



Indianapolis Power & Light Company
Petersburg Generating Station

Landfill Location Restriction Compliance:
Unstable Areas

Prepared by



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1 DEMONSTRATION

Federal CCR Rule References: 40 CFR 257.53, 257.64(a), and 257.64(b)

Indianapolis Power & Light Company (IPL) owns and operates the Petersburg Generating Station (PS). The PS Landfill, an existing coal combustion residual (CCR) landfill at the site, presently accepts CCR in accordance with its permit, Solid Waste Program ID 63-02, which was issued by the Indiana Department of Environmental Management (IDEM). This document addresses the demonstration required for the CCR unit to satisfy 40 CFR 257.64(a):

“An existing or new CCR landfill, existing or new CCR surface impoundment, or any lateral expansion of a CCR unit must not be located in an unstable area unless the owner or operator demonstrates...that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of the structural components of the CCR unit will not be disrupted.”

Pursuant to 40 CFR 257.53:

“*Unstable area* means a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity, including structural components of some or all of the CCR unit that are responsible for preventing releases from such unit. Unstable areas can include poor foundation conditions, areas susceptible to mass movements, and karst terrains.”

Moreover, per 40 CFR 257.64(b):

“The owner or operator must consider all of the following factors, at a minimum, when determining whether an area is unstable: (1) On-site or local soil conditions that may result in significant differential settling; (2) on-site or local geologic or geomorphologic features; and (3) on-site or local human-made features or events (both surface and subsurface).”

As documented in IPL’s recent minor permit modification application, which was approved by IDEM on September 27, 2018, the PS Landfill has adequate factors of safety to resist several different loading conditions, including the 2475-year earthquake event. Moreover, the calculated differential settlement of the landfill’s foundation soils was determined to be manageable with no adverse impact on the integrity of the proposed final cover system.

According to the Indiana Geological and Water Survey’s (IGS) “Liquefaction Potential of Surficial Materials in Indiana,” the PS Landfill is in an area with a high liquefaction potential. The United States Geological Survey (USGS) also considers the landfill to be within an area susceptible to liquefaction, specifically the Wabash Valley liquefaction zone. However, analyses by other experienced Professional Engineers have indicated that the PS Landfill has an adequate factor of safety against failure when considering a post-earthquake liquefaction event. These analyses have been reviewed and determined to be appropriate.

The preceding assessments further demonstrate that the materials comprising the PS Landfill and the soils supporting it are not susceptible to mass movements. Based on the ground surface topography adjacent to this CCR unit, which is of relatively low relief as compared to the landfill, this area is not susceptible to an external landslide that would impact the structural integrity of the PS Landfill.

Based on a review of the regional and site geology as well as historical soil borings, the bedrock underlying the PS Landfill is primarily comprised of shale. Based on the bedrock's composition, the site's susceptibility to karst solution features (e.g., sinkholes) is minimal. Moreover, the site is mapped by the IGS as not being susceptible to karst solution features.

Finally, per the "Coal Mine Information System" maintained by the Indiana Department of Natural Resources (INDNR), an underground mine has been mapped near, but outside of, the northeast and east edges of the PS Landfill's existing boundary. This mine is also mapped in the aforementioned minor permit modification application. Given the landfill's distance from the underground mine and its existing permit conditions, the PS Landfill is not susceptible to mine subsidence.

Based on the preceding statements, the PS Landfill meets the performance standard promulgated by 40 CFR 257.64(a).

2 CERTIFICATION

Federal CCR Rule Reference: 40 CFR 257.64(c)

The demonstration presented herein meets the requirements of 40 CFR 257.64(a).

I certify that this document was prepared by me or under my direct supervision, and that I am a registered professional engineer under the laws of the State of Indiana.

Certified By: David E. Nielson

Date: October 17, 2018

Seal:

