and did not finally consider any single supplemental cooling water supply source. As noted above, in Section II, this clearly supports the need (existing independently as a legal requirement in Indian Point) to consider alternatives, and their relative operating impact desirability. As well as defining the inquiry's necessary scope, it also supports the need to make a fresh and in-depth review, as required by the cases discussed immediately above.

The decision at the Construction Permit stage adopts the Delaware River Basin Commission's decision on the allocation question, and attaches the DRBC EIS. (1 NRC at 186.) However, the DRBC EIS included no consideration of the effects of the intake construction because it at that time existed only as a general proposal, without specific plans that would allow complete analysis. Thus the prior appended DRBC review is no basis for in any way limiting or constricting the present analysis of impacts. And the notion that prior failure to assess impacts of an undesigned intake can be transformed into an adequate review by adding an assessment of design change impacts following the act of appending the incomplete DRBC review is of course ludicrous.

STATUS OF PERMITS AND REVIEWS OF OTHER AGENCIES

The U.S. Army Corps of Engineers has not yet made a decision regarding the NWRA application for a permit for the intake at the Delaware River. There is presently pending a proposed Memorandum of Agreement between the Army Corps of Engineers and the Advisory Council on Historic Preservation, which is a necessary prerequisite to the Corps' issuance of a permit. EPA's request to the Corps for an interagency meeting is still pending, and EPA's review is therefore still open. The Advisory Council has not yet made a decision. If executed, the Agreement will provide, inter alia, for archeological studies, after which a decision will be made regarding construction. U.S. Fish and Wildlife opposes the permit, and has notified the Corps of its intention to elevate the matter should the District decide to issue the permit. In any event, the Corps' review is narrowly limited, as stated by the Corps.

On September 8, 1982 Pennsylvania DER issued four permits and a water quality certificate for the project. However, the four permits are now under appeal to the Pennsylvania Environmental Hearing Board, said appeal having been filed by Del-Aware on September 17, 1982. These permits are conditional, more ever, on the MOA described above, and other conditions not yet satisfied. The DER Water Quality Certification referred to previously does not cover the Neshaminy and Perkiomen Creek water qualities as

required by Section 401 of the FWPCA, and if so expanded, will be appealed as well. The bases of the appeals includes some of the matters raised herein, as well as a host of others, some of which have been excluded by this Board from these proceedings, but which are part of the background and underlying basis of the State permits.

NPDES permits which Del-Aware believes are required for the discharges of the cooling water into the East Branch of the Perkiomen Creek and the Schuylkill River have not yet been applied for.

Zoning and building permits from the Township of Plumstead for the intake and Bradshaw Reservoir have not been applied for. PECO, as owner of the Bradshaw Reservoir, has to option to apply to the Pennsylvania PUC for a Certificate of Reasonable Necessity to override local zoning. PECO has done so, and that petition is pending in the Pennsylvania PUC. No action has been taken by NWRA regarding the Point Pleasant intake.

Applications for U.S. Army Corps of Engineer permit and state permits are pending for the Merrill Creek Reservoir and facilities associated with it, including the intake from the Delaware River. Such permits have not, in several cases, been granted yet.

Outstanding objections to the project from the U.S. Fish and Wildlife Service and the Pennsylvania Fish Commission have not been resolved by the U.S. Army Corps of

Engineers, which must do so prior to the issuance of its permits. Inter-agency elevation procedures have not yet been instituted, and there has been no resolution at the initial level.

A Pennsylvania Fish Commission permit, required for blasting in the Delaware River, has not been sought. The Fish Commission opposes the project.

Rights of way for the transmission main from the Point Pleasant intake to the Bradshaw Reservoir are not yet completely in hand, and no eminent domain condemnation proceedings are pending. The right of way to cross under the Delaware Canal has not been obtained from Pennsylvania DER.

TIMING

Finally, with regard to timing, PECO's September 17 Supplemental Response to Interrogatory 12 shows that there is no need whatever to start construction this Fall. Bourguard's meeting memo of January 6, 1982 shows his estimate that the River construction costs \$1,000 per foot. The Bourguard documents (1/22/82) show that blasting in the River is required only for a few feet. The total River construction is only 245 feet. To suggest that one six month period (180 days) will not suffice is ludicrous. Mover, PECO's memos show needed completion date is Spring,

1985, thus allowing 22 months from Summer, 1982, and two winters to get in the River. Finally, equipment has not been ordered. Delivery is 7-10 months, and it would not make sense to excavate in the River until pipes and installation are available; else the trench will slump or fill with debris.

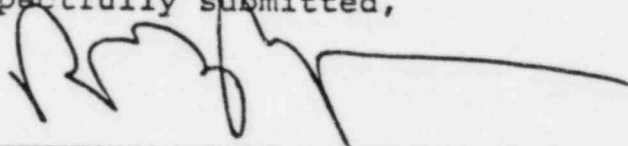
The real time constraint is clearly identified in May 16, 1982 meeting memo (D-35A). That memo states that haste is necessary to avoid political problems as the county election draws closer.

EXHIBIT LIST

Del-Aware's exhibit list is attached hereto as Exhibit

A.

Respectfully submitted,



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September 20, 1982

EXHIBIT LIST

to
Trial Brief of
Intervenor Del-AWARE Unlimited, Inc.
September 20, 1982

- D-1 Letter, Sept. 14, 1982 to Col. Baldwin, COE, from Charles Kulp, U.S. Fish & Wildlife Service
- D-2 Delaware River Basin Commission. Staff responses to R.J. Sugarman letter of Sept. 3, 1982: Issues No. 2, No. 3, No. 6, & No. 7, with attachments. Also, DRBC responses to NRC Staff questions No. 1, No. 3, No. 6, No. 5, & No. 7, with attachments.
- D-3 Rider, Sept. 17, 1982, to Appeal filed by Del-AWARE of Permit No. ENC 09-81 issued by Pennsylvania DER for a water intake at Point Pleasant.
- D-4 PECO response to NRC Staff Question E240.27 and E240.28, Limerick EROL.
- D-4a Applicant's Supplemental Responses to "Interrogatories of Del-AWARE Unlimited, Inc. Addressed to Applicant Philadelphia Electric Co." September 1, 1982.
- D-5 Opinion and Order, Pennsylvania Public Utility Commission, August 27, 1982 (excerpts)
- D-6 "Archeological Investigations of the Point Pleasant Area, A Preliminary Report", by S.W. Landis, Aug. 23, 1982
- D-7 Letter, Aug. 10, 1982, to H. Dickinson, PECO, from E.H. Bourquard
- D-8 Cost Estimate, Aug. 5, 1982, E. H. Bourquard
- D-9 Letter, July 27, 1982 to R. Ballard, from Charles Kulp, U.S. Fish and Wildlife Service.
- D-10 Letter, July 27, 1982 to R. Flowers, from Harold Brundage, Ichthyological Assoc., Inc.
- D-11 Letter, July 23, 1982 to Col. Baldwin, from Howard Larsen, U.S. Fish and Wildlife Service
- D-12 Endangered Species Act - Section 7 Consultation - Biological Opinion, July 23, 1982
- D-13 Letter, July 19, 1982 to Col. Baldwin, from William Gordon, U.S. Dept. of Commerce - National Oceanic and Atmospheric Administration

- D-14 Letter, July 12, 1982 to Col. Baldwin from Norman Chupp, U.S. Department of Interior - Fish and Wildlife Service
- D-15 Interstate Water Management - Recommendations of the Parties to the U.S. Supreme Court - July, 1982
- D-16 Letter, June 17, 1982 to Robert Sugarman from P.W. Fournier, Johnson Division
- D-17 Calculation Sheet - Limerick Generating Station, June 14, 1982
- D-18 Letter, May 13, 1982 to Col. Baldwin from William McLaughlin, PA Historical and Museum Comm.
- D-19 Letter, May 6, 1982 to David Morad from Robert Bourquard, Bourquard Assoc., Inc.
- D-20 Neshaminy Water Supply System - Plan of Operation, April 27, 1982
- D-20-1 Point Pleasant Pumping Station - Hydraulics of Water Intake, April 30, 1982
- D-21 Letter, April 13, 1982 to Peter Duncan from Kathryn Ann Auerbach, Bucks County Conservancy
- D-23 Letter, April 8, 1982 to Kathryn Auerbach from Dr. Richard Jordan and Glenn Sheehan, Bryn Mawr College
- D-24 Letter, March 24, 1982 to NWRA from George Bush, Hartzel and Bush
- D-25 Letter, March 17, 1982 to Col. Baldwin from George Pence, U.S. Environmental Protection Agency
- D-26 Letter, March 10, 1982 to Col. Baldwin from Norman Chupp, U.S. Dept. of the Interior
- D-27 Preliminary Case Report for NWRA Point Pleasant Diversion Project - March 19, 1982
- D-28 U.S.G.S. Point Pleasant Bridge River Stage Records - 1950 to 1955 - March 15, 1982
- D-29 Letter, March 17, 1982 to Col. Baldwin from George Pence, U.S. Environmental Protection Agency
- D-30 Letter, February 18, 1982 to John Pomponio from Roy Denmark, Dept. of the Army
- D-31 Letter, January 22, 1982 to Roy Denmark, Jr. from E. H. Bourquard
- D-32 Letter, January 8, 1982 to Honorable Robert Edgar from Norman Chupp, U.S. Dept. of the Interior

- D-33 Letter, Jan. 10, 1982 to E. H. Bourquard from Harold M. Brundage, Ichthyological Assoc., Inc.
- D-34 MEMO to file, PPS, January 5, 1982 - RE: Mtg. with Phila. District, U.S.A. Corps of Engineers
- D-35 Assessment of the Impacts of the Proposed Point Pleasant Pumping Station - January, 1982
- D-35a MEMO, May 14, 1982, RE: Point Pleasant Project Limerick Generating Station (Mechanical Engineering Division)
- D-35b PECO Water Quality Data Printout, August 6, 1982
- D-36 The American Shad in The Delaware River - by J. Miller et al
- D-37 Letter, December 29, 1981 to Col. Baldwin from Carol D. Shull, U.S. Dept. of the Interior
- D-37-1 MEMO, December 16, 1981, RE: Limerick Generating Station, Units 1 & 2 Makeup Water System - Status Report
- D-38 Letter, Dec. 15, 1981 to Carol Shull from Col. Baldwin
- D-39 MEMO, Dec. 21, 1981, RE: Limerick Generating Station, Units 1 & 2 Makeup Water System - Status Report and Schedule
- D-40 Letter, Dec. 1, 1981 to Brenda Barrett from Kathryn Auerbach Bucks County Conservancy
- D-41 Pt. Pleasant Historic & Archaeological District - Comments on the Request for Determination of Eligibility by M. Mintz - November, 1981
- D-42 Letter, Nov. 30, 1981 to E. H. Bourquard from Harold Brundage, Ichthyological Assoc., Inc.
- D-43 Letter, Nov. 27, 1981 to Robert Flowers from Harold Brundage, Ichthyological Assoc., Inc.
- D-44 Letter, Oct. 26, 1981 to Col. Baldwin from Gerald M. Hansler
- D-45 Letter, Oct. 26, 1981 to Ms. Rehfus from Gerald M. Hansler
- D-47 Letter, June 8, 1981 to Roy Denmark from Timothy Goodger, National Oceanic and Atmospheric Admin.
- D-48 Letter, Sept. 21, 1981 to Col. Baldwin from Larry E. Tise, PA Historical and Museum Comm.
- D-49 Letter, Sept. 9, 1981 to Col. Baldwin from E. H. Bourquard
- D-51 MEMO to file, Aug. 18, 1981, RE: NWRA - Army Corps of Engineers, from HJR

- D-52 Letter, July 31, 1981 to E. H. Bourquard from John A. Burnes
- D-53 Letter, July 28, 1981 to E. H. Bourquard from Paul Harmon, RMC - Environmental Services Division
- D-54 Letter, July 22, 1981 to Col. Baldwin from Gerald Hansler, DRBC
- D-55 Letter, June 24, 1981 to J. W. Thrusby from Ruth Rehfus, National Oceanic and Atmospheric Admin.
- D-56 Letter, June 22, 1982 to E. H. Bourquard from Paul Harmon, RMC - Environmental Services Division
- D-57 Letter, June 19, 1981 to Col. Ton from Norman R. Chupp, U.S. Dept. of the Interior
- D-58 Planning Aid Report - July, 1981
- D-59 Topographic Survey of Portion of Delaware River Situate in Plumstead Twp., Bucks County, PA
- D-60 The Delaware River Basin - Final Report and Environmental Impact Statement of the Level B Study - May, 1981
- D-61 Letter, May 4, 1981 to Col. Ton from Jack G. Miller, Commonwealth of PA - Fish Commission
- D-64 DRBC MEMO, March 23, 1981 to D. B. Everett from R. C. Kausch
- D-65 Letter, Jan. 27, 1981 to Gerald Hansler from J. Ton
- D-67 Morad conversation memo, January 16, 1981
- D-70 Water Quality Analyses - Area-Specific Dilution Studies Region III - January, 1981
- D-75 Letter, December 16, 1980 to Gerald Hansler from Norman Chupp, U.S. Dept. of the Interior
- D-77 Biological Evaluation of the Proposed Water Intake in the Delaware River at Point Pleasant, PA - November, 1980
- D-80 Handwritten notes of Thomas G. May during deposition of August 19, 1982
- D-82 Meeting notes, June 9, 1980 - Point Pleasant Pumping Facilities - Phila. District, U.S. Army Corps of Engineers
- D-83 Letter, March 12, 1980 to Gerald Hansler from Arnold Schiffman, Dept. of Environmental Protection
- D-84 Letter, March 12, 1980 to Gerald Hansler from Steven Torok, U.S. Environmental Protection Agency
- D-87 Review of Environmental Reports of the PECO and the NWRA September, 1979

- D-88 Alternatives to Proposed Plan - July, 1979
- D-89 Letter, Aug. 6, 1979 to Gerald Hansler from J. Ton
- D-91 MEMO, July 12, 1978, RE: Point Pleasant Project
(Mechanical Engineering Division)
- D-92 DRBC MEMO, April 14, 1978 to Gerald Hansler from J. W.
Thursby
- D-93 DRBS MEMO, April 13, 1978 to Everett, Thursby, Longmaid
from Bruce E. Stewart
- D-94 Letter, Nov. 12, 1974 to David Marano from R. C. Richert,
GPU Service Corporation
- D-95 Environmental Impact Statement, February, 1973
- D-96 Photograph of Delaware River at Tohickan Creek submitted
during depositions of PECO Panel - August 6, 1982
- D-97 Letter, Dec. 31, 1969 to R. A. Mulford from C. W. Dick,
Bechtel Corporation
- D-98 McNutt Photos

CERTIFICATE OF SERVICE

I hereby certify that I have served a copy of the foregoing Trial Brief of Intervenor Del-AWARE Unlimited, Inc. by mailing a copy of the same to the following persons this 20th day of September, 1982.

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