COMMENTS

Comments received for CHA Draft Report *(July 6, 2009,* CHA Project No. 20085.1000.1510*)* for the Assessment of Dam Safety of Coal Combustion Surface Impoundments Georgia Power Company – Plant Bowen, Cartersville, GA. Comments include;

- EPA comments received on July 13, 2009;
- Georgia Department of Natural Resources, Environmental Protection Division received on August 12, 2009; and
- Georgia Power Company comments received on September 4, 2009.

Final Report
Assessment of Dam Safety of Coal Combustion Surface Impoundments
Georgia Power Company – Plant Bowen
Cartersville, GA

Comments Received from the EPA *(July 13, 2009)*
In Response to CHA Draft Report (July 6, 2009)

CHA Project No. 20085.1000.1510

Everleth, Jennifer

From: Harris IV, Warren
Sent: Monday, July 13, 2009 1:10 PM
To: Everleth, Jennifer; Adnams, Katy; Hargraves, Malcolm
Subject: FW: EPA's comments on CHA's Draft Assessment Report for: Georgia Power Company - Plant Bowen

-----Original Message-----
From: Killeen, Deborah A [mailto:deborah.a.killeen@lmco.com]
Sent: Monday, July 13, 2009 12:47 PM
To: Harris IV, Warren
Cc: Miller, Dennis A; Hoffman.Stephen@epamail.epa.gov
Subject: FW: EPA's comments on CHA's Draft Assessment Report for: Georgia Power Company - Plant Bowen

Warren,

Here are EPA's comments on CHA's Draft Assessment Report for: Georgia Power Company - Plant Bowen:

1) Figure 7 is unreadable.

2) Hazard potential is listed as "Significant" on EPA checklist, but marked as "Low" on EPA inspection form.

Deborah A Killeen
Quality Assurance Officer
Lockheed Martin/REAC
732-321-4245 (office)
609-865-9308 (cell)
732-494-4021 (fax)

Final Report
Assessment of Dam Safety of Coal Combustion Surface Impoundments
Georgia Power Company – Plant Bowen
Cartersville, GA

Comments Received from the EPA *(July 13, 2009)*
In Response to CHA Draft Report (July 6, 2009)

CHA Project No. 20085.1000.1510

Everleth, Jennifer

From: Killeen, Deborah A [deborah.a.killeen@lmco.com]
Sent: Wednesday, August 12, 2009 4:43 PM
To: Harris IV, Warren
Cc: Hoffman.Stephen@epamail.epa.gov; Kohler.James@epamail.epa.gov; Miller, Dennis A
Subject: RE: State Comments on the Georgia Power Company - Plant Bowen Draft Report

Warren,

Please find the State's comments on the draft final report for Georgia Power Plant, Bowen, GA.

Deborah A Killeen
Quality Assurance Officer
Lockheed Martin/REAC
732-321-4245 (office)
609-865-9308 (cell)
732-494-4021 (fax)

-----Original Message-----
From: Kohler.James@epamail.epa.gov [mailto:Kohler.James@epamail.epa.gov]

Sent: Wednesday, August 12, 2009 4:37 PM
To: Miller, Dennis A; Killeen, Deborah A
Cc: Hoffman.Stephen@epamail.epa.gov
Subject: State Comments on the Georgia Power Company - Plant Bowen Draft Report

Dennis and Deb:

Attached are the state's comments on the Georgia Power Company - Plant Bowen Draft Report (CHA).

We have reviewed the comments and believe they are limited to factual/editorial issues. They should be verified and incorporated accordingly.

This comment was not as straightforward:

"...under Section 1.4, it is stated that there have been identified dam safety issues at Plant Bowen. We disagree that the issues were related to dam safety. They were issues that indirectly involved the dike, but were not caused by improper operation or failure of the dike."

Please review to determine if the clarification requested is necessary.
Should you disagree or choose not to address/incorporate into the report, please draft a response that explains why.

Also: remember not to finalize any reports until we inform you that all comments (from EPA/state/company) have been received.

If you have any questions or concerns with these directions please feel free to call me or Steve. Thanks!

Jim

****
Jim Kohler, P.E.
Environmental Engineer
LT, U.S. Public Health Service
U.S. Environmental Protection Agency

Office of Resource Conservation and Recovery
Phone: 703-347-8953
Fax: 703-308-8433
****

----- Forwarded by James Kohler/DC/USEPA/US on 08/12/2009 04:16 PM -----

From:
"Carey Anderson" <Carey.Anderson@dnr.state.ga.us>

To:
"Tom Woosley" <Tom.Woosley@dnr.state.ga.us>, James Kohler/DC/USEPA/US@EPA

Cc:
Craig Dufficy/DC/USEPA/US@EPA, Stephen Hoffman/DC/USEPA/US@EPA

Date:
08/12/2009 04:01 PM

Subject:
Re: Request for Review: Georgia Power Company - Plant Bowen

Jim:

Tom Woosley and I read the report, mainly looking at the portions that mention EPD. One thing we noticed is that it is misleading which program in EPD has regulatory authority to have issued the consent orders in 2002 and 2008. The dike itself is not regulated by EPD (Safe Dams Program) because it is not high hazard; therefore, we have no enforcement authority with respect to the dike. However, discharges from the pond are regulated by EPD, and the facility has an NPDES permit which is briefly discussed in section 1.2. In general, we think it should be made a little clearer that the consent orders were issued for violation of the NPDES permit and were not related to the Safe Dams Program.

We propose the following revision (or something similar) to section 1.2, including switching the first two paragraphs that might make this a little clearer:

"Discharges from the Plant Bowen ash impoundment are under the jurisdiction of the Georgia Department of Natural Resources Environmental Protection Division (EPD). EPD issued Permit No.
GA0001449 to the Georgia Power Company authorizing discharge... (to end of paragraph).

The dike surrounding the ash impoundment is not under the jurisdiction of EPD. According to the National Inventory of Dams (NID), the Georgia State ID No. for the dike is 008-031-04136. According to the EPD Safe Dams Program, the dike has been classified as a "Category II" dam, meaning improper operation or dam failure would not be expected to result in probable loss of human life. Category II dams do not require a permit under Georgia dam safety regulations, thereby leaving the design, operation and maintenance standards up to the owner's discretion for best management practices. According to Safe Dams Program personnel, as a Category II dam, the dike is not held to any state recognized dam design standards. However, the flood plain below the dike is reinventoried by the Safe Dams Program at least once every 5 years to check for changed conditions to assure the dike is properly classified. If changed conditions warrant a reclassification to Category I, meaning improper operation or dam failure would be expected to result in probable loss of human life, the dike itself would require a State permit and design and operation standards would be imposed."

The only other comments we have are that under Section 1.4, it is stated that there have been identified dam safety issues at Plant Bowen. We disagree that the issues were related to dam safety. They were issues that indirectly involved the dike, but were not caused by improper operation or failure of the dike. And, under Section 3.2, last sentence, under our regulations, we use the term probable maximum precipitation (PMP) instead of PMF.

I hope these are the type of comments you were looking for. Let us know if you have any questions,

Carey

Carey Anderson, E.I.T.
Environmental Engineer III
GA DNR/EPD
Safe Dams Program
4244 International Pkwy, Suite 110
Atlanta, GA 30354
404/362-2678
>>> <Kohler.James@epamail.epa.gov> 08/04/09 3:49 PM >>>

Dear All:

On May 26-27, 2009, USEPA conducted a site assessment of coal combustion waste management units at the Georgia Power Company - Plant Bowen. Carey Anderson was the state representative present during the assessment.
Please paste the link below in your browser to download a copy of the draft report prepared by EPA's engineering contractor. I am requesting that you review and comment on this draft report. I would appreciate it if you would send me your comments no later than

10 days from the receipt of this email (August 18, 2009). This draft report has also been sent to the facility. After EPA receives all comments, a final report will be prepared and released to the public.

If you have any questions about this effort, please call me (703-347-8953) or Steve Hoffman (703-308-8413). Please acknowledge receipt of this email. Be aware this is not a public document and should be handled accordingly. Thank you!

Jim

[redacted]

****
Jim Kohler, P.E.
Environmental Engineer
LT, U.S. Public Health Service
U.S. Environmental Protection Agency
Office of Resource Conservation and Recovery
Phone: 703-347-8953
Fax: 703-308-8433
****

Final Report
Assessment of Dam Safety of Coal Combustion Surface Impoundments
Georgia Power Company – Plant Bowen
Cartersville, GA

Comments Received from Georgia Power Company *(September 4, 2009)*
In Response to CHA Draft Re*port (July 6, 2009)*

CHA Project No. 20085.1000.1510

CHA

Charles H. (Chuck) Huling, P.E.
Vice President
Environmental Affairs

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Atlanta, Georgia 30308-3374

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chhuling@southernco.com

GEORGIA POWER
A SOUTHERN COMPANY

Certified Mail

September 3, 2009

Mr. Stephen Hoffman
Office of Resource Conservation and Recovery (5304P)
U.S. Environmental Protection Agency
2733 South Crystal Drive, Fifth Floor
Arlington, Virginia 22202

Re: Comments on "Assessment of Dam Safety Coal Combustion Surface Impoundments Draft Report" for Georgia Power Company Plant Bowen, Cartersville, Georgia

Dear Mr. Hoffman,

On August 25, 2009, the U.S. Environmental Protection Agency ("EPA") provided to Georgia Power ("GPC") a draft report regarding certain facilities for the management of coal combustion byproducts at GPC's Plant Bowen ("Draft Report"). The Draft Report was prepared by CHA under contract to Lockheed Martin and was dated July 6, 2009. Georgia Power appreciates the opportunity to provide comments on the draft report before it is finalized. This letter provides Georgia Power's comments on that draft report.

Acknowledgement of Management Unit Condition and Potential Hazard Rating

We are pleased that the report concludes that the coal combustion byproduct management unit at Plant Bowen is in "Satisfactory" condition, which is the most favorable category. We also agree with the report's recommended potential hazard rating as "Low". This ranking matches the current ranking under the National Inventory of Dams.

Report Recommendations

The Draft Report includes three recommendations. GPC is already conducting or agrees to initiate those recommendations as described in the paragraphs below.

GPC has initiated evaluation of storm events larger than a 10 year storm and for safely passing appropriate percentages of the probable maximum precipitation.

GPC already conducts site inspections and reviews instrumentation data after seismic events.

GPC will continue piezometer monitoring and inspections that have been implemented for the ash pond as these inspections allow for proactive responses to developing situations.

Comments on Draft Report

GPC provided significant technical information to the inspection team to assist them in performing the inspection and providing factual information as a basis for their report. We appreciate the amount of time involved in reviewing and evaluating such information. We have reviewed the report in detail and offer these comments to assist in providing clear and factual information. In the following paragraphs, we provide a discussion of each comment along with GPC's recommendation in italics. Changes or additions to text in the current draft report are indicated in bold.

There are several discrete factual errata, typographical corrections or missing information. Attachment I provides a listing of recommended corrections.

GPC recommends the correction of the errata listed in Attachment I in the final report.

In Section 1.4, titled "Previously Identified Safety Issues", of the three safety issues identified, two were potentially related to dam integrity, which were the July 2002 sinkhole and the December 2008 ash release. Appropriate remedial actions were taken as described for both events resulting in no dike safety issues. The September 2008 event was an erosion issue unrelated to dike integrity or safety.

GPC recommends changing the first sentence in Section 1.4 to read: "There have been three previously identified ***ash pond*** *issues at Plant Bowen,* ***with two potentially related to the dike."***

In Section 2.2.2, titled "North Dike", the last two sentences describe work being completed for a "drainage swale". The referenced "drainage swale" is, in fact, already clay lined. Additionally, the work being completed is to improve drainage and conveyance of storm water. All site improvements to reduce the facility's impact on karst topography was completed by June 1, 2004.

GPC recommends changing the last two sentences of Section 2.2.2 to read: "Georgia Power personnel indicated the drainage swale in this area is ***being regraded to address drainage and conveyance of storm water. This work is to be completed in 2009 or 2010.****"*

On page 2 of the "Coal Combustion Waste (CCW) Impoundment Inspection" form, under the section titled "Describe Reasoning for Hazard Rating Chosen:", it would be informative to the reader to understand the actions taken by GPC to reduce the risk of unpermitted releases due to the karst topography.

GPC recommends adding the following sentence to the report response on page 2 of the "Coal Combustion Waste (CCW) Impoundment Inspection" form, under the section titled "Describe Reasoning for Hazard Rating Chosen:" - ***"GPC has taken actions to reduce the risk of sinkhole activity by removing the hydraulic head on the dry ash stacking area of the pond and lining all dewatering areas, drainage swales and the recycle pond."***

On page 5 of "Coal Combustion Waste (CCW) Impoundment Inspection" form, there is a section titled "Has there ever been a failure at this site?" There has never been a dam failure at this facility. As described in section 1.4 of this report, the potential ash pond issues identified for this facility did not result in any failure of the dam.

GPC recommends on page 5 of "Coal Combustion Waste (CCW) Impoundment Inspection" form, the response be corrected to read: "Has there ever been a failure at this site" – ***"No"***

In Section 3.2 Hydrology and Hydraulics, the last sentence, "In comparison, the same facility in a Category I condition would be required to safely pass or store 50% of the probable maximum flood (PMF)", makes a comparison that is inappropriate for this facility. The Plant Bowen ash pond dam is a Category II dam under Georgia Environmental Protection Division Safe Dams program, with no expectation of being reclassified. Also, 50% is an incorrect percentage. Therefore, Georgia Power believes the comparison to requirements for Category I dam is inappropriate. The comparison to criterion for a Category I dam classification is also made in Section 4.2.

GPC recommends removing references to criteria for a Category I classification in Section 3.2 and 4.2.

Throughout the report, coal combustion byproducts are referred to as coal combustion "waste". In the State of Georgia, "waste" holds a regulatory definition under OCGA 12-8-20, Georgia Comprehensive Solid Waste Management Act of 1990. Coal combustion byproducts in ash ponds do not meet this definition.

GPC recommends using the term ***"coal combustion byproducts"*** *throughout the report.*

Thank you again for this opportunity to comment. Please direct any future correspondence on this issue to me.

Sincerely,

Charles H. Huling

Charles H. Huling

Enclosure

ATTACHMENT 1
ERRATA to "Assessment of Dam Safety Coal Combustion Surface Impoundments Draft Report" for Georgia Power Company Plant Bowen, Cartersville, Georgia

Page & Section	Recommended Correction
1 – Section 1.1	• Gary McWhorter, P.E., Earth Science and Environmental Engineering – Southern Company • Hollister Hill, Attorney - Troutman Sanders • Will McIntyre, Sr. Compliance Specialist - Georgia Power
2 – Section 1.2	"The Plant Bowen ash pond **dam** is under the jurisdiction of the Georgia Department of Natural **Resources**……."
2 – Section 1.2	Second sentence -"According to the **National** Inventory of Dams…"
2 – Section 1.2	"Category II facilities are exempt from **all** of the Georgia dam safety regulations…."
2 – Section 1.2	The permit became effective on November 9, 2007 and will expire on June30, 2010."
2 – Section 1.2	"3. Submit a dredging plan **of Euharlee Creek** if proposed as part of the recommended **remedial** actions;"
2 – Section 1.2	"5. Conduct a geological engineering assessment of the ash pond stability and recommend corrective actions to **address** future sinkhole development."
3 – Section 1.3	"8. Submit and interim progress **report** on the completion of the corrective action plants; and,"
4 – Section 1.3	"This transition to dry disposal was an engineered plan to reduce the impacts of **the hydrostatic** levels in the impoundment from impacting the underlying karst topography, which is more thoroughly discussed in Section 1.5 below."
6 – Section 1.4.2	This heavy rainfall resulted in a portion of the ash stack to erode and flow over **natural ground.**
6 – Section 1.4.3	"The sinkholes were excavated to **twelve to fifteen feet** and a graded filter was placed to backfill the depressions."
7 – Section 1.5	"The report summarizes several site-specific subsurface **exploration** programs that have been….."
11 – Section 2.2.1	'In the area where the recycle pond ends and the main dike curves to the north, **the cover soils over the** formerly sluiced or placed ash is level with the crest of the dam as shown in Photos 15, 16, 18, and 20."
Photograph 8	"South portion of the embankment near the end of the reclaimed water portion of the impoundment (looking west). **Recycle** Pond is lined. Note set up for remote monitoring of piezometers (not operational as of our visit)."
Photograph 18	"Embankment at the "Horseshoe" looking north. Note original embankment crest width was 15 feet. **Soil cover** placed uniform to dam crest."
Photograph 19	Embankment at the "Horseshoe" looking north. Gray coloring at toe of embankment is gravel placed **along the road.**
Photograph 21	**"Recycle** Pond and south end of the embankment crest looking east. Note the **Recycle** Pond is lined with **bentonite** and HDPE liner."
Photograph 22	"Drainage Swale noted in Photos 15, 16, and 17 discharges into the **Recycle** Pond. Note the drainage swale is also HDPE lined. Behind the swale in this photo is one of two gypsum ponds."
Photograph 24	"Upstream side of North Dike looking east. Dry Stack ash piles in the right of the photo. Drainage swale in this area is **lined with clay**, but **additional work** is planned for the 2009 construction season.
Photograph 28	Within the main impoundment looking south. To the left of photo are the **ash dewatering cells** (2) and to the right of the photo are the gypsum **dewatering cells** (2).

<table>
<tr><td>Photograph 29</td><td>The west embankment of the ash dewatering cell. Note short height and redacted slope.</td></tr>
<tr><td>Photograph 30</td><td>North ash dewatering cell looking east.</td></tr>
<tr><td>Photograph 31</td><td>North embankment of ash dewatering cells.</td></tr>
<tr><td>Photograph 32</td><td>North embankment of ash dewatering cells, looking east.</td></tr>
<tr><td>Photograph 33</td><td>Separator dike between two ash dewatering cells.</td></tr>
<tr><td>Photograph 34</td><td>South ash dewatering cell looking east.</td></tr>
<tr><td>Photograph 35</td><td>West embankment of south ash dewatering cell, looking south.</td></tr>
<tr><td>Photograph 36</td><td>"South embankment of ash dewatering cells, looking East. Note the lined drainage swale in right of photo discharges into the recycle pond."</td></tr>
<tr><td>Photograph 37</td><td>Upstream slope of south embankment of ash dewatering cells, looking east. Note the red clay liner which overlays a liner.</td></tr>
<tr><td>Photograph 38</td><td>East slope of ash dewatering cells, looking south.</td></tr>
<tr><td>Photograph 39</td><td>Sluiceway into the north ash dewatering cell.</td></tr>
<tr><td>Photograph 40</td><td>East slope of ash dewatering cells looking south.</td></tr>
<tr><td>Photograph 41</td><td>Lined gypsum dewatering cell.</td></tr>
<tr><td>Photograph 42</td><td>"Emergency overflow and outlet sluice (via buried outlet pipe) from the gypsum dewatering cell into the drainage swale running to the recycle pond."</td></tr>
<tr><td>11 – Section 2.3</td><td>"The outlet is an emergency ash pond overflow discharge point in the NPDES permit which discharges through a sampling flume into a discharge channel in natural ground (photo 1)."</td></tr>
<tr><td>12 - Section 2.4</td><td>"There are 60 piezometers installed along the main impoundment dikes, recycle pond, and dewatering cell dikes at Plant Bowen with the majority being monitored remotely."</td></tr>
<tr><td>12 - Section 2.4</td><td>"A new remote reading system is being installed to allow reading of selected piezometers on a daily basis."</td></tr>
<tr><td>13 – Section 3.2.</td><td>At the end of the last paragraph add - "This is a permitted discharge under the NPDES permit during emergency conditions."</td></tr>
<tr><td>16 – Table 4</td><td>Table 4 with corrected values:
<table>
<tr><th>Description</th><th>Unit Weight (pcf)</th><th>Friction angle (φ)</th><th>Cohesion (psf)</th></tr>
<tr><td>Embankment</td><td>122</td><td rowspan="4">redacted</td><td>350</td></tr>
<tr><td>Firm Residual Soil</td><td>124</td><td>218</td></tr>
<tr><td>Weak Residual Soil</td><td>117</td><td>100</td></tr>
<tr><td>Ash</td><td>85</td><td>0</td></tr>
</table></td></tr>
<tr><td>16- Table 5</td><td>Table 5 with corrected values:
<table>
<tr><th>Description</th><th>Unit Weight (pcf)</th><th>Friction angle (φ)</th><th>Cohesion (psf)</th></tr>
<tr><td>Embankment</td><td>122</td><td rowspan="4">redacted</td><td>280</td></tr>
<tr><td>Firm Residual Soil</td><td>124</td><td>175</td></tr>
<tr><td>Weak Residual Soil</td><td>117</td><td>100</td></tr>
<tr><td>Ash</td><td>85</td><td>0</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>17 – Table 6</td><td>Table 6 with corrected values and footnotes that were in original table:
<table>
<tr><th>Load Case</th><th>USACOE Minimum Factor of SafetyGuidelines</th><th colspan="2">1969 Design Load Case Documents</th><th>2003 Slope Study (min. of sections analyzed)</th></tr>
<tr><td></td><td></td><td>North Dike</td><td>Main Dike</td><td></td></tr>
<tr><td>Steady State Seepage
– Downstream Slope
– Upstream Slope</td><td>1.5</td><td>1.9
4.0</td><td>1.7
2.7</td><td>1.4</td></tr>
<tr><td>Steady State Seepage with Seismic Loading</td><td>1.0</td><td>NP</td><td>NP</td><td>* 0.99 (2% in 50 yr)
1.1 (10% in 50 yr)</td></tr>
<tr><td>Rapid Drawdown (Upstream)</td><td>1.3</td><td>NP</td><td>NP</td><td>NP</td></tr>
<tr><td>Under Wash/Uplift from Karst Feature</td><td>-</td><td>NP</td><td>NP</td><td>** 0..97</td></tr>
<tr><td>Post Seismic Condition with Development of Karst Feature</td><td>-</td><td>NP</td><td>NP</td><td>*** 0.95</td></tr>
</table>
NP: Not performed
* - 1) Degraded soil strength refers to strength of soil being reduced or degraded by 20% to simulate loss in soil strength during seismic shaking.
2) 2% PE means this level of quake has a 2% probability of exceedance (or 2% chance of higher magnitude earthquake occurring) within a 50-year period.
** - For this section and case weak zone undrained cohesion varied until FOS approached or equal to 1.0. This yielded a "c" value of approximately 600 psf. This c=600 then taken as lower bound strength of weak zone (lowest strength weak zone could exhibit without failure) and applied to other section geometries for this parameter evaluation.
*** - Post-seismic refers to a period of time shortly after a seismic event, say 3 to 6 months, in which soil strength has not recovered from its 20% degraded values.</td></tr>
<tr><td>19 – Section 3.4</td><td>"The ash stacking plan was further modified in 2008 following an erosion triggered event in which heavy rain fall caused erosion and sloughing of an ash slope to inundate the drainage swale and flow over adjacent natural ground."</td></tr>
<tr><td>20 – Section 3.4.1</td><td>"Georgia Power is working on installing a new remote reading system so selected piezometers will be able to be read daily."</td></tr>
</table>

Charles H. (Chuck) Huling, P.E.
Vice President
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Bin 10221
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Sincerely,

Charles H. Huling

Charles H. Huling

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