CHOLLA POWER PLANT
LINER DOCUMENTATION §257.71
BOTTOM ASH POND
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Liner Assessment	**Liner Documentation**
§257.71 (a)(1) i. ***Is there a liner consisting of a minimum of two feet of compacted soil with a hydraulic conductivity of no more than 1x10-7 cm/sec?*** ***ii. A composite liner that meets the requirements of § 257.70(b)?*** § 257.70 *(b) A composite liner must consist of two components; the upper component consisting of, at a minimum, a 30-mil geomembrane liner (GM), and the lower component consisting of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1x10-7 centimeters per second (cm/sec). GM components consisting of high density polyethylene (HDPE) must be at least 60-mil thick. The GM or upper liner component must be installed in direct and uniform contact with the compacted soil or lower liner component. The composite liner must be:* *(1) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the CCR or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;* *(2) Constructed of materials that provide appropriate shear resistance of the upper and lower component interface to prevent sliding of the upper component including on slopes;* *(3) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and* *(4) Installed to cover all surrounding earth likely to be in contact with the CCR or leachate.*	The Bottom Ash Pond CCR Unit does not have a constructed liner system. The Unit does not satisfy the requirements of 257.71(a)(1)(i), (ii), or (iii) and therefore, according to Rule 257.71(a)(3)(i), is considered to be unlined.
OR	
iii. An alternative composite liner that meets the requirements of § 257.70(c)? § 257.70 (c) If the owner or operator elects to install an alternative composite liner, all of the following requirements must be met: (1) An alternative composite liner must consist of two components; the upper component consisting of, at a minimum, a 30-mil GM, and a lower component, that is not a geomembrane, with a liquid flow rate no greater than the liquid flow rate of two feet of compacted soil with a hydraulic conductivity of no more than 1x10-7 cm/sec. GM components consisting of high density polyethylene (HDPE) must be at least 60-mil thick. If the lower component of the alternative liner is compacted soil, the GM must be installed in direct and uniform contact with the compacted soil. (2) The owner or operator must obtain certification from a qualified professional engineer that the liquid flow rate through the lower component of the alternative composite liner is no greater than the liquid flow rate through two feet of compacted soil with a hydraulic conductivity of 1x10-7 cm/sec. The hydraulic conductivity for the two feet of compacted soil used in the comparison shall be no greater than 1x10-7 cm/sec. The hydraulic conductivity of any alternative to the two feet of compacted soil must be determined using recognized and generally accepted methods. The liquid flow rate comparison must be made using Equation 1 of this section, which is derived from Darcy's Law for gravity flow through porous media.	

Certification Statement 40 CFR § 257.71(b) – Construction of the Liner for an Existing CCR Surface Impoundment

CCR Unit: Arizona Public Service; Cholla Power Plant; Bottom Ash Pond

I, Alexander W. Gourlay, being a Registered Professional Engineer in good standing in the State of Arizona, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above-referenced CCR Unit, that the documentation as to whether the construction of the CCR Unit meets the requirements of 40 CFR § 257.71(a) is accurate.

Alexander W. Gourlay, P.E

Printed Name

August 31, 2016

Date