TEXAS MUNICIPAL POWER AGENCY
GIBBONS CREEK STEAM ELECTRIC STATION
COAL COMBUSTION RESIDUE SURFACE IMPOUNDMENTS

40 CFR §257.73(d) – Periodic Structural Stability Assessment

§257.73(d)(1) The owner or operator of the CCR unit must conduct an initial and periodic structural stability assessments and document whether the design, construction, operation and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices for the maximum volume of CCR and CCR wastewater which can be impounded therein. The assessment must, at a minimum, document whether the CCR unit has been designed, constructed, operated and maintained with:

(i) Stable foundations and abutments.

A review of information presented in the draft history of construction (ERM, dated September 12, 2016), indicates that a soils investigation was conducted by the National Soil Services (NSS) prior to plant construction to characterize the physical and engineering properties of the subsurface material. Boring Nos. 4 through 7 and 13 through 18 were installed in the area of the proposed ash ponds from 100 to 200 feet below ground surface. Soil samples were analyzed for moisture content, Atterberg limits, grain size distribution, unconfined compressive strength, unconsolidated-undrained compressive strength and consolidated-undrained compressive strength. The NSS investigation report also presents a description of the general site geologic formations as well as more detailed discussion of strata encountered in the soil borings.

Prior to construction of the ash ponds, areas that would receive fill were stripped of topsoil to a depth of one foot. These areas were then scarified to a depth of one foot, moisture conditioned and compacted to achieve 95% of maximum dry density per ASTM 698.

During construction of the ash ponds, inspection trenches were installed along the interior toe of the embankments to observe the soil strata below the toe and dike foundations to ensure pervious soils did not underlie the embankment foundations.

(ii) Adequate slope protection to protect against surface erosion, wave action, and adverse effects of sudden drawdown.

The pond slopes were constructed at a maximum 3H:1V horizontal to vertical slope, were constructed of clayey material and constructed in lifts that were compacted to a minimum of 95% maximum dry density. Exposed slopes are well vegetated to protect against erosion and wave action. The vegetated slopes are being maintained and monitored for erosion problems. The water levels in the ponds are controlled by TMPA and sudden drawdown should not occur.

(iii) Dikes mechanically compacted to a density sufficient to withstand the range of loading conditions in the CCR unit.

According to information provided in the draft history of construction (ERM, dated September 12, 2016), embankment fill materials were placed in maximum nine inch thick loose lifts, moisture conditioned to within 2% below and 4% above optimum moisture content and compacted to achieve 95% of the maximum dry density. Material testing was also performed to ensure that the impoundment liners consisted of either four feet of natural impervious soils or

three feet of compacted impervious soils (permeability less than or equal to 1 x 10^{-7} cm/sec) to control seepage. As required by §257.73(e), an initial safety factor assessment is being performed to verify that the required embankment safety factors are met or exceeded to accommodate the anticipated range of loading conditions of the CCR units.

(iv) Vegetated slopes of dikes and surrounding areas not to exceed a height of six inches above the slope of the dike, except for slopes which have an alternate form or forms of slope protection.

Vegetated slopes and surrounding areas are maintained on a regular basis.

(v) A single spillway or combination of spillways configured as specified in paragraph (d)(1)(v)(A) of this section. The combined capacity of all spillways must be designed, constructed, operated and maintained to adequately manage flow during and following the peak discharge from the event specified in paragraph (d)(1)(v)(B) of this section.

(A) All spillways must be either:

(1) Of non-erodible construction and designed to carry sustained flows, or

(2) Earth or grass lined and designed to carry short-term, infrequent flows at non-erosive velocities where sustained flows are not expected.

(B) The combined capacity of all spillways must adequately manage flow during and following the peak discharge from a:

(1) Probable maximum flood for a high hazard potential CCR surface impoundment;

(2) 1000 year flood for a significant hazard potential CCR surface impoundment;

(3) 100 year flood for a low hazard potential CCR surface impoundment.

The ash ponds (designated as ash ponds and scrubber sludge pond) are designed for total containment of the required design storm event. Each ash pond is classified as a low hazard potential CCR surface impoundment. The required design storm event is the 100 year, 24 hour event of 11.5 inches of rainfall. The ponds are operated to maintain sufficient freeboard to fully contain the runoff from the 100 year storm event.

Because the ponds are designed for total containment of the required design storm event, spillways are not provided. The ash ponds do have an overflow drop inlet that can be utilized to dewater the ponds (mechanically operated) down to the drop inlet crest elevation (elevation 266.0). Pumps are utilized to dewater the sludge pond as required.

As required by §257.82, an Inflow Design Flood (IDF) analysis was prepared for the ash ponds and scrubber sludge pond. A review of the draft copy (ERM, dated August 19, 2016) indicates that to provide total containment of the 100 year design storm event and also maintain a minimum of 6 inches freeboard, the water level in the ash ponds needs to be maintained at least 2.0 feet below the dike crest and the water level in the sludge pond needs to be maintained at least 1.6 feet below the dike crest.

(vi) Hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit that maintain structural integrity and are free of significant deterioration, deformation, distortion, bedding deficiencies, sedimentation, and debris which may negatively affect the operation of the hydraulic structure, and

Based on the visual inspection and review of weekly inspections, there are no indications of structural integrity issues and these structures appear to be free of significant deterioration, deformation, distortion, bedding deficiencies, sedimentation or debris which could negatively affect the operation of the hydraulic structure. Minor seepage was noted along the north bank of the ash ponds and has been and will continue to be monitored for signs of problems such as changes in flow rate or color of the water.

(vii) For CCR units with downstream slopes which can be inundated by the pool of an adjacent water body, such as a river, stream or lake, downstream slopes that maintain structural stability during low pool of the adjacent water body or sudden drawdown of the adjacent water body.

The CCR units (ash pond and sludge pond) are located such that the downstream slopes are not subject to inundation by the pool of any adjacent water bodies.

§257.73(d)(2) The periodic assessment described in paragraph (d)(1) of this section must identify any structural stability deficiencies associated with the CCR unit in addition to recommending corrective measures. If a deficiency or a release is identified during the periodic assessment, the owner or operator unit must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.

No structural stability deficiencies were identified in the initial structural stability assessment or in the initial inspection. Minor seepage observed along the northern slope of the ash ponds should continue to be monitored.

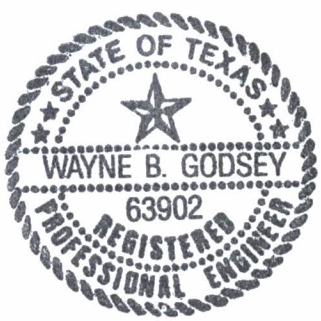
§257.73(d)(3) The owner or operator of the CCR unit must obtain a certification from a qualified professional engineer stating that the intitial assessment and each subsequent periodic assessment was conducted in accordance with the requirements of this section.

Certification

This initial structural stability assessment was prepared in accordance with 40 CFR 257.73(d) and was prepared by:

Wayne B Godsey 10/10/16

Wayne B. Godsey, P.E.
Godsey Engineering
Texas Firm Registration No. F-5593



Seal