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June 11, 2012

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Washington, DC 20555-0001

**BELL BEND NUCLEAR POWER PLANT  
ENVIRONMENTAL AUDIT NEED FOR  
INFORMATION RESPONSES:  
THIRD SUBMITTAL  
BNP-2012-144      Docket No. 52-039**

The purpose of this letter is to formally document PPL Bell Bend, LLC's (PPL) responses to NRC Need for Information (NFI) requests that were discussed with the NRC at the Bell Bend Supplemental Environmental Audit held the week of May 14, 2012. Additional letters providing the remainder of NFI responses requested by NRC at the audit will be provided in coming weeks.

Responses to the following NFIs are included in this letter as Enclosure 1:

Additional supporting enclosures are as follows:

- ALT-06      • HY-01      • LU-04      • STO-04      • STO-05
- TE-31

As discussed at the audit, the information presented in, HY-01, LU-04, STO-04/STO-05, and TE-31 require updates be made to language in the Bell Bend Nuclear Power Plant (BBNPP) Combined License Application (COLA) Part 3, "Environmental Report," Rev. 3 to be consistent with information provided in these NFIs. The revised COLA content will be included in a future revision of the BBNPP COLA. The future revisions to the COLA are the only new regulatory commitments in this letter.

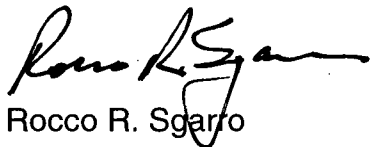
D102  
NRO

Should you have questions or need additional information, please contact the undersigned at 610.774.7552.

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

Executed on June 11, 2012.

Respectfully,

A handwritten signature in black ink, appearing to read "Rocco R. Sgarro", with a stylized flourish at the end.

Rocco R. Sgarro

RRS/kw

Enclosures: 1) Need For Information Responses

cc: (w/ Enclosures)

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(w/o Enclosures)

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Enclosure 1

Need for Information Responses

**ALTERNATIVE SITES (ALT)**

**ALT-06: Provide a SME to discuss the features of the Region of Interest (ROI) regarding electrical generating stations and hazards to construction and operations.**

**Audit Disposition:** Upon review of this NFI response the NRC requested to be provided a docketed copy of the response, included in a revised form below.

**Response:** Natural or man-made geologic features in the ROI that could present a hazard to construction and operation of a new nuclear power plant include underground mines and karst features. Underground mines are common throughout most of the ROI. Various county and state-specific publications and mines databases were reviewed to evaluate the potential for mines near the sites (Frostburg State University, 2009; Pennsylvania Department of Conservation and Natural Resources [PA DCNR], 1992; U.S. Department of Interior [USDI], 2009). The reviewed sources indicate the potential for coal or other underground mines within approximately 3 miles of three of the Alternative Sites (i.e., Humboldt, Seedco and Martins Creek). There is a potential for coal or other underground mines to be present within approximately 20 miles of the Montour site, as well as all of the other Potential Sites within the ROI, with the exception of Indian River. Mines may potentially be within closer proximity (i.e., 10 miles) of the Bainbridge, Conowingo, and Wallenpaupack Potential Sites.

Karst features are most common where carbonate bedrock (i.e., limestone) is present near the ground surface. Various publications regarding carbonate bedrock formations and location-specific databases of karst features (i.e., sinkholes) were reviewed to evaluate the potential for karst features near the sites (Maryland Geological Survey [MGS], 2009; Kochanov and Reese, 2003; PA DCNR, 2000; Weary, 2005). The reviewed sources indicate the potential for karst features and/or carbonate bedrock formations within approximately 0.5, 10, 20, and greater than 20 miles of the Martins Creek, Humboldt, Seedco, and Montour sites, respectively. The same sources indicate the potential for karst features and/or carbonate bedrock formations within 10 to 20 miles of several Potential Sites within the ROI (i.e., Bainbridge, Conowingo, and Peach Bottom) and greater than 20 miles from the remaining Potential Sites.

Underground mines or karst features, if actually present at a site, would, at a minimum, require costly investigations and risk mitigation measures during construction, and could preclude a site from development for a nuclear power plant.

Based on the reviewed sources, seismicity and surface faulting within the ROI are not expected to present unique hazards to construction and operation that would exceed typical nuclear power plant design parameters. National Seismic Hazards Maps (U.S. Geological Survey [USGS], 2008) indicate that the peak ground acceleration (PGA) with 2 percent probability of exceedance in 50 years is less than 0.1 g for all of the Alternative Sites and Potential Sites within the ROI, except for the Martins Creek site, which has a PGA of 0.11g. The USGS Quaternary Fault and Folds Database does not indicate quaternary faults or fault areas within 100 miles of any of the Alternative or Potential Sites. The closest fault area identified was the Central Virginia Seismic Zone. (USGS, 2004) While these screening-level sources do not indicate unique seismic or surface faulting hazards at the sites, rigorous site-specific seismic studies will be required to verify the site parameters for design of a nuclear power plant.

**Data Sources:**

**Frostburg State University, 2009.** Maryland Coal Mine Mapping Project, Website: <http://www.frostburg.edu/minemapping/gis.htm>, Date accessed: June 17, 2009.

**Kochanov, W. E., and S. O. Reese, 2003.** Map 68 – Density of Mapped Karst Features in South-Central and Southeastern Pennsylvania, Commonwealth of Pennsylvania, Department of

Conservation and Natural Resources, Bureau of Topographic and Geologic Survey, Website: <http://www.dcnr.state.pa.us/topogeo/map68/index.aspx>, Date accessed: July 23, 2009.

**MGS, 2009.** Foundation Engineering Problems and Hazards in Karst Terranes, FactSheet 11, Website: <http://www.mgs.md.gov/esic/fs/fs11.html>, Date accessed: June 17, 2009.

**PA DCNR, 1992.** Distribution of Pennsylvania Coals, Commonwealth of Pennsylvania, Department of Conservation and Natural Resources, Website: [http://www.dep.state.pa.us/dep/deputate/minres/Districts/homepage/California/Underground/PA%20Mining%20History/PA\\_coal\\_fields\\_map.jpg](http://www.dep.state.pa.us/dep/deputate/minres/Districts/homepage/California/Underground/PA%20Mining%20History/PA_coal_fields_map.jpg), Date accessed: July 26, 2009.

**PA DCNR, 2000.** Map 15 – Limestone and Dolomite Distribution in Pennsylvania, Commonwealth of Pennsylvania, Department of Conservation and Natural Resources, Bureau of Topographic and Geologic Survey, Fourth Edition, 1990, Third Printing, Revised, 2000, Website: <http://www.dcnr.state.pa.us/topogeo>, Date accessed: July 23, 2009.

**USDI, 2009.** National Mine Map Repository Home Page, National Mine Map Repository, U.S. Department of Interior, Office of Surface Mining, Website: <http://mmr.osmre.gov/>, Date accessed: June 23, 2009.

**USGS, 2004.** Earthquake Hazards Program/Quaternary Faults and Folds Database Home, U.S. Geological Survey, Website: <http://gldims.cr.usgs.gov/qfault/viewer.htm>, Dates accessed: June 18 and July 22, 2009.

**USGS, 2008.** National Seismic Hazard Maps – 2008, U.S. Geological Survey, Website: <http://gldims.cr.usgs.gov/nshmp2008/viewer.htm>, Dates accessed: June 25 and July 22, 2009.

**Weary, D. J., 2005.** An Appalachian Regional Karst Map and Progress Towards a New National Karst Map, U.S. Geological Survey, Website: <http://pubs.usgs.gov/sir/2005/5160/PDF/sir2005-5160part3A.pdf>, Date accessed: June 22, 2009.

**HYDROLOGY (HY)**



**HY-01: Provide a SME to address the following issues with ground water and surface water impacts of construction.**

**Address:**

**A. Effects to Unnamed tributaries 1 & 5 from stormwater runoff and sedimentation controls.**

**B. Use of any barriers to groundwater flow such as slurry walls during construction and their effects, combined with dewatering, on surface water flow and wetlands.**

**C. Details of construction and operation of infiltration beds and effects on surface water bodies and wetlands.**

**Audit Disposition:** Upon review of this NFI response, the NRC requested that additional information regarding the treatment of the slurry wall be provided in the ER.

**Response:** An ER update has been prepared describing the proposed post-construction management of the slurry wall to allow for a return to normal subsurface hydrologic conditions following completion of ESWEMS pond construction.

**COLA Impact:** ER Section 4.2.1.5 and 4.2.2.3 will be revised as shown below, in a future COLA revision.

#### **4.2.1.5 Construction Impacts**

In order to excavate down to the bedrock surface and construct the subgrade for the ESWEMS Pond and Pumphouse, the sand and gravel aquifer needs first to be dewatered in the entire excavation area in order to achieve stable sidewalls and to minimize the area that is disturbed during excavation. Prior to excavation a slurry wall will be constructed around the excavation area. This step will be performed in order to minimize the amount of groundwater that flows into the excavation and minimize the potential impacts to the shallow glacial aquifer during construction activities. The relatively large saturated thickness of the outwash aquifer in this area (approximately 20 ft (6 m)) will likely require an active system of dewatering wells to keep the excavation dry during construction. Once construction of the subgrade nears completion, the dewatering wells will be turned off and converted to monitoring wells, if deemed necessary. Otherwise, they will be pressure-grouted shut and abandoned in accordance with PADEP well abandonment requirements. The slurry wall will be rendered non-functional after completion of construction.

#### **4.2.2.3 Physical Effects of Hydrologic Alterations**

As stated previously, the slurry wall installed during construction of the ESWEMS Retention Pond will be rendered non-functional after construction is completed. As a result, the The locally lowered glacial outwash aquifer water level would be expected to eventually recover after the dewatering and other subsurface construction activities are complete. Although it would be altered by buildings and paved areas, rainwater will still be allowed to infiltrate through the infiltration beds, which will be designed to maintain post-construction hydrologic conditions as close to preconstruction conditions as reasonably achievable, and in other plant areas with nonimpervious surfaces to recharge the aquifer.

**LAND USE (LU)**

**LU-04: Discuss applicable zoning and land use restrictions including permitted uses in each zone and the need to rezone the west parcel to heavy industrial, per ER Table 1.3-1.**

**Audit Disposition:** Upon review of this NFI response the NRC requested that an update be made to ER Table 1.3-1, Federal, State, and Local Authorizations.

**Response:** An update to ER Table 1.3-1 has been prepared to reflect updated information on regulatory approvals for BBNPP.

**COLA Impact:** ER Section 1.3, Table 1.3-1 will be revised as shown below, in a future COLA revision.

**Table 1.3-1— Federal, State and Local Authorizations**

<b>Agency</b>	<b>Authority</b>	<b>Requirement</b>	<b>Activity Covered</b>	<b>Date</b>
Salem Township	<del>Zoning Ordinance Section 1302</del> <u>Zoning Ordinance Section 1302, Ordinance No. 2011-03</u>	Zoning Permit	Need to rezone property for heavy industrial use	<del>January 2011</del> <u>October 2010</u>
<u>Salem Township</u>	<u>Zoning Ordinance Section 1302, Ordinance No. 2011-03</u>	<u>Conditional Use Approval, Lot Subdivision Approval</u>	<u>Conditional Use Approval for Electric Power Generating Plants</u>	<u>March 2012</u>
Salem Township/ Luzerne County/ PADEP	Subdivision and Land Development Ordinance Section 501	<del>Approval for Site Development</del> <u>Plan Preliminary and Final Land Development Plan Approval</u>	Construction of buildings and other structures	<del>May 2011</del> <u>September 2014</u>

**SITE AND TECHNICAL OVERVIEW (STO)**

**STO-04: Discuss how/when procedures will be developed regarding the applicant's commitments to measures and controls to limit potential impacts during site preparation, operations, and construction, including the following:**

**A. Identification of the impact.**

**B. The planned control program, including monitoring.**

**C. the control procedures for following areas:**

1. noise,
2. erosion,
3. effluents and waste,
4. surface water impacts,
5. groundwater impacts,
6. terrestrial ecosystem impacts,
7. aquatic ecosystem impacts,
8. socioeconomic impacts,
9. cooling tower drift impacts,
10. other site specific impacts

**STO-05: Discuss procedures for reporting and keeping records of environmental data.**

**Audit Disposition:** Upon review of these NFI responses, the NRC requested additional text regarding BBNPP procedures and programs on reporting, record keeping, and monitoring programs be included within the ER. Also, NRC noted that Socioeconomic Impacts could be removed in the STO-04 part C. listing.

**Response:** An ER update has been prepared to ensure the ER is consistent with the STO-04 and STO-05 responses and associated discussion between PPL and NRC at the Environmental Audit.

**COLA Impact:** ER Sections 4.6, 5.10.1, and 6.7 will be revised as shown below, in a future COLA revision:

#### **4.6 MEASURES AND CONTROLS TO LIMIT ADVERSE IMPACTS DURING CONSTRUCTION**

In general, potential impacts will be mitigated through compliance with applicable federal, Pennsylvania, and local laws and regulations enacted to prevent or minimize adverse environmental impacts that may be encountered such as air emissions, noise, storm water pollutants, and spills. Principal among these will be the National Pollutant Discharge Elimination System (NPDES) Individual Permit for Discharge of Stormwater Associated with Construction Activities and the Corps of Engineers 404 Permit to minimize sediment erosion and protect water quality. The Site Resource Management Plan will address affected site lands and waters. Also included will be required plans such as a Storm Water Pollution Prevention Plan (SWPPP) and associated Best Management Practices (BMPs) as well as administrative actions such as a Traffic Management Plan.

Programs / procedures for BBNPP will be based on those already established for SSES, including relevant reporting and record keeping requirements.

Table 4.6-1 lists the potential impacts associated with the construction activities described in Section 4.1 through Section 4.5 and Section 4.7. The table identifies, from the categories listed

**TERRESTRIAL ECOLOGY (TE)**

**TE-31: Provide an SME to discuss the basis for the statement that "there should be no impact from operation and maintenance of transmission line corridors to Important Species."**

**Audit Disposition:** Upon review of this NFI response, NRC requested that an update to the language in the ER be made regarding PPL's management methods for transmission line rights of way as related to reduction of impacts to avian species.

**Response:** An ER update has been prepared to ensure the ER is consistent with the information in NFI TE-31 response.

**COLA Impact:** ER Sections 4.3.1 and 10.1.3 will be revised as shown below, in a future COLA revision.

#### **4.3.1 Terrestrial Ecosystems**

Approximately 33 ac (13.4 ha) of forested land would be permanently converted to accommodate transmission lines and vehicle, rail and utility pipeline bridge corridors. These areas include both forested upland and forested wetland areas that will require forest clearing for transmission line rights-of-way and bridges. Transmission line corridors and areas under and adjacent to bridges will be permanently maintained as scrub/shrub habitats following PPL vegetative management programs. BBNPP plans to follow the Edison Electric Institute's (EEI) Suggested Practices for Avian Protection on Power Lines (APLIC, 2006) and the Avian Protection Plan Guidelines (USFWS, 2005) developed by EEI in conjunction with USFWS in on-site transmission rights-of-way. These policies are considered protective of all regulated avian species, including migratory birds.

#### **10.1.3 Summary of Unavoidable Adverse Environmental Impacts from Construction and Operations**

During construction, land disturbance will be contained within an area of approximately 687 ac (278 ha). Post-construction, 357.4 ac (144.6 ha) will be permanently committed to the BBNPP plant and supporting infrastructure. BBNPP will be located near the existing Susquehanna Steam Electric Station (SSES) Units 1 and 2. A new access road will be constructed to support BBNPP construction and will remain in place to support operations. Temporary construction and laydown areas will be restored following construction to reduce the size of the footprint affected during operations. BBNPP will require the construction of a new substation, transmission towers and lines to connect BBNPP to the existing SSES switchyard and a planned 500 kV switchyard to the north of the site. All new transmission facilities and lines will be located within the site property. PPL will maintain 18 approximately 800 ft transmission lines in the estimated 600 ft wide right-of-way that crosses the "teardrop" wetland and extends from the power block to the breakers located to the east, just north of the ESWEMS pond. BBNPP's responsibility with regard to transmission corridor maintenance ends at the east end of these lines. The use of existing offsite transmission right-of-ways for the BBNPP will eliminate the need for construction of new corridors, further limiting the plant's disturbance of land. In addition, no modifications to existing roads associated with off-site transmission corridors are anticipated. In a summary, land impacts will be SMALL.

below, which adverse impact may occur as a result of construction activities and its relative significance rating (i.e., [S]mall, [M]oderate, or [L]arge) following implementation of associated measures and controls. Table 4.6-1 also includes a brief description, by ER Section, of each potential impact and the measures and controls to mitigate the impact, if needed.

### 5.10.1 Impacts during Operation

In general, potential impacts will be mitigated through compliance with applicable Federal, Pennsylvania, and local laws and regulations enacted to prevent or minimize adverse environmental impacts that may be encountered such as air emissions, noise, storm water pollutants, and spills. Principal among these will be the NPDES Permit to protect water quality and compliance with 10 CFR Parts 50, Appendix I, (CFR, 2007a), 10 CFR 51.52(b) (CFR, 2007b) and 40 CFR Part 190 (CFR, 2007c) to minimize radiation. Also included will be required plans such as a Post-Construction Stormwater Management (PCSM) Plan and associated Best Management Practices (BMPs) to minimize sediment erosion as well as administrative actions such as a site Resource Management Plan. ER Section 1.3 lists the various applicable Federal, Pennsylvania, and local laws, regulations, and permits.

Programs / procedures for BBNPP will be based on those already established for SSES, including relevant reporting and record keeping requirements.

Table 5.10-1 lists the potential impacts associated with the operation of BBNPP described in Sections 5.1 through 5.9 as well as Sections 5.11 and 5.12. The table identifies, from the categories listed below, which adverse impact may occur as a result of operation and its relative significance rating (i.e., [S]mall, [M]oderate, or [L]arge) following implementation of associated measures and controls. NUREG-1437, Supplement 35 (NRC, 2009) was also used to evaluate potential impacts. Table 5.10-1 also includes a brief description, by section, of each potential impact and the measures and controls to mitigate the impact, if needed.

## 6.7 SUMMARY OF MONITORING PROGRAMS

This section summarizes the monitoring environmental programs described in Chapter 6. The summary is divided into three sections:

- ◆ Pre-application monitoring
- ◆ Construction and Pre-Operational monitoring
- ◆ Operational monitoring

These monitoring programs provide the necessary measures and controls to limit potential environmental impacts. Each program will comply with its associated local, state or federal permit / license requirements. Programs / procedures for BBNPP will be based on those already established for SSES, including relevant reporting and record keeping requirements.

### 6.7.1 Preapplication Monitoring

Pre-Application monitoring for BBNPP will be fulfilled by the ongoing thermal, radiological, hydrological, meteorological, ecological, and chemical monitoring programs (Section 6.1 through Section 6.6) for the existing SSES Units 1 and 2. This represents over 30 years of monitoring for the site. Pre application ecological monitoring was provided through field studies. Summaries of the pre-application monitoring activities are included in Table 6.7-1 through Table 6.7-7.



#### **4.3.3 References**

**APLIC, 2006.** Suggested Practices for Avian Protection On Power Lines: The State of the Art in 2006, Edison Electric Institute, APLIC, and the California Energy Commission, 2006.

**USFWS, 2005.** Avian Protection Plan (APP) Guidelines, A Joint Document Prepared By The Edison Electric Institute's Avian Power Line Interaction Committee (APLIC) and U.S. Fish and Wildlife Service (USFWS), April, 2005.