Bell Bend Alternative Sites Audit Trip Report
March 30 – April 3, 2009

Overview

Pacific Northwest National Laboratory (PNNL) and NUMARK. Inc. staff convened with U.S. Nuclear Regulatory Commission (NRC) staff in Harrisburg, Pennsylvania, the morning of March 31, 2009. The team was met by Pennsylvania Power and Light (PPL), UniStar, Areva and Land Studies staff who would guide the alternate sites visits. The following three days of the trip were dedicated to a tour of each alternative site selected by the applicant and the Bell Bend Site. A presentation was made by PPL to the U.S. Army Corps of Engineers (USACE) on Friday, April 3 in Wilkes-Barre, Pennsylvania. All staff returned home on Friday, April 3, 2009.

NRC Team

Stacey Imboden	EPM
Nancy Kuntzleman	Ecologist
Jack Cushing	Senior NRC Staff

PNNL/NUMARK Team

Bruce McDowell	Team Lead/Socioeconomics
Roy Kropp	Aquatic Ecology
Richard Codell	Hydrology
Tom Anderson	Alternatives and Need for Power

Additional Attendees

Amy Elliott	USACE
Bryan Bellacima	USACE (Martin's Creek only)
Kevin Magerr	EPA, Philadelphia office

PPL

Rocky Sgarro	Regulatory Affairs
Jerry Fields	Sr. Environmental Scientist
Jim Freels	Licensing

Areva

Peter Gluckler	Environmental Report
Kelli Voelsing	Licensing
Darrell Gardner	Licensing
Rick Williamson	Project Manager
Martin Owens	Project Manager

UniStar (COLA Contractor)

Vernon Hull	Licensing at Bell Bend

David Sullivan	Transmission Project Manager
Mike Cain	

Land Studies

Mark Gutshall	Wetland Mitigation

Schedule of Activities

Monday 3/30: Travel to Harrisburg PA. Dick Codell arranged for a rental car and picked up McDowell, Anderson and Kropp at the Harrisburg airport. Stayed at the Four Points Sheraton Harrisburg, 800 East Park Drive, Harrisburg, Pennsylvania 17111. Phone: (717) 561-2800.

Tuesday 3/31: PPL gave a presentation/discussion of the alternative site selection process at the Four Points Sheraton Harrisburg conference room a 9:00 am. PPL provided two vans for transportation and drove 1 hour and 15 minutes to Sandy Bend, PA, alternative site and did a site visit. Team drove 2 hours to Bloomsburg, PA, and stayed at the Holiday Inn Express, 14 Mitchell Drive, Bloomsburg, PA 17815. Phone: 570-387-6702.

Wednesday 4/1: Visited Montour site and Bell Bend site, transported by PPL vans. These are about 30 minutes apart. Stayed in Bloomsburg Holiday Inn Express again (see above).

Thursday 4/2: Drove 1.5 hours to Belvidere, NJ, for Martins Creek site visit, transported by PPL vans. Visited Martins Creek site. Stayed at Best Western East Mountain Inn, 400 E End Boulevard, Wilkes-Barre, PA. Phone: 570-822-1011.

Friday 4/3: Met with PPL/NRC/USACE/other agencies to have detailed discussion on alternative sites and alternative energy generation sources, purpose and need, wetlands impacts as part of 404 permitting process at the East Mountain Business Center in Wilkes Barre, PA, at 9:00am. McDowell, Anderson and Codell attended. McDowell, Anderson and Kropp flew out of Scranton. Codell drove back to Baltimore Washington International Airport. Kropp did not attend the morning meeting due to flight schedule.

Initial Overview of Alternative Site Process

Peter Gluckler gave a presentation on the site selection process in a conference room at the Four Points Sheraton on Tuesday morning prior to the Sandy Bend visit. PPL handed out a binder but requested that it be returned at the end of the process. PPL committed to providing a summary report that could be docketed at the site audit. Concern was based on the potential for siting maps showing plant layouts to cause public misconception about PPL's plans for alternative sites. NRC requested copies of the maps which were more detailed than the maps in the Environmental Report (ER) (e.g. floodplains, wetlands, and prime farmlands mapped for all sites). The ranking system was discussed and a ranking table provided with numerical ranking.

PPL ranked candidate sites based on a number of criteria including wetlands, floodplains, ability to expand, access to transmission lines and other factors. Some but not all of the criteria were explained. For example, a site ranked high for floodplains if there were no floodplains located within a half mile radius of the reactor core. Wetlands were delineated at a "reconnaissance" level. For transmission lines, this resulted in estimates of impacts wherever wetlands were

crossed even though these could be avoided in practice by siting towers in non-wetland areas. PPL committed to providing a report summarizing the alternate site selection process, including the ranking criteria.

Detailed designs of intake and discharge facilities at the alternate sites are not required by NRC and have not been done. The general assumption is that these facilities would be similar to those planned for Bell Bend. Each site would be assumed to have two natural-draft cooling towers somewhat smaller than those currently in use at Susquehanna Steam Electric Station (SSES). Areva stated that they chose two cooling towers because a single cooling tower large enough for a 1600 MW has never been built. Areva preferred to use two towers of a known and certified design. Standard industry guidance requires two 500 kV lines for redundant power supply and each alternative site would have two lines installed as part of the project.

A contractor database, developed by Environmental Data Resources Incorporated, was used to determine the presence of terrestrial and aquatic species at the alternative sites. PPL committed to providing access to a printout of this database at the site audit. PPL made no direct contacts with agencies such as U.S. Fish and Wildlife Service or State Historic Preservation Office to solicit site specific information for the alternative sites.

Sandy Bend

The Sandy Bend site is located at a former sand washing site and is therefore considered a brownfield site. The site is not owned by PPL, but the owner was present for the tour. Sand was excavated on one side of the river and transported to the Sandy Bend site by narrow gage railroad. A fairly large sand pile exists and is being depleted as it is used for periodic manufacturing of construction materials. Several former plant buildings exist onsite. The land area is sufficient for expansion. River flow seems slow, but PPL indicates that sufficient flows are available. Available records and PPL's criteria for determining availability of water needs to be confirmed. Water depth close to shore downstream from the proposed intake location was very shallow. When asked, the applicant was not certain about the depth of the water but stated it was thought to be about 20 feet in the center of the river. The river current in this area was very slow (see photo below), so it is probably that the river bottom is fairly muddy in the area. The river bottom near shore appeared muddy. Camping often occurs on the opposite shore of the river.

A two-track railroad line runs roughly parallel to the river just south of the site. The applicant provided maps that indicated that the railroad tracks would be moved to the opposite side of the Juniata River upstream of the proposed plant site and would be moved back to the south side of the river downstream of the site. Two bridges would have to be built to support the tracks. Additionally, an access road requiring a supporting bridge would have to be built across the Juniata River at the proposed plant site. Construction of these three bridges was not mentioned in the ER. Each event would impact the Juniata River. Several wetlands occur on the site, but these do not appear to be of high quality and probably do not directly connect to the Juniata River. Phragmites occupied several of the wetlands. One marsh did have cattails, but it could only be seen from the road. At least one wetland area appeared as though it could contain some open water at much of the year (see photo below). We did not see any streams on the site.

Two transmission lines would extend 3.5 miles. Rail lines are available near the site and no barge facilities would be required.

Sandy Bend Site. Juniata River just downstream from the proposed location of the cooling water intake system. Note lack of obvious current.

Sandy Bend Site. Open water wetlands south of the sand pile; note phragmites to the right of photo.

Montour

The Montour site is located on gently rolling farmland owned by PPL next to an operating PPL coal plant. It is considered a greenfield site next to an industrial facility and has sufficient land available for expansion. The site is about 12 miles away from the Susquehanna River. The pipelines required for makeup water supply and blowdown releases would generally follow the paths of the existing pipelines for the coal plant.

Two small creeks, the East Branch of Chillisquaque Creek and Chillisquaque Creek, cross the site. Both show some signs of anthropogenic impacts, including steeply sloping banks in places, undercut trees and bushes, and sections with relatively large pools from interrupted flow. The creeks have recently planted buffers extending into the adjacent farmland. Much of the site is comprised of open farmland, with wooded areas being confined to the creek corridors (see photo below). The fields are edged with small drainage ditches along the road, which can funnel runoff from the fields into the creeks. There were no onsite ponds or wetlands observed. New access roads would be built, which could affect onsite aquatic resources should the routes cross either creek.

Staff and contractors visited the site of the intake structure for the Montour plant on the Susquehanna River. The structure had no visible intake on the river, but discussions with the two workers there indicated that there were submerged pipes of unknown design located in the middle of the river, and that there was occasional dredging during low water periods to remove sediment. The most recent work on the intake was to increase capacity for the gas scrubbers and gypsum board plant. The river is fairly wide in this area and the current appeared relatively slow (see photo below).

PPL also provided a tour of the Lake Chillisquaque, a small (165 acre) impoundment upstream of the coal plant. During this tour, PPL indicated that several sites in the area would be suitable for small impoundments of the same size as Chillisquaque. PPL plans to purchase water from the Susquehanna River Basin Commission (SRBC), but mentioned other possible alternatives for low flow augmentation, including new reservoir construction and using abandoned mines. Since no application for water withdrawals have been made by PPL, the final requirements for low flow augmentation, if any, have not been established.

Either 30 miles of existing 230 kV transmission lines would require upgrading to 500 kV or 13 miles of new transmission lines would be required to interconnect the Montour site. The plant would not be located in the flood plain of the Susquehanna River.

There were several Amish farms noted in the proposed plant area (see photo below). Otherwise, the area is residential and small farms with no apparent clusters of low income or minority populations.

Montour Site. Agricultural field north of Stamm Road, just off Strawberry Ridge Road; View roughly to the northwest towards general area possible for power block; trees mark East Branch Chillisquaque Creek.

Montour Site. West Branch Susquehanna River at location of intake for coal plant; view upstream. Note the relatively slow flow.

Montour Site. Coal plant in background.

Bell Bend

The Bell Bend site sits on a bench above the Susquehanna River to the west of the Susquehanna site. There are very few common facilities with the existing SSES. The reactor block sits in an open field area crossed by the main branch and the east branch of Walker Run creek. The two cooling towers sit on a hill to the north of the reactor block. The hill holds an abandoned orchard. Evidence (scat piles) of carnivorous mammals (coyotes?) was seen on the hill. Transmission lines run only onsite to a new switchyard. A new transmission line is planned by PJM for connection to SSES regardless of the Bell Bend plant and should be installed by the time Bell Bend comes online.

Offsite borrow may be required for engineered fill. Otherwise, the planned construction would result in excess excavated material, particularly from the excavation of the hill on which the cooling towers would be placed. PPL owns the land on which all plant features would be constructed and has removed several old farm buildings in the power block area. Other buildings are being rented or occupied as part of a life-estate whereby PPL allows the former owner to occupy the property until their death.

There are no floodplains in the half mile radius surrounding the reactor core, so Bell Bend ranks high in the floodplain criteria. The intake structure would be downstream of the SSES intake structure and the outfall would be downstream of the SSES outfall. There would be dewatering during construction of the power block, but dewatering during operation is not anticipated.

A rail spur exists to the SSES. This spur would be extended to the Bell Bend site. It was not clear whether PPL has evaluated the need to improve other portions of the rail line to handle the size of equipment being delivered to Bell Bend. The line is presently being evaluated prior to a planned outage at SSES. No barge facilities are required.

A tour of several sections of Walker Run was provided. The tour highlighted examples of a relatively natural area upstream of the Bell Bend site, the anthropogenically modified stretch on the Bell Bend site, and a downstream section where the creek purportedly begins to return to more “natural” conditions. A stop was made at the intersection of North Market Street and Beach Grove Road to observe the possible location of a mill that dammed Walker Run in the 1800’s. Historical records indicate that a sediment layer (“legacy sediment”) in part of the flat area of the planned Bell Bend reactor block where Walker Run passes was the result of the failure of one or several millponds constructed in the 1800’s. Dating of the sediments using radiocarbon, seeds and pollen, bolster the theory of the origin of the sediment. Wetland delineation was accomplished by onsite surveys conducted by the applicant. The USACE will conduct a jurisdictional delineation in the next few months. The approximate locations of the re-routing of parts of Walker Run were pointed out during the tour. Staff also visited the pond referred to as Farm Pond in the ER that would be filled as a result of construction activities.

Staff also saw a portion of the North Branch Canal (part is maintained by PPL), Lake Took-A-While, and visited the location of the intake structure for the nearby SSES up-river of the proposed Bell Bend intake. There are several wetlands areas nearby that would be affected by construction of the intake complex. A relatively large drainage “ditch” on the downriver side of the intake area would be relocated.

Bell Bend Site. View from proposed power block area across corn field to North Market Street. Walker Run, which would be relocated to near North Market Street is indicated by the brown shrubbery in running diagonally across the middle of the image. The house in the distance is owned by PPL.

Bell Bend Site. Section of Walker Run downstream from Beach Grove Road showing steeply eroded sediment layer (legacy sediment?) and natural cobble creek bottom.

Martins Creek

Martins Creek is located in New Jersey along the Delaware River across the river from a retired PPL coal plant and an operating PPL oil- or natural gas-fired plant. Martins Creek is considered a greenfield site next to a PPL industrial site. The site is located on PPL-owned farmland on a bench above the Delaware River. The area supports small farms and residences. Several houses in poor condition that may be used as summer residences were noted between the former coal plant and the Delaware River.

The Delaware River floodplain is within a half mile of the site of the reactor core. However, most of the Martins Creek site and the reactor site are approximately 75 to 100 feet above the floodplain. There is sufficient land available for expansion. There is railroad access to the site and no barge facility would be required. It was noted that the ranking score for this site would have been higher and potentially similar to the Bell Bend site but for the floodplain, assumed wetland impacts along transmission corridors, and the expandability of the site. The USACE noted that wetlands impacts can be routinely avoided with proper placement of transmission towers. Further evaluation of this issue will occur when the Siting Report is docketed.

The Delaware River at the proposed discharge location is swiftly flowing with noticeable small rapids. It is likely that the river bottom here is primarily rocky and installation of the discharge would be similar to that for Bell Bend. The river bank on this shore is steep. One proposed transmission line route would cross the Delaware River at this location. There are three small islands in the river that may support transmission line towers. A single railroad line runs parallel to and just above the river. The river flow is fairly slow at the location of the proposed intake locate opposite the former coal plant. The river bottom here may have accumulated some sediment that would require dredging or excavation to install the intake system. Much of the site away from the river is comprised of active farmland with scattered small wooded area, most of which line Buckhorn Creek or otherwise seem to have been left to serve as windbreaks. Buckhorn creek runs along the east side of the site, intersecting PPL property at a few locations. The creek is small but has a natural cobble bottom, shallow banks, and a relatively low, floodplain. No ponds or other wetlands were observed on the site. The site is just downriver from the Foul Rift Natural Heritage Priority Area identified by the State. The applicant had no knowledge of this area (it was not mentioned in the ER). It appears that the Priority Area ends just upstream from the site and the two may not interact.

Martins Creek Site. Delaware River at the location of the proposed discharge; view upriver towards former PPL coal plant in Pennsylvania. Note the small islands and relatively good current.

Martins Creek Site. View to the south from North Foul Rift Road across potential location for power block; note scattered, small woods and transmission lines in distance.

Friday USACE Alternatives Kickoff Meeting

The USACE held a kickoff meeting on their process on Friday morning at the East Mountain Business Center following the site visits. The USACE plans to hold addition meetings in the near term on specific issues related to their 404 permit. The following table lists the attendees, including many state agencies.

NRC Team

Stacey Imboden	EPM
Nancy Kuntzleman	Ecologist
Jack Cushing	Senior NRC Staff

PNNL/NUMARK Team

Bruce McDowell	Team Lead/Socioeconomics
Richard Codell	Hydrology
Tom Anderson	Alternatives and Need for Power

Agency Attendees

Amy Elliott	USACE
Bryan Bellacima	USACE (by phone)
Wade Chandler	USACE
Kevin Magerr	EPA, Philadelphia office
Jamie Davis	EPA
Melinda Turner	USFWS
Cindy Tibbott	USFWS
Tom Shervinskie	PA Fish and Boat Commission
Gene Trowbridge	PA Department of Environmental Protection
Kevin White	PA Department of Environmental Protection
Heather Berlew	Luzerne Conservation District
Mike Brownell	Susquehanna River Basin Commission
Paula Ballaron	Susquehanna River Basin Commission

PPL

Rocky Sgarro	Regulatory Affairs
Jerry Fields	Sr. Environmental Scientist
Jim Freels	Licensing
Craig Shamory	PPL Services
Michael Detamore	PPL Bell Bend
George Kuczynski	PPL Director EPC
J. Vincent Kelly	PPL Bell Bend
Nancy Evans	PPL-EMD

Terry Harpster	PPL Bell Bend

UniStar (COLA Contractor)

Vernon Hull	Licensing at Bell Bend
David Sullivan	Transmission Project Manager
Dimitri Lutchenkov	

Normandeau

Keith Maurice	

Land Studies

Mark Gutshall	Wetland Mitigation

Ecology III

Brian Mangan	
Ted Jacobsen	

Mark Gutshall and Rocky Sgarro presented the Bell Bend site layout and a discussion of impacts. PPL has not applied to the USACE for a 404 permit or to the SRBC for a consumptive water permit. PPL is currently completing an evaluation of the fishery in Walker Run creek for the purpose of stream classification. This study should be complete by the site audit.

The USACE provided an overview of their process and identified several issues. This USACE district considers alternatives different than NRC. USACE considers that if PPL's purpose and need is baseload power, then each alternative that could provide baseload power should be evaluated at least at a reconnaissance level. This would require a consideration of alternative sites for coal, gas, or a combination of alternative generation sources such as wind and solar. Clearly, alternative sites for these generation sources are not in the current scope of NRC's EIS. Also, USACE's approach to impact to wetlands at Bell Bend is avoidance, minimization, and mitigation, in that order. From this standpoint, the Martins Creek site could be considered a preferable alternative, particularly if transmission line impacts to wetlands could be avoided by tower design. NRC and USACE plan to meet to further evaluate how NRC's EIS can meet the USACE's 404 permitting needs.

The Pennsylvania Department of Environmental Protection described their approach to wetland mitigation. If a stream is considered a wild trout stream, any associated wetlands would be considered of "exceptional value". Impacts to these types of wetlands would only be allowed if necessary to protect public health and safety, and construction of Bell Bend would not meet this criterion. Therefore, the categorization of Walker Run is critical to PPL's ability to alter the stream channel and affect associated wetlands. Although the stretch of Walker Run impacted by plant construction may be downstream of the prime trout habitat, it may be considered an important support area. PPL stated that the stream categorization by their contractor should be complete by the site audit.

The SRBC provided a short discussion of constraints in the Susquehanna River Basin for additional withdrawals of water. SRBC was established by Federal Law and is exempt from NEPA. Although planned withdrawals for Bell Bend would be a small percentage of average

flow, the SRBC evaluated applications on percent of low flows. Using this criteria, SRBC was concerned that there may not be sufficient water available for Bell Bend. SRBC will have a representative at the site audit for further discussions, and if they are not able to attend, NRC and PNNL staff could travel to the SRBC offices in Harrisburg. A comprehensive plan describing constraints and recommendations is available on the SRBC website: http://www.srbc.net/planning/compplanfiles.asp.

Site Audit Planning

PPL, NRC, and PNNL reviewed the schedule for the site audit and toured the East Mountain Business Center. The planned sessions were reviewed with PPL staff. The auditorium can be split into four or more smaller meeting areas by rolling divider walls that can also serve as white boards. The East Mountain Business Center is located less than 5 minutes from the Best Western Hotel.