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April 25, 2013

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

**BELL BEND NUCLEAR POWER PLANT
REDACTION OF RESPONSE TO RAIs ENV-20 AND 21
BNP-2013-064 Docket No. 52-039**

Reference: BNP-2012-286, R. R. Sgarro (PPL) to Document Control Desk (NRC),
"Response to RAIs ENV-20 and ENV-21," dated December 11, 2012.

The purpose of this letter is to provide a revised redacted version of Attachment 2 of the referenced letter based on discussions with the NRC staff.

Please note that line spacing has been changed and some wording has been added that makes the redacted version more readable for the public without materially changing its content.

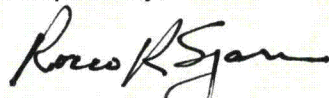
The revised Attachment 2 supersedes the referenced version in its entirety.

Should you have questions, please contact the undersigned at 610.774.7552.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April 25, 2013

Respectfully,


Rocco R. Sgarro

RRS/kw

Attachment: As stated

D102
u120

cc: W/ Attachment

Ms. Laura Quinn-Willingham
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w/o Attachment

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Attachment

Revised Redacted Version of BNP-2012-286, Attachment 2

RAI ENV-20
Question 5.3.2-3

ESRP Section 2.3.1 directs that the staff describe water use that could affect or be affected by construction and operation of the plant. ESRP Section 2.4.2 directs that the staff describe the aquatic environment and biota at and in the vicinity of the Bell Bend site and other areas likely to be affected by the construction, maintenance, or operation of the proposed project. ESRP 5.2.1 directs that the staff identify, describe, and analyze hydrologic alterations resulting from plant operation. ESRP 5.2.2 directs that the staff analyze and assess predicted impacts of plant operation on water use. The staff should analyze and evaluate the impacts resulting from hydrological alterations and water quality changes that could affect water use and should analyze and evaluate proposed practices to minimize or avoid these impacts.

The applicant and the Susquehanna River Basin Commission (SBRC) have informed the NRC staff that during low flow periods supplemental water would need to be obtained by the applicant to continue operation of the proposed Bell Bend Nuclear Power Plant (BBNPP). The NRC staff needs to evaluate the ecological effects of the potential addition of up to 28 million gallons per day of supplemental water on local aquatic ecosystems. The applicant has not disclosed how it plans to obtain and deliver this supplemental water to the Susquehanna River. To determine the ecological effects of supplemental water use, the NRC staff requests that the applicant provide information on the options for flow supplementation that are available, the locations of the discharge points for each option, and the likely frequency and amount of supplementation water that would be discharged.

Name and describe the waterbody into which the supplemental water would be discharged, indicate the point on that waterbody at which the water would be discharged, describe the current flow and ecological conditions of that waterbody at and downstream of the discharge point. Also describe the potential ecological effects of adding supplemental water to the water body at and downstream of the discharge point for each water source location and source type, such as impacts to habitat and aquatic species including important species as defined in Table 2.4.1-1 of the ESRP, such as ecological, commercial, and recreational species.

Acceptance Criteria:
ESRP Sections 2.3.1, 2.4.2, 5.2.1, and 5.2.2

Response

Request 1: "To determine the ecological effects of supplemental water use, the NRC staff requests that the applicant provide information on the options for flow supplementation that are available, the locations of the discharge points for each option, and the likely frequency and amount of supplementation water that would be discharged."

Please refer to Response 3 and Enclosure 1 of PPL Bell Bend, LLC's response to NRC RAI ENV-019, provided with letter BNP-2012-281, dated December 4, 2012¹, for the discussion of supplemental water use. The SRBC will specify project requirements for meeting their consumptive use regulation and passby flow policy by the end of December 2012.

¹ BNP-2012-281, R. R. Sgarro (PPL Bell Bend, LLC) to U.S. NRC Document Control Desk, "Response to RAI ENV-19," dated December 4, 2012

Request 2: "Name and describe the waterbody into which the supplemental water would be discharged, indicate the point on that waterbody at which the water would be discharged, describe the current flow and ecological conditions of that waterbody at and downstream of the discharge point."

The main source of 28 million gallons per day (mgd) (43 cubic feet per second (cfs)) consumptive-use

make-up and pass-by flow water is expected to come from [REDACTED]. [REDACTED]

[REDACTED] discharges into [REDACTED] which enters [REDACTED]. [REDACTED] then flows north entering [REDACTED], then flowing southeast and joining the North Branch of the Susquehanna River [REDACTED].

[REDACTED] and most sections of [REDACTED] within Pennsylvania are classified by the Pennsylvania Department of Environmental Protection (PADEP) as WWF, MF (warm water fishery, migratory fishery) (Ref: 25 PA Code §93.9h and §93.9i). Where [REDACTED] flows in New York, it is considered a Class C, Standard C waterway. [REDACTED] is also considered a Class C, Standard C waterway, with the exception of a short stretch [REDACTED]

[REDACTED] where it is considered a Class A, Standard A waterway. Class A waters are suitable as a water supply source for drinking. Class C waters are suitable for fishing and recreation. (6 NYCRR §701.7 and §701.8) The standard refers to water quality values to protect the best usages of the waters. [REDACTED] and short sections of [REDACTED] within

Pennsylvania are listed as impaired due to mercury contamination, with the probable cause being atmospheric deposition. (Ref: <http://www.emappa.dep.state.pa.us/emappa/viewer.htm>) [REDACTED]

[REDACTED] throughout its reach within New York State is considered to meet its water quality class and standard, (http://www.dec.ny.gov/docs/water_pdf/pwlchmgasmt.pdf). The North Branch of the Susquehanna River within Pennsylvania is listed as impaired due to contamination by mercury and polychlorinated biphenyls (PCBs). Total Maximum Daily Loads (TMDLs) are in effect for sections of the North Branch of the Susquehanna River.

The conservation releases for consumptive-use make-up will occur during periods of low flow on [REDACTED]

[REDACTED]. The conservation releases will be within the banks of the river and be used to

maintain a normalized flow, (see Figure 1, below). Therefore, these releases are expected to have only positive impact on downstream users and ecological conditions.

The alternate site for consumptive-use make-up water is [REDACTED] with its discharge to [REDACTED] which flows following the same general path as the [REDACTED] release into the North Branch of the Susquehanna River. Similar to the [REDACTED] release, this discharge will occur during periods of low flow when the discharge will be within the banks of the river and be used to maintain a normalized flow, (see Figure 2, below). Therefore, this release is also expected to have only positive impact on downstream users and ecological conditions.

Waterway "A"

Resource "B"

Resource "A"

Request 3 "...describe the potential ecological effects of adding supplemental water to the water body at and downstream of the discharge point for each water source location and source type, such as impacts to habitat and aquatic species including important species as defined in Table 2.4.1-1 of the ESRP, such as ecological, commercial, and recreational species."

The Bell Bend Nuclear Power Plant Combined License Application, Part 3, Environmental Report (ER) Sections 4.2 and 4.3 deal with water-related and ecological impacts from the construction of the Bell Bend Plant. ER Section 5.2 deals with the water-related impacts of plant operation. The impacts of low flows such as 7Q10 occur infrequently and for short periods of time. Adding supplemental water to maintain levels above this threshold are expected to maintain habitat and reduce impacts on aquatic species as they will seek out deeper, cooler water. Most reservoirs in the Susquehanna River basin are primarily operated and maintained for flood control and recreational purposes. As such they are operated to maintain a specific recreation pool elevation during the recreation season (Memorial through Labor Day). This means that reservoir outflows are normally equal to reservoir inflows, except during high water events, so the normal impact on reservoir operations is negligible.²

Based on the flow statistics in Tables 1 and 2, below, a supplemental release of 43 cfs from either

[REDACTED] during low flow periods would be well within natural flow variability of the receiving stream, and would be expected to be beneficial to all instream water uses.

Resource "A" or Resource "B"

² The Nature Conservancy, "Ecosystem Flow Recommendations for the Susquehanna River Basin", November 2010, page 24

COLA Impact

The BBNPP COLA will not be revised as a result of this response.

Waterway "B"

Table 1
FLOW (cfs)

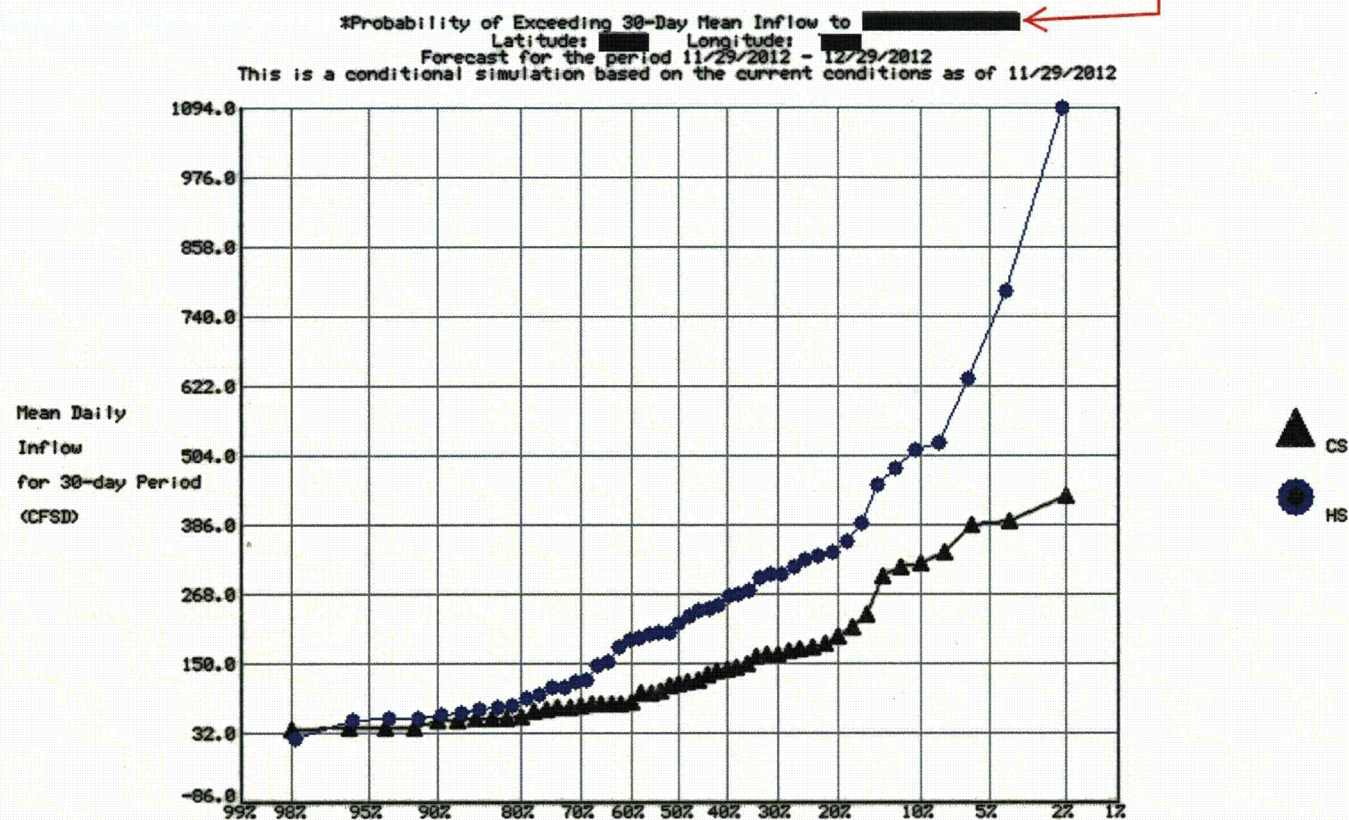
| Site # | Site description | percent | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|--------|------------------|---------|------|------|------|-------|-------|-------|-----------|-----------|-----|-----|-----------|------|
| | | | | | | | | | | | | | | |
| | | 99 | 13 | 15 | 41 | 81 | 22 | 11 | 3.8 | 2.5 | 1.9 | 3.4 | 5.9 | 12 |
| | | 95 | 21 | 33 | 79 | 114.5 | 40 | 16 | 6.6 | 4 | 4.5 | 7.2 | 13 | 21 |
| | | 90 | 35 | 48 | 112 | 150 | 59.5 | 22 | 9.9 | 6.3 | 6.2 | 10 | 17 | 34 |
| | | 85 | 45 | 56 | 148 | 181 | 75 | 28 | 13 | 8.25 | 8.1 | 12 | 20 | 52 |
| | | 80 | 54 | 66 | 186 | 211 | 91 | 33 | 15 | 11 | 11 | 14 | 26 | 70 |
| | | 75 | 62 | 78 | 218 | 239 | 107 | 38 | 18 | 13 | 14 | 15 | 32 | 86 |
| | | 70 | 72 | 88 | 261 | 272 | 120 | 42 | 20 | 15 | 15 | 18 | 38 | 108 |
| | | 65 | 82 | 100 | 300 | 305 | 136 | 47 | 24 | 16 | 16 | 21 | 50 | 122 |
| | | 60 | 93 | 110 | 334 | 357 | 156.5 | 55 | 26 | 18 | 17 | 24 | 73.5 | 146 |
| | | 55 | 107 | 128 | 380 | 401 | 178 | 61 | 30 | 20 | 19 | 26 | 93 | 165 |
| | | 50 | 125 | 150 | 441 | 442.5 | 200 | 71 | 32 | 22 | 21 | 31 | 110. 5 | 190 |
| | | 45 | 145 | 170 | 493 | 489.5 | 224 | 83 | 36 | 24 | 23 | 37 | 132 | 219 |
| | | 40 | 170 | 195 | 549 | 557.5 | 252.5 | 100 | 42 | 26 | 26 | 46 | 154. 5 | 243 |
| | | 30 | 240 | 263 | 715 | 717 | 334.5 | 142.5 | 58 | 34 | 40 | 77 | 223 | 317 |
| | | 25 | 300 | 318 | 845 | 831.5 | 390 | 177.5 | 74 | 41 | 53 | 99 | 256 | 372 |
| | | 20 | 363 | 400 | 1030 | 954 | 466.5 | 233.5 | 91 | 53 | 74 | 148 | 322. 5 | 447 |
| | | 10 | 632 | 809 | 1750 | 1560 | 797 | 480.5 | 160. 5 | 106. 5 | 160 | 327 | 543 | 730 |
| | | 5 | 1180 | 1510 | 2540 | 2405 | 1315 | 956 | 294. 5 | 240 | 369 | 652 | 863 | 1200 |

Waterway "A"

Table 2
FLOW (cfs)

| Site # | Site description | percent | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|--------|------------------|---------|------|------|-------|-------|------|-------|-----|-----|-----|-----|-------|-------|
| | | | | | | | | | | | | | | |
| | | 99 | 24 | 26 | 50 | 120 | 60 | 28 | 13 | 9.4 | 6.8 | 9 | 12 | 21 |
| | | 95 | 42 | 49 | 106 | 172 | 89 | 39 | 20 | 13 | 11 | 16 | 28 | 37 |
| | | 90 | 60 | 66 | 153 | 210 | 110 | 47 | 25 | 17 | 16 | 21 | 35 | 59 |
| | | 85 | 72 | 82 | 205 | 254 | 130 | 54 | 31 | 22 | 18 | 25 | 42 | 80 |
| | | 80 | 86 | 100 | 248 | 295.5 | 153 | 61 | 33 | 26 | 22 | 29 | 50.5 | 100 |
| | | 75 | 96 | 120 | 290 | 326 | 176 | 69 | 37 | 29 | 26 | 33 | 62 | 114 |
| | | 70 | 110 | 139 | 335 | 361 | 198 | 79 | 40 | 31 | 28 | 36 | 80 | 135 |
| | | 65 | 127 | 152 | 380 | 401 | 222 | 89 | 45 | 32 | 31 | 39 | 104.5 | 160 |
| | | 60 | 141 | 170 | 425 | 446.5 | 245 | 100 | 50 | 34 | 34 | 43 | 125 | 187 |
| | | 55 | 160 | 188 | 475 | 492 | 274 | 110 | 56 | 37 | 37 | 48 | 148 | 214 |
| | | 50 | 181 | 212 | 530.5 | 552.5 | 305 | 124 | 61 | 42 | 40 | 54 | 173 | 239.5 |
| | | 45 | 210 | 241 | 602 | 609 | 340 | 140 | 68 | 45 | 45 | 65 | 197 | 273 |
| | | 40 | 249 | 270 | 680 | 678 | 387 | 162 | 74 | 50 | 50 | 81 | 227.5 | 315 |
| | | 30 | 350 | 375 | 870 | 873 | 500 | 216 | 94 | 62 | 64 | 121 | 314.5 | 421 |
| | | 25 | 405 | 440 | 1010 | 1000 | 572 | 255 | 110 | 71 | 79 | 151 | 375 | 491 |
| | | 20 | 486 | 534 | 1210 | 1180 | 674 | 308.5 | 132 | 94 | 103 | 205 | 448.5 | 584 |
| | | 10 | 823 | 945 | 1970 | 2010 | 1080 | 587.5 | 233 | 205 | 225 | 440 | 707 | 956 |
| | | 5 | 1380 | 1680 | 3250 | 2900 | 1700 | 1000 | 426 | 395 | 473 | 823 | 1195 | 1470 |

Figure 1



▲_{CS} = Conditional Simulation

●_{HS} = Historical Simulation

CS - Conditional Simulation line indicates chances of the river going above given levels based on current conditions.

HS - Historical simulation line indicates the chances of the river going above given levels based on the total range of past levels.

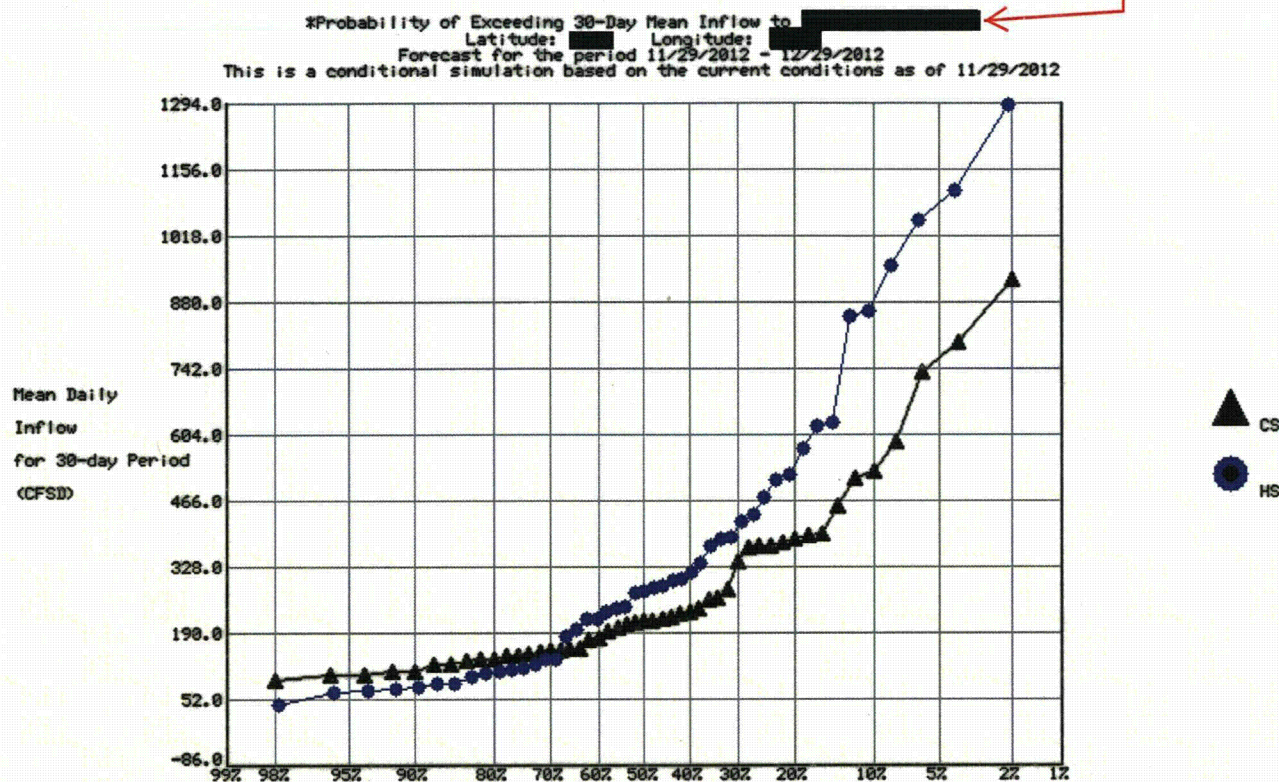
Note: National Weather Service, Advanced Hydrologic Prediction Service, <http://water.weather.gov/ahps2/glance.php?wfo=ctp&riverid=205042>

Resource "A" a. [REDACTED] 95% Probability of Exceeding 30-day Mean Inflow 95% value is approximately 32 cfs

Resource "B" b. [REDACTED] 95% Probability of Exceeding 30-day Mean Inflow 95% value is approximately 55 cfs.

In both cases the inflow to these reservoirs is close to the daily 43 cfs maximum consumptive-use mitigation.

Figure 2



▲ CS = Conditional Simulation

● HS = Historical Simulation

CS - Conditional Simulation line indicates chances of the river going above given levels based on current conditions.

HS - Historical simulation line indicates the chances of the river going above given levels based on the total range of past levels.

Note: National Weather Service, Advanced Hydrologic Prediction Service, <http://water.weather.gov/ahps2/glance.php?wfo=ctp&riverid=205042>

Resource "A" c. [REDACTED] 95% Probability of Exceeding 30-day Mean Inflow 95% value is approximately 32 cfs

Resource "B" d. [REDACTED] 95% Probability of Exceeding 30-day Mean Inflow 95% value is approximately 55 cfs.

In both cases the inflow to these reservoirs is close to the daily 43 cfs maximum consumptive-use mitigation.

RAI ENV-21**Question EIS 2.4.1-9**

The NRC staff, in its environmental impact statement as required by the National Environmental Policy Act (NEPA), needs to evaluate the ecological effects on wetlands and floodplains from the potential addition of up to 28 million gallons per day of supplemental water for consumptive use, which will be required by the Susquehanna River Basin Commission.

The ESRP 2.4.1 directs that the Staff identify and describe wetland and floodplain resources in the vicinity of the Bell Bend site that could be impacted by construction or operation of the plant. ESRP 5.3.3.2 directs that the Staff identify and evaluate the impacts to terrestrial ecosystems, including wetlands and floodplains, due to the operation of heat dissipation systems, the cooling towers, and cooling ponds.

To determine the ecological effects from the addition of this supplemental water on wetlands, floodplains, and associated habitats and wildlife species, the NRC staff requests information on the available options the applicant will use for flow supplementation, the approximate locations of the water withdrawal, routes of conveyance (e.g., streams, rivers that would carry the supplemental water), discharge points for each supplemental water option, and the approximate frequency of use and amount of supplementation water for each available option.

Provide a description of wetlands and floodplains associated with the water source, conveyance routes, and receiving waterbodies for the plant's supplemental water. It is acceptable to reference publicly available data from the U.S. Fish and Wildlife Service National Wetlands Inventory and Federal Emergency Management Agency National Flood Insurance Program flood maps. Describe in qualitative terms to what extent (e.g., areal extent and depth) and for how long wetlands and floodplains might be affected by supplemental water withdrawal (potential dewatering) and conveyance and discharge (potential flooding). Describe the possible associated potential impacts to wetland and floodplain vegetation and associated wildlife, based on the magnitude and duration of recurring dewatering or flooding events. Describe the process and estimate the time that may be required for such affected resources to return to pre-dewatering or pre-flooding conditions.

Acceptance Criteria:

ESRP Sections 2.4.1 and 5.3.3.2; 10 CFR 51.75

Response

Request 1: ... "the NRC staff requests information on the available options the applicant will use for flow supplementation, the approximate locations of the water withdrawal, routes of conveyance (e.g., streams, rivers that would carry the supplemental water), discharge points for each supplemental water option, and the approximate frequency of use and amount of supplementation water for each available option."

Please refer to Response 3 and Enclosure 1 of PPL Bell Bend, LLC's response to NRC RAI

ENV-019, provided with letter BNP-2012-281, dated December 4, 2012³, for the discussion of supplemental water use. The Susquehanna River Basin Commission (SRBC) will specify

³ BNP-2012-281, R. R. Sgarro (PPL Bell Bend, LLC) to U.S. NRC Document Control Desk, "Response to RAI ENV-19," dated December 4, 2012

project requirements for meeting their consumptive use regulation and passby flow policy by the end of December 2012.

Request 2: "Provide a description of wetlands and floodplains associated with the water source, conveyance routes, and receiving waterbodies for the plant's supplemental water."

Most wetlands associated with the North Branch Susquehanna River (NBSR) downstream of [REDACTED] ^{Resource "A" and Resource "B"} occur on islands within the river, with a few along the river shoreline. (Reference: U.S. Fish and Wildlife Service National Wetland Inventory Wetlands Mapper, <http://www.fws.gov/wetlands/Wetlands-Mapper.html>). The small amount of mitigation water, whether consumptive-use (CU) make-up or pass-by flow, only represents a small portion of the overall flow in the river. Because the Susquehanna River is a wide, shallow river throughout much of its reach, large changes in flow represent small changes in water surface level, dampening the impact of any supplemental water except at those locations where the river narrows. Since the discharge will occur during periods of low flow, the discharge will be within the banks of the river and be used to maintain a normalized flow.

Request 3: "Describe in qualitative terms to what extent (e.g., areal extent and depth) and for how long wetlands and floodplains might be affected by supplemental water withdrawal (potential dewatering) and conveyance and discharge (potential flooding)."

The effects of supplemental water withdrawal or a conservation release is dependent on the period of time and the frequency of drawdown. Since this will occur primarily in [REDACTED] ^{Waterways "A", "B", "C"} and North Branch of the Susquehanna River during periods of low flow, dewatering of these rivers is being prevented; yet the supplemental discharge will be within the banks of the rivers and be of a volume insufficient to cause flooding.

Request 4: "Describe the possible associated potential impacts to wetland and floodplain vegetation and associated wildlife, based on the magnitude and duration of recurring dewatering or flooding events."

Since dewatering or flooding is not expected to result from supplemental water withdrawal or release; impacts to wetlands, floodplain vegetation, and associated wildlife are expected to mimic naturally occurring cycles.

Request 5: "Describe the process and estimate the time that may be required for such affected resources to return to pre-dewatering or pre- flooding conditions."

As stated in response to Request 4, resources are not expected to be impacted by dewatering or flooding as the result of supplemental water releases. A similar outcome is predicted for [REDACTED]
[REDACTED] as stated in Response 3 to RAI ENV-20, of this letter.



Resource "B"