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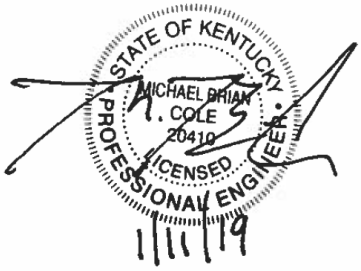
Reid/HMPL CCR Surface Impoundment

Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule
CCR Surface Impoundment 2018 Annual Inspection Report

Big Rivers Electric Corporation

Project number: 60581504

January 11, 2019



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1. Project Background

In accordance with the United States Environmental Protection Agency (USEPA) Final Coal Combustion Residual (CCR) Rule §257.83, annual inspection by a qualified professional engineer is required for each CCR surface impoundment.

The CCR Rule requires a visual inspection by a licensed civil engineer of each CCR unit to ensure the design, construction, operation and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. AECOM completed the annual inspection in accordance with CCR Rule requirements and prepared this Annual Inspection Report for the Reid/HMPL CCR Surface Impoundment at Sebree Station, located in Webster County, Kentucky. This inspection was performed in accordance with the scope of work presented in our proposal number OPP-800543, dated June 6, 2018, executed under purchase order 249941 as part of general services agreement with Big Rivers Electric Corporation dated November 16, 2017.

The CCR unit has been in existence for more than 40 years. The CCR unit operator has general maintenance and repair procedures in place as they determine necessity. There are no known occurrences of structural instability of the CCR unit. The current Reid/HMPL CCR Surface Impoundment footprint is approximately 25.4 acres. An aerial photograph of Reid/HMPL CCR Surface Impoundment is shown below in Figure 1.

Figure 1: Big Rivers Reid/HMPL CCR Surface Impoundment Overview

2. Regulatory Requirements

The annual inspection must include the criteria specified in CCR Rule Section 257.83(b) (1) which at a minimum includes:

(i) A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., CCR unit design and construction information required by §§ 257.73(c)(1) and 257.74(c)(1), previous periodic structural stability assessments required under §§ 257.73(d) and 257.74(d), the results of inspections by a qualified person, and results of previous annual inspections);

(ii) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures; and

(iii) A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.

In addition to the annual inspections, 7-day inspections and 30-day instrumentation monitoring per CCR Rule Section 257.83 (a) (1) are completed by BREC and are documented in the facility operating record per § 257.105(g)(5) .

Once the annual inspection has been completed, the CCR Rule Section 257.83(b) (2) requires the qualified professional engineer to prepare a report following each inspection that addresses the following:

(i) Any changes in geometry of the impounding structure since the previous annual inspection;

(ii) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection;

(iii) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection;

(iv) The storage capacity of the impounding structure at the time of the inspection;

(v) The approximate volume of the impounded water and CCR at the time of the inspection;

(vi) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures;

(vii) Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.

3. Review of Available Information

Prior to completing the visual inspection of the CCR unit, AECOM reviewed the 2017 Annual Inspection Report, dated December 5, 2017, prepared by Associated Engineers, Inc. for the CCR surface impoundment. Observations by the inspecting engineer were documented in the inspection report and BREC completed the appropriate repairs where necessary. The observations from the 2017 annual inspection include:

- Thick vegetation in the interior of the impoundment and upstream slope of the embankment;
- North embankment crest contained a minor slip on the upstream slope;
- Small areas of exposed soil in southeast corner of the embankment;
- Damage to vegetation from mowing equipment at the southeast corner of the south embankment;
- Small depression located mid-slope of the south downstream slope;

- Saturated ground and deep mower ruts observed on lower slope of south embankment adjacent to the toe;
- Depression on the embankment slope;
- Minor mower damage to upper downstream slope;
- Standing water and thick vegetation at east end of embankment;

The 2017 inspection concluded “no deficiencies or disrupting conditions that would require immediate measures to remedy were identified in the inspection. The inspection findings consisted of maintenance items that were not observed to be signs or potential signs of significant structural weakness.”

After the inspection observations were made available to BREC corrective actions at the Sebree Station Reid/HMPL Surface Impoundment were completed. In summary, no deficiencies were identified and the previously stated observations are being addressed as part of surface impoundment general maintenance and monitoring.

4. Inspection Observations & Procedures

The Reid/HMPL CCR Surface Impoundment consists of an ash pond which receives flow from the Robert A. Reid plant and is located immediate west of the Sebree Station cooling towers. Per CCR Rule Section 257.83 (b) (3) the owner or operator of the CCR unit (BREC) must complete the initial inspection no later than January 18, 2016. This report summarizes the fourth annual inspection performed by BREC since the CCR Rule took effect April 17, 2015. The inspection was completed on July 25, 2018 to visually inspect the dikes of the impoundment, and on August 22, 2018 to inspect the hydraulic structures with use of a remote operated camera. The inspection was completed by AECOM personnel Mark Keown, P.E. and Scott Mesi.

Visual inspection of the surface impoundment and embankments were performed on July 25, 2018. The inspection began at the southwest corner near the principal spillway stop log structure. The stoplog structure was in good condition showing no signs or deterioration or instability, the inlet to the structure was not obstructed. The overflow weir discharged into a 48-inch outlet pipe. The outlet pipe inspection by remote video camera was completed on August 22, 2018 by Envision Contractors, LLC. The inspection ended after 221 feet due to mud in the spillway piping. However, the piping section within the embankment was inspected and determined to be clear and in good working condition. No signs of bad pipe joints or leaks that may result in internal erosion of the embankment were present. There was a minor sag in the pipe observed however, this did not show signs of affecting the structural integrity of the outlet pipe and the sag should continue to be monitored.

The inspection proceeded along the south dike adjacent to the cooling towers moving west at the crest then returning to the east at the toe of the southern dike. The dike becomes incised at the southeast corner and a portion of the east side of the pond therefore the inspection progressed along the west dike. At the crest of the west dike is a well maintained gravel access road showing no signs or settlement or instability. Rip rap was present as slope protection on the upstream (inboard) embankment slope, and appeared to be well maintained. The west embankment downstream slope was generally well vegetated and maintained.

At the toe of the northeast corner of the embankment the ground was soft however; there was no visible seepage, flowing water, or turbidity. The area was recently regraded to promote drainage and the recently planted vegetation was well established. The north embankment access road was well maintained and the vegetation was in good condition covering the entire embankment with no noticeable areas of sparse vegetation.

5. Inspection Findings

Per CCR Rule Section 257.83(b) (2) the following deductions were made after completion of the inspection.

CCR Surface Impoundment Geometry

The Reid/HMPL CCR Surface Impoundment consists of an earthen embankment on the south, west and north sides and incised to the east as shown in Figure 1. The impoundment is approximately 2,500 feet to the east of the Green River and the maximum height of the embankment is 42 feet on the west dike. The impoundment currently receives only sluiced bottom ash however, previously received both sluiced fly ash and bottom ash until 1985 when the Boothe system was put into operation.

Per the 2017 annual inspection observations, BREC repair the wet saturated ground along the northeast corner of the embankment toe. This area was regraded to promote positive drainage and re-seeded. The regrading was done to provide a slope to direct surface from the toe of the embankment. At the time of the inspection there were no signs of visible seepage, flowing water, or turbidity in this location. The area should continue to be monitored as part of the regular inspections for any changes in post-construction conditions. In order to minimize rutting in the area BREC plans to use lightweight or handheld mowing equipment in the repaired area.

CCR Surface Impoundment Instrumentation

The Reid/HMPL CCR Surface Impoundment instrumentation consists of five piezometers and one water level indicator.

Piezometers

The location and maximum recorded readings of each piezometer between the December 5, 2017 inspection and the July 25, 2018 inspection are presented in the table below.

Piezometer ID	Northing	Easting	Top of Casing Elevation (AMSL)	Depth to Water Static Level (ft.)	Static Water Elevation (AMSL)
P-1A	483464.43	1491086.43	428.95	18.54	416.19
P-2A	483141.96	1491515.32	428.63	13.03	418.11
P-3A	483772.54	1491306.43	428.75	23.62	410.91
P-4	483033.84	1491399.12	397.44	5.23	393.33
P-5	483415.93	1490969.80	395.34	9.62	386.8

Water Surface Level Indicator

The maximum water surface elevation since the 2017 annual inspection report was approximately 426.4 feet above mean sea level (MSL) as measured from the water level indicator gauge adjacent to the overflow weir outlet structure.

CCR Surface Impoundment Contents Depths and Elevations

The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection of the Reid/HMPL CCR Surface Impoundment are provided below. The measurements are based on the survey report by Associated Engineers, Inc. dated November 8, 2018. The basis for the measurements include: the available measure water surface elevations, the October 2018 flight derived topographic contours and bathymetric survey data, and the best available as-built design data for the impoundment prior to placement of CCR materials (provided by Big Rivers Electric Corporation).

Elevations are provided as feet above MSL and depths are provided as height in feet above the impoundment's design bottom prior to placement of CCR material. All values are rounded off to the nearest tenth of foot.

CCR Surface Impoundment Properties	Minimum	Maximum	Present
Depth of Impounded Water (ft.)	Not Available[1]	Not Available[1]	15.2
Elevation of Impounded Water (ft. above MSL)	424.8	426.4	426.5
Depth of Impounded CCR Material (ft.)	9.0	45.1	45.1
Elevation of Impounded CCR Material (ft. above MSL)	409.3	442.1	442.1

[1] Depth not available due to absence of bathymetric survey data at times of minimum and maximum pool elevations. However, the depth of impounded water ranged from 0 to approximately 15.2 feet at the time of survey.

[2] At location of maximum impounded water depth

[3] At location of maximum CCR material depth

CCR Surface Impoundment Storage Capacity

The total storage capacity of the Reid/HMPL Surface Impoundment at the time of the October 2018 survey was estimated to be 758,873 cubic yards. This volume was based on the assumption CCR can be placed up to the spillway elevation of 425.8 ft above MSL. The storage capacity is provided by Associated Engineers, Inc. and the estimated capacity is based on the available measured water surface elevations, the October 2018 flight derived topographic contours and bathymetric survey data, and the best available as-built design data for the impoundment prior to placement of CCR material, provided by BREC.

CCR Surface Impoundment Contents Volumes

The total volume of CCR material contained in the Green CCR Surface Impoundment at the time of the October 2018 survey was estimated to be 102,751 cubic yards which includes CCR material above the impoundment pool elevation. The total volume of impounded water was estimated at 758,452 cubic yards.

The volumes are based on the survey completed by Associated Engineers, Inc. in October of 2018. The estimated volumes are based on the October 2018 flight derived topographic contours and bathymetric survey data and the best available as-built design data for the impoundment prior to placement of CCR material, provided by Big Rivers Electric Corporation.

CCR Surface Impoundment Structural, Operational, and Safety Items

No deficiencies or disrupting conditions that would require immediate measures to remedy were identified in the inspection. The inspection findings consisted of maintenance items that were not observed to be signs or potential signs of significant structural weakness. The video inspection completed on August 22, 2018 by Envision Contractors, LLC of the piping associated with the structure show the pipes are in good condition to operate as designed however, the inspection was not able to be completed due to soft sediment in the pipe. Sediment tends to deposit in slower moving water typical in flatter sections of pipe over time however, the accumulation is very minor and will readily be forced out during periods of large discharge from the overflow weir.

The observations were limited to minor erosion on the inboard of the south embankment likely due to mowing and minor vegetation growth within the riprap on the upstream slope of the north embankment. Portions of the downstream slope of the south embankment was re-seeded at the time of the inspection in improve vegetative cover. The observations are discussed further below in Section 6 “Recommendations” BREC has been made aware of the aforementioned observations and are continuing to monitor the areas.

CCR Surface Impoundment Changes

There have been no changes to the Reid/HMPL Surface Impoundment since the previous 2017 annual inspection that may have the potential to affect the stability or operation of the CCR unit. Changes include typical operations activity such as, placement of additional CCR material and maintenance such as mowing or spraying to control vegetation on the upstream slopes of the perimeter berm.

6. Recommendations

General Maintenance Items and Monitoring Conditions

1. Continue to spray 2 to 3 times per year to kill weeds along the inboard slopes of the surface impoundment. Current schedule is effective.
2. Continue to monitor the re-graded and re-seeded area at the toe of the downstream slope on the west side of the north embankment. Continue to use lightweight mowing equipment to minimize rutting if subgrade is soft or wet. Monitor for any signs or seepage such as wetness on the slope or flowing water.
3. Consider mowing with lightweight equipment at the crest of the south slope to minimize erosion of the inboard embankment.
4. Monitor sediment in the flatter portions of the spillway piping, if condition shows increasing sediment after consecutive inspections, the plant may consider cleaning out the spillway.

Repairs and/or Deficiencies

Based on the results of the inspection and provided the general maintenance items discussed above are addressed and monitored, no deficiencies were observed and no repairs required for the Reid/HMPL CCR Surface Impoundment.

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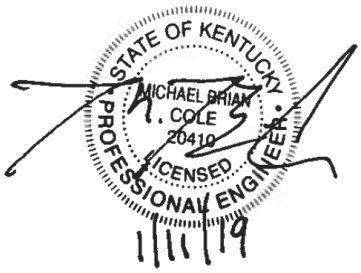
Green CCR Surface Impoundment

Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule
CCR Surface Impoundment 2018 Annual Inspection Report

Big Rivers Electric Corporation

Project number: 60577417

January 11, 2019



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1. Project Background

In accordance with the United States Environmental Protection Agency (USEPA) Final Coal Combustion Residual (CCR) Rule §257.83, annual inspection by a qualified professional engineer is required for each CCR surface impoundment.

The CCR Rule requires a visual inspection by a licensed civil engineer of each CCR unit to ensure the design, construction, operation and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. AECOM completed the annual inspection in accordance with CCR Rule requirements and prepared this Green CCR Surface Impoundment Annual Inspection Report for the Sebree Station, located in Henderson County, Kentucky. This inspection was performed in accordance with the scope of work presented in our proposal number OPP-800542, dated June 6, 2018, executed under purchase order 249941 as part of general services agreement with Big Rivers Electric Corporation dated November 16, 2017.

The CCR unit has been in existence for more than 40 years. The CCR unit operator has general maintenance and repair procedures in place as they determine necessity. There are no known occurrences of structural instability of the CCR unit. The current Green CCR Surface Impoundment footprint is approximately 21 acres. An aerial photograph of Green CCR Surface Impoundment is shown below in **Figure 1**.

Figure 1: Green CCR Surface Impoundment Aerial Photograph

2. Regulatory Requirements

The annual inspection includes the criteria specified in CCR Rule Section 257.83(b) (1) which at a minimum includes:

(i) A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record. These files include, CCR unit design and construction information required by §§ 257.73(c)(1) and 257.74(c)(1), previous periodic structural

stability assessments required under §§ 257.73(d) and 257.74(d), the results of inspections by a qualified person, and results of previous annual inspections;

(ii) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures; and

(iii) A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.

In addition to the annual inspections, 7-day inspections and 30-day instrumentation monitoring per CCR Rule Section 257.83 (a) (1) are completed by BREC and are documented in the facility operating record per § 257.105(g)(5) .

Once the annual inspection has been completed, the CCR Rule Section 257.83(b) (2) requires the qualified professional engineer to prepare a report following each inspection that addresses the following:

(i) Any changes in geometry of the impounding structure since the previous annual inspection;

(ii) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection;

(iii) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection;

(iv) The storage capacity of the impounding structure at the time of the inspection;

(v) The approximate volume of the impounded water and CCR at the time of the inspection;

(vi) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures;

(vii) Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.

3. Review of Available Information

Prior to completing the visual inspection of the CCR unit, AECOM reviewed the 2017 Annual Inspection Report, prepared by Associated Engineers, Inc. dated December 5, 2017, for the CCR surface impoundment. Observations by the inspecting engineer were documented in the inspection report and BREC completed the appropriate repairs where necessary. The observations from the 2017 annual inspection include:

- Small isolated low area on the crest of the access road;
- Sparsely vegetated downstream slope in the southwest corner of the impoundment and sparse vegetation in the drainage ditch at the toe of the west slope;
- Small animal burrows and disturbed ground were observed on the mid-slope and lower downstream slope of the central portion and east end of the south embankment;
- Minor small animal burrows and areas of sparse vegetation were observed on the embankment crest adjacent to the rocked upstream slope and vegetated downstream slope on the northern portion of the west embankment;
- Damage from mowers observed on the east end of the downstream slope of the south embankment
- Moderate erosion was observed on the southeast groin of the downstream south embankment slope;

- Standing water and thick stands of vegetation were observed in the ditch located adjacent to the south embankment;
- The east crest access road is not well separated from interior CCR storage areas, and drainage control for these areas was observed to be ineffective. Drainage control ditches are absent or poorly drained and contain excess vegetation. Areas of exposed CCR material and erosion were observed on the east embankment downstream slope;
- An inflow pipe that is located at the north end of the impoundment was observed to be in poor condition and contain debris; and
- A minor slump was observed on the upstream slope of the west embankment crest approximately 300 feet north of the west access road.

The 2017 inspection concluded “no deficiencies or disrupting conditions that would require immediate measures to remedy were identified in the inspection. The inspection findings consisted of maintenance items that were not observed to be signs or potential signs of significant structural weakness.”

After the inspection observations were made available to BREC corrective actions at the Green CCR Surface Impoundment were completed. In summary, no deficiencies were identified and the previously stated observations are being addressed as part of surface impoundment general maintenance and monitoring.

4. Inspection Procedures & Observations

The Green CCR Surface Impoundment consists of an ash pond which receives flow from the plant and is located approximately 400 feet west of the west of the Green River at the Sebree Station. This report summarizes the fourth annual inspection performed by BREC since the CCR Rule took effect April 17, 2015. The inspection was completed on July 25, 2018 to visually inspect the dikes of the impoundment, and on August 22, 2018 to inspect the hydraulic structures with use of a remote operated camera. The inspection was completed by AECOM personnel Mark Keown, P.E. and Scott Mesi.

Visual inspection of the surface impoundment and embankments were performed on July 25, 2018. The inspection began at the northwest corner of the impoundment on the embankment crest access road. The crest access road was paved with gravel and appeared to be well maintained. However, an area of the crest access road was missing gravel within the southeast corner of the impoundment. Rip rap was present as slope protection on the upstream embankment slope, and typically appeared to be well maintained, although some vegetation was noted within the rip rap on the upstream slope. The south embankment downstream slope was generally well vegetated and maintained.

The east side of the impoundment interior contains CCR material at or above the current pool elevation. Active management of CCR material was observed where stored above the pool elevation. The east crest access road is not well separated from interior CCR storage areas however, shows no signs of instability or deficiencies.

The south embankment contains the discharge structure, which consists of two 30-inch diameter corrugated steel discharge pipes. The upstream end of the discharge structure has a concrete common headwall with variable height steel debris deflectors that should be removed. Thick vegetation was present around the spillway pipe outlets. The pipe conveyances were inspected on October 27, 2017 and August 22, 2018 by Envision Contractors, LLC using a remote camera and found to be in acceptable operating condition.

5. Inspection Findings

In accordance with CCR Rule Section 257.83(b) (2) the inspection findings are presented in the following sections.

CCR Surface Impoundment Geometry

The Green CCR Surface Impoundment consists of an earthen embankment to the south, and incised on the remaining sides. The south embankment has a maximum height of 19.5 feet. The middle of the south embankment was constructed on a ridge and the toe of the embankment was previously a drainage area.

The west side of the pond is bounded by a gravel access road with a drainage ditch to the west generally less than five feet in height, the original design drawings by Burns and Roe, Inc., dated August 10, 1978 show the west side of the pond as incised. Although shown as incised on the design drawings, the east side of the impoundment has a maximum height of approximately eight feet above surrounding ground surface, with a 40-foot wide access road parallel to the east dike supporting the toe of slope. CCR has been placed above the normal pool elevation on the upstream side of the east dike creating reclaimed land. The area has been regraded as part of the active CCR management operations.

CCR Surface Impoundment Instrumentation

The Green River CCR Surface Impoundment instrumentation consists of five piezometers and one water level indicator.

Piezometers

The location and maximum recorded readings of each piezometer between the previous December 5, 2017 inspection and the most recent July 25, 2018 inspection are presented in the table below.

Piezometer ID	Northing	Easting	Top of Casing Elevation (AMSL)	Depth to Water Static Level (ft.)	Static Water Elevation (AMSL)
P-1A	480202.55	1492104.21	396.17	11.54	384.63
P-2A	480186.48	1492464.48	395.98	11.76	384.22
P-3A	480175.11	1492692.75	395.91	13.26	382.65
P-6	480122.51	1492462.58	379.33	1.04	378.29
P-7	480137.28	1492099.00	380.26	1.03	379.23

Water Surface Level Indicator

The maximum water surface elevation between the July 25, 2018 inspection and the previous December 5, 2017 annual inspection report was recorded at 2.00 feet on the gauge which corresponds to a water surface elevation of 392.02 feet above mean sea level.

CCR Surface Impoundment Contents Depths and Elevations

The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection of the Green CCR Surface Impoundment are provided below. The measurements are based on the survey report by Associated Engineers, Inc. dated November 8, 2018. The basis for the measurements include: the available measure water surface elevations, the October 2018 flight derived topographic contours and bathymetric survey data, and as-built design data for the impoundment prior to placement of CCR material, prepared by Burns and Roe, Inc. Engineering and Consultants, dated June 30, 1978, provided by BREC.

Elevations are provided as feet above MSL and depths are provided as height in feet above the impoundment's design bottom prior to placement of CCR material. All values are rounded off to the nearest tenth of foot.

CCR Surface Impoundment Properties	Minimum	Maximum	Present
Depth of Impounded Water (ft)	Not Available[1]	Not Available[1]	14.5[2]
Elevation of Impounded Water (ft above MSL)	391.7	392.0	392.6
Depth of Impounded CCR Material (ft)	5.1	57.1	57.1[3]
Elevation of Impounded CCR Material (ft above MSL)	378.1	420.6	420.6[3]

[1] Depth not available due to absence of bathymetric survey data at times of minimum and maximum pool elevations. However, the depth of impounded water ranged from 0 to 14.5 feet at the time of survey.
[2] At location of maximum impounded water depth
[3] At location of maximum CCR material depth

CCR Surface Impoundment Storage Capacity

The total storage capacity of the Green Surface Impoundment at the time of the October 2018 survey was estimated to be 976,165 cubic yards. This volume was based on the assumption CCR can be placed up to the spillway elevation of 393.8 ft above MSL. The storage capacity is provided by Associated Engineers, Inc. and the estimated capacity is based on the available measured water surface elevations, the October 2018 flight derived topographic contours and bathymetric survey data, and the as-built design data for the impoundment prior to placement of CCR material, prepared by Burns and Roe, Inc. Engineering and Consultants, dated June 30, 1978, provided by BREC.

CCR Surface Impoundment Contents Volumes

The total volume of CCR material contained in the Green CCR Surface Impoundment at the time of the October 2018 survey was estimated to be 898,581 cubic yards which includes CCR material above the impoundment pool elevation. The total volume of impounded water was estimated at 135,766 cubic yards.

The volumes are based on the survey completed by Associated Engineers, Inc. in October of 2018. The estimated volumes are based on the October 2018 flight derived topographic contours and bathymetric survey data and the as-built design data for the impoundment prior to placement of CCR material, prepared by Burns and Roe, Inc. Engineering and Consultants, dated June 30, 1978, provided by BREC.

CCR Surface Impoundment Structural, Operational, and Safety Items

No deficiencies or disrupting conditions that would require immediate measures to remedy were identified in the inspection. The inspection findings consisted of maintenance items that were not observed to be signs or potential signs of significant structural weakness. The video inspection completed on August 22, 2018 by Envison Contractors, LLC of the piping associated with the structure show the pipes are in good condition to operate as designed and the outfall is unobstructed. The observations were limited to sparse vegetation, and weed control as discussed further in Section 6 below. BREC has been made aware of the aforementioned observations and are planning to repair as soon as practical.

CCR Surface Impoundment Changes

There have been no changes to the Green Surface Impoundment since the previous 2017 annual inspection that may have the potential to affect the stability or operation of the CCR unit. Changes include typical operations activity such as, placement of additional CCR material and maintenance such as mowing or spraying to control vegetation on the upstream slopes of the perimeter berm.

6. Recommendations

General Maintenance Items and Monitoring Conditions

1. Continue to spray 2 to 3 times per year to kill weeds along the inboard slopes of the surface impoundment. Current schedule is effective.
2. Sparse vegetation was noted in a small area near the crest of the south embankment and a small strip on the west Access Road berm on the downstream side. No signs of erosion were present however, it is prudent BREC re-seeds this area when the weather permits to reduce the risk of erosion propagation.
3. The phragmites growing in the southeast corner of the CCR Surface Impoundment (near the landfill storage ponds outfall) should be sprayed as part of the regular maintenance. The vegetation is growing near the erosion protection armoring and should be removed so it does not begin to grow over the armoring. Once the vegetation is removed from the inboard slope of the south embankment the area should be monitored for signs of erosion and if witnessed rip rap armoring can be placed to protect the slope.

Repairs and/or Deficiencies

Based on the results of the inspection and provided the general maintenance items discussed above are addressed and monitored, no deficiencies were observed and no repairs required for the Green CCR Surface Impoundment.