

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

July 18, 2014

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

VIA E-MAIL

Mr. Jim Vick, Environmental Affairs Director
Gulf Power Company
One Energy Place
Pensacola, Florida 32520-0328

Re: Request for Action Plans regarding Gulf Power –Plants Crist and Scholz

Dear Mr. Vick,

On August 20-21, 2012 and August 22, 2012 the United States Environmental Protection Agency ("EPA") and its engineering contractors conducted coal combustion residual (CCR) site assessments at the Gulf Power - Plants Crist and Scholz facilities, respectively. The purpose of these visits was to assess the structural stability of the impoundments or other similar management units that contain "wet" handled CCRs. We thank you and your staff for your cooperation during the site visits. Subsequent to the site visits, EPA sent you a copy of the draft reports evaluating the structural stability of the units at the Gulf Power - Plants Crist and Scholz facilities and requested that you submit comments on the factual accuracy of the draft reports to EPA. Your comments were considered in the preparation of each of the final reports.

The final reports for the Gulf Power - Plants Crist and Scholz facilities have been sent via overnight mail.

Each report includes a specific condition rating for the CCR management units and recommendations and actions that our engineering contractors believe should be undertaken to ensure the stability of the CCR impoundments located at the Gulf Power - Plants Crist and Scholz facilities. These recommendations are listed in Enclosure 1.

Since these recommendations relate to actions which could affect the structural stability of the CCR management units and, therefore, protection of human health and the environment, EPA believes their implementation should receive the highest priority. Therefore, we request that you inform us on how you intend to address each of the recommendations found in the final reports. Your response should include specific plans and schedules for implementing each of the recommendations. If you will not implement a recommendation, please provide a rationale. Please provide a response to this request by **August 20, 2014**. Please send your response to:

Mr. Stephen Hoffman
U.S. Environmental Protection Agency (5304P)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

If you are using overnight or hand delivery mail, please use the following address:

Mr. Stephen Hoffman
U.S. Environmental Protection Agency
Two Potomac Yard
2733 S. Crystal Drive
5th Floor, N-5838
Arlington, VA 22202-2733

You may also provide a response by e-mail to hoffman.stephen@epa.gov, dufficy.craig@epa.gov, kelly.patrickm@epa.gov and englander.jana@epa.gov.

You may assert a business confidentiality claim covering all or part of the information requested, in the manner described by 40 C. F. R. Part 2, Subpart B. Information covered by such a claim will be disclosed by EPA only to the extent and only by means of the procedures set forth in 40 C.F.R. Part 2, Subpart B. If no such claim accompanies the information when EPA receives it, the information may be made available to the public by EPA without further notice to you. If you wish EPA to treat any of your response as "confidential" you must so advise EPA when you submit your response.

EPA will be closely monitoring your progress in implementing the recommendations from each report and could decide to take additional action if the circumstances warrant.


Until a determination is made on your CBI claim for each of these facilities, you should be aware that EPA will NOT be posting the reports for these facilities on the Agency website.

Given that the site visit related solely to structural stability of the management units, these reports and their conclusions in no way relate to compliance with RCRA, CWA, or any other environmental law and are not intended to convey any position related to statutory or regulatory compliance.

Please be advised that providing false, fictitious, or fraudulent statements of representation may subject you to criminal penalties under 18 U.S.C. § 1001.

If you have any questions concerning this matter, please contact Mr. Hoffman in the Office of Resource Conservation and Recovery at (703) 308-8413. Thank you for your continued efforts to ensure protection of human health and the environment.

Sincerely,


for Barnes Johnson, Director
Office of Resource Conservation and Recovery

Enclosure

Gulf Power – Plant Crist Recommendations (from the final assessment report)

CONCLUSIONS

Conclusions are based on visual observations during the site assessment on August 20 and 21, 2012 and review of technical documentation provided by Gulf Power (Appendix A of the final report). Plant Crist's CCW impoundments appear to be structurally sound based on the visual observations of the structural element components (i.e. inlet structures, earth embankments, and outlet structures).

Conclusions Regarding Structural Soundness of the CCW Impoundments

□ Gypsum Storage Pond - Stability analyses for the Gypsum Storage Pond performed by Southern Company Services, Inc. (SCS), dated January 28, 2014 were provided to CDM Smith. Liquefaction potential analyses performed by SCS, dated January 27, 2014 were also provided to CDM Smith.

Liquefaction potential analyses for the Gypsum Storage Pond, performed by SCS evaluated the liquefaction potential of the ponds when subjected to loading associated with a seismic event having a 2-percent exceedance over a 50-year period, considering seismic hazards derived from both the Central and Eastern U.S. random faulting source (CEUS) and the New Madrid Source Zone (NMSZ) scenario earthquakes. Analyses of the Gypsum Storage Pond embankments indicate liquefaction of the foundation soils is not a threat during either of the scenario earthquakes.

Slope stability analyses were based on available as-built drawings and soil properties from Plant Crist Gypsum Storage Area Hydrogeological and Geotechnical Investigation Report prepared by Earth Science and Environmental Engineering group of Southern Companies Generation, dated June 2007. Calculated factors of safety for the steady-state and seismic loading conditions with the pond at maximum surcharge level conditions were adequate.

Slope stability analyses for rapid drawdown conditions were not provided due to the presence of a low-permeability textured high-density polyethylene (HDPE) liner system preventing saturation of underlying soils. CDM Smith agrees that analysis of rapid drawdown is not necessary, based on the presence of the HDPE liner system.

□ Process Sedimentation Pond and the Process Return Water Pond - Stability analyses for the Process Sedimentation Pond and Process Return Water Pond, dated January 28, 2014, were provided to CDM Smith. Conditions analyzed included steady-state and seismic loading with the pond at maximum surcharge level and liquefaction potential analyses. Slope stability analyses for rapid drawdown conditions were not provided. Calculated factors of safety for the conditions analyzed were adequate. Rapid drawdown was not considered due to the interior HDPE liner preventing saturation of underlying soil. CDM Smith agrees that analyses of rapid drawdown is not necessary, based on the presence of the HDPE liner.

□ Ash Pond – As stated in Section 1.2, the Ash Pond falls outside the scope of this assessment program. Stability analyses provided by Gulf Power and presented in this report are for informational purposes only.

Stability calculations, provided by Gulf Power for the Ash Pond, at normal pool, determined inadequate factors of safety for steady-state and rapid drawdown loading conditions, and for liquefaction potential. Analyses of liquefaction potential were performed with water surface levels 3 feet and 10 feet below the embankment crest.

For steady-state loading, the calculated factor of safety was 1.2 for the east embankment (river side) exterior slope. The calculated factor of safety was 1.4 for the west embankment (canal side) exterior slope. The minimum required factor of safety established by the United States Army Corps of Engineers for steady-state conditions (USACE) is 1.5.

For the rapid drawdown loading condition, the calculated factor of safety was 1.2 for the east embankment (river side) exterior slope. The minimum required factor of safety established by the USACE for rapid drawdown conditions is 1.3. According to the Gulf Power, the Ash

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Pond is not operated in a manner that would result in a rapid drawdown condition. If the pond level had to be lowered for maintenance purposes, the discharge rate would be controlled to avoid a rapid drawdown condition.

Liquefaction potential analyses evaluated the Ash Pond embankments when subjected to loading associated with a seismic event having a 2-percent exceedance over a 50-year period, considering seismic hazards derived from both the CEUS/NMSZ. Liquefaction analyses of the Ash Pond embankments, dated January 27, 2014, indicate soft natural soils encountered immediately below the embankment fill exhibit factors of safety of 0.9 (NMSZ scenario earthquake) and 1.1 (CEUS scenario earthquake). For the purpose of the January 2014 analyses, water was assumed to be 3 feet below the top of crest for the Ash Pond. Liquefaction analyses of the Ash Pond embankments, dated September 7, 2012, yielded factors of safety ranging from 1.0 to 1.2 during the CEUS and NMSZ scenario earthquakes. For the purpose of the September 7, 2012 liquefaction potential analyses, water was assumed to be 10 feet below the top of crest for the Ash Pond.

The minimum required factor of safety established by the USACE for liquefaction is 1.3. CDM Smith notes there was approximately 3 feet of freeboard in the Ash Pond during our August 20, 2012 site assessment.

Conclusions Regarding the Hydrologic/Hydraulic Safety of CCW Impoundments

Gulf Power provided supporting technical documentation regarding the hydrologic/hydraulic safety for Plant Crist's CCW impoundments. The hydrologic/hydraulic safety of Plant Crist's Gypsum Storage Pond, Process Sedimentation Pond, and Process Return Water Pond is adequate.

Based on the USEPA classification system, presented on Page 2 of the USEPA checklist and CDM Smith's review of the site and downstream areas, a recommended hazard rating of SIGNIFICANT has been assigned to Plant Crist's Gypsum Storage Pond, Process Sedimentation Pond, and Process Return Water Pond, as summarized in Table 2-3, Section 2.3. FEMA guidelines recommend impoundments to have the capacity to pass and/or store some percentage of the Probable Maximum Precipitation (PMP) for a 6-hour storm event over a 10-square-mile area in the vicinity of the site. Significant hazard structures are required to store precipitation associated with the 50% Probable Maximum Precipitation (50% PMP) storm event.

Hydrologic/hydraulic analyses for the 50% PMP were provided for the Plant Crist CCW impoundments. Hydrologic and hydraulic (H&H) data provided by Gulf Power and reviewed by CDM Smith indicate the CCW impoundments have adequate capacity to pass and/or store the 50% PMP storm event without overtopping.

Conclusions Regarding Adequacy of Supporting Technical Documentation

CDM Smith has the following conclusions based on our review of the supporting technical documentation provided by Gulf Power:

- Steady-state and seismic stability analyses for of Plant Crist Gypsum Storage Pond, Process Sedimentation Pond, and Process Return Water Pond embankments are documented.
- Gulf Power provided assessments of the embankments' liquefaction potential for Gypsum Storage Pond, Process Sedimentation Pond, and Process Return Water Pond. Gulf Power did not provide stability analyses for rapid drawdown conditions due to the presence of a low permeability textured HDPE liner system covering the bottom and entire interior slopes of the ponds preventing saturation of underlying soils. CDM Smith agrees that analysis of rapid drawdown is not necessary, based on the presence of the HDPE liner system.

CDM Smith considers the Supporting Technical Documentation provided by Gulf Power for the Gypsum Storage Pond, Process Sedimentation Pond, and Process Return Water Pond to be adequate.

Conclusions Regarding Description of the CCW Impoundments

The description of the CCW impoundments provided by Gulf Power, and design drawings by Southern Company Generation Engineering and Construction Services, dated September, 2008 (revised July, 2010), for the Gypsum Storage Pond, Process Sedimentation Pond, and Process

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Return Water Pond were generally consistent with the visual observations by CDM Smith during our site assessment.

Conclusions Regarding Field Observations

Gypsum Storage Pond - CDM Smith observed the following during our site assessment of the Gypsum Storage Pond:

- Animal burrows were observed on the exterior slopes of the west and east embankments.
- Areas of possible seepage were observed near the south corner of the impoundment, at the toe of the southwest embankment; a second area of possible seepage was observed at the toe of the east embankment.
- CDM Smith observed discontinuities and settlement of the riprap-covered west embankment's exterior slope and areas where the underlying filter fabric was exposed.

Process Sedimentation Pond - CDM Smith observed the following during our site assessment of the Process Sedimentation Pond:

- Areas of surface erosion and erosion rills were observed on the exterior slope of the north embankment.
- Areas of possible seepage were observed on the northeast embankment, adjacent to the access road to the crest.

Process Return Water Pond - CDM Smith observed the following during our site assessment of the Process Return Water Pond:

- The crest surface is gravel-covered without vegetation. No depressions, ruts, or evidence of settlement were observed on the crests.
- No signs of tears, leaks, or excessive wear were observed on the interior slopes. The interior slopes appear to be straight and uniform and no signs of bulging were observed.
- The alignment of the exterior slopes appears to be uniform and consistent. No signs of erosion or animal burrows were observed.

No apparent unsafe conditions or conditions in need of immediate remedial action were observed at the Plant Crist CCW impoundments.

Conclusions Regarding Adequacy of Maintenance and Methods of Operation

Current operation and maintenance procedures appear to be adequate. There was no existing evidence of previous spills, significant repairs, or release of impounded coal ash slurry.

Conclusions Regarding Adequacy of Surveillance and Monitoring Program

Gulf Power's surveillance program is inadequate. Gulf Power currently performs weekly, monthly, and yearly inspections; however inspections do not include a monitoring program to measure/document the rate, volume, and turbidity of possible seepage flow emerging from the embankment slopes.

Groundwater monitoring, surveillance program, recording, and report preparation for FDEP under the National Pollutant Discharge Elimination System (NPDES) Permit appear to be adequate and complying with FDEP requirements.

Conclusions Regarding Suitability for Continued Safe and Reliable Operation

Plant Crist's CCW impoundments' embankments do not show evidence of unsafe conditions requiring immediate remedial efforts, but maintenance to correct deficiencies noted above is recommended.

RECOMMENDATIONS

Based on CDM Smith's visual assessment of CCW impoundments and review of documentation provided by Gulf Power, CDM Smith provides the following recommendations for consideration. CDM Smith recommends that remedial repairs for slope restoration be designed by a registered professional engineer experienced with earthen dam design.

Recommendations Regarding the Hydrologic/Hydraulic Safety

CDM Smith does not have any recommendations.

Recommendations Regarding the Technical Documentation for Structural Stability

CDM Smith does not have any recommendations.

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Recommendations Regarding Field Observations

The following recommendations for maintenance repairs, monitoring, and studies are offered to help improve the condition of the Plant Crist's CCW impoundments.

Gypsum Storage Pond

- Animal burrows – Animal burrows were observed on the west and east exterior slopes of the Gypsum Storage Pond. Although not seen on other areas, vegetation cover may have hidden additional animal burrows. CDM Smith recommends documenting areas disturbed by animal activity, removing the animals and backfilling the burrows with compacted structural fill to protect the integrity of the embankments.
- Areas of possible seepage – Areas of possible seepage were observed near the south corner of the impoundment, at the toe of the southwest embankment; a second area of possible seepage was observed at the toe of the east embankment. CDM Smith recommends regular monitoring of embankment slopes to detect and monitor seepage. The monitoring program should include measuring/documenting of the rate, volume, and turbidity of flow emerging from the embankment slopes.
- Voids and missing riprap - Voids within riprap armor and missing riprap were observed on the west embankment's exterior slope. CDM Smith recommends that the existing riprap be removed and the embankment slope restored to no steeper than 2.5H:1V or the original contour (whichever is flatter) with compacted structural fill. Riprap (similar size to existing), consisting of a heterogeneous mixture of irregular shaped rocks should be placed over the compacted fill and a geotextile fabric.

Process Sedimentation Pond

- Erosion rills – Erosion rills were observed on the north exterior slope of the Process Sedimentation Pond. Structural fill should be placed and compacted in the rills and graded to adjacent existing contours. It is recommended that these areas be covered with sod or hydro-seeded to establish vegetative cover.
- Seepage - Areas of possible seepage were observed on the northeast embankment, adjacent to the access road to the crest. CDM Smith recommends regular monitoring of embankment slopes to detect and monitor seepage. The monitoring program should include measuring/documenting of the rate, volume, and turbidity of flow emerging from the embankment slopes.

Process Return Water Pond

- CDM Smith does not have any recommendations.

Recommendations Regarding Surveillance and Monitoring Program

Regular monitoring is essential to detect and monitor seepage and to reduce the potential for failure. CDM Smith recommends if seepage areas are observed, services of a qualified engineer should be retained by Gulf Power to assess the area of seepage and recommend remedial actions. Inspections should be made following periods of heavy and/or prolonged rainfall and/or high water events on the Escambia River, and the occurrence of these events should be documented. Inspection records should be retained at the facility for a minimum of three years.

Recommendations Regarding Continued Safe and Reliable Operation

Currently the State of Florida does not require Emergency Action Plans (EAPs) for CCW impoundments. Gulf Power provided a copy of Southern Company Generation's Emergency Action Plan dated December 13, 2012. The plan references "Ash Pond/Gypsum Dike Failure" and "Dike Failure" under the heading "Site Specific Occurrence Annexes & Information". The EAP does not include a general location plan, a site plan, names and phone numbers of internal and external emergency contacts, or descriptive information regarding the CCW impoundments. CDM Smith recommends that Gulf Power develop a site-specific EAP for the CCW impoundments.

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Gulf Power – Plant Scholz Recommendations (from the final assessment report)

CONCLUSIONS

Conclusions are based on visual observations during site assessment on August 22, 2012 and review of technical documentation provided by Gulf Power and Southern Company.

Conclusions Regarding Structural Soundness of the CCW Impoundments

The CCW impoundments appear to be structurally sound based on visual observations of the structural element components (i.e. inlet structures, earth embankments, and outlet structures). Slope stability analyses, performed by Southern Company Services on February 9, 2011 and October 18, 2012, of the Upper Pond and Lower Pond embankments are well documented, and in general, satisfactory factors of safety are reported for the different loading conditions analyzed. Slope stability analyses of the Middle Pond were not provided.

Southern Company Services February 9, 2011 report for the north and east embankments of the Upper East Pond showed a factor of safety of 1.2, under rapid drawdown loading, that did not meet the required factor of safety of 1.3. Southern Company indicates in their October 18, 2012 submittal that revised stability analyses found the upstream (interior) slopes of the pond are subject to shallow sloughing with rapid changes in water level or seismic loads. Southern Company further states the shallow depth of sloughing does not represent a hazard to the embankments, but will require prompt maintenance attention. The calculated factor of safety of 1.3 presented in Southern Company Services October 18, 2012 report for the Upper East Pond's north embankment interior slope, under the rapid drawdown case reflects acceptance by Southern Company of this condition. CDM Smith is in agreement with Southern Company Services' evaluation of the adequacy of the Upper East Pond's north and east embankments under rapid drawdown conditions, given Southern Company's commitment to prompt maintenance attention to shallow sloughing.

Conclusions Regarding the Hydrologic/Hydraulic Safety of CCW Impoundments

The hydrologic/hydraulic (H & H) safety of Plant Scholz's CCW impoundments is inadequate. FEMA guidelines recommend impoundments to have the capacity to pass and/or store some percentage of the Probable Maximum Precipitation (PMP) for a 6-hour storm event over a 10-square-mile area in the vicinity of the site. Significant hazard structures are required to store the 50% PMP, 6-hour rainfall event. Gulf Power did not provide an H & H analysis of the CCW impoundments' capacity to pass and/or store the 50% PMP, 6-hour rainfall event. Gulf Power did provide an H & H analysis, dated October 18, 2013, of the CCW impoundments' capacity to pass and/or store the 50% PMP, 24-hour rainfall event, rather than the 50% PMP, 6-hour rainfall event and an H & H analysis of the CCW impoundments' capacity to pass 25- and 100-year, 24-hour storm events.

Gulf Power's calculations of October 18, 2013, DC-FP-FPC34572-101 show that the Middle Pond's south embankment will be overtopped by approximately 21 inches during the 50%PMP, 24-hour storm event. Gulf Power's H & H analyses of the CCW impoundments' capacity to pass 25- and 100- year, 24-hour storm events indicate the impoundments have adequate capacity to withstand these 24- hour storm events without overtopping the perimeter embankments.

Freeboard for the Upper East Pond for a 100-year, 24-hour storm event was approximately one foot.

CDM Smith performed a comparative review of the Middle Pond's performance for the 50% PMP, 6- hour storm event. Hydrometeorological Report No. 51 (HMR 51) published by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, U.S. Department of the Army Corps of Engineers indicates the PMP for the 6-hour storm event at Plant Scholz is 31 inches. The 50% PMP associated with this event is 15.5 inches of rain over a 6-hour period. CDM Smith's comparative review indicated a total increase in the Middle Pond's water surface elevation of about 29 inches.

Based on the assumption the Middle Pond water surface is at Gulf Power's stated target elevation (two feet of freeboard) at the start of the event, it appears that the Middle Pond

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embankment will be overtopped by approximately 5 inches. CDM Smith concludes that Plant Scholz's CCW impoundments have inadequate combined storage capacity to pass and/or store the 50% PMP, 6-hour rainfall event.

CDM Smith cautions that we did not perform a detailed H & H analysis of Plant Scholz's CCW impoundments for the 50% PMP, 6-hour rainfall event.

Conclusions Regarding Adequacy of Supporting Technical Documentation

Supporting Technical Data provided by Gulf Power and reviewed by CDM Smith is inadequate. Gulf Power did not provide slope stability analyses of the Middle Pond.

The stability analyses provided for the north and east embankments of the Upper East Pond and the south embankment of the Lower Pond show the required factors of safety for required loading conditions are met in all instances. Liquefaction analyses of the Upper East Pond and Lower Pond exhibit factors of safety between 0.9 and 1.4. This suggests some soft pockets may liquefy and other portions of the embankment may lose strength due to earthquake-induced pore pressure buildup.

Gulf Power states in their August 22, 2012 report, they believe there is a very low likelihood of an earthquake scenario of the magnitude used for the analyses occurring over the life of Plant Scholz. Southern Company indicates in their October 18, 2012 submittal that the stability analyses indicate the upstream (interior) slopes of the pond are subject to shallow sloughing with rapid changes in water level or seismic loads. Southern Company states the shallow depth of sloughing does not represent a hazard to the embankments, but will require prompt maintenance attention. The higher factor of safety presented above reflects acceptance by Southern Company of this condition. CDM Smith is in agreement.

Conclusions Regarding Description of the CCW Impoundments

The description of the CCW impoundments provided by Gulf Power and Plant Scholz representatives appears to be consistent with the visual observations by CDM Smith during site assessment. However, record drawings were not provided to assess discrepancies against the intended design of the CCW impoundments.

Conclusions Regarding Field Observations

Upper East Pond: The Upper East Pond's normal pool elevation is approximately 128.0 feet, approximately 3.7 feet above the normal pool of the Upper Middle Pond. Some areas on the east embankment appear to be recently backfilled and repaired. Based on plant personnel comments, shallow erosion rills have occurred in these areas. Some areas of dampness were observed at the toe of exterior slope of the east embankment. It was difficult to determine if these wet areas were caused by seepage or the previous day's rain. An animal burrow was observed on the north embankment.

Upper Middle Pond: The Upper Middle Pond's normal pool elevation is 124.3 feet, approximately 2.2 feet above the normal pool of the Upper West Pond and 13.3 feet above normal pool of the Middle Pond. Signs of heavy equipment traffic were present on the crest of the east divider embankment.

Shallow erosion rills were observed along the interior slope of the west embankment with an approximate frequency of one every 50 feet. Areas of surface erosion were observed on the west interior embankment and at the northwest corner of the pond around the 18-inch-diameter corrugated HDPE inlet pipe.

Upper West Pond: The Upper West Pond's normal pool elevation is 122.1 feet, approximately 11.1 feet above normal pool of the adjacent Middle Pond. Shallow erosion rills and scarps were observed on the west embankment interior slope. An approximately 30-foot-long erosion/depressed area was also observed at the west embankment.

Middle Pond: The Middle Pond's normal pool elevation is 111.0 feet, approximately 12.8 feet above normal pool of the adjacent Lower Pond. The interior slopes of the pond embankments appear to be in fair condition. Erosion rills observed along the north embankment interior slope appeared to only extend into the haul road fill materials. Erosion rills and scarps were observed northeast embankment, adjacent to the Ash Dry Stack. Grass on the inside of the embankment

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was approximately 8 to 12 inches tall and was recently mowed. The west embankment interior slope appeared to be in satisfactory condition, well vegetated with grass, typically less than 6 inches in height. The Ash Dry Stack appears to cover the Middle Pond north divider embankment.

Lower Pond: The exterior slopes of the south and southwest embankments are covered with trees and dense vegetation. During the visual assessment, areas of erosion, erosion rills, and scarps were observed on the exterior slopes of the south and southeast embankments of the Lower Pond. An area of standing water or possible seepage was observed at the toe of the exterior slope of the southwest embankment. Maintenance of these areas is encouraged. Signs of erosion rills and shallow scarps were observed on the interior slopes of all CCW impoundment embankments.

Conclusions Regarding Adequacy of Maintenance and Methods of Operation

Current maintenance and operation procedures appear to be adequate. There was no evidence of previous spills and release of impounded coal ash slurry within or outside the plant property. Repairs on the Upper East Pond north embankment to mitigate seepage discovered during a regular inspection were performed in October, 2010 and appear to have mitigated the condition. Seepage in any other areas has not been reported by Gulf Power.

Conclusions Regarding Adequacy of Surveillance and Monitoring Program

Gulf Power's monitoring program is inadequate. Areas of possible seepage were observed on exterior slope of the east embankment of the Upper East Pond. Although no detrimental conditions or indications of potential embankment failure were observed during CDM Smith's visual assessment, regular monitoring is essential to detect and monitor seepage and to reduce the potential for failure.

Groundwater monitoring, surveillance program, recording, and report preparation for Florida Department of Environmental Protection (FDEP) under the National Pollutant Discharge Elimination System (NPDES) Permit appear to be adequate and complying with FDEP requirements.

Conclusions Regarding Suitability for Continued Safe and Reliable Operation

The CCW impoundment embankments do not show evidence of unsafe conditions requiring immediate remedial efforts, although maintenance to correct deficiencies noted above is required.

Currently the State of Florida does not require Emergency Action Plans (EAPs) for CCW impoundments. Gulf Power has an EAP for the CCW impoundments.

RECOMMENDATIONS

Based on CDM Smith's visual assessment of the CCW impoundments and review of documentation provided by Gulf Power and Southern Company, CDM Smith offers the following recommendations for consideration.

Recommendations Regarding the Hydrologic/Hydraulic Safety

CDM Smith recommends that a detailed H & H analysis be performed to determine the adequacy of Plant Scholz CCW impoundments to pass and/or store the 50% PMP, 6-hour rainfall event.

Recommendations Regarding the Technical Documentation for Structural Stability

It is recommended that Gulf Power have a qualified engineer evaluate the stability of the Middle Pond embankments.

Recommendations Regarding Field Observations

The following recommendations for maintenance repairs, monitoring, and studies are offered to help improve the condition of the Plant Scholz's CCW impoundments.

Animal Activity: Animal burrows were observed in several locations. Although not seen in other areas, vegetation cover may have hidden additional animal burrows. CDM Smith recommends documenting areas disturbed by animal activity, removing the animals and backfilling the burrows with compacted structural fill to protect the integrity of the embankments.

Erosion rills, scarps, and rutting: CDM Smith recommends that structural fill be placed and compacted in the rills and scarps and the repaired areas graded to meet the adjacent existing

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contours. After slope restoration, it is recommended that the exposed surface of the embankment be stabilized with sod or hydroseeded to restore vegetation cover on exterior embankment slopes. After slope restoration of the interior embankment slopes, it is recommended to stabilize the exposed surface of the embankment with riprap consisting of a heterogeneous mixture of irregular-shaped rocks placed over the compacted fill and a geotextile fabric.

Seepage: Areas of possible seepage were observed on exterior slope of the east embankment of the Upper East Pond. Regular monitoring is essential to detect and monitor seepage and to reduce the potential for failure. To monitor the nature of the possible seepage conditions, CDM Smith recommends Gulf Power develop a regular surveillance program to monitor areas of seepage and potential seepage to evaluate the rate, volume, and turbidity of flow emerging from the embankment slopes.

Trees and dense vegetation: The removal of trees, shrubs, and bushes on or near the embankments is recommended. The greatest density of this vegetation was observed along the south embankment of the Lower Pond. Trees and dense vegetation should be removed and embankment slopes restored to the original contours by placing select structural fill in 12-inch lifts and compacting as recommended by a professional engineer.

Recommendations Regarding Surveillance and Monitoring Program

Areas of possible seepage were observed on exterior slope of the east embankment of the Upper East Pond. CDM Smith recommends that Gulf Power develop a regular surveillance program to monitor areas of seepage and potential seepage to evaluate the rate, volume, and turbidity of flow emerging from the embankment slopes.

Recommendations Regarding Continued Safe and Reliable Operation

Inspections should be made following periods of heavy and/or prolonged rainfall and/or high water events on the Apalachicola River, and the occurrence of these events should be documented.

Inspection records should be retained at the facility for a minimum of three years.

Plant personnel should inspect the interior slope following major storm or earthquake events and anytime water level in the cell has decreased more than 6 inches over a period of 24 hours. None of the conditions observed require immediate attention or remediation; however the above recommendations should be implemented during a reasonable time frame to maintain continued safe and reliable operation of the CCW impoundments.

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