the CCRs generated by the WGS have been disposed in six on-site ponds/surface impoundments. One of these ponds is the South Ash Pond, an unlined surface impoundment which was designed by Burns and Roe in 1977 and 1978, commissioned in 1980, and has a surface area of approximately 75 acres. The South Ash Pond is situated immediately south of the coal stockpile and power block and is encircled by a coal delivery railroad which loops around the impoundment. Outside of the rail loop, the northern side of the South Ash Pond is bounded by the Coal Pile, the southern side is bounded by a forested area, the western side is bounded by Pennyroyal Creek and the eastern side is bounded by an access road and the Discharge Canal. Vehicular access to the perimeter dike is limited by the rail loop and provided at a single location along the northern portion of the dike.

The unit historically received fly ash, boiler slag, bottom ash, low volume wastewater, and stormwater. Currently, the South Ash Pond receives low volume wastewater from Units 3 and 4, Unit 3 and 4 fly ash sluice (when fly ash is not handled dry), and blowdown and stormwater from the SEFA Star Facility. The South Ash Pond is permitted to receive Unit 3 and 4 bottom ash sluice, Coal Pile Runoff from the western half of the coal pile, and stormwater runoff from the exterior perimeter of the pond. The purpose of the South Ash Pond is to contain CCR and treat process wastewater and stormwater to remove solids by gravity settling. Decanted water is discharged through a riser structure to the Discharge Canal.

The design layout of the pond and perimeter dikes are provided in Drawings 3-CV-548, 3-CV-549, and 3-CV-550, which show that the perimeter dikes were constructed of compacted earth with 3H:1V interior side slopes. The downstream side slopes are typically 3H:1V, except in the western corner where the side slopes are 4H:1V due to the presence of a soft clay zone in the foundation materials (Drawing 3-CV-549). Typical perimeter dike cross sections are provided in Drawing 3-CV-551. The upstream base of dike of the South Ash Pond is located near existing grade (12.5 to 20 ft National Geodetic Vertical Datum of 1929 [NGVD 29]). Site plans and design cross sections depict toe drains that discharge to a shallow perimeter channel installed outside the perimeter dike of the South Ash Pond. Construction dewatering trenches were excavated to drawdown and route water through a 30-in diameter bituminous coated corrugated metal pipe located in the southwest corner (Drawing 3-CV-549). The drawdown pipe was connected to a new catch basin and an existing 54-in diameter corrugated metal pipe to route water away from the excavation.

approximately 26.5 to 41 ft below ground surface (bgs). A total of eighteen borings were performed within the footprint of the South Ash Pond prior to construction.

In October 2013, Geosyntec conducted a subsurface investigation that included five test borings and 12 CPT soundings for the purpose of seismic and liquefaction evaluations. One of the test borings and there of the CPT soundings were advanced within the interior of the South Ash Pond and were terminated once native foundation materials were encountered. Four of the test borings were drilled in the dike materials and advanced beyond the Chicora Member and five feet into the underlying Williamsburg Formation. Six CPT soundings were advanced through the perimeter dike center and three were advanced at the dike toe. In 2016, Geosyntec conducted a supplementary investigation in the west corner of the South Ash Pond that consisted of three test borings and four CPT soundings through the perimeter dike centerline and dike toe.

This Federal CCR Rule Location Restrictions Compliance Demonstration is based on and supported by the detailed information contained in the following documents:

- *Subsurface Investigation Ash and Slurry Pond Dikes*, Winyah Generating Station, Georgetown, South Carolina, 1978, prepared by Soil and Material Engineers, Inc.;
- *Report: Geotechnical/Hydrogeologic Investigation*, Winyah Generating Station, 1999, prepared by Paul C. Rizzo Associates, Inc.;
- *Site Hydrogeologic Characterization Study Report*, Winyah Generating Station, Georgetown, South Carolina, April 2016, prepared by Geosyntec Consultants;
- *History of Construction Report – South Ash Pond,* Winyah Generating Station, Georgetown, South Carolina, October 2016, prepared by Geosyntec Consultants; and
- *2016 Surface Impoundment Periodic Safety Factor Assessment Report – South Ash Pond*, Winyah Generating Station, Georgetown, South Carolina, October 2016, prepared by Geosyntec Consultants.

Additional late Cretaceous Formations are present to a depth of approximately 2,200 ft bgs in the area. These formations, in descending order, include: Donoho Creek, Bladen, Coachman, Cane Acre, Caddin, Sheppard Grove, Pleasant Creek, Cape Fear, and undifferentiated Cretaceous sediments (Geosyntec, 2016a).

The aquifers of most interest at this site are the surficial aquifer and Gordon Aquifer. The surficial aquifer is the water-table aquifer and consists mainly of terrace sediments that were deposited during transgressions and regressions of a post-Miocene sea. The surficial aquifer is lithologically heterogeneous but generally consists of quartz gravel and sand, silt, clay, and shelly sand and unconformably overlies the Gordon aquifer, which is the lowermost aquifer of the Floridan Aquifer system. The Gordon Aquifer represents the permeable portion of the Williamsburg Formation (upper Chicora Member) in the vicinity of the site. As detailed in the *Site Hydrogeologic Characterization Study Report* (Geosyntec, 2016c), the surficial aquifer and Gordon Aquifer exhibit similar hydrogeologic properties and are not separated hydrogeologically. Therefore, the Gordon Aquifer and surficial aquifer are collectively termed the surficial aquifer (Geosyntec, 2016c) and are designated as the uppermost aquifer at the site in accordance with 40 CFR §257.40.

Historical groundwater elevation measurements in the surficial aquifer at the site were influenced by the water levels in the slurry ponds and ash ponds. In recent years, two ponds have been closed. Once the new landfill is operational and the remaining ponds are dewatered and closed, the effect of the ponds on recharge to the water table will be eliminated. For these reasons, a modeled seasonal high water table representing conditions after closure of the slurry ponds and ash ponds was developed (Geosyntec, 2016). A map of the seasonal high water table conditions used for this location restrictions evaluation is included in this report as Figure 3.

2 LOCATION RESTRICTIONS EVALUATION

The location restrictions under §257.60 through §257.64 include: (1) placement above the uppermost aquifer; (2) wetlands; (3) fault areas; (4) seismic impact zones; and (5) unstable areas. Each of these locations is generally recognized as having the potential to impact the structure of any disposal unit.

Soil & Material Engineers, Inc. 1978. *Subsurface Investigation Ash and Slurry Pond Dikes* Winyah Generating Station, Georgetown, South Carolina.

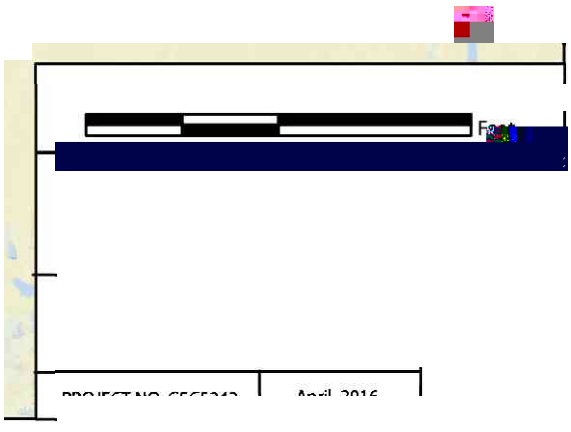
South Carolina Department of Transportation (SCDOT), 2010. Geotechnical Design Manual (GDM), seismic hazard maps.

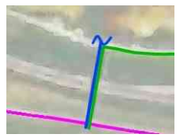
Spencer, 1973. "The Thrust Line Criterion in Embankment Stability Analysis," *Geotechnique,* Volume 23, No. 1, pp. 85-100. March.

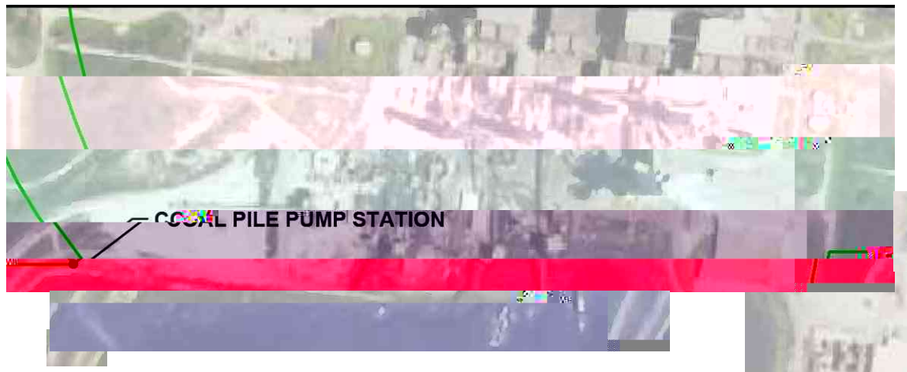
Thomas and Hutton, 2016. "Topographic Survey of the Dike Crests at Santee Cooper, Winyah Generating Station", prepared for Santee Cooper.

Geosyntec consultants

FIGURES






COAL PILE PUMP STATION


SLURRY
POND 3 & 4
UNIT 2
POND
POND A