SOUTH CAROLINA ELECTRIC & GAS

SCANA®
POWER FOR LIVING

GROUNDWATER MONITORING SYSTEM CERTIFICATION

FOR THE

COPE STATION LANDFILL

ORANGEBURG COUNTY, SOUTH CAROLINA

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SOUTH CAROLINA
GARRETT AND MOORE, INC.
No. C3371
CERTIFICATE OF AUTHORIZATION

GARRETT & MOORE
Engineering for the Power and Waste Industries

SOUTH CAROLINA
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1 OVERVIEW

The EPA Administrator, Gina McCarthy, signed the Disposal of Coal Combustion Residuals from Electric Utilities final rule on December 19, 2014, and it was published in the Federal Register (FR) on April 17, 2015. The regulations provide a comprehensive set of requirements for the safe disposal of coal combustion residuals (CCRs), commonly known as coal ash, from coal-fired power plants. The rule is administered as part of the Resource Conservation and Recovery Act [RCRA, 42 United States Code (U.S.C.) §6901 et seq.], using the Subtitle D approach.

South Carolina Electric & Gas (SCE&G) is subject to the CCR Rule. Based on SCE&G's review of the rule, the **Class Three Landfill** at **SCE&G Cope Station** has been determined to be existing CCR landfill subject to the CCR rule requirements.

2 PURPOSE

The purpose of this report is to document that the groundwater monitoring system for the Cope Station Landfill meets the requirements of CCR rule §257.91 – *Groundwater Monitoring System*

3 APPLICABLE REGULATIONS

CCR rule §257.91 – *Groundwater Monitoring Systems* states, in part, the following:

> (a) *Performance standard*. The owner or operator of a CCR unit must install a groundwater monitoring system that consists 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.
>
> (b) The number, spacing, and depths of monitoring systems shall be determined based upon site-specific technical information that must include thorough 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.
>
> (c) The groundwater monitoring system must include the minimum number of monitoring wells necessary to meet the performance standards specified in paragraph (a) of this section, based on

the site-specific information specified in paragraph (b) of this section. The groundwater monitoring system must contain:

(1) A minimum of one upgradient and three downgradient monitoring wells; and

(2) 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.

(d) The owner or operator of multiple CCR units may install a multiunit groundwater monitoring system instead of separate groundwater monitoring systems for each CCR unit.

(e) Monitoring wells must be cased in a manner that maintains the integrity of the monitoring well borehole. This casing must be screened or perforated and packed with gravel or sand, where necessary, to enable collection of groundwater samples. The annular space (*i.e.,* the space between the borehole and well casing) above the sampling depth must be sealed to prevent contamination of samples and the groundwater.

(f) 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. If the groundwater monitoring system includes the minimum number of monitoring wells specified in paragraph (c)(1) of this section, the certification must document the basis supporting this determination.

4 CCR UNIT DESCRIPTION

Cope Station is a coal-fired electric generation plant located in Orangeburg County near Cope, South Carolina. Within the boundary of the Cope Station property, SCE&G owns and operates Phase 1, consisting of Cell 1 through Cell 4, of the Class Three Landfill. The Phase 1 disposal unit was constructed in accordance with the construction permit (permit LF3-00028) issued from DHEC on September 30, 2008 and modified on March 22, 2013. The Phase 1 disposal unit was placed into operation in accordance with an operation approval issued by DHEC on November 12, 2014.

5 DISCUSSION OF THE GROUNDWATER MONITORING SYSTEM

Extensive work has been completed in associated with the groundwater monitoring system for the CCR unit including work associated with the following reports for which I am responsible:

- *Groundwater Sampling and Analysis Plan, EPA CCR Rule Compliance Monitoring Wells, Cope Generating Station Class Three Landfill.* May 2016, Revised July 2016, Revised October 2016
- *Groundwater Monitoring Well Installation Report, EPA CCR Rule Compliance Monitoring Wells, South Carolina Electric & Gas*, July 2016, revised January 2017, for CCR facilities at Cope Station, Wateree Station and Williams Station

- *Analysis of Groundwater Flow Rate and Direction, July 2017 Monitoring Data, EPA CCR Rule Compliance Monitoring Wells, South Carolina Electric & Gas,* September 2017, for CCR facilities at Cope Station, Wateree Station and Williams Station

6 GROUNDWATER MONITORING SYSTEM CERTIFICATION

Based on my experience with the groundwater monitoring well system at the facility to include the planning, installation/construction, monitoring, and analyses of groundwater data, it is my professional opinion that the groundwater monitoring system for the Class Three Landfill at Cope Station has been designed and constructed to meet the requirements of CCR Rule 40 CFR §257.91 - Groundwater Monitoring Systems.