

**GROUNDWATER MONITORING SYSTEM CERTIFICATION**  
**40 CFR §257.91(f)**  
**PLANT WILLIAM C. GORGAS GYPSUM POND**  
**ALABAMA POWER COMPANY**

The Environmental Protection Agency's "Disposal of Coal Combustion Residuals from Electric Utilities" Final Rule (40 CFR Part 257 and Part 261), 40 CFR §257.91(f) states:

*The owner or operator must obtain a certification from a qualified professional engineer stating that the groundwater monitoring system has been designed and constructed to meet the requirements of this section [40 CFR §257.91].*

According to 40 CFR §257.91(a), the groundwater monitoring system must consist of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer that:

1. Accurately represent the quality of background groundwater that has not been affected by leakage from a CCR unit; and
2. Accurately represent the quality of groundwater passing the waste boundary of the CCR unit.

40 CFR §257.91(b) states that the number, spacing, and depths of groundwater monitoring system wells must be determined based upon site-specific technical information that must include a characterization of:

- (1) Aquifer thickness, groundwater flow rate, groundwater flow direction, including seasonal and temporal fluctuations in groundwater flow; and
- (2) Saturated and unsaturated geologic units and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the uppermost aquifer, including, but not limited to, thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities and effective porosities.

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40 CFR §257.91(c) requires the groundwater monitoring system to include the minimum number of monitoring wells necessary to meet the performance standard set forth in the rules. The monitoring system must contain a minimum of one upgradient and three downgradient monitoring wells, but consist of additional monitoring wells as necessary to accurately represent the quality of background groundwater that has not been affected by leakage from the CCR unit and the quality of groundwater passing the waste boundary of the CCR unit.

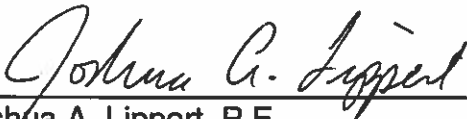
In total, seventeen (17) well locations were attempted around the perimeter of the Plant Gorgas Gypsum Pond to depths between 50 and 307 feet below ground surface. Only three (3) locations provided sufficient groundwater and recharge rates to sample via low-flow sampling methods. Geophysical and hydrogeophysical logging were employed in select rock borings to further assess hydrogeological conditions and identify water-bearing zones. Attempts at installing upgradient well locations west, north, and east of the facility were unsuccessful; and therefore, four (4) locations upgradient of the nearby Plant Gorgas Bottom Ash Landfill were selected for upgradient locations on the basis of similar geology. The limited recharge area created by the narrow valley and topographic divides surrounding the facility combined with historic mining and now, developed land reduces groundwater recharge and occurrence at the site, especially for potential upgradient locations closer to the topographic divides.

The three (3) downgradient monitoring well locations were installed in the valley south of the Gypsum Pond and at lower elevations. These locations serve as downgradient locations and capture groundwater draining through the valley occupied by the Gypsum Pond. Given that the valley is narrow from west to east (approximately 800 to 1200 feet across) these wells intercept preferential drainage for the site and are sufficient to monitor groundwater downgradient of the Gypsum Pond.

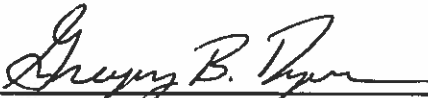
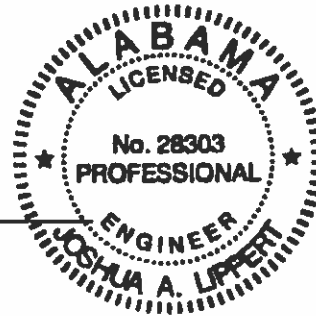
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**CERTIFICATION**

I, Joshua A. Lippert, certify that this report was prepared under my supervision and that the information contained herein is true and accurate to the best of my knowledge. Further, based on my experience and knowledge of the site, the groundwater monitoring network has been adequately designed and constructed to meet the requirements of 40 CFR 257.91.



Joshua A. Lippert, P.E.  
Licensed State of AL, PE No. 28303  
10/17/2017



Gregory B. Dyer, P.G.  
Licensed State of AL, PG No. 1471  
10/17/2017