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July 9, 2010

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

BELL BEND NUCLEAR POWER PLANT
RESPONSE TO ENVIRONMENTAL
INFORMATION NEEDS, FIRST SUBMITTAL
BNP-2010-167 Docket No. 52-039

The purpose of this letter is to respond to several Environmental Information Needs discussed at the June 15-17, 2010, Alternative Sites Audit. The enclosure provides responses to the following Information Needs discussed with NRC staff during the Alternative Sites Audit:

- AE-8
- AE-12
- AE-13
- AE-15
- AE-17
- AE-18
- AE-21
- AE-22
- AE-23
- AE-25
- AE-26
- AE-27
- ALT-4
- ALT-14
- ALT-19
- ALT-28
- LU-4
- NRHH-1
- NRHH-2
- SE-11

If you have any questions, please contact the undersigned at 570-802-8102.

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

Executed on July 9, 2010

Respectfully,

Rocco R. Sgarro

RRS/dw

Enclosure: Information Needs Items Responses, Alternative Sites Audit, June 15-17, 2010, Bell Bend Nuclear Power Plant, Luzerne County Pennsylvania

D102
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Enclosure

Information Needs Items Responses
Alternative Sites Audit
June 15-17, 2010
Bell Bend Nuclear Power Plant
Luzerne County Pennsylvania

AE-8

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss water consumption at the proposed or Alternative Sites. Would the water consumption by a new nuclear power plant reduce the "wet width" of the river downriver from the CWS system at each site? Would the natural flow variability in the river be interrupted by the water consumption or the measures used to offset the consumption? Would water quality, in particular dissolved oxygen concentration, be adversely affected by the consumption?

Response: Water consumption at any of the alternative sites, absent mitigation, will result in the diminution of flow in downstream reaches. This will reduce water depth and wet width to some degree. At any of the alternative sites, overall depth and wet width reduction is expected to be small. For the Bell Bend site, PPL has undertaken an aquatic study to determine potential effects on aquatic habitat and downstream dissolved oxygen conditions to facilitate a determination by the Susquehanna River Basin Commission (SRBC) of appropriate mitigation.

With a relatively constant withdrawal and consumptive use, the natural variability of flow in downstream reaches will essentially remain unchanged.

AE-12

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss the occurrence of commercial and recreational fisheries for each of the Alternative sites. The fisheries subsections for the Alternative Sites are essentially the same and do not recognize potential differences among sites. Are there any commercial fisheries or commercial bait collection activities in the Susquehanna River stretches near the CWS intake/discharge systems for any site?

Response: A subject matter expert will be available to discuss the occurrence of commercial and recreational fisheries for each of the alternative sites. No commercial fishery operations were identified at or nearby downstream of any of the alternative sites' cooling water system (CWS) intake/discharge sites. There is one commercial bait operation located in Luzerne County and a commercial fishery in Columbia County and in both cases they are not within, near, or nearby downstream of the alternative sites or their associated CWS systems.

Because the alternatives sites are within the same general part of the state, there are no appreciable differences in recreational fishing among the considered locations. All locations deal with the same suite of fish species from the standpoint of recreational harvest.

Data Source:

Pennsylvania Department of Agriculture, 2010. Pennsylvania Sports Fish Directory, Pennsylvania Aquaculture, Undated, Website: www.pda.state.pa.us, Date accessed: May 18, 2010.

AE-13

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss the State-ranked (S1, S2) insects for Luzerne County. Many (at least 24) of these have aquatic life stages (Odonata), but no ranked insects were discussed in the section. No insects were included in Table 9.3-3. Odonate larvae were collected from Bell Bend onsite streams in 2008 but were not identified to species. Provide an expert to discuss the conservation status of these species in Pennsylvania; the likelihood that the ranked species were not among those collected from Bell Bend streams and whether they are likely to occur in Bell Bend streams; and the likelihood that ranked insects could occur on the Humboldt site. {Note: lists for Montour and Northumberland do not include odonates, with one exception.}

Response: A subject matter expert will be available to discuss state-ranked insects for Luzerne County. A subject matter expert will also be available to discuss the conservation status of these species in Pennsylvania; the likelihood that the ranked species were or were not among those collected from Bell Bend streams and whether they are likely to occur in Bell Bend streams; and the likelihood that ranked insects could occur on the Humboldt site.

The Susquehanna Riverlands, a PPL-owned property east of the Bell Bend site, contains ranked odonate species. It is not possible to rule out the presence of ranked odonate species in the 2008 samples collected from the Bell Bend site (see AREVA, 2008).

The Invertebrate Appendix to the State Wildlife Action Plan (SWAP) identifies 89 odonate species of special concern:

- 8 odonate species of immediate concern (1 of these is extirpated in Pennsylvania)
- 22 odonate species of High Concern (1 of these is extirpated)
- 59 vulnerable odonate species.

Further, the SWAP acknowledges that it is only feasible to manage for these species (and other invertebrate species) by habitat-based management emphasizing maintenance of ecological conditions of sufficient size and with sufficient connectivity to sustain viable populations of multiple species of special concern. (Rawlins, 2007) The Susquehanna River is likely the primary corridor of connectivity for ranked odonate species that may occur on the Bell Bend site and that use river and stream habitats. However, none of these species of special concern are federal or state-listed threatened or endangered species and therefore are not included in ER Table 9.3-3.

The Humboldt site has a reasonable probability of having adult ranked odonate species. There is a known high quality natural area (Valmont Industrial Park) immediately east of the Humboldt site with multiple ranked odonate species known to reproduce there. There are two other known natural areas (Dreck Creek Watershed and Black Creek Flats) nearby to the east of the Humboldt Site that exhibit reproduction by ranked odonate species. Because of the substantial disturbance of the Humboldt site from past mining, it is less likely to contain suitable habitat for

larvae of ranked odonate species and use of this area by ranked odonate species would be more likely to be incidental.

The high quality habitats to the east of the Humboldt site are upstream and would not be impacted by development of the site.

Data Sources:

AREVA, 2008. A Field Survey of Fish and Aquatic Macroinvertebrates at the Proposed Bell Bend Nuclear Power Plant Site, Luzerne County, Pennsylvania.

PNHP, 2006. A Natural Areas Inventory Luzerne County, Pennsylvania: Update – 2006. Prepared for Luzerne County Board of Commissioners.

Rawlins, J.E. 2007. Pennsylvania's Comprehensive Wildlife Conservation Strategy, Invertebrates, Version 1.1, A report submitted to the Pennsylvania Game Commission and Pennsylvania Fish and Boat Commission, January 12, 2007.

AE-15

Information Needs Text: Provide a knowledgeable expert who can discuss the water withdrawal from/discharge into the West Branch Susquehanna River by the Montour coal plant and the potential combined ecological effects of locating the CWS intake near the Montour coal plant CWS system. What is the amount of water withdrawn/consumed by the Montour coal plant? Are entrainment/impingement data for the Montour coal plant available?

Response: The Montour Steam Electric Station withdraws water from the West Branch Susquehanna River near Watsontown. The Montour station's peak day withdrawal is approximately 34 MGD (53 cfs). The plant's maximum (peak day) consumptive use is 17 MGD (26 cfs). Water from the Montour plant cooling towers is discharged to the Chillisquaque Creek which combines with the West Branch approximately 10 miles below the Montour intake. This configuration may have to change in the future due to issues with respect to chloride concentrations. No entrainment or impingement studies have been performed at the Montour station. The intake is submerged and designed with less than 0.5 fps intake velocity.

Based on information at the USGS gage at Lewisburg (gage No. 01553500), the river level changes approximately 0.01 feet for each 15-30 cfs of river flow. Therefore, the combined effect of the consumptive use of both plants would be expected to result in a change in West Branch water level of less than one inch. Ecological effects of the combined consumptive use are, therefore, expected to be small.

A new plant at this location would withdraw and discharge water near Watsontown. Thermal discharge from a new plant would be minimized by the cooling towers and would further dissipate in the 12 mile discharge pipeline to the river. Thermal or other water quality effects would be expected to be small as the discharge would be approximately one percent of the period of record minimum river flow at the Lewisburg gage.

AE-17

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can verify whether Lake Chillisquaque would be affected by building and operating a new plant on the Montour site. How close would building activities be to the lake?

Response: A subject matter expert will be available who can verify whether Lake Chillisquaque will be affected by building and operating a new plant on the Montour site.

Lake Chillisquaque is a 165-acre reservoir built on the middle branch of Chillisquaque Creek by PPL in 1972. The lake was built as a backup cooling water supply for the existing Montour Steam Electric Station (PPL, 2010). As discussed in Section 9.3.2.2.3 of the Bell Bend Nuclear Power Plant (BBNPP) Environmental Report (ER), the main source of water for a new unit at the Montour site will be from the West Branch of the Susquehanna River. There are no plans to use the lake as a backup water supply for a new nuclear power plant at the Montour site.

Lake Chillisquaque is located approximately 0.4 miles north of the Montour site. Given the degree of separation of the site from the lake, it is not anticipated that there would be any direct impacts to the lake during the construction or operation of a new nuclear power plant at the Montour site.

Because the alternative sites evaluation was conducted at a reconnaissance-level, indirect impacts on Lake Chillisquaque associated with construction at the Montour site have not been determined at this time. Deep excavation construction at the Montour site is not anticipated to affect Lake Chillisquaque because the site is down gradient of the lake. In addition, based on review of the Pennsylvania Groundwater Information System (PaGWIS) for groundwater wells within a one-mile radius of the Montour site (Pennsylvania Department of Conservation and Natural Resources [PA DCNR], 2009a), depth to bedrock is estimated to likely be within 20 feet (6 meters) below ground surface. The uppermost-soils are formed from Quaternary-derived glacial till, which are generally recognized as competent. According to the PA DCNR, sinkholes are uncommon in Montour County and, if present, are limited in aerial extent, and no sinkholes have occurred in the counties surrounding the Montour Site (PA DCNR, 2009b).

Proper mitigation and management methods will be implemented during construction to avoid the potential for indirect water quantity and quality effects to surface water and groundwater. Best management practices, including dust, erosion, grading, and sediment control measures; stormwater control measures; and a spill prevention plan will be in effect during construction.

Data Sources:

PA DCNR, 2009a. PaGWIS List of Selected Wells, Pennsylvania Department of Conservation and Natural Resources, PA Topographic & Geologic Survey, Pennsylvania Groundwater Information System, Website: http://www.dcnr.state.pa.us/topogeo/groundwater/PaGWIS/SelectRecords.asp?Page=&UserType=, Date accessed: July 23, 2009.

PA DCNR, 2009b. Sinkhole Inventory, Montour, Lycoming, Columbia, and Northumberland Counties, Pennsylvania Department of Conservation and Natural Resources, Website: http://www.dcnr.state.pa.us/topogeo/hazards/sinkhole/default.asp, Date accessed: July 23,

2009; amended with personal communication with Mr. Kochanov, PA DCNR, dated June 9, 2010.

PPL Corporation, 2010. Lake Chillisquaque, Website: http://www.pplweb.com/montour+preserve/things+to+do/lake+chillisquaque.htm, Date accessed: May 27, 2010.

AE-18

ER Section 9.3

Information Needs Text: Provide an expert who can discuss the conceptual route for a new transmission line to the proposed Catawissa Substation (page 39 of Section 9.3) and the potential effects on aquatic resources. Catawissa is on the south shore of the Susquehanna River. Would the route cross Mahoning Creek (an approved trout stream stocked by the state); would a new crossing need to be built? Would a new Susquehanna River crossing for the transmission line need to be built? Provide an expert to describe the potential effects on each waterbody. Catawissa is in Columbia County; would building the transmission line affect any Federally listed or Pennsylvania listed or ranked species or other aquatic resources in the county?

Response: A subject matter expert will be available who can discuss the conceptual route for a new transmission line to the proposed Catawissa Substation (page 39 of ER Section 9.3) and the potential effects on aquatic resources. Although an engineering design of the transmission line has not been performed, a conceptual route for the transmission line from the Montour site would extend south from the southern boundary of the Montour site for approximately 0.7 mi (1.1 km), where 15.5 mile (mi) (24.9 kilometer [km]) of existing 230-kilovolt (kV) transmission rights-of-way (ROW) would be expanded, then travel southeast to reach the Catawissa Substation. As discussed in the Environmental Report (ER) Section 9.3.2.2.10, to reach the proposed Catawissa Substation, a new 0.7 mi (1.1 km) transmission line ROW would need to be constructed to connect with the existing 230-kV ROW.

The existing 230-kV transmission line ROW does not currently cross Mahoning Creek and the expansion of this ROW will not result in the need to cross Mahoning Creek. In addition, the existing 230-kV transmission line ROW currently crosses the Susquehanna River north of the proposed Catawissa Substation location. Any expansion of this ROW crossing over the Susquehanna River would continue to be aerial crossings and would be designed to avoid or minimize any direct or long-term impacts to the water quality of either creek.

A subject matter expert will also be available who can describe the potential effects on each waterbody. Impacts to new or significantly widened transmission corridors are expected to be moderate because of the commitment of additional previously undeveloped land and construction impacts (e.g., clearing) associated with the transmission system upgrades on aquatic resources. Utilization of existing transmission corridor ROW could present opportunities to minimize adverse impacts. Specific monitoring requirements for upgrades to transmission lines and corridors would be designed to meet conditions of applicable federal, state, and local permits, to minimize adverse environmental impacts, and to ensure that aquatic habitat and organisms are protected against potential construction related impacts.

The conceptual transmission line route does not cross any significant natural communities in Columbia County, except the Lower Susquehanna River, where two state ranked aquatic species are known to occur. The conceptual route avoids the sensitive Catawissa Bluffs and Ruppert Bluffs along the Susquehanna River. Because the Susquehanna River Crossing would be an aerial crossing, no impacts to aquatic species in the Susquehanna River would be expected. No disturbance to the river or river bottom would occur.

Data Source:

The Nature Conservancy, 2004. Columbia County Natural Areas Inventory 2004, Prepared by the Pennsylvania Science Office of The Nature Conservancy, Submitted to the Columbia County Planning Commission.

AE-21

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss the conceptual route for the CWS pipeline for the Humboldt Site and the potential effects on aquatic resources. Discuss the approximate location where the pipe would intersect the Susquehanna River. It appears that this would be in Columbia County. Would building the system affect any Federally listed or Pennsylvania listed or ranked species in Columbia County?

Also, Black Creek is a tributary of Nescopeck Creek, which is degraded by abandoned mine drainage (AMD). Discuss the implications of locating the CWS intake/discharge for Humboldt within the potential plume from Nescopeck Creek.

Response: A subject matter expert will be available to discuss the conceptual route for the cooling water system (CWS) pipeline for the Humboldt site and the potential effects on aquatic resources. As noted by the NRC, the proposed route and CWS intake/discharge location are conceptual and the exact route/location could be varied to avoid or minimize potential environmental impacts. It is expected that the Humboldt site CWS intake/discharge location would be just inside Columbia County, immediately west of the Borough of Nescopeck. This portion of the Susquehanna River is within an urbanized area (between the Boroughs of Berwick [west bank] and Nescopeck [east bank]). Because the river is subject to local urban impacts to water quality and substrate and also due to potential acid mine drainage (AMD) inputs from the Nescopeck Creek drainage (Mendinsky and Dempsey, 2004), no impacts to aquatic resources would be expected from the CWS intake/discharge. Also, for the reasons stated above, no impacts to protected species in Columbia County would be expected.

For the alternative site evaluation discussed in ER Section 9.3.2.3.5 (Aquatic Ecology and Sensitive Species [Humboldt site]), the analysis focused on the Federal and state-listed threatened and endangered (T&E) species[1] that may occur at the alternative site, as the proposed CWS pipeline route and intake/discharge location were only conceptual and involved a degree of uncertainty. Because the route could be adjusted to avoid or minimize potential environmental impacts, a detailed analysis of the conceptual route was not conducted. The alternative site evaluation did not address Pennsylvania ranked species that were not also listed species (see ER Table 9.3-8 for the alternative site evaluation criteria).

Should this site be selected as a potential site for a new nuclear power plant, additional water quality analyses above what is already available in the Susquehanna River in the vicinity of the potential CWS intake/discharge should be conducted to compare the chemical requirements of the facility cooling water with the water from the river. There could be incompatibility issues that would require treatment of raw water prior to use as cooling water as a result of a potential AMD-influenced plume from Nescopeck Creek.

Additionally, the discharge water chemistry would be compared with the river water to determine whether any effects from loss of volume during cooling could result in changes in the river following discharge. Should issues be found, water used for cooling would be treated appropriately to meet water quality standards and permit requirements prior to discharge.

[1] Aquatic plant species are discussed in ER Section 9.3.2.3.4 (Terrestrial Ecology and Sensitive Species).

Data Source:

Mendinsky, J. J., and Dempsey, B. A., 2004. *Effects of Pollutant Loading on Streams in the Hazleton PA Area*, Paper presented at the 2004 National Meeting of the American Society of Mining and Reclamation and The 25th West Virginia Surface Mine Drainage Task Force, April 18-24, 2004. Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502.

AE-22

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can identify the existing substation that is mentioned as the terminus of the conceptual transmission line route described on page 9-54. Would the route cross sensitive parts of Nescopeck Creek?

Response: A subject matter expert will be available to identify the existing substation that is mentioned as the terminus of the conceptual transmission line route from the Humboldt site described on page 9-54. This substation is the Susquehanna Substation owned by PPL Electric Utilities Corporation.

The conceptual transmission corridor route crosses a tributary of Little Nescopeck Creek at one location and crosses a tributary of Black Creek at another location. These segments of the Little Nescopeck Creek and Black Creek are affected by metals pollution from acid mine drainage (AMD) (Pennsylvania Department of Environmental Protection [PADEP], 2005). Transmission corridor crossings over water would be aerial crossings and would be designed to avoid or minimize any direct or long-term impacts to the water quality of either creek.

Data Source:

PADEP, 2005. Black Creek, Little Nescopeck Creek, and UNT Little Nescopeck Creek Watershed TMDL, Final, Luzerne County, for Acid Mine Drainage Affected Segments. Prepared by Pennsylvania Department of Environmental Protection, May 2, 2005.

AE-23

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss the conceptual location of the CWS intake/discharge system for a new nuclear plant at Seedco. The location is described as being at about where Shamokin Creek discharges into the Susquehanna River (below Shamokin Dam). The Sunbury Steam Electric Station is located on the Susquehanna River on the opposite shore and slightly downriver from Shamokin Creek, which is affected by AMD. The plant uses water from the Susquehanna River for cooling. Provide an expert to discuss the water withdrawal from/discharge into the Susquehanna River by the Sunbury coal plant and the potential ecological effects of the combined withdrawal/discharges of the two plants on the River, especially at low water periods. In particular, would the combined withdrawals affect important species (e.g., smallmouth bass) in the area? The USGS monitored smallmouth bass about 1.25 mi downriver from the area and found incidence of Flavobacterium infections in fish there in 2008. The infection is often attributed to stress from low dissolved oxygen conditions. Would the combined plant activities contribute to low dissolved oxygen? Would an intake/discharge system in the Susquehanna River near the mouth of Shamokin Creek affect AMD conditions in the river? Are entrainment/impingement data for the Sunbury Steam Electric Station available?

Response: A subject matter expert will be available to discuss the water withdrawal from/discharge into the Susquehanna River by the Sunbury coal plant and the potential ecological effects of the combined withdrawal/discharges of the two plants on the Susquehanna River, especially at low water periods. A subject matter expert will also be available to discuss the water withdrawal from/discharge into the Susquehanna River by the Sunbury coal plant and the potential ecological effects of the combined withdrawal/discharges of the two plants on the River

The Sunbury coal plant utilizes once through cooling. Maximum plant water withdrawal from the Susquehanna River is approximately 330 MGD on a 30-day average basis. The plant maximum consumptive use, on a 30-day average basis, is approximately 3.4 MGD. Intake impingement/entrainment data is not readily available for the Sunbury plant.

The intake and discharge for a new plant would be located on the east side of the river just upstream of the Sunbury plant and Shamokin Creek. The river near the Sunbury plant is segregated by a series of islands. Information on the thermal discharge characteristics of the Sunbury plant is not available. However, since the Sunbury plant uses once-through cooling the thermal load to the river would be expected to be larger than at alternative site locations. The discharge from a new plant at this location would be regulated to comply with state water quality standards under an NPDES permit. Thermal discharge from a new plant would be minimized by the cooling towers and would further dissipate in the 24 mile discharge pipeline to the river. The thermal discharge would be less than one percent of the period of record minimum river flow at the Sunbury gage (USGS gage 0155400).The discharge would also be regulated to comply with state water quality standards under an NPDES permit. Therefore, on an incremental basis, thermal or other water quality effects would be expected to be small, even under extreme low flow conditions.

Flavobacterium infections among young of year (YOY) small mouth bass have been observed at numerous locations along the Susquehanna River, particularly in 2005, and at fewer locations

in subsequent years. Scientists investigating the infections have hypothesized that low dissolved oxygen levels might be a trigger or at least a correlate of these infections.

Dissolved oxygen should not be as great a limiting factor in this areas as it might be in other reaches of river because of the dam is up (inflated) during critical hot weather months. Water falling over the dam is mixed with atmospheric oxygen in the spillway, which should raise D.O. levels easily to those 2 of 3 required by fish. While there might be lower D.O. levels in some backwater areas, particularly near the Shamokin Creek mouth, the oxygen levels is the main channel flows should be more than sufficient for fish.

AMD loadings to the Susquehanna River from the Shamokin Creek are generally small in relation to total Susquehanna mainstem flows at this location. The consumptive use of water associated with a new plant at this location would not be expected to have a measurable impact on mainstem water quality as affected by the Shamokin Creek AMD discharge.

AE-25

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss the onsite aquatic resources for Seedco. Figure 9.3-33 shows two small ponds on the site; Table 9.3-13 mentions only one pond onsite. How many ponds are on the site? Are the ponds impaired by AMD or other pollution sources? The ER text (Section 9.3, Page 63) says "Aquatic habitat types present on and in the area of the Seedco site include streams, rivers, lakes, and ponds." Identify the lakes on or near the site.

Response: A subject matter expert will be available to discuss the onsite aquatic resources for the Seedco site.

There are two ponds on the Seedco site (0.2 acre and 0.5 acre in size). For the alternative site evaluation described in ER Section 9.3.2.4.5 and ER Table 9.3-13, pond habitat was discussed collectively. All ponds occurring on the site were included in the evaluation.

Open water bodies and emergent wetlands on the Seedco site are likely impacted by AMD. The surface water features are concentrated within the portion of the site where historic coal mining occurred. No other pollution sources are evident on the site or from offsite areas that may drain to the site.

There are five man-made impoundments (lakes) near the Seedco site, ranging in size from 5.3 acres to 168 acres. These include two unnamed impoundments, the Number 1 Reservoir, the Number 4 Reservoir, and the Bear Gap Dam Number 6 Reservoir.

AE-26

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss the condition of Shamokin Creek and Quaker Run at the Seedco site. The Seedco site is bounded by two key AMDs into Shamokin Creek (Excelsior Mine Strip Pit Overflow Discharge (SR12) upstream is one of the largest in the watershed; Corbin Water Level Drift Discharge (SR15) along western border of site). Both may be candidates for restoration. Would building and operating the proposed plant exacerbate conditions in the creek or be affected by conditions in the creek? Would the proposed plant interfere with restoration efforts in this section of the creek? Quaker Run, which abuts the northern boundary of the site, is adversely affected by AMD. Would building and operating a plant at Seedco affect (or be affected by) Quaker Run?

Response: A subject matter expert will be available discuss the condition of Shamokin Creek and Quaker Run at the Seedco site.

The conceptual route for the new transmission line for the Seedco site would cross a tributary of Shamokin Creek to the east of the site. In addition, the conceptual route for the cooling water pipelines would follow Shamokin Creek west of the site to the Susquehanna River and cross the creek a number of times. A very small portion (approximately 120 linear feet) of Quaker Run is within the very northern edge of the Seedco site. Active AMD treatment systems/areas along both the creek and run would be avoided. In addition, water use impacts to the creek and run would be avoided or minimized during construction and operation of a new nuclear plant by implementing mitigation methods and best management practices (BMPs), including erosion, grading, and sediment control measures; stormwater control measures; preparation and implementation of a spill prevention plan; and observance of federal, state, regional, tribal, and local regulations pertaining to nonpoint source discharges. Therefore, construction and operation of a new nuclear power plant are not expected to interfere with restoration efforts or exacerbate conditions in Shamokin Creek or Quaker Run, or be affected by conditions in the creek and run.

Data Source:

USGS, 2004. Effects of Abandoned Coal-Mine Drainage on Streamflow and Water Quality in the Shamokin Creek Basin, Northumberland and Columbia Counties, Pennsylvania, 1999-2001. U.S. Department of the Interior, Water-Resources Investigations Report 03-4311, In cooperation with the Northumberland County Conservation District, Bucknell University and the Pennsylvania Department of Environmental Protection. New Cumberland, Pennsylvania 2004.

AE-27

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss the conceptual route for the transmission line from the Seedco site. The ER text (Section 9.3, Pages 68-69) describes a conceptual route, but does not mention a specific location. The route seems to lead towards the proposed Catawissa Substation that is mentioned for the Montour site. Is this the possible end point of the transmission line? Regardless, the route must go through Columbia County. Would building the transmission line affect any Federally listed or Pennsylvania listed or ranked species or other aquatic resources in Columbia County? It appears that a conceptual route would cross two branches of Roaring Creek and at least one of its tributaries (Mugser Run). Describe the potential effects on these regulated or stocked trout streams.

Response: A subject matter expert will be available to discuss the conceptual route for the transmission line from the Seedco site. As noted by the NRC, the proposed transmission line route is conceptual and the exact route of the transmission line could be varied to avoid or minimize potential environmental impacts. The conceptual route for the transmission line would require a new right-of-way (ROW) from the eastern boundary of the Seedco site to extend east-northeast for approximately 9.0 mi (14.5 km), where it would it meet an existing 230-kV transmission line ROW. The existing 230-kV transmission ROW running north-northwest from that location would be expanded for 14.6 mi (23.5 km) to reach the closest potential substation location on a 500-kV transmission line, the Catawissa substation.

For the alternative site evaluation discussed in ER Section 9.3.2.4.5 (Aquatic Ecology and Sensitive Species [Seedco site]), the analysis focused on Federal and state-listed threatened and endangered (T&E) species[2] that may occur at the alternative site, as the proposed transmission route was only conceptual and involved a degree of uncertainty. Because the route could be adjusted to avoid environmental impacts, a detailed analysis of the conceptual route was not conducted. The alternative site evaluation did not address Pennsylvania ranked species that were not also listed species (see ER Table 9.3-8 for the alternative site evaluation criteria).

The transmission route would be adjacent to an existing transmission ROW across the trout streams, which would minimize the potential for impacts to the streams. The impact to the South Branch Roaring Creek, one of the trout streams that would be crossed, would be further minimized because the stream is impounded just downstream of where the crossing would be located. Additional canopy removal along this reach could result in locally elevated temperatures, which potentially could result in a localized adverse impact on trout.

Mugser Run is not stocked where the crossing would occur, but is designated as a Class A wild natural reproduction trout stream along this reach (PFBC, 2010). The stocked portion of Mugser Run is well downstream of the crossing. Additional canopy removal along this reach could result in locally elevated temperatures, which potentially could result in a localized adverse impact on trout.

Roaring Creek is a stocked trout stream where the crossing would occur (PFBC, 2010). Additional canopy removal along this reach could result in locally elevated temperatures, which potentially could result in a localized adverse impact on trout.

[2] Aquatic plant species are discussed in ER Section 9.3.2.2.4 (Terrestrial Ecology and Sensitive Species).

Best management practices (BMPs), including dust, erosion, grading, sediment control measures and stormwater control measures, would be implemented to minimize indirect impacts to the streams and aquatic species. With the implementation of appropriate BMPs and because other impacts associated with the transmission line crossing of aquatic habitats (e.g., turbidity, nutrient loading, sediment disturbance) would be temporary, no substantial impacts to aquatic resources, including trout and T&E species, would be expected.

In addition to the three stocked trout streams, the conceptual route would cross the Wyoming State Forest in the South Branch Roaring Creek Watershed, which is considered a significant natural area (The Nature Conservancy, 2004). The additional clearing within the South Branch Roaring Creek Watershed would be alongside the already cleared ROW, which would minimize the impact. However, the significant natural resource value of this area largely derives from the generally unbroken forested area, so the clearing could have a negative impact on the natural resources of the watershed. No T&E species are known from this watershed, so no impacts to protected species would be anticipated in this area.

Data Sources:

PFBC, 2010. PFBC County Guide, Website: http://www.fish.state.pa.us/county.htm, Date accessed: May 21, 2010.

The Nature Conservancy, 2004. Columbia County Natural Areas Inventory 2004, Prepared by the Pennsylvania Science Office of The Nature Conservancy, Submitted to the Columbia County Planning Commission.

ALT-4

ER Section 9.3

Information Needs Text: Provide an expert who can summarize the steps used by the Delphi panel in evaluating sites, including the scoring, weighting, etc.

Response: A subject matter expert will be available to summarize the steps used by the Delphi panel in evaluating sites, including the scoring, weighting, etc.

As stated in Section 6 and Appendix D of the Bell Bend Nuclear Power Plant Alternative Site Evaluation Report (ASER), a nine member Delphi panel was selected based on their knowledge, skills, and specific areas of expertise to evaluate Potential Sites.

As stated in ASER Section 6, the Delphi panel developed evaluation criteria based on the major criteria categories defined in NUREG-1555 augmented with sub-criteria developed by the panel. After developing and discussing the criteria, the Delphi panel independently assigned a weight (by secret ballot) to each criterion to indicate the relative importance of that criterion to the site evaluation process, with the total of all assigned weights equal to 100. The Delphi panel moderator then calculated the average and standard deviation for each criterion. For criterion with a standard deviation greater than 1, the team members responsible for the low and high scores discussed their reasoning for assigning the outlying scores. Additional secret ballots for assigning weights to each criteria and discussion of outlying scores were repeated as necessary until the standard deviations of the averaged criterion weights converged to less than 1.

The weights assigned by each panel member were averaged and then rounded to the nearest whole number, with the exception of Criteria 5 and 14, as listed on page D-1 of the ASER. The weights for Criteria 5 and 14 were assigned a value of 5.5 in order for the assigned weights of all the criteria to total to 100.

The Delphi panel then developed metrics and scoring basis or rationale for each criterion. Using the metrics for each criterion, a team of subject matter experts (SME) collected and evaluated reconnaissance-level data for each of the Candidate Sites and assigned a score (ranging from 1 [the lowest] to 5 [the highest]) to each site for each criterion/sub-criterion using the scoring basis developed by the Delphi panel. After the data had been collected and evaluated and the sites scored by the SMEs, the Delphi panel discussed and reached consensus on whether each criterion would be scored objectively based on the SME scoring or whether the Delphi panel wished to subjectively score the criterion/sub-criterion. All criteria the panel agreed to score objectively were automatically assigned the SME scores. For the remaining criteria, reconnaissance-level data collected by the SMEs for each site were discussed with the Delphi panel and then the panel, by secret ballot, subjectively scored each criterion/sub-criterion. For the subjectively scored criteria, the individual scores from the Delphi panel members were averaged and used in lieu of the objective scores from the SME.

ALT-14

ER Section 9.3

Information Needs Text: Provide an expert who can discuss Appendix A, page A-10, Criterion 11a. Please provide an expert to explain/clarify why the scoring basis is only evaluating "spent" fuel when the title says Nuclear Fuel and Wastes. Does the criterion include new fuel or is the title incorrect and only spent fuel is intended? If the latter, why is fresh fuel not a consideration?

Response: A subject matter expert will be available to discuss Criterion 11a on page A-10 of Appendix A of the Bell Bend Nuclear Power Plant Alternative Site Evaluation Report (ASER).

As noted, the scoring basis did only include spent fuel and radioactive wastes for the alternative sites. Criterion 11a scoring is based on the potential radiological impact of radioactive material transportation. The transportation of new fuel was previously evaluated and found to contribute very little radiological impact when compared to spent fuel and radioactive waste (orders of magnitude lower). Therefore, new fuel and associated routes to the site were not included in the scoring basis/evaluation. The omission is based on the relatively (compared to modeled spent fuel and radioactive waste) low radiological impact associated with the operational transport of modeled low dose rate packages (See Reference ER 5.11 for package dose rates and associated impacts).

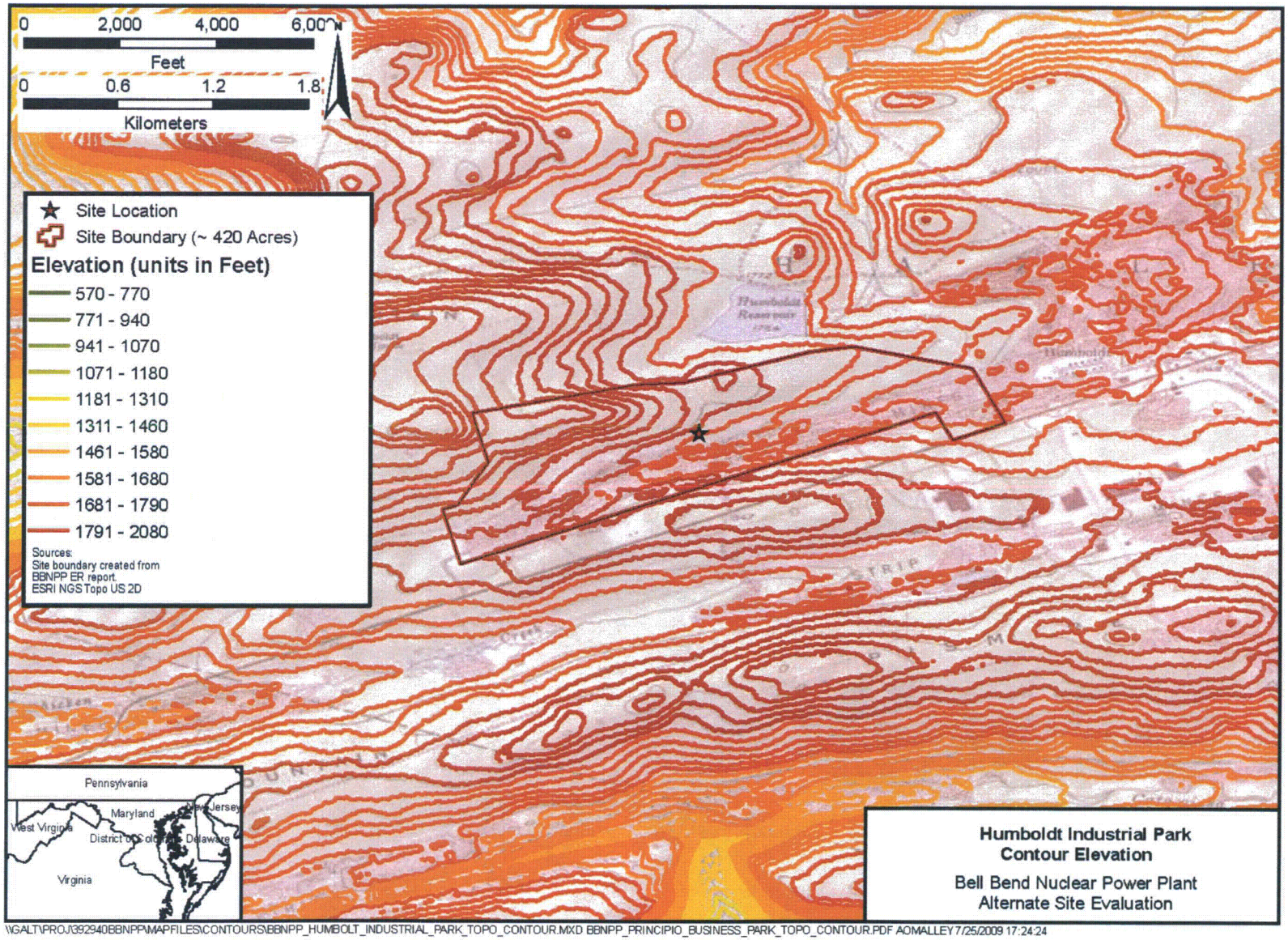
ALT-19

ER Section 9.3

Information Needs Text: Provide an expert who can discuss Page C-1, Criterion 1e. Because Bell Bend, with greater than 130 ft of relief, scored 3.00 (page C-17) due to limited cut and fill (which is not included in the scoring rationale, p. A-1), please address the relative amount of cut and fill anticipated at Humboldt to warrant a score of 1.44 with a relief of >100 ft.

Response: A subject matter expert will be available to discuss Criterion 1e on page C-1 of the Bell Bend Nuclear Power Plant Alternative Site Evaluation Report (ASER). As noted by the NRC, "limited cut and fill" is not included in the scoring rationale for Criterion 1e. However, as provided in Appendix A of the ASER, Criterion 1e is a criterion that was subjectively scored by the Delphi panel. When the Delphi panel scored Criterion 1e, the panel felt that a limited amount of cut and fill should be a mitigating consideration for any site with greater than 100 feet of relief that did not have steep relief across the entire site. For example, although the Bell Bend site has 130 ft of relief across the site (see Appendix C of the ASER), the area within the approximately 420-acre site boundary where significant cut and fill will occur is limited. As stated in Appendix C and as shown in the attached figure of the topographic contour lines at the Humboldt site, the Humboldt site has approximately 230 ft (70 meters) of relief across the site with steep topography spanning the site and requiring a more significant amount of cut and fill. As a result, the Delphi panel subjectively scored Criterion 1e as 1.44 for the Humboldt site vs. 3.00 for the Bell Bend site.

Humboldt Site Topography



ALT-28

ER Section 9.3

Information Needs Text: Provide an expert who can discuss increased evaporation caused by thermal effects of blowdown discharge from Bell Bend, as requested by the SRBC.

Response: The blowdown heat rejection is the driver for additional in-stream evaporation. The attachment summarizes the calculation of this additional evaporation, using methods previously approved by the SRBC. The maximum in-stream evaporation is expected to be less than 0.1 MGD. PPL Bell Bend has requested that the SRBC approve a consumptive use of up to a maximum of 31 MGD. This amount is more than adequate to cover a conservatively estimated in-plant peak-day consumptive use of 28 MGD, in-stream evaporation, and an approximate 10 percent contingency to account for metering error.

Attachment - Methodology and Calculation of In-River Evaporation at Bell Bend

Methodology

The owners of electric generating facilities in the Delaware and Susquehanna river basins have estimated in-stream evaporation induced by thermal discharge using a method developed in the 1960s by Edinger and Geyer. [3,4,5] The "Edinger-Geyer Method" is employed to determine a coefficient of evaporation (C) in cfs (alternatively, MGD) per billion Btu/hr of heat rejected by the plant or unit. The ambient parameters used in the method are the temperature of the receiving water body, the dew point temperature and the wind speed. Typically, long-term average monthly values for these parameters are used to determine a value of C for each month of the year. The average evaporation for each month is determined as the product of the plant/unit full-load heat rejection rate, the plant/unit capacity factor for the month, and the monthly C value.

The method is as follows, where:

C - consumptive water use (cfs per 10^9 Btu/hr)

T_d - dew point temperature (°F)

T_s - background temperature of receiving stream (°F, assumed surface)

U - wind speed (miles per hr)

L - latent heat of vaporization of water at T_s (Btu per lb)

B - slope of saturated water vapor pressure curve between T_d and T_s (mmHg per °F)

K - surface heat exchange coefficient (Btu ft^{-2} day^{-1} $°F^{-1}$)

Monthly average values of T_d, T_s and U are obtained from long-term data.

L depends upon T_s and may be determined from a table of water properties or approximated as

$$L = 1093.9 - 0.566T_s$$

B, K and C are calculated as:

$$B = 0.255 - 0.0085T + 0.000204T^2 \text{ (mmHg per °F)}$$

where $T = (T_s + T_d)/2$ (°F)

$$K = 15.7 + (B+0.26) \times f(W) \text{ (Btu ft}^{-2} \text{ day}^{-1} \text{ °F}^{-1}\text{)}$$

where $f(W) = 70 + 0.7U^2$ (Btu ft^{-2} day^{-1} $mmHg^{-1}$)

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[3] Edinger, J.E. and J.C. Geyer, "Heat Exchange in the Environment," Edison Electric Institute, Publication NO. 65-902, 1965

[4] Helwig, D.R., "An Overview of Heat Rejection from Electric Generating Facilities," presentation to the SRBC on behalf of Susquehanna River Basin Electric Utilities Group, 1975

[5] Technical Support Document - Calculation of Evaporative Water Loss from Steam Electric Plants Located in the Delaware River Basin," Delaware River Basin Electric Utilities Group, 1986

$C = (4450/L) \times B \times (K-15.7)/((0.26 + B) \times K)$ (cfs per 10^9 Btu/hr)

Alternatively, $C = (2880/L) \times B \times (K-15.7)/((0.26 + B) \times K)$ (MGD per 10^9 Btu/hr)

Calculation of In-stream Evaporation

Ambient Data

Available monthly average ambient meteorological and river water temperature data tabulated below were used in the calculation.

Parameter	Available each month during 1977 through 2007 except as noted	Data site
Wet-bulb temperature	excludes Jul-Sep 1988	Wilkes-Barre weather station
Relative humidity	excludes Jul-Sep 1988	Wilkes-Barre weather station
River water temperature	excludes Aug 2003-Jan 2004 and Aug 2007-Dec 2007	Susquehanna SES
Dew point temperature	excludes Oct-Dec 2007	Wilkes-Barre weather station
Wind speed	excludes Oct-Dec 2007	Wilkes-Barre weather station

These data allowed estimated in-river evaporation to be calculated for ambient conditions during each month of the following periods: January 1977 through June 1988; October 1988 through July 2003; and February 2004 through July 2007.

Circulating Water System (CWS) Cooling Tower Blowdown Flow Rate (gpm)

The monthly average CWS full-power cooling tower blowdown flow was estimated as follows:

1. CWS cooling tower evaporation rate (gpm) was derived from manufacturer evaporation curves[6] according to monthly average wet-bulb temperature (WBT) and relative humidity (RH). The evaporation curves were replicated mathematically in a spreadsheet to facilitate derivation of the evaporation rates.
2. Blowdown flow rate (gpm) was calculated as evaporation rate divided by the difference between assumed cycles of concentration (CC) and unity. CC was assumed in all months to be 3.0. The result for each month:

   Monthly average blowdown flow rate = monthly average evaporation rate / 2

Total Plant Blowdown Flow Rate (gpm)

The total plant blowdown flow rate (gpm) was considered to be the estimated CWS cooling tower blowdown flow rate plus a constant additional flow rate of 724 gpm. The 724 gpm is the estimated normal operations peak day flow rate from other plant systems:

- Essential Service Water System cooling tower blowdown (567 gpm)
- Raw Water Supply System water treatment filter backwash (91 gpm)
- Miscellaneous Low Volume Waste flow (39 gpm)
- Demineralizer Makeup Reverse Osmosis reject flow (27 gpm)

Intermittent radiological liquid treatment flow (11 gpm) is not included.

[6] SPX Cooling Tower Co., "TRACS Version 18-SEP-08, Cooling Tower Model 8500 202-5.3-324," 100% design flow rate, April 2, 2010.

CWS Cooling Tower Blowdown Temperature (deg F)

1. CWS cold-water temperature was derived from manufacturer cold-water temperature curves[7] according to monthly average WBT and RH. The cold-water temperature curves were replicated mathematically in a spreadsheet to facilitate derivation of the cold-water temperatures. The curves are linear and correspond to WBT ranging from 60 deg F to 80 deg F; the curves were assumed to extend linearly in both directions outside that WBT range.
2. CWS blowdown temperature was assumed to be equal to the cold-water temperature.

Total Plant Blowdown Temperature (deg F)

The CWS cooling tower blowdown temperature was assumed to be the temperature of the total plant blowdown to the river.

Heat Rejection Rate (billion Btu per hour)

The heat rejection rate to the river (HRR, 10^9 Btu/hr) was calculated as the product of (a) the total plant blowdown flow rate and (b) the difference between the total plant blowdown temperature and the river water temperature, adjusted for units:

HRR (10^9 Btu/hr) = 8.34 x blowdown flow rate (gpm) x 60
x (blowdown temperature – river water temperature) (deg F) / 10^9, or
HRR (10^9 Btu/hr) = 0.0000005 x blowdown flow rate (gpm)
x (blowdown temperature – river water temperature) (deg F)

HRR was assumed equal to zero when river water temperature exceeded blowdown temperature.

In-River Evaporation Rate (gpd)

The estimated monthly average in-river evaporation rate was calculated in accordance with the above methodology, corresponding to monthly average ambient river water temperature, dew point temperature and wind speed.

The estimated in-river evaporation rates corresponding to full-power operation for ambient conditions of 1977 through 2007 are tabulated below.

Conservatism of Estimated Amounts

The estimated in-river evaporation rates are considered to be conservative (high) for the following reasons:

- 3.0 cycles of concentration (CC) were assumed in calculating the CWS cooling tower blowdown flow rate. Average CC values over periods as long as one month are always expected to exceed 3.0, resulting in reduced blowdown flow rates compared to the calculated rates.
- The assumed additional blowdown flow from non-CWS systems is a peak-day flow.
- The small effect of CWS cooling tower drift in reducing derived blowdown flow was disregarded.
- The effect of river water make-up temperature in reducing CWS cooling tower blowdown temperature was disregarded.
- The loss of heat in the blowdown flow in transit from the plant via the Waste Water Retention Pond to the river was disregarded.

[7] SPX Cooling Tower Co., "TRACS Version 18-SEP-08, Cooling Tower Model 8500 202-5.3-324," 100% design flow rate, November 24, 2008.

Estimated monthly maximum, average and minimum in-river evaporation (gpd) for ambient meteorological data and river water temperatures from 1977 through 2007.

Month	Maximum Month	Average Month	Minimum Month	Years	Notes
Jan	69,000	47,000	26,000	30	excludes 2004
Feb	70,000	50,000	28,000	31	
Mar	68,000	60,000	48,000	31	
Apr	88,000	64,000	44,000	31	
May	75,000	52,000	33,000	31	
Jun	66,000	32,000	0	31	
Jul	42,000	17,000	0	30	excludes 1988
Aug	42,000	16,000	0	28	excludes 1988, 2003, 2007
Sep	44,000	31,000	14,000	28	excludes 1988, 2003, 2007
Oct	60,000	48,000	28,000	29	excludes 2003, 2007
Nov	67,000	57,000	46,000	29	excludes 2003, 2007
Dec	62,000	51,000	32,000	29	excludes 2003, 2007

LU-4

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can provide further information on borrow pits and volumes of borrow material anticipated to be needed.

Response: A subject matter expert will be available to discuss borrow pits and volumes of borrow material anticipated to be needed. Luzerne County, Pennsylvania contains relatively extensive surficial mineral resources that are commercially available in support of construction projects requiring backfill, common fill, and some manufactured backfill products. However, the proposed construction of BBNPP will produce a large net excess of fill and will have only minor to moderate needs for importation of "specialty" fill materials, such as clay for the pond and basin liners and raw materials for the concrete batch plant. The total volume of fill material to be imported to the site has not been calculated, but is a small percentage of the total fill material to be exported off site during construction of BBNPP.

To evaluate fill importation materials at the alternative sites requires geotechnical and advanced engineering design to be completed, which are beyond the scope of the Alternative Site Analysis. Based upon the locations of the alternative sites it is expected that while cut and fill volumes may differ drastically by site, the total amount of imported fill material will be relatively similar among the sites.

NRHH-1

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert and make available any supporting documentation to discuss the proximity and types of recreational activities occurring in or near the thermal discharge into the receiving waters.

Response: A subject matter expert will be available to discuss the proximity and types of recreational activities that may occur in or near the thermal discharge into receiving waters.

The types of recreational activities in the receiving waters of the Susquehanna River near the thermal discharge of the alternative sites include both fishing and boating.

As discussed in ER Sections 9.3.2.1.3, 9.3.2.2.3, 9.3.2.3.3, and 9.3.2.4.3, the Susquehanna River is the river near which the BBNPP and the three alternative sites are located. The cooling water intake systems (CWIS) and discharge points for BBNPP and Humboldt are near the North Branch of the Susquehanna, the Montour site is near the West Branch, and the Seedco site is near the main branch of the river. The Water Use Protected designation for all of these branches is warm water fishery with no special quality designation (The Pennsylvania Code, 2007). Sport fishing is a popular activity on the Susquehanna River; however, population of game fish, such as the Smallmouth Bass has fluctuated through time (Pennsylvania Fish and Boat Commission [PFBC], 2010a).

Boating in the West Branch Susquehanna River is a very popular recreational activity. Types of boating-related activities include motor boating; water skiing; sailing; canoeing; row boating; jet skiing; crewing; large passenger paddle wheeling; and inner tube floating. Boat access and travel is controlled by dams and water depth. During dry seasons, the river's depth drops to levels that prohibit the operation of powerboats. Inflatable dams, the world's largest, are installed to raise water levels during the dry season to depths where powerboats can be operated safely. Canoeing the Lower West Branch of the Susquehanna River and its major tributaries in the corridor is also very popular (Northcentral Pennsylvania Conservancy, 2003).

All three branches of the Susquehanna River where the alternative sites' cooling water intakes/discharges will be located are part of the Susquehanna River Water Trail. The Susquehanna River Water Trail-North Branch extends from Cherry Tree to Sunbury, Pennsylvania. The proposed and potential, respectively, locations of the cooling water intake/discharge for the BBNPP and Humboldt sites are in this section of the Water Trail. The Susquehanna River Water Trail-Middle Branch runs from Sunbury to Harrisburg, Pennsylvania and the Seedco site's potential cooling water intake/discharge is located in this section of the trail. The Montour site's potential cooling water intake/discharge is located in the West Branch of the Water Trail. Activities on the water trails include boating, canoeing, kayaking, fishing, and birdwatching (PFBC, 2010b).

Data Sources:

Northcentral Pennsylvania Conservancy, 2003. The Pennsylvania Rivers Conservation Program, Lower West Branch Susquehanna River Conservation Plan (DRAFT), May.

The Pennsylvania Code, 2007. Title 25 Environmental Protection, Part 1 Department of Environmental Protection, Subpart C Protection of Natural Resources, Article II Water

Resources, Chapter 93 Water Quality Standards, March.

PFBC, 2010a. Pennsylvania Fish and Boat Commission, Frequently asked questions about Susquehanna River Smallmouth Bass, Website: http://www.fish.state.pa.us/pafish/bass_black/meetings/faq_smb.htm, Date accessed: June 14, 2010.

PFBC, 2010b. Pennsylvania Fish and Boat Commission, Water Trail Guides, Website: http://www.fish.state.pa.us/watertrails/trailindex.htm, Date accessed June 8, 2010.

NRHH-2

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert and make available any supporting documentation to discuss the most recent Centers for Disease Control information regarding incidence of infection from etiological agents or diseases of concern in the regions of influence around the alternative sites.

Response: The Pennsylvania Department of Health (PADOH) tracks state and local health statistics, such as communicable diseases other than sexually transmitted diseases (STDs), using their Epidemiologic Query and Mapping System (EpiQMS) (PADOH, 2010a). Health statistics are tracked for nine communicable diseases other than STDs; *Campylobacter*, *Giardiasis*, Hepatitis A, Hepatitis B Acute, Hepatitis C Chronic, Lyme disease, *Salmonellosis*, *Shigellosis*, and Tuberculosis. Of these nine communicable diseases, only four, *Campylobacter*, *Giardiasis*, *Salmonellosis*, and *Shigellosis,* are water-borne diseases (PADOH, 2010b). For the four water-borne diseases, the incidence rate is significantly higher compared to the rate for Pennsylvania as a whole for the counties in which the alternative sites are located for the following diseases[8]:

- Luzerne County – None
- Montour County – *Campylobacter* and *Giardiasis*
- Northumberland County - None

The incidence rates for the other tracked communicable diseases (other than STDs) were either no different or significantly lower than the rates for Pennsylvania as a whole, with the exception of Shigellosis, for which no data were available or no data were reported for these counties.

A subject matter expert can be made available if further discussion is required regarding incidence of infection from etiological agents or diseases of concern in the regions of influence around the alternative sites.

Data Sources:

PADOH, 2010a.

PADOH, 2010b.

[8] These data were provided by the Bureau of Health Statistics and Research, Pennsylvania Department of Health. The Department specifically disclaims responsibility for any analyses, interpretations or conclusions.

SE-11

ER Section 9.3

Information Needs Text: Provide a knowledgeable expert who can discuss the percentage of black, American Indian and Alaskan Native, Asian, Hawaiian and other Pacific Islander, Hispanic or Latino, two or more races, and all other races residing within the 50-mile region around each of the three alternative sites.

Response: A subject matter expert will be available to discuss the percentage of Black, American Indian and Alaskan Native, Asian, Hawaiian and other Pacific Islander, Hispanic or Latino, two or more races, and all other races residing within the 50-mile region around each of the three alternative sites.

As stated in ER Section 9.3.2.2.9, criteria established by the NRC in the Nuclear Reactor Regulation Office Instruction License 203 were used to classify census block groups as having minority or low income populations (NRC, 2004). Statistical analysis was conducted on the sum of all of the census block groups within the 50-mi (80-km) radius of each site to determine if each census block group met a certain significant threshold minority population. The results of this analysis are provided in ER Tables 9.3-2, 9.3-4, and 9.3-6.

The attached table provides additional information to supplement the minority population data presented for each of the alternative sites in ER Tables 9.3-2, 9.3-4, and 9.3-6, including the total and percentage of each minority racial population within the 50-mile radius of each alternative site.

Data Source:

NRC, 2004. Procedural Guidance for Preparing Environmental Assessments and Considering Environmental Issues in Appendix D. NRR Office Instruction LIC-203, Revision 1. Office of Nuclear Reactor Regulation. May.

Information Need SE-11

Percentages of Minority Populations within 50-mi Radius of Alternative Sites

Alternative Site	Total Population	Black Minority Population	Percent of Total Population	American Indian and Alaskan Native Minority Population	Percent of Total Population	Asian Minority Population	Percent of Total Population	Hawaiian and other Pacific Islander Minority Population	Percent of Total Population	Two or More Races Minority Population	Percent of Total Population	All Other Races Minority Population	Percent of Total Population	Hispanic or Latino* Minority Population	Percent of Total Population
Humboldt	2,398,629	61,553	2.57%	3,289	0.14%	23,298	0.97%	532	0.02%	26,450	1.10%	56,118	2.34%	116,877	4.87%
Montour	1,118,407	20,403	1.82%	1,410	0.13%	5,212	0.47%	167	0.01%	6,938	0.62%	3,930	0.35%	12,230	1.09%
Seedco	2,124,575	82,666	3.89%	2,814	0.13%	21,660	1.02%	507	0.02%	21,198	1.00%	34,238	1.61%	71,740	3.38%

*Persons of Hispanic/Latino origin may be of any race including the identified racial populations, and therefore, are identified as a separate subcategory.