Susquehanna River Basin Commission

a water management agency serving the Susquehanna River Watershed

January 19, 2011

Mr. Terry L. Harpster
VP-Bell Bend Project-Development
PPL Bell Bend, LLC
38 Bomboy Lane, Suite 2
Berwick, PA 18603

Re: IFIM and Aquatic Impact Studies Workplan;
Bell Bend Nuclear Power Plant, BNP-2010-103;
Salem Township, Luzerne County, Pennsylvania

Dear Mr. Harpster:

Susquehanna River Basin Commission (Commission) staff has reviewed the "IFIM and Aquatic Impact Studies Workplan" submitted in the referenced correspondence, which is a partial response to the Commission's letter dated March 1, 2010, commenting on the surface water withdrawal application submitted on May 15, 2009, by PPL Bell Bend, LLC (PPL). This letter is a complete response to the referenced correspondence with the exception of Section 6 and appendices of Enclosure 1, which the Commission responded in a letter dated July 26, 2010 and two separate letters dated October 15, 2010.

Our comments are as follows:

1. The first page of Enclosure 1 referenced a meeting in July 2009, stating that the Commission required an IFIM study because of additional consumptive use of water by the Bell Bend Nuclear Power Plant (BBNPP) project. To reiterate our position outlined in our July 26, 2010 letter, PPL has several options to comply with Commission policies and regulations that do not require performance of an IFIM study. These options include: (1) accept an approval condition requiring a passby flow of 20 percent of the average daily flow (ADF) during operations; (2) provide releases from upstream storage water to fully mitigate the withdrawal and consumptive use at flows less than 20 percent ADF; and (3) otherwise alter plant operations to accommodate low river flows (less than 20 percent ADF). The IFIM study is only required if PPL wishes to attempt to demonstrate that the aquatic life in the river would not be degraded due to water withdrawals for BBNPP if none of the three options above are fully implemented, or are implemented at a different low flow threshold, such as Q7-10. In short, Commission staff has allowed an IFIM study to be considered by PPL to provide information to support as a fourth option, but the

choice of this option is at the discretion of PPL. This comment also applies to a similar statement on page 7 and page 11.

2. In Section 1, pages 9 and 10, the discussion of Commission Policy No. 2003-01 indicates a misunderstanding of that policy. Section III, paragraph B, of that policy clearly provides wide latitude for the Commission to set passby flow requirements to assure water quality is not compromised by water withdrawals. As additional studies, such as Commission Publication No. 253 (Consumptive Use Mitigation Plan, issued in March 2008), become available, the Commission will give due consideration to any study in determining water quality impacts.

3. Section 3.1.1 states that, "Flow in the river between Nescopeck Creek and Fishing Creek will be assumed to be the sum of the Wilkes-Barre flow and the Nescopeck flow." The method to simulate flow needs to be further clarified. The stated method does not take into consideration: (1) the drainage in between the Wilkes-Barre gage and the Nescopeck Creek confluence with the Susquehanna River, which includes numerous tributaries to the Susquehanna River (including the U.S. Geological Survey [USGS]-gaged Wapwallopen Creek); (2) how flow will be simulated from a non-real-time Nescopeck Creek USGS gage; and (3) what flow will be simulated from the Nescopeck Creek USGS gage.

4. In Table 3-4, the 20 percent ADF values are incorrect. The 20 percent ADF for Wilkes-Barre should be 2,740 cubic feet per second (cfs) (13,700 average flow from Table 3-3 times 0.2).

5. In Section 3.2.1, page 18, the dissolved oxygen (DO) values that were measured are in an acceptable range; however, DO values can vary significantly based on the time of day and water temperature. Commission staff requires this information to determine the significance of the DO values. Also, the samples were not collected in the study area and, therefore, are not relevant.

6. Section 3.2.1 states that, "Pennsylvania provides the following criteria for temperature (Pa. Code, Chapter 93. Water Quality Standards, § 93.7. Specific water quality criteria): Maximum temperatures in the receiving water body resulting from heated waste sources are regulated under Chapters 92, 96 and other sources where temperature limits are necessary to protect designated and existing uses. Additionally, these wastes may not result in a change by more than 2°F during a 1-hour period." Section 3.2.3, SSES and BBNPP Thermal Discharges, illustrates models of thermal plumes (Table 3-8) with temperature rises that far exceed the Chapters 92 and 96 limits on temperature change in receiving waters. Table 3-9 similar illustrates both lower and upper temperature rises that exceed the Chapters 92 and 96 limits on temperature change in receiving waters. PPL must demonstrate that the proposed thermal plume will not violate the water quality criteria standards or, alternatively, provide rationale for not meeting the standards.

7. In Section 3.2.2, page 19, pH values can vary significantly based on the time of day. Commission staff requires the time of day that the samples were taken to determine the significance of the pH values.

8. Section 3.2.5 indicates the use of time-of-travel dye dispersion studies for the present study to calibrate the alternate hydraulic model. Because these studies are going to be used to calibrate the hydraulic model, these studies should be provided to the Commission for review.

9. In Table 3-8, the intake and discharge rates for BBNPP are significantly different than the rates in the surface water and consumptive use applications. Also, the projected temperature rise for the Susquehanna Steam Electric Station (SSES) is significantly greater than BBNPP (12.5°F vs. 3.5°F). The Ecology III Thermal Plume Studies, submitted in Appendix A, should be used as a reference point to calibrate the thermal model used for this study. For example, the summer scenario in this study uses an 11,200 gallons per minute (gpm) discharge rate for SSES, which is inconsistent with the measured SSES discharge rate of 12,000 gpm published in the Ecology III summer study. These discrepancies need justification in order for the proposed scenarios to be acceptable. Additionally, Commission staff requires validation of the thermal model including related peer-reviewed literature. This comment also applies to Table 3-9 and Figures 3-2 through 3-5. Finally, to provide a comprehensive thermal discharge study, the model should be used to analyze a river flow rate of 820 cfs, which is the Q7-10 flow rate.

10. In Section 3.3.1, fish community refers to an Appendix B in an Ecology III report that presents a species list of fisheries identified through multi-year sampling at SSES. Please include Appendix B from the Ecology III report in this submittal.

11. In Section 3.3.2, Commission staff recommends PPL develop, with assistance from the U.S. Fish and Wildlife Service (USFWS) and/or the Pennsylvania Fish and Boat Commission (PFBC), a supplemental program for protection of migrating American shad should their restoration program identify migrating shad in the vicinity of BBNPP.

12. In Section 3.4, there is a reference to an Appendix B in an Ecology III report that presents a species list of benthic organisms identified via 2007-2008 sampling at SSES. Please include the referenced appendix in this submittal.

13. Section 7 states that, "The initial extent of the study reach for this assessment is from the Nescopeck Creek 13 miles downstream to the Fishing Creek in Bloomsburg (Figure 4-1). The expectation is that complete mixing of the Nescopeck Creek and Susquehanna River will occur within this reach for all combinations of Nescopeck Creek and Susquehanna River flow rates." There should be data or supporting

evidence for this statement, given broad assumptions about flow mixing and potential impacts from consumptive use of the river flows and contribution of abandoned mine drainage (AMD) waters from Nescopeck Creek. Additionally, the proposed protocol for pH sampling appears inadequate to accurately define the boundaries of the AMD plume. The AMD plume would be more accurately defined by sampling once in the middle and then sampling at regular intervals from the east bank until the pH values are similar to the reading from the middle reading. Also, because of the variability of pH readings during a 24-hour period due to biological changes and the dilution due to flow variability, constant pH monitoring is required to determine compliance with Chapter 93 water quality standards for pH.

14. In Section 8, a comprehensive analysis of the impacts of the cooling tower blowdown should include impacts of the chemical additives to the blowdown. The analysis should include the impacts of biocides, antifreeze chemicals, and other additives.

15. In Section 11, the schedule for some of the monitoring and analytical activities will need to be revised to reflect incorporation of the above comments.

If you have any questions regarding the above, please do not hesitate to contact Paula Ballaron at (717) 238-0423, extension 222.

Sincerely yours,

Jim Richenderfer, Ph.D., P.G.
Director, Technical Programs

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