

AES RESPONSES TO SECOND SET OF ENVIRONMENTAL QUESTIONS

The Licensing Board noted that all of the environmental questions could be answered by both the Nuclear Regulatory Commission (“NRC”) Staff and AES, although the Licensing Board explained that at least one party must respond to each question. AES and the NRC Staff have conferred regarding which party is best positioned to respond to the Licensing Board’s questions. Based on those discussions, AES is providing a response to the following questions: 13, 14, 15, 16, and 17. Below, AES repeats each question, identifies the person(s) providing a response to the question, and responds to the question. Affidavits and statements of qualification for each expert are also provided, as necessary.

ASLB Question 13:

The Final Environmental Impact Statement (“FEIS”) describes a number of possible low-level radioactive waste (“LLRW”) facilities that might be utilized for Eagle Rock Enrichment Facility (“EREF”)-generated low-level radioactive waste (“LLRW”). Recently, the State of Texas has indicated it may open the compact disposal site it operates with the State of Vermont to permit the receipt of LLRW generated in non-compact states. See 36 Tex. Reg. 571, 571 (Feb. 4, 2011). Is this a facility that might be utilized for LLRW from the EREF and, if so, what environmental impacts would that have?

Response to Question 13 (Kay and Harper):¹

AES does not intend to utilize the Texas facility.

ASLB Question 14:

From Figure 2-8, it appears the EREF site lies within about ten miles of a designated seismic avoidance area and approximately 100 miles from a designated winter weather avoidance area. What gives AES and/or the staff confidence that these avoidance areas have been accurately mapped such that the proposed EREF falls outside their boundaries?

¹ Exhibits AES000089 (Kay Affidavit) and AES000012 (Kay Professional Qualifications); Exhibits AES000082 (Harper Affidavit) and AES000011 (Harper Professional Qualifications).

Response to Question 14 (Harper, Redente, Klimkiewicz):²

The first phase of the site selection process was to screen regions (not sites) using broad screening criteria. The process was used to avoid clearly problematic areas. Regions and areas that were not clearly within a risk/hazard area were kept for further review on a case-by-case basis. The process recognized the precision of the data being used at this phase and the difference in scale between/among data sets. This initial screening process was conducted to be inclusive of regions and to only exclude regions that clearly were in areas to be avoided, for example, because of winter weather or seismic concerns. Regions that were at the margins of avoidance areas were retained for further consideration.

Winter Weather Avoidance Area

Severe winter weather was used as a surrogate for road closure risk because long-term road closures could potentially disrupt operations (*e.g.*, material and personnel transportation).

The winter weather avoidance area data was regional in nature. The winter weather avoidance area boundary was developed based on broad continent wide data and maps to identify broad regions where winter weather may be an issue. Snowfall was used as a surrogate for potential for road closures. The data used was from mapped mean annual snowfall data, plus other information (annual mean maximum daily snowfall, mean days with snowfall greater than one inch). From these complex winter weather maps, AES developed a very simplified illustration of the general winter weather region of concern for the regional screening process. No attempt was made to include western United States mountainous areas (which are

² See Exhibits AES000083 (Redente Affidavit) and AES000084 (Redente Professional Qualifications); Exhibits AES000085 (Klimkiewicz Affidavit) and AES000086 (Klimkiewicz Professional Qualifications).

also subject to severe winter weather) since sites in those areas would not be considered in the first place. The focus was to identify an area where potential sites could exist (generally across northern non-mountainous regions of the United States from Idaho eastward) that should be avoided due to severe winter weather potential.

The weather information was obtained from the National Oceanic and Atmospheric Administration (“NOAA”). *See* ER Chapter 2, 2.1-26-67 (Exh. AES000070). The boundary in the vicinity of the state of Idaho as shown in FEIS Figure 2-8 and ER Figure 2.1-6 was specifically drawn to include the region south of the boundary (through Idaho) that has reduced snow fall (cold desert climate) versus that north of the boundary (through Idaho) which includes areas of higher snow fall and possible road closure risk.

Seismic Avoidance Area

As described in ER Section 2.1.3.3.1 (Exh. AES000070), the seismic avoidance area data was obtained from the United States Geological Survey (“USGS”) general seismic hazard maps through the nationalatlas.gov interactive map system. Areas with peak ground acceleration (pga) greater than 0.09g associated with a 10 percent probability of exceedance in 50 years were avoided. The USGS calculated hazard values used to generate these maps are based on a 0.05 degree in latitude by a 0.05 degree in longitude uniform grid. Therefore, a calculated pga value with a 10 percent probability of exceedance in 50 years is available for a relatively fine grid (a node every 0.05 degrees for both latitude and longitude). The resolution of the maps is down to the county level, thus allowing a fairly accurate representation of the boundary shown on the FEIS and ER figures. The USGS interactive site also allows the user to obtain the calculated pga value with a 10 percent probability of exceedance in 50 years for any location identified by a user input latitude-longitude coordinate. The latitude-longitude for the

EREF site returns a pga value with a 10 percent probability of exceedance in 50 years well under 0.09g.

Distances between the EREF site and the subject avoidance area boundaries are relatively small compared to the scale of the FEIS Figure 2-8. However, based on the above information, AES is confident that the winter weather and seismic avoidance area boundaries were mapped with sufficient accuracy to make a determination that the proposed EREF site fell outside of these avoidance area boundaries during the first phase of the site selection process.³

ASLB Question 15

(a) The FEIS describes a number of Phase I candidate site screening criteria that were considered disqualifying, including threatened or endangered species near or onsite or the presence of sensitive properties, such as national parks. In this vein, why wasn't having a National Register of Historic Places-eligible structure onsite considered to be a disqualifying screening criterion?

(b) Relative to the Phase I candidate site screening criterion regarding the presence of sensitive properties, Table 2-3 indicates that several sites (i.e., Power County-1 in Power, ID; Blackfoot in Bingham, ID; Copeland Stone, in Laurens, SC) were excluded based, at least in part, on this criterion. Please explain the basis for these exclusions and why/how these sites differ from the EREF, which has the Hell's Half Acre Wilderness Study Area located immediately to its south.

Response to Question 15(a) (Thomson, Kay, Poyser):⁴

A site or structure identified on the National Register of Historic Places ("NRHP") situated immediately adjacent to or within a Phase I candidate site was considered as

³ The "zoomed in" area around the EREF site shown in FEIS Figure 2-8 and ER Figure 2.1-6 was added to the base avoidance map figure *after* the siting study was complete to show the location of the chosen site (*i.e.*, EREF) with respect to the specific avoidance areas.

⁴ See Exhibits AES000087 (Thomson Affidavit) and AES000088 (Thomson Professional Qualifications); Exhibits AES000093 (Poyser Affidavit) and AES000094 (Poyser Professional Qualifications).

a disqualifying criterion under the definition for sensitive properties. At the time that Phase I screening was performed (*i.e.*, 2007), there were no known NRHP-eligible sites on the EREF property. The first cultural resource inventory of the EREF property was conducted from May 27 through June 3, 2008, and on July 23, 2008. Subsequent cultural resource surveys were conducted in early October 2008 and early August 2009. The State Historic Preservation Office issued their concurrence with the determination of eligibility to the NRHP for the John Leopard homestead site (Site MW004) on September 29, 2009.

Response to Question 15(b) (Redente, Harper, Poyser):

As described in ER Sections 2.1.3.3.1 and 2.1.3.3.2.1, during Phase I screening, 44 sites were evaluated using eleven site selection criterion and publicly available data from agency and organizational websites, technical literature, and agency reports. AES met with site representatives to gain a better understanding of the sites. Site sponsors provided site-specific information on screening criteria to assist AES in screening. No other contacts were made and no field data were collected.

The screening performed for the “sensitive properties” criterion was to determine that “no Native American Reservations, National Parks, Monuments, Forests, National Register of Historic Places or Properties, wildlife refuges, scenic river parkways, recreation areas, Class I air quality areas, or air quality non-attainment areas are immediately adjacent to or on the site.” For this criterion, the following web sites and other sources of data were utilized as the primary data sources:

- <http://www.nature.nps.gov/air/maps/classILoc.cfm>
- <http://www.epa.gov/air/oaqps/greenbk/>
- <http://www.nps.gov/nr/research>

- State park, wildlife, and recreation websites

From the web searches and data collected in the Phase I screening, the Hell's Half Acre Wilderness Study Area was not identified as a sensitive property for the Bonneville, Idaho, site. The designation of Hell's Half Acre as a National Natural Landmark ("NNL") and its partial Wilderness Study Area designation did not rise to the level of being an eliminating factor in Phase I for any sites in eastern Idaho. It was also not used as a basis for eliminating the Atomic City Site or the Blackfoot Site; both within 5 miles of the boundary of the NNL or the McNeill Site, which is contiguous to the NNL.

The Power County #1 site was disqualified based on its proximity to (1) Craters of the Moon National Monument, an NPS Class I Area, (2) the Fort Hall Indian Reservation, (3) American Falls Dam, and (4) the Snake River. The Blackfoot Site located in Bingham County, Idaho, was disqualified because of its proximity to the Snake River and the Fort Hall Indian Reservation. The Copeland Stone Site near Laurens, South Carolina, was disqualified for its proximity to the Sumter National Forest.

ASLB Question 16:

The FEIS discusses noise level impacts in terms of decibels (dB) above ambient levels, i.e., "loudness." Is any of the machinery used during the construction or operation of the EREF, including the centrifuges, likely to produce an impact because of sound in frequencies outside the range of human hearing such that it would cause discomfort/disruption for humans or, alternatively, any of the wildlife species described in section 4.2.7 as utilizing the habitat near the EREF?

Response to Question 16 (Kay, Andrews, Wescoat):⁵

The construction and earthmoving machinery planned for use during construction does not produce significantly high or low sound levels or frequencies that are considered harmful to living species. Sounds generated by construction of the EREF will be typical of other large industrial construction projects. The construction contractor's intention is to periodically monitor various noise levels and frequencies of machinery and compare the results to regulatory requirements and use best management practices to ensure compliance and environmental stewardship.

During operation, noise impacts were evaluated by AES as described in ER Section 4.7.1.2 (Exh. AES000070) and considered sound levels generated by machinery used during operation, including the centrifuges. The running frequency of the centrifuges, which are housed in an enclosed insulated structure, is classified; however, it is within the frequency range that most humans can detect, and therefore, they emit audible sound. Noise levels from the running centrifuges are such that hearing protection is only required inside the cascade halls. Outside the cascade halls, the running centrifuges will not cause discomfort/disruption to humans or wildlife.

ASLB Question 17:

The estimated annual exposure to construction workers completing the last 20 percent of the cylinder storage pad is 1.96 times the 10 C.F.R. § 20.1301 dose limit, so that these workers should be classified (and paid) as radiation workers.

(a) What measures will be taken to ensure either that worker exposure will not exceed the 10 C.F.R. § 20.1301 dose limit or that the workers involved are treated as radiation workers?

⁵ Exhibits AES000090 (Andrews Affidavit) and AES000022 (Andrews Professional Qualifications); Exhibits AES000091 (Wescoat Affidavit) and AES000092 (Wescoat Professional Qualifications);

(b) The dose to construction workers was not calculated for the construction of the second to last 20 percent of the cylinder storage pad. Is it known whether this dose does or does not exceed the 10 C.F.R. § 20.1301 dose limit? If that dose is known, what is that dose and does that dose exceed the section 20.1301 limit? If that dose isn't known, why hasn't it been calculated?

Response to Question 17(a) (Panzarino, Kay):⁶

Appropriate measures will be taken to protect the construction workers based on actual radiation surveys at the time the construction work is performed. These surveys will reflect actual radiological conditions and will determine the dose limits and radiological controls that will be applied to the construction workers. Based on these surveys, the estimated exposures to the construction workers will determine whether these workers will be classified as radiation workers to complete this activity.

If the actual survey results (performed prior to the start of construction work) on the pads confirm that the dose to the construction workers will exceed the 10 C.F.R. § 20.1301 dose limit, then the construction workers will be considered radiation workers and the occupational dose limits of § 20.1201 will apply. The workers will be subject to the requirements of the EREF radiation protection program as discussed in SAR Chapter 4 (Exh. AES000037). These include, in part, ALARA reviews of the work to be performed, radiation protection training, compliance with the requirements of radiation work permits, and compliance with postings. The construction workers will also be required to wear individual external dosimetry devices and will be subject to the site annual administrative limit of 10 mSv (1 rem), which is 20% of the NRC limit in § 20.1201.

⁶ Exhibits AES000081 (Panzarino Affidavit) and AES000068 (Panzarino Professional Qualifications).

Response to Question 17(b) (Panzarino, Kay):

This dose was not calculated since the calculation performed for the construction of the last 20% of the cylinder storage pad was bounding. When this construction is conducted a survey will be performed and the appropriate controls established based on the expected doses to the construction workers, as described in the above response to Question 17(a).