

Longleaf Energy Associates, LLC

c/o LS Power Development, LLC
400 Chesterfield Center, Suite 110
Chesterfield, Missouri 63017
(636) 532-2200 Tel.
(636) 532-2250 Fax.

Via Overnight Mail and Electronic Mail

July 29, 2010

Eric Cornwell
Manager, Stationary Source Permitting Program, Air Protection Branch
Georgia Environmental Protection Division
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

**RE: Response to Public Comments on Draft Permit Amendment
4911-099-0033-P-01-2**

Dear Mr. Cornwell:

Enclosed please find responses from Longleaf Energy Associates, LLC (LEA) to comments made by Greenlaw and The Finley Firm, P.C. (collectively "Greenlaw") on behalf of interested parties regarding the Environmental Protection Division's (EPD) Draft Permit Amendment No. 4911-099-0033-P-01-2 (the "Permit Amendment").¹

LEA has reproduced sections of Greenlaw's comment letter in italics, followed by LEA's responses to the italicized section. In most cases, Greenlaw has misrepresented applicable Georgia law or the facts as they apply to applicable law. In some cases, Greenlaw has identified provisions in the Permit Amendment that LEA agrees should be clarified and accordingly, LEA offers appropriate minor changes to the Permit Amendment to address Greenlaw's comments.

Finally, LEA commends EPD for the work done in preparing the current draft Permit Amendment. LEA believes, as anyone familiar with this project will agree, that while Greenlaw's comments may be lengthy, they are not persuasive. Indeed, the numerous internal inconsistencies in the comments undermine the credibility of the entire document.

Please do not hesitate to contact me if you have any questions concerning the contents of this submission.

¹ On June 30, 2010, Greenlaw submitted public comments on behalf of fourteen (14) separate organizations. On July 2, 2010, Christopher R. Reeves of The Finley Firm, P.C. submitted public comments on behalf of the Flint Riverkeeper, Don Lambert, and Walter Lee. Mr. Reeves' letter is identical to the Greenlaw letter in all material respects.

Sincerely,

A handwritten signature in black ink that reads "Kathy French". The signature is written in a cursive style with a large, looping "K" and a distinct "F".

Kathy French
Assistant Vice President, Environmental

Enclosure

cc: Anna Aponte, EPD

Longleaf Energy Associates, LLC
Response to Comments Received from Greenlaw on June 30, 2010

COMMENTS REGARDING EXTENSION OF CONSTRUCTION SCHEDULE

Greenlaw Comment (p. 2):

EPD Should Not Grant an Extension to the Longleaf Construction Schedule.

LEA Response:

On December 22, 2009, LEA submitted extensive comments in response to Greenlaw's challenge to the extension of the construction schedule.² LEA incorporates those same comments here. LEA continues to believe that the extension is justified for the reasons explained in its prior responses because, substantively, nothing has changed.

² See December 22, 2009 Letter from K. French to A. Aponte at Attachment B, Section II.

COMMENTS REGARDING POTENTIAL TO EMIT ESTIMATES

Greenlaw Comment (pp. 3-7):

Legal Requirements for Restricting a Source's Potential to Emit to Less than Major Source Levels

LEA Response:

In its comment letter, Greenlaw sets forth what it believes to be the applicable legal requirements for minor source permits in Georgia. LEA disagrees with several characterizations of the law offered by Greenlaw. Initially, it must be clarified that *Georgia* law controls the issuance of the Permit Amendment. As the Georgia Court of Appeals recently explained in the appeal of LEA's PSD permit, Georgia has a state implementation plan that has been approved by EPA. As an approved state, Georgia, through EPD, issues state, not federal, PSD permits pursuant to the requirements of Georgia law. Because PSD permits issued in Georgia are state permits, the permits must be evaluated under state law and regulations, which EPA has determined to meet or exceed the standard of the federal Clean Air Act.³

This same logic applies with equal force to the Permit Amendment. Pursuant to Section 112(l) of the federal Clean Air Act, states may develop and submit for approval to EPA a program to implement and enforce the requirements of Section 112 of the federal Clean Air Act. Georgia has done so for the specific hazardous air pollutant permitting requirement at issue in this Permit Amendment. In 1995, EPA approved Georgia's "federally enforceable state operating permit" program which, in EPA's own words, is designed to "provide a mechanism through which sources may avoid classification as a major source by obtaining a Federally enforceable limit on potential to emit."⁴ With EPA's approval, Georgia, through EPD, issues state, not federal, construction and/or operating permits that contain enforceable limits on potential to emit pursuant to the requirements of Georgia law. The sufficiency of the Permit Amendment must therefore be evaluated under Georgia law and regulations. While federal court decisions and EPA guidance cited by Greenlaw may provide guidance, they are in no way binding on EPD.⁵

Greenlaw Comment (p. 7-15):

The Draft Longleaf Permit Amendment Fails to Include Adequate Terms and Conditions to Create Federally and Practically Enforceable Limitations on Longleaf's Potential to Emit HAPs Below Major Source Emission Thresholds.

³ See *Longleaf Energy Associates, LLC v. Friends of the Chattahoochee, Inc.*, 298 Ga. App. 753, 754-55 (2009).

⁴ 60 Fed. Reg. 45048, 45050 (Aug. 30, 1995).

⁵ See *Environmental Waste Reductions, Inc. v. Legal Envtl. Assistance Found., Inc.*, 216 Ga. App. 699, 700 (1995) ("A ruling by a federal trial court is persuasive, not binding, on this court.").

LEA's Response:

Over the course of several pages in its comment letter, Greenlaw discusses the various components of LEA's December 22, 2009 submission to EPD in an attempt to demonstrate that the Permit Amendment does not effectively limit LEA's potential to emit below major source thresholds. Greenlaw's strained interpretations of the contents of LEA's submission as well as the contents of the Permit Amendment are not supported by the facts, and collectively fail to undermine the minor source status that the Permit Amendment will enforce. LEA will address each of Greenlaw's comments in turn.

A. Comments Concerning LEA's Revised Emission Estimates

Greenlaw provides several categories of comments regarding the revised HAP emission estimates that LEA presented to EPD in its December 22, 2009 submission. First, Greenlaw apparently seeks to attribute fault to LEA for reducing its emission estimates during the course of the permitting process for the Permit Amendment. As EPD is well aware, it was Greenlaw that repeatedly noted in its August 4, 2009 comments regarding EPD's draft Notice of MACT Approval that the HAP emissions from the Longleaf facility would be lower than LEA's and EPD's original estimates. Greenlaw specifically requested that EPD "collect additional stack test data from other pollution control agencies and revisit its MACT determination using actual emissions data."⁶ That is precisely what LEA did to derive its revised HAP emission estimates, and thus Greenlaw has no credible basis to criticize LEA or EPD to responding to Greenlaw's own request for additional analysis.

Second, Greenlaw attempts to discredit the factual basis for LEA's revised emission estimates. Again, these comments are not well-taken, as in many cases, the revised emission estimates derived by LEA are based, at least in part, on stack test results cited by Greenlaw in its August 4, 2009 comment letter to EPD. For example, Greenlaw commented in its August 4, 2009 letter that LEA and EPD failed to adequately consider lower HCl stack tests.⁷ Now Greenlaw contends that these *very same stack tests* "cannot be relied upon to indicate controlled levels of HCl emissions" because Greenlaw alleges that the EPA-approved test method, Method 26A, allegedly has a negative bias. As explained in more detail in subsequent responses to comments, Greenlaw's exhibits do not demonstrate that Method 26A has such a negative bias, and in any event, EPA's repeated endorsement of Method 26A as the appropriate test method for HCl indicates that any potential for a negative bias is not significant.

Greenlaw again contradicts itself when offering its opinion as to what HCl emission limits can be achieved at the Longleaf facility. According to Greenlaw's calculations, the Longleaf facility would need to limit its HCl emissions from each boiler to no more than 0.00018 lb/MMBtu in order to fall below the 10 tpy major source threshold. Greenlaw appears to argue that this emission rate cannot be achieved at the Longleaf facility. Yet this suggestion is contradicted by statements made by Greenlaw *in the very same comment letter*. On page 31 of its June 30, 2010 comment letter, Greenlaw cites to the 0.00006 lb/MMBtu HCl limit proposed

⁶ Letter from Greenlaw to J. Capp at 35 (Aug. 4, 2009).

⁷ *Id.* at 33-34.

by EPA in its industrial boiler MACT standard and claims that “[t]here is no reason why coal-fired electric utility steam generating units should not be subject to the same if not more stringent emission limits as pulverized coal industrial boiler.”⁸ Again, Greenlaw’s own statements provide further support for the minor source emission estimates upon which the Permit Amendment is based.

Greenlaw also suggests that LEA’s HCl emission estimates are flawed because of an error in LEA’s presentation of 2009 stack test results from the Newmont facility. Greenlaw is correct that the average HCl emission rate for the April 24, 2009 stack tests at the Newmont facility listed in Table 1 of LEA’s December 22, 2009 submission, 1.2×10^{-4} lb/MMBtu, does not match the average emission rate reported in the stack test results. The underlying stack test results were provided with LEA’s December 22, 2009 submission to EPD, and thus the error in Table 1 was simply an oversight. This oversight in no way affects LEA’s underlying analysis, however, as LEA did not factor test results from Newmont into its emission estimates after learning that Newmont adds CaCl_2 to the coal at the feeders to improve performance of the facility’s activated carbon injection system. LEA has no intention of similarly adding CaCl_2 to its coal, and has been assured by its technical consultants and vendors that the removal efficiency necessary to meet the permitted mercury limits can be achieved without the addition of CaCl_2 to the coal. Lastly, it is worth noting that one of LEA’s technical consultants identified a significant computational error in the Newmont’s April 2009 test report, which likely explains the disparity in results from Newmont’s 2008 and 2009 test results.

Greenlaw’s attack on LEA’s emission estimate for HF is similarly unpersuasive. According to Greenlaw’s calculations, the Longleaf facility would need to limit its HF emissions from each boiler to no more than 0.00018 lb/MMBtu in order to fall below the 10 tpy major source threshold. Greenlaw suggests that this emission rate could not be achieved at the Longleaf facility. Again, Greenlaw’s comments contradict statements it previously made to EPD. In its August 4, 2009 comment letter to EPD, Greenlaw criticized EPD’s proposed HF emission limit as being too high, and argued that the average emission rate it calculated from its own stack test research was 0.000052 lb/MMBtu. Greenlaw went on to note that “the average plus three standard deviations, which encompasses 99.7% of the measurements, is 0.00016 lb/MMBtu.” Thus, Greenlaw’s own research indicates that the very same limit it now suggests is *not achievable*, 0.00018 lb/MMBtu, has in fact been *achieved* in practice by other facilities. In sum, Greenlaw itself has already made the case to explain why, based on demonstrated performance of facilities with similar control technology, the Longleaf facility will not emit HF in amounts that exceed the major source threshold of 10 tons per year.

Greenlaw also criticizes LEA’s revised estimates for other HAP emissions based on LEA’s reliance on emission factors developed by the Electric Power Research Institute (EPRI) and COALQUAL data. As LEA explained in its December 22, 2009 submission to EPD, there are several reasons why LEA’s use of EPRI factors, as opposed to the AP-42 factors on which its previous estimates were based, is justified in this instance. AP-42 factors are neither subject to external peer review nor public notice and comment rulemaking. Moreover, AP-42 factors are based on an array of emission data obtained from many diverse sources over 30-year period —

⁸ June 30, 2010 Comment Letter from Greenlaw at 30-31.

often with little or no consistency among test programs and/or test methods. To the contrary, EPRI designed and implemented its “Power Plant Integrated System: Chemical Emissions Study” (PISCES) project *specifically* to collect and review data regarding the source, distribution, and fate of trace chemicals in fossil fuel-fired power systems. The complete PISCES database was assembled using a single emission testing protocol, which was implemented by a small group of experienced test contractors. As previously mentioned, EPRI provided EPA with its PISCES database, and EPA elected to use the EPRI data in preparing the 1998 Utility Report to Congress. In sum, Greenlaw’s criticism of LEA’s use of EPRI emission factors has no merit.

Likewise, Greenlaw’s attempt to discredit LEA’s use of the average non-mercury metal HAP concentrations from the USGS COALQUAL database should be disregarded. The use of average coal content data from the COALQUAL database is appropriate given that the concentrations were used to derive an estimate of *annual* emissions. For example, in the November 9, 2006 EPA comments on the then-draft Holcomb permit, EPA noted that for longer averaging periods, the effects of variability are minimized. In contrast, when evaluating short-term emission limitations for BACT, EPA noted that it is important to consider the effects of variability. Additionally, while Greenlaw cites two papers that advise caution when relying on COALQUAL data, neither paper advises not to use COALQUAL data. Moreover, to the extent the papers demonstrate any inaccuracies with COALQUAL data, they suggest that use of COALQUAL data will *overestimate* concentrations of non-mercury metals. As Greenlaw notes, a likely explanation for these inflated concentrations is that the COALQUAL data is derived from samples that contain rock and overburden which skews the total metals content in the samples. Thus, to the extent Greenlaw’s citations suggest that COALQUAL data is not entirely accurate, these same sources suggest that use of COALQUAL data will result in a more conservative estimate of non-mercury metal emissions as compared to other methods.

Lastly, Greenlaw erroneously suggests that the emission limits contained in EPD’s June 2009 Notice of MACT Approval (which remain in the Permit Amendment) are “reflective of the controlled HCl [and HF] emissions” for purposes of calculating potential to emit. As set forth in more detail below, the “lb/MMBtu” emission limitations in the Permit Amendment for HCl and HF are not the primary means by which the Permit Amendment renders the Longleaf facility a minor source of hazardous air pollutants. Accordingly, Greenlaw is incorrect to suggest that these emission limitations establish the facility’s potential to emit.

B. Comments Concerning the Provisions in the Permit Amendment that Will Restrict the Longleaf Facility’s Potential to Emit.

Greenlaw mistakenly claims that “the only provisions that would restrict Longleaf’s emissions to minor source levels of HAP emissions are blanket restrictions on emissions.” As the following explanation details, the Permit Amendment contains operational restrictions that are “permanent, quantifiable, and otherwise enforceable as a practical matter,” and which collectively ensure that the Longleaf facility will be a minor source of HAP emissions.

As explained above, LEA’s minor source emission estimates are based, in part, on the results of recent stack tests from facilities that utilize similar pollution control technology and coal type. The recent data indicates that the Longleaf facility’s state-of-the-art pollution control

technology, when consistently operated to maximize performance, will effectively reduce HAP emissions from the Longleaf facility to below major source thresholds.

The Permit and Permit Amendment contain numerous operational limitations that require LEA to utilize state-of-the-art pollution control technology and to operate such technology in a manner that maximizes performance. Conditions 2.4, 2.5, 2.6, and 2.7, for example, require the installation of add-on control technology (dry scrubber, fabric filter baghouse, halogenated activated carbon injection) and good combustion practices that will reduce HAP emissions. As LEA has explained in detail in prior submissions to EPD, the dry scrubber, in conjunction with the fabric filter baghouse, will control HCl and HF emissions. The halogenated activated carbon injection will control mercury as well as organic HAP emissions. The fabric filter baghouse will control emissions of HAP metals. The good combustion practices will reduce emissions of organic HAPs. The Permit Amendment further provides that these control technologies and combustion practices must operate efficiently to remove many pollutants, including HAPs, to meet short-term limits.⁹ The Permit requires the effectiveness of these control technologies and combustion practices to be monitored continuously, through the required use of continuous emission monitoring systems for emissions that will be directly affected by the performance of the pollution control devices and by the effectiveness of LEA's combustion practices.¹⁰

The Permit also contains restrictions on production. Specifically, the heat input of each boiler will be restricted to 6,139 MMBtu/hr on a one-hour average, a condition that will further limit the amount of emissions that will be generated by the Longleaf facility in any given hour of operation.¹¹

To the extent some of these operational or production limitations may not explicitly reference HAPs, the effect that these controls will necessarily have on HAP emissions allows them to be considered for purposes of estimating potential to emit. The definition of "potential to emit" in both the Georgia regulations and the applicable federal regulations considers all permit limitations "if the limitation *or the effect it would have* on [HAP] emissions" is federally enforceable or "legally and practically enforceable."¹² EPA has noted that, for purposes of estimating potential to emit for HAPs, the definition of potential to emit allows permitting authorities to consider limitations on criteria pollutant emissions if the effect such limitations would have on HAP emissions is enforceable as a practical matter.¹³

⁹ See Conditions 2.15(c) - (k), (m), (n), and (o).

¹⁰ See Conditions 5.2(d) (Hg CEMS to monitor halogenated activated carbon injection performance), 5.2(c) (SO₂ CEMS to monitor scrubber performance), 5.2(b) (CO CEMS to monitor performance of good combustion practices), 5.2(f) (PM CEMS to monitor fabric filter baghouse performance).

¹¹ See Conditions 2.17, 8.19, and 8.25(b)(xviii).

¹² Ga. Comp. R. & Regs. r. 391-3-1-.01(ddd); 40 C.F.R. § 63.2.

¹³ See Memorandum from John S. Seitz to various EPA Region Directors, *Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act (Act)*, at 6-7 (Jan. 25, 1995) (available at <http://www.epa.gov/compliance/resources/policies/civil/caa/stationary/limit-pte-rpt.pdf>).

The Permit Amendment ensures that EPD has the ability to monitor the effect that the above permit conditions will have on HAP emissions and to enforce the Longleaf facility's HAP minor source status via numerous conditions, including Condition 2.25. Condition 2.25 of the Permit Amendment limits emissions of any single HAP to less than 10 tons during any 12 consecutive months or any combination of HAPs to less than 25 tons during any 12 consecutive months. Condition 2.25 serves as an absolute ceiling on HAP emissions from the Longleaf facility, and provides EPD with the necessary enforcement authority to ensure that the effect that the numerous pollution control technologies employed at the facility will have on HAP emissions is sufficient to maintain the facility's status as a minor source of HAPs.

As set forth in the Georgia regulations, the limitations, controls, and requirements in a federally enforceable operating permit, such as this Permit Amendment, must be "permanent, quantifiable, and otherwise enforceable as a practical matter."¹⁴ Contrary to Greenlaw's suggestions, the absolute ceiling on HAP emissions contained in Condition 2.25 meets this regulatory standard of enforceability. The Permit Amendment contains a rigorous monitoring and reporting regime that will allow EPD to verify LEA's compliance with the 12-month rolling averages set forth in Condition 2.25.

The monitoring and reporting regime starts with Condition 8.3, which requires sampling and analysis of the coal as-fired on a daily basis. This provision will require LEA to maintain daily records of the content of various HAPs in the coal as-fired. Conditions 4.1 and 4.2 set forth performance testing requirements, including calculations of percent removal of certain HAPs (HCl, HF, and selenium). The frequency of these each test varies from HAP to HAP, and is dependent upon the expected variability in emissions for the subject HAPs. The daily coal sampling and analyses, coupled with the results of the performance tests and percent removal calculations, will be utilized to conduct monthly emissions of every HAP that the Longleaf facility may emit. The emission calculations are set forth in detail in Condition 8.27. Pursuant to Condition 8.29, LEA is required to notify EPD if any monthly emissions of a single HAP exceed 0.83 tons (1/12 of 10 tons) or if the total monthly emissions of all HAPs exceed 2.08 tons (1/12 of 25 tons). Likewise, pursuant to Condition 8.30, LEA is required to notify EPD if the 12-month rolling total of emissions of any individual HAP equals or exceeds 10 tons or if the 12-month rolling total of emissions of all HAPs equals or exceeds 25 tons. Given the quantity of information LEA must record, and the frequency with which information must be reported to EPD, EPD's enforcement officers will have sufficient information and notice to bring a timely enforcement action should the Longleaf facility's HAP emissions ever exceed the limits in Condition 2.25. On information and belief, EPD has followed this approach since EPA approved Georgia's permitting program, and EPA has not commented concerning longstanding EPD practice.

Greenlaw objects to the approach outlined in the Permit Amendment as failing to comply with a 1987 decision from the U.S. District Court for the District of Colorado, *U.S. v. Louisiana-Pacific, Corp.*, and subsequent EPA guidance published in 1989, over twenty years ago. As stated above, neither a federal trial court decision nor EPA guidance are not binding on EPD, as the Permit Amendment is a Georgia permit issued pursuant to Georgia law. Nevertheless, the

¹⁴ Ga. Comp. R. & Regs. r. 391-3-1-.03(2)(h).

conditions set forth in the Permit Amendment are not inconsistent with the *Louisiana-Pacific* decision nor with EPA guidance governing potential to emit.

In *Louisiana-Pacific*, in the context of the PSD permit, the court held that “blanket restrictions on actual emissions” are not properly considered in a source’s calculated potential to emit because, among other reasons, the court believed them to be “virtually impossible to verify or enforce.”¹⁵ EPA issued guidance in the wake of the *Louisiana-Pacific* decision regarding the agency’s preferred approach to limiting potential to emit in the context of PSD permitting.¹⁶ EPA noted that “any permit limitation can legally restrict potential to emit if it meets two criteria: (1) it is federally enforceable ... and (2) it is enforceable as a practical matter.”¹⁷ EPA provided examples of restrictions on production or operation that could limit potential to emit, including “limitations on quantities of raw materials consumed, fuel combusted, hours of operation, or conditions which specify that the source must install and maintain controls that reduce emissions to a specified emission rate or to a specified efficiency level.”¹⁸ EPA further noted that if a permitting authority found setting operating parameters infeasible, the permit could effectively limit potential to emit by including short-term emission limits and the operation of a CEMS. Of course, EPA’s 1989 guidance was drafted for the context of new source review permitting and the criteria pollutants at issue in that context. The Permit Amendment at issue here concerns HAP emissions, and accordingly, EPA assumptions in the context of new source review — such as the availability of CEMS to monitor the criteria pollutants — do not apply in the context of HAP emissions. Moreover, as subsequent guidance documents released by EPA indicate, the 1989 guidance does not set forth a rigid set of requirements. Rather, EPA has approved requests to deviate from the language of the 1989 guidance where appropriate, as determined on a case-by-case basis.¹⁹

Nevertheless, to the extent the court’s decision in *Louisiana-Pacific* or EPA’s 1989 guidance has any relevance to the application of Georgia law, the many enforcement, monitoring, and reporting conditions in the Permit Amendment distinguish this case from the facts of *Louisiana-Pacific* and are consistent with EPA’s policy of requiring conditions that ensure minor source status is enforceable as a practical matter. EPD has imposed operational restrictions that require the installation of pollution control technology that will control HAP emissions and the maintenance of such technologies at levels that maximize their performance.

¹⁵ 682 F.Supp. 1122, 1133 (D. Colo. 1987).

¹⁶ Memorandum from Terrell E. Hunt and John Seitz, *Guidance on Limiting Potential to Emit in New Source Permitting* (June 13, 1989) (attached as Exhibit 2 to Greenlaw’s comments).

¹⁷ *Id.* at 2.

¹⁸ *Id.* at 6.

¹⁹ *See, e.g.*, Memorandum from John B. Rasnic to David Kee, *Policy Determination on Limiting Potential to Emit for Koch Refining Company’s Clean Fuels Project* (March 13, 1992) (endorsing the use of emission limitations to restrict potential to emit through use of a 12-month rolling averaging time and without use of a CEMS) (available at <http://www.epa.gov/ttn/nsr/gen/memo-v.html>); Memorandum from John B. Rasnic v. David Kee, *3M Tape Manufacturing Division, Minnesota* (July 14, 1992) (approving use of emission limitation to limit potential to emit where either a CEMS “or an acceptable alternative is used.”) (available at <http://www.epa.gov/region07/air/nsr/nsrmemos/3mtape.pdf>).

The performance of each add-on pollution control technology as well as the effectiveness of LEA's good combustion practices will be monitored on a continuous basis through the use of numerous CEMS devices. The Permit likewise restricts production of the boilers to an hourly maximum heat input. Together, these independently enforceable permitting conditions will provide EPD with a surrogate tool to monitor HAP emissions. The Permit Amendment also requires daily sampling and analysis of coal entering the boilers to measure HAP emissions, which in turn must be recorded and reported to EPD in the event that HAP emissions in any given month do not fall below 1/12th of the total annual major source threshold. Additionally, the absolute ceiling on HAP emissions contained in Condition 2.25 is a *rolling* 12-month average, which EPA has recognized as more stringent than a fixed 12-month average. In sum, all of these permit conditions, taken together, allow EPD to verify and enforce the Longleaf facility's minor source status on a regular basis.

The fact that LEA retains the flexibility to burn some CAPP coal does not affect this conclusion. LEA clearly indicated to EPD that its transition from a major source of HAPs to a minor source would necessarily correspond with reduced flexibility to burn CAPP coal. Due to the logistical issues referenced in Greenlaw's comments, the flexibility to burn some CAPP coal — even for just a few days — could be all that is needed to withstand a short-term disruption in rail delivery from the Powder River Basin. LEA readily concedes, as it previously did in its December 22, 2009 submission to EPD, that without some unexpected increase in HAP removal efficiency from its control devices, the Longleaf facility will not be able to burn CAPP coal for any sustained period of time and maintain its status as a minor source. It is difficult, however, for LEA to know exactly how much CAPP coal it would be able to burn in any rolling 12-month period and still satisfy Condition 2.25 of the Permit Amendment. That will depend on specific chlorine content of any CAPP coal burned at the Longleaf facility, among other factors. Should LEA burn any CAPP coal at the facility, Condition 4.2 of the Permit Amendment will require performance tests during any such event along with the daily coal sampling and analyses required by Condition 8.3. Thus, LEA and EPD will learn at the time any CAPP coal is burned how the CAPP coal affects the facility's HAP emissions. With that information, LEA will be able to calculate how much CAPP coal can be burned without exceeding the HAP emission limitations in the Permit Amendment.

COMMENTS REGARDING CONDITION 4.1(m)

Greenlaw Comment (p. 16):

(1) Condition 4.1.m of the draft permit amendment requires performance testing to determine HCl and HF emission rates. Specifically, this provision states:

Method 26A shall be used for the determination of fluorine and chlorine at the inlet of the control device, hydrogen fluoride, and hydrochloric acid emission rates from the PC-Fired Boilers, S01 and S02; the sampling time for each run shall be a minimum of one hour. The percent removal of hydrogen chloride and hydrogen fluoride shall also be calculated at the time of the test. The Division may require the Permittee to determine the percent removal of hydrogen chloride and hydrogen fluoride when firing PRB or CAPP coal based on the results of the test.

This provision lacks clarity. It does not define or describe how the percent removal is to be calculated. It also does not identify the HCl and HF “control device” at which the chlorine and fluorine is to be determined.

LEA Response:

Initially, LEA responds by noting that there must be reasonable limits on the degree of specificity that must be included for testing and monitoring provisions in the Draft Permit Amendment. As is the case in most permits EPD issues, especially complex permits such as this, the permittee submits a testing protocol to EPD prior to the test that includes the specific methodology to be employed during the test. EPD has the flexibility to alter the protocol as it sees fit. LEA does not believe it serves anyone’s interest to limit EPD’s flexibility to prescribe particular testing methodologies several years prior to a test.

That said, to the extent Condition 4.1(m) needs additional clarity, LEA proposes the following methodology for the calculation of removal efficiency. LEA believes that the key to calculating accurate removal efficiencies is to obtain representative coal samples during the initial performance tests. The initial performance test will consist of three independent sampling runs of the various required stack sampling methods (e.g., EPA Method 26A for acid gases, Method 29 for metals including selenium). Accordingly, LEA proposes to collect three independent and representative coal samples to pair with the three individual stack tests. A short proximate analysis will be performed on each coal sample, which will measure ash, moisture, sulfur content, and heating value, among other characteristics. Each sample shall also be analyzed for chlorine and fluorine, in addition to other substances. Since the laboratory results are reported in parts per million (ppm) by weight, the analytical results (e.g., ppm chlorine) can be divided by the heating value to yield HCl in the units of lbs/MMBtu.²⁰ The following

²⁰ Of course, adjustments for molecular weights will be required (e.g., multiply coal chlorine concentration by 36.5/35.5 to convert to equivalent HCl concentration).

equation illustrates how coal sampling results will be combined with stack testing results to calculate removal efficiency:

$$\eta = \frac{HAP_{Coal} - HAP_{Stack}}{HAP_{Coal}} \times 100\%$$

Where:

η = Removal efficiency, %

HAP_{Coal} = Concentration of the HAP in coal, lb/MMBtu, as required by Condition 8.3

HAP_{Stack} = Concentration of the HAP as determined by stack test, lb/MMBtu

Finally, LEA urges EPD to remove the phrase “at the inlet to the control device” from Condition 4.1(m). As Greenlaw notes, as presently drafted, it is not clear which “control device” the Permit Amendment refers to. In any event, LEA believes it is most appropriate for the chlorine and fluorine content to be measured prior to entry into the boilers to allow for a calculation of percent removal across the entire combustion and post-combustion process. Pursuant to Condition 8.3 and 8.27(a) & (b), HCl and HF emissions will be measured by taking the chlorine and fluorine content of the coal as-fired on a daily basis and multiplying that time the percent removal calculated in the above equation. To be consistent, LEA believes that the chlorine and fluorine content should be measured from the same location when calculating percent removal and when applying the results of that calculation to estimate monthly HCl and HF emissions. Accordingly, LEA asks EPD to clarify the language of Condition 4.1(m) to make is clear that percent removal shall be calculated by comparing the chlorine and fluorine content measured in the coal prior to entry into the boiler with the results of the performance test.

Greenlaw Comment (p. 17):

Most significantly, this provision does not definitively require determination of percent removal or HCl and HF testing during all types of coal combustion combinations, when fuel oil is used for startup, or when clarifier sludge is burned. It does not even specify whether PRB or CAPP coal is to be burned in the initial test, and it provides discretion for the EPD to determine whether the percent removal of HCl and HF when firing PRB or CAPP coal is to be calculated.

As is clear from the company’s own projections, the HCl emissions when burning PRB coal could vary significantly from the HCl emissions when burning CAPP coal. Longleaf’s projections of uncontrolled HCl emissions showed HCl emissions with CAPP coal could be 5-6 times greater than HCl emissions from PRB coal. USGS data confirm this. Not only can the chlorine levels vary greatly between PRB and CAPP coal, but the fate of chlorine in the system can vary between coal type as well. Thus, this performance testing requirement in Condition 4.1.m of the draft permit amendment fails to account for HCl emissions or HCl removal efficiency across the various types of coals that Longleaf will be allowed to burn under its permit.

LEA Response:

As set forth in more detail in LEA’s December 22, 2009 letter to EPD, to the extent HAP emissions during startup events deviate from HAP emissions during normal operating conditions,

such HAP emissions will be lower than the HAP emissions during normal operating hours.²¹ Rather than conduct calculations during startup events, LEA proposed, and EPD accepted, Permit Amendment conditions that would utilize normal operation condition HF and HCl emission estimates even during periods of startup.

LEA does not expect the small amount of clarifier sludge that it is permitted to burn to affect the facility's overall emission rates of HAPs for several reasons. First, the total amount of clarifier sludge that the facility is permitted to burn on any given day represents a small percentage of the facility's total permitted heat input capacity.²² Second, the sludge will consist of spent fibrous material from Georgia-Pacific's neighboring mill which is not expected to contain many HAPs. The Georgia-Pacific facility from which Longleaf may obtain small quantities of sludge to burn in its boiler is an unbleached kraft containerboard facility. When EPA promulgated the cluster rules for pulp and paper facilities, they did not include effluent limitations for unbleached kraft facilities like the adjacent Georgia-Pacific mill.²³ While these facilities must follow best management practices, EPA has yet to issue specific effluent limitations for the unbleached kraft facilities. The cluster rules focused on the types of facilities at which EPA concluded HAPs were a concern.²⁴ The fact that unbleached kraft facilities were not included in the rule indicates that HAPs are of minor, if any, concern at these facilities. For these reasons, Greenlaw's suggestion that the burning of clarifier sludge at the Longleaf facility will affect HAP emissions is not well-taken.

Nevertheless, in the event that EPD believes a test is necessary to ensure that any HAPs contained in the clarifier sludge do not increase the facility's overall emission rates, LEA would propose including any clarifier sludge that is burned at the Longleaf facility in the sampling and HAP analysis requirements of Condition 8.3. Any HAP content measured in any such analysis would, in turn, be included in the monthly HAP emission estimates in Condition 8.27. It should be carefully noted that any requirements for the sampling and analysis of clarifier sludge included in Condition 8.3 would be separate and in addition to any requirements set forth in the National Emission Standard for Mercury, 40 C.F.R. Part 61, Subpart E.²⁵ A revised Condition 8.3 would read as follows (proposed change in italics):

- 8.3 The Permittee shall obtain a representative sample of the coal (*and clarifier sludge, if fired, for purposes of enforcing minor source status*) as-fired on a daily basis for analysis for sulfur content (%S), moisture content, ash content, chlorine content, fluorine content, antimony content, arsenic content, beryllium content, cadmium content, chromium content, cobalt content, lead content, manganese content, nickel content, selenium content, and Gross

²¹ See December 22, 2009 Letter from K. French to J. Capp at Attachment A, 10-11.

²² See Permit, Condition 2.14 (limiting the amount of clarifier sludge burned on any given day to 1% of the total heat input).

²³ 63 Fed. Reg. 18504, 18512 (April 15, 1998).

²⁴ See 63 Fed. Reg. 18504.

²⁵ Compliance with the National Emission Standard for Mercury, 40 C.F.R. Part 61, Subpart E, is a separate and distinct requirement of LEA's Permit. See Conditions 1.5 & 4.1(o).

Caloric Value (GCV). The sample shall be acquired and analyzed using the procedures of Section 12.5.2.1 in Method 19 of the Division's **Procedures for Testing and Monitoring Sources of Air Pollutants**. [391-3-1-.02(6)(b)1(i)] (emphasis in original). These records shall be kept available for inspection by or submittal to the Division for five years from the date of record.

LEA disagrees with Greenlaw's comment that the Permit Amendment fails to specify which type of coal will be fired when the removal efficiency of HCl and HF is calculated. Condition 4.2 requires LEA to conduct the required performance tests "not later than 180 days after the initial startup of each boiler *for each coal type*." As LEA has repeatedly indicated, the conditions in the Permit Amendment will severely limit the amount of CAPP coal that the facility may burn. Nevertheless, in the event any CAPP coal is fired at the facility, the language of Condition 4.2 will require LEA to conduct a performance test while firing CAPP coal to determine, among other things, the percent removal of HCl and HF.

Greenlaw Comment (p. 17):

In addition, Test Method 26A has been shown to cause a negative bias for at least HCl measurements at coal-fired units burning Powder River Basin coals. The Method 26A sampling trains call for a filter upstream of four impingers. Fly ash and unburned carbon particles collected on the filter can capture some halogens that would otherwise be emitted as HCl, but the test method does not account for those halogens. This is especially problematic with Powder River Basin coals and has been known to be a problem for quite some time. For example, the Electric Power Research Institute ("EPRI") recently stated regarding use of Method 26A for HCl emissions that "[u]sing this method [Method 26A] for sources containing a significant amount of alkaline particulate, e.g., some units burning Powder River Basin (PRB) coal or with wet scrubber carryover, will result in a known negative bias for HCl...." EPA noted this issue as long ago as 1996. This problem with the test method could likely be an issue with HF emissions as well.

Method 26A also can result in a significant negative bias in measuring acid gases when any moisture is present in the sampling train. An EPA report states "[i]t is important, but difficult to confirm, that any condensed moisture present during sampling be removed completely during a post purge of the Method 26A train to avoid a significant negative bias." EPRI also noted this issue in its guidance for responding to EPA's Information Collection Request for the forthcoming utility MACT standard. Specifically, EPRI states that this can be an issue with low concentrations of HCl, as is likely with low chlorine with PRB coal. EPRI states further that "[u]niform and adequate heating of the probe and filter is essential to avoid condensation."

LEA's Response:

Greenlaw's attack on the validity of Method 26A has no merit. First, the Energy and Environmental Research Center (EERC) paper on which Greenlaw relies does not support Greenlaw's contention that Method 26A will cause a negative bias to occur on account of the

alleged adsorption of HCl on fly ash and unburned carbon particles on the test filter. The statement Greenlaw extracts from the EERC paper is a supposition that is not supported by experimental data. Even if the EERC hypothesis were proven, however, it would not be applicable to the Longleaf units. The combustion of PRB coal in utility boilers results in essentially no unburned carbon particles. Indeed, the lack of unburned carbon particles in PRB coal emissions explains why mercury control tends to be more challenging for PRB coal and often requires the addition of activated carbon, whereas the measurable quantity of unburned carbon in the fly ash from CAPP coal requires less activated carbon to achieve the same level of mercury reduction. Additionally, the EERC hypothesis does not take into account the state-of-the-art particulate control technology that will be employed at Longleaf. The fabric filter to be installed at Longleaf will ensure that PM emissions will be sufficiently low so as to prevent the adsorption of HCl on the test filter.

Second, EPA's own actions demonstrate that the agency clearly does not view any potential negative bias associated with Method 26A to be significant. Pursuant to an information collection request (ICR) issued to the electric utility industry in January 2010, EPA required subject facilities to utilize Method 26A to conduct acid gas emission testing.²⁶ As recently as June 2010, EPA proposed a maximum achievable control technology rule for industrial boilers that specifies use of Method 26A to determine compliance with EPA's proposed HCl limits.²⁷ In sum, EPA's repeated endorsement of Method 26A demonstrates that any negative bias that could potentially exist through use of the test method is not significant, and certainly does not invalidate the prescribed use of Method 26A in Condition 4.1(m) of the Permit Amendment.

²⁶ Supporting Statement for USEPA ICR No. 2362.01 (OMB Control No. 2060-0631): Information Collection Effort for National Emission Standards for Hazardous Air Pollutants (NESHAP) for Coal- and Oil-Fired Electric Utility Steam Generating Units, Part B at 37 (EPA, Dec. 24, 2009) (available at www.regulations.gov, Docket No. EPA-HQ-OAR-2009-0234-0103).

²⁷ 75 Fed. Reg. 32006, 32069 at Table 5 (June 4, 2010).

COMMENTS REGARDING CONDITION 8.3

Greenlaw Comment (pp. 18-19):

*(2) Condition 8.3 of the draft permit would require Longleaf to obtain a representative sample of coal as fired on a daily basis for analysis of content of chlorine and fluorine, among other constituents, using the procedures in Section 12.5.2.1. of Method 19 in EPD's **Procedures for Testing and Monitoring Sources of Air Pollutants.***

Section 12.5.2.1. of Method 19 does not clearly state how to get a representative sample of the coal to be burned. For example, although it typically requires sampling from a sample size reflective of 1 day of coal to be processed, it allows sampling from a 90 day sample size "if representative sampling can be conducted for each raw coal and product coal." Yet Condition 8.3 of the draft permit requires a "representative sample of coal as fired on a daily basis," and such representativeness of the coal sampling is imperative for it to be of any value. However, it is questionable whether there can be any such thing as a representative sample of coal when it comes to chlorine content. Powder River Basin coal can have a maximum of 1,370 parts per million (ppm) of chlorine, and a minimum level of below 75 ppm, with an arithmetic mean of 100 ppm and a standard deviation of 120 ppm. Appalachian coal can have a maximum level of chlorine of 8,760 ppm, has an arithmetic mean concentration of chlorine of 730 ppm and a standard deviation of 680 ppm. Thus, it is highly questionable whether a representative sample of coal and of uncontrolled chlorine emissions can be made, even with daily coal sampling.

LEA Response:

Initially, Greenlaw's comment appears to attack the clarity of EPD's Procedures for Testing and Monitoring Sources of Air Pollutants, which is a duly promulgated rule in Georgia. EPD must follow this rule, and pursuant to Condition 8.3 of the Permit Amendment, so must LEA.

Additionally, as is the case with many of Greenlaw's comments, Greenlaw seeks to impose a level of specificity on the terms and conditions of the Permit Amendment that is simply not required under Georgia law. The exact coal sampling techniques to be employed by LEA will be proposed by LEA and approved by EPD prior to the test. Any lack of clarity as to the minute details of the sampling methodology will be resolved by EPD prior to the test. To require more detail at this stage would eliminate the flexibility that EPD must have to practically implement the testing and monitoring requirements set forth in the Permit Amendment.

Finally, LEA disagrees with Greenlaw's claim that a representative sample of coal cannot be derived. Modern coal-fired power plants routinely include equipment that is capable of collecting representative samples of coal on a daily basis. Indeed, Greenlaw's expert witness in the prior litigation over LEA's PSD permit, Phyllis Fox, testified that it was feasible (and in her opinion, preferred) for LEA to obtain representative coal samples at the pulverizer on a daily

basis in order to determine sulfur content in the coal.²⁸ In accordance with the Permit Amendment and in compliance with EPD procedures, LEA will install such a system at the Longleaf facility.

One example of similar system used on other coal-fired facilities operates as follows. First, coal travels via conveyor from the coal storage piles to the crusher. The crusher will crush the coal into pieces that are ¾-inch or less in diameter. The crushed coal will then be transported via feeders to the pulverizer immediately prior to be deposited in the boilers. Throughout the day, samples of coal will be taken from the feeders. At the end of each day, the total volume of coal amassed from these periodic samples will then be analyzed for the characteristics listed in Condition 8.3. By taking samples throughout the day, LEA will ensure that the tested coal will be representative of the coal burned on a particular day.

Greenlaw's Comment (p. 19):

*This permit condition also does not identify the test method(s) to be used to determine the amount of chlorine and fluorine in the coal, nor does Section 12.5.2.1. of Method 19 in EPD's **Procedures for Testing and Monitoring Sources of Air Pollutants** specify test method(s) for determining the amount of chlorine and fluorine in the coal. While Section 12.5.2.1.3 of EPD's **Procedures for Testing and Monitoring Sources of Air Pollutants** does identify various ASTM test methods for determining the sulfur content in the coal, it does not specify a test method for determining chlorine or fluorine content. It is a well known practice of effective permit and regulation writing that, to ensure practical enforceability and to ensure replicable data are used to determine compliance with emission limits, test methods must be specified in the permit.*

With respect to the testing for chlorine levels in the coal, studies have shown that most of the ASTM test methods for determining the chlorine levels in low chlorine coal such as Powder River Basin coal are not reliable. Specifically, an EPRI study that reviewed four ASTM methods for measuring chlorine in the coal that are either approved methods or under development by ASTM, and found that none of the methods can reliably and consistently measure chlorine in the coal for low chlorine coals including Powder River Basin coal. The oxidative hydrolysis microcoulometry method for measuring chlorine in coal was the only method shown to reliably provide chlorine concentrations in low chlorine coals like PRB coal. This method is now approved method ASTM D6721.

LEA Response:

Greenlaw also objects to the fact that the Permit Amendment does not specify the precise test method that will be utilized to measure the chlorine content in a particular coal sample. LEA agrees that Method 19 in EPD's Procedures for Testing and Monitoring Sources of Air Pollutants does not specify a particular test method for determining chlorine or fluorine content in the coal. LEA disagrees with Greenlaw's claim that this omission undermines the enforceability of the

²⁸ See *Friends of the Chattahoochee, Inc., et al. v. Couch, et al.*, Case No. OSAH-BNR-AQ-0732139, Hearing Transcript at 586-87 (September 14, 2007).

Permit Amendment. Again, an effective permit grants the permitting authority flexibility with regards to establishing the details of any methodology that will be employed for a particular test.

LEA does agree with Greenlaw that ASTM test method D6721 is the most accurate test method currently available to determine chlorine content in coal. Indeed, the new low reported HAP emission rates on which LEA's permit amendment application was based were derived through the advances in testing accuracy produced by ASTM D6721. Prior to the implementation of this ASTM standard, many of these low HAP emission rates were reported as "non-detects." To the extent more accurate test methods are not developed prior to LEA's first required coal sampling event, LEA will utilize ASTM D6721 to determine chlorine content in the coal burned at the Longleaf facility, provided EPD approves the use of that method.

Greenlaw's Comment (p. 19):

This provision also does not require any testing for HAP constituents in the clarifier sludge that is allowed to be burned at Longleaf, nor does it require testing of the HAP constituents of the fuel oil that is allowed to be used for startup.

LEA's Response:

As stated previously in response to a similar comment, in the event clarifier sludge is burned at the facility, LEA agrees to sample any clarifier sludge that it may burn and analyze the sample pursuant to Condition 8.3 of the Permit Amendment, and also use the results of any such analysis in the emissions calculations required pursuant to Condition 8.27.

For reasons previously stated, sampling of fuel oil during startup will not be required, as HAP emissions during startup are expected to be less than HAP emission levels during normal operating conditions. Accordingly, LEA will utilize factors derived during its normal operating conditions to account for HAP emissions during startup.

COMMENTS REGARDING CONDITION 4.1(h)

Greenlaw Comment (p. 19):

(3) EPD also added a new provision 4.2.h. providing that EPD could require continuous emission monitoring systems (“CEMS”) for hydrochloric acid or hydrogen fluoride if, prior to the commencement of operations of Longleaf, EPD determines that a CEMS “exists that can reliably and accurately measure” these pollutants from Longleaf.

Because this provision does not definitively require HCl and HF CEMS, it cannot be relied upon to ensure practical enforceability of the blanket restrictions on actual emissions of HCl and HF in Permit condition 2.25. Yet, for the reasons described in this comment letter, HCl and HF CEMS are the only methods available that could be relied upon to show that actual emissions of HCl and HF at Longleaf total less than the major source HAP emission levels. Indeed, EPA allows blanket restrictions on emissions to be considered in limiting potential to emit only if CEMs are used for compliance and if a short term emission limit, such as lb/hr, is imposed. Such CEMs are available and have been used on municipal waste incinerators and cement plants for years. HCl and HF CEMS are available and can measure at low concentrations of HCl and HF.

LEA’s Response:

LEA is well aware that HCl and HF CEMS are available for certain types of facilities, such as incinerators. HCl and HF CEMS are not, however, available to reliably monitor HAP emissions from a facility as LEA intends to construct and operate. In particular, LEA understands from CEMS experts that the current state-of-the-art HCl CEMS is not capable of detecting HCl emissions at the low levels that Longleaf will emit. LEA therefore disagrees with Greenlaw’s claim that HCl and HF CEMS are currently available and can reliably measure HCl and HF emissions at a facility like the Longleaf facility. Moreover, Greenlaw cites no examples of these types of monitoring systems being employed in units like those at the Longleaf facility operating in similar emission ranges.

Notwithstanding the lack of a current requirement²⁹ to install HCl and HF CEMS, the Permit Amendment contains numerous provisions that will enable EPD to enforce the Longleaf facility’s status as a minor source of HAPs. Through daily coal sampling and analysis as provided in Condition 8.3, percent removal testing as required by Condition 4.1(m), monthly HCl and HF emission calculations as required by Condition 8.27(a) & (b), and the recordkeeping and reporting provisions contained in Condition 8.29 and 8.30, EPD will have the information and notice needed to ensure that LEA complies with the 12-month rolling average emission limitations for HCl and HF set forth in Condition 2.25. Additionally, EPD will be able to rely on the SO₂ CEMS data to continuously monitor the performance of the dry scrubber, which will also serve as the primary control device for HCl and HF emissions.

²⁹ In Condition 5.2(h), the Permit Amendment explicitly provides EPD with the authority to require the use of an HCl or HF CEMS if the agency determines that a CEMS device is available that “can reliable and accurately measure [HCl] and [HF] emissions.”

COMMENTS REGARDING CONDITIONS 8.27(a) & (b)

Greenlaw's Comment (p. 20):

Second, draft permit condition 8.27 allows the use of monthly averages of chlorine and fluorine content from the daily coal sampling as well as monthly averages of coal heat value. Such averaging is wholly inadequate to provide any assurances that actual total emissions of HCl and HF do not exceed major source emission thresholds, as the averaging will allow Longleaf to discount days of high chlorine content coal. One example of how the averaging can cause inaccuracies in the tally of HCl emissions is if Longleaf burns PRB coal with higher chlorine content for a few days in a month and also burns more coal those days than other days of the month, but otherwise burns similar amounts of coal with similar chlorine content for the majority of the month. The HCl emission factor based on the average chlorine concentration for the month will be just slightly higher than the typical daily HCl emission factor because the units only burned higher chlorine coal for a few days in the month. However, the resulting determination of monthly emissions under Condition 8.27 will be lower than if HCl emissions were determined and tallied daily, because Condition 8.27 would fail to account for the fact that greater amounts of the higher chlorine coal were burned for a few days in the month. Exhibit 27 provides a spreadsheet of data relevant to this example. Thus, in this and similar circumstances, the averaging of daily chlorine and heat value data from the coal sampling will result in a lower determination of HCl emissions than actually occurred.

LEA's Response:

LEA believes that the use of monthly averages of chlorine and fluorine (and other constituents) in the calculations listed in 8.27(a) - (d) will adequately capture the variability in the coal characteristics. Nevertheless, because LEA is already required, pursuant to Condition 8.3, to sample and analyze the coal on a daily basis to determine daily values of chlorine, fluorine, and other metal concentrations in the coal, LEA is willing to utilize these daily concentrations to calculate daily emissions of HCl, HF, and non-mercury metals (including selenium). These daily emission calculations can then be added to derive monthly emission totals for purposes of demonstrating compliance with the HAP emission limits in the Permit Amendment, as required by 8.27(a) - (d), 8.28, 8.29, and 8.30. This alternate approach would ensure that any daily variability in coal content is accounted for in calculating HAP emissions.

Should EPD prefer this approach, LEA suggest altering the calculations in 8.27(a) - (d) as follows:

- a. Calculation of monthly HCl emissions from the PC-fired boilers:

$$\text{HCl} = \frac{1 \text{ ton}}{2,000 \text{ lb}} \sum_{j=1}^k \sum_{i=1}^n (\text{EF}) \times \text{HI}_i$$

Where:

HCl = Monthly HCl emissions from each PC-fired boiler in tons per month.

HI_i = Heat input in MMBtu/hr for the ith operating hour in the jth day as calculated from the Part 75-certified CEMS.

n = Number of operating hours in the jth day.

k = Number of operating days in the month.

$$EF = (CC/GCV)(1-HCl_R)(HCl/Cl)$$

CC = Average chlorine content for the jth day as computed from data obtained pursuant to Condition No. 8.3.

GCV = Average Gross Caloric Value for the jth day as computed from data obtained pursuant to Condition No. 8.3.

HCl_R = Percent removal of hydrogen chloride from stack testing results in Condition No. 4.1(m) and approved by the Division.

$$HCl/Cl = HCl\text{-to-Cl conversion factor} = 36.5/35.5.$$

- b. Calculation of monthly HF emissions from the PC-fired boilers:

$$HF = \frac{1 \text{ ton}}{2,000 \text{ lb}} \sum_{j=1}^k \sum_{i=1}^n (EF) \times HI_i$$

Where:

HF = Monthly HF emissions from each PC-fired boiler in tons per month.

HI_i = Heat input in MMBtu/hr for the ith operating hour in the jth day as calculated from the Part 75-certified CEMS.

n = Number of operating hours in the jth day.

k = Number of operating days in the month.

$$EF = (CF/GCV)(1-HF_R)(HF/F)$$

CF = Average fluorine content for the jth day as computed from data obtained pursuant to Condition No. 8.3.

GCV = Average Gross Caloric Value for the jth day as computed from data obtained pursuant to Condition No. 8.3.

HF_R = Percent removal of hydrogen fluoride from stack testing results in Condition No. 4.1(m) and approved by the Division.

HF/F = HF-to-F conversion factor = 20.0/19.0.

- c. Calculation of monthly emissions of non-mercury metals (other than selenium) that are included in Section 112 of the Clean Air Act from the PC-fired boilers:

$$\text{Metal}_1 = \frac{1 \text{ ton}}{2,000 \text{ lb}} \sum_{j=1}^k \sum_{i=1}^n (\text{EF})_1 \times \frac{\text{HI}_i}{1 \times 10^6}$$

Where:

Metal₁ = Monthly emissions of the 1th non-mercury metal (antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, and nickel) from each PC-fired boiler in tons per month.

HI_i = Heat input in MMBtu/hr for the ith operating hour in the month as calculated from the Part 75-certified CEMS.

n = Number of operating hours in the jth day.

k = Number of operating days in the month.

EF₁ = Emission Factor of the 1th metal in pounds of pollutant per trillion Btu heat input (lb/TBtu), derived utilizing the following equations:

Element	Equation
Antimony (Sb)	(0.92) X ^{0.63}
Arsenic (As)	(3.1) X ^{0.85}
Beryllium (Be)	(1.2) X ^{1.1}
Cadmium (Cd)	(3.3) X ^{0.50}
Chromium (Cr)	(3.7) X ^{0.58}
Cobalt (Co)	(1.7) X ^{0.69}
Lead (Pb)	(3.4) X ^{0.80}
Manganese (Mn)	(3.8) X ^{0.60}
Nickel (Ni)	(4.4) X ^{0.48}

Where:

$$X = (\text{MC}_j / \text{AC} * \text{PM})$$

MC_1 = Daily average of the 1th metal content as computed from data obtained pursuant to Condition No. 8.3, expressed in parts per million.

AC = Daily average of the ash content of the coal as computed from data obtained pursuant to Condition No. 8.3.

PM = Daily average particulate matter concentration as measured by the PM CEMS, expressed in lb/MMBtu.

- d. Calculation of monthly emissions of selenium from the PC-fired boilers:

$$Se = \frac{1 \text{ ton}}{2,000 \text{ lb}} \sum_{j=1}^k \sum_{i=1}^n (EF) \times HI_i$$

Where:

Se = Monthly selenium emissions from each PC-fired boiler in tons per month.

HI_i = Heat input in MMBtu/hr for the i^{th} operating hour in the month as calculated from the Part 75-certified CEMS.

n = Number of operating hours in the j^{th} day.

k = Number of operating days in the month.

$$EF = (SeC/GCV)(1-Se_R)$$

where,

SeC = Daily average selenium content as computed from data obtained pursuant to Condition No. 8.3.

GCV = Daily average Gross Caloric Value as computed from data obtained pursuant to Condition No. 8.3.

Se_R = Percent removal of selenium from stack testing results in Condition No. 4.1(n) and approved by the Division.

Greenlaw's Comment (p. 21):

Third, after allowing the averaging of all chlorine and fluorine concentrations in the coal burned over a month, draft permit condition 8.27 then takes into account the HCl and HF removal efficiency determined pursuant to permit condition 4.1(m). As stated above, this permit condition does not define or describe how percent removal is to be calculated, does not require determinations of percent removal across the various types of fuels allowed by the permit to be burned or blended, and is based on a test method that is known to inaccurately measure HCl. Further, although it is not clear, it appears the test to determine HCl and HF control efficiency is a one time test for the life of the source. Condition 4.1(m) does not specify a frequency for testing. While permit conditions 4.2d., h., and g. require annual testing of HCl and HF emissions, this testing is only to show compliance with the lb/MM Btu emission limits of draft permit conditions 2.15 k. and o. EPD has provided no justification to show that the HF and HCl control efficiencies collected during the one time performance test will accurately reflect control efficiencies throughout the year. Stack tests are typically conducted during optimum conditions with much advance notice. So, the control efficiencies determined during the one time stack tests may not be reflective the HF and HCl control efficiencies that are achieved day in and day out at each unit. Even once per year stack tests are not likely to reflect the variability in control efficiencies of acid gas HAPs. For example, the annual HCl tests at the Gilbert CFB unit at Spurlock station (Unit 3) varied by more than a factor of 10 between 2005 and 2007.

By relying on a one-time (or even once per year) stack test to determine the HCl and HF removal efficiency at the Longleaf boilers, EPD assumes that HCl and HF control efficiencies will not ever vary. EPD knows this is not the case. Anna Aponte of EPD testified in the Longleaf PSD appeal that "A test – a one-time emissions test is a setup -it's based on a controlled situation. The testing company and the plant operation knows exactly what scenarios they are setting up...and so it's a controlled situation. And it is important information to let you know what the boiler is emitting, but it's only a snapshot of that information."

LEA's Response:

See previous response regarding LEA's approach to calculating removal efficiency for chlorine and fluorine. Contrary to Greenlaw's characterization of the Permit Amendment, the removal efficiency calculation for HCl and HF will not be conducted once over the life of the facility. Condition 4.1(m) establishes requirements for LEA to calculate percent removal of HCl and HF, the results of which will be used in the emission calculations set forth in Condition 8.27. As evident from the language of Condition 4.1(m), the frequency of the percent removal calculations corresponds to the frequency of the performance tests — specifically, Condition 4.1(m) provides that "the percent removal of [HCl] and [HF] shall also be calculated *at the time of the test.*" Conditions 4.2(d), (g), and (h) require performance tests to be conducted "once every year or as requested by the Division." Thus, when taken together, Conditions 4.1(m) and 4.2(d), (g), and (h) clearly require LEA to calculate the percent removal of HCl and HF at least once per year. Further, as is customary for all performance tests, LEA will be required to submit a testing protocol to EPD for the agency's approval prior to conducting the test. EPD will adjust the protocol, if necessary, to ensure that the testing conditions are representative of normal operating conditions.

Additionally, it should be noted that the Permit requires LEA to utilize the results of its SO₂ and PM CEMS as a surrogate for HCl and HF emissions. Specifically, Condition 8.25(c)(i) provides that “[a]ny exceedance of the filterable PM emission limit and/or SO₂ limits in Condition 2.15 are an excursion for HF and HCl.” While this provision is not tied to Condition 2.25, it will provide a continuous means of monitoring the performance of the primary HCl and HF control devices.

Greenlaw’s Comment (p. 21, n. 51):

Emissions during startup and shutdown must be included in determining whether the Longleaf facility has the potential to emit in excess of major source HAP emission thresholds, and thus startup and shutdown emissions must be accounted for in determining compliance with any synthetic minor emission limitations.

LEA’s Response:

As set forth in more detail in LEA’s December 22, 2009 letter to EPD, to the extent HAP emissions during startup events deviate from HAP emissions during normal operating conditions, such HAP emissions will be lower than the HAP emissions during normal operating hours.³⁰ Rather than conduct calculations during startup events, LEA proposed, and EPD accepted, Permit Amendment conditions that would utilize normal operation condition HF and HCl emission estimates even during periods of startup. Thus, startup and shutdown emissions will be more than adequately accounted for in determining compliance with synthetic minor emission limitations.

Greenlaw Comment (pp. 21-22):

The dry scrubber is to be operated to primarily remove SO₂ emissions, and it will be operated accordingly, with the amount of lime needed to meet SO₂ emission limits dependent on the uncontrolled SO₂ emissions coming into the scrubber. Hydrogen chloride removal is similarly based on the stoichiometric ratio of lime to chlorine. However, there is no correlation between sulfur content of the coal and chlorine levels in the coal. This is made clear by Exhibits 29 and 30 which include raw data from the USGS COALQUAL database for subbituminous Powder River Basin coal (Ex. 29) and for bituminous Central Appalachian coal (Ex. 30). Because there is no correlation between sulfur content and chlorine content of either PRB or CAPP coal, a dry scrubber operated to meet SO₂ BACT emission limits will not likely be optimized for HCl removal. If the scrubber is operated to achieve high levels of SO₂ removal and the sulfur content of the coal stays the same but the chlorine content increases (and chlorine content of both PRB and CAPP coals can fluctuate significantly, as shown in Exs. 29 and 30), then HCl removal could plunge.

In fact, a dry scrubber operated to optimize SO₂ emission reductions may result in lower HCl removal. A study of SO₂ and HCl removal in a circulating fluidized bed (“CFB”) boiler

³⁰ See December 22, 2009 Letter from K. French to J. Capp at Attachment A, 10-11.

showed that HCl removal was significantly reduced when SO₂ removal was required concurrently. Thus, there is nothing in the permit that would ensure operation of the pollution controls at Longleaf to achieve an HCl removal efficiency consistent with what was measured in the one time stack test will be maintained. In fact, it is very likely that the HCl removal efficiency will vary more than SO₂ removal efficiency, because Longleaf will have SO₂ CEMs data to use in adjusting the lime feed to the dry scrubber for optimizing SO₂ removal and because there is no correlation between sulfur content and chlorine content of the coal.

Even with SO₂ CEM data to help with adjustment of the operation of SO₂ controls, SO₂ emission rates can vary significantly hour by hour and day by day. Exhibit 39 to this letter provides an example of this variability at Unit 1 of the Pleasant Prairie Power Plant in Wisconsin, which burns PRB coal and is equipped with a wet scrubber. The graph shows hourly SO₂ emission rate, 24-hour average rates, 30-day average rates and 365-day average rates. Clearly, the hourly and daily rates fluctuate significantly. HCl emission rates could similarly fluctuate significantly hour by hour and day by day. Thus, for all of the above reasons, the reliance on the HCl and HF control efficiencies determined from the one time (or once every year) stack test will not accurately account for the HCl and HF emissions from the Longleaf boilers.

LEA Response:

LEA agrees with Greenlaw's general statement that the primary purpose of a dry scrubber is for SO₂ control. LEA disagrees, however, with Greenlaw's claim that a dry scrubber operated to optimize SO₂ removal will result in lower HCl removal. HCl is much more reactive and much more water soluble as compared to SO₂. It is generally accepted that the HCl removal efficiency of a scrubber is always higher than the SO₂ removal efficiency. While Greenlaw may have identified a single example where SO₂ removal is greater than HCl removal, that example (Spurlock) is a circulating fluidized bed combustor (CFB) that is not comparable to the pulverized coal-fired boilers to be built at the Longleaf facility. Importantly, a CFB unit requires the injection of large amounts of limestone along with the coal to maintain the "bed" in the combustor. The limestone efficiently removes HCl in the bed itself so there is much less HCl available for the dry scrubber to remove. As a result, the HCl removal efficiency of the dry scrubber in the studied CFB unit appears to be less than the SO₂ removal efficiency. This result fails to account for the HCl removal that took place in the CFB combustor itself. In sum, Greenlaw has provided no data from a unit similar to the Longleaf facility in support of its claim that a dry scrubber operated to optimize SO₂ removal will result in lower HCl removal.

Greenlaw's Comment (p. 22):

In addition to the significant issues with determining actual HCl and HF emissions from the boilers based on the equations in Condition 8.27, there are absolutely no provisions in the permit that explain how HAP emissions from the auxiliary boiler are to be accounted for.

LEA's Response:

Greenlaw's claim that there are no provisions in the Permit Amendment to address and account for HAP emissions from the auxiliary boiler is without merit. Condition 8.27(f) sets forth requirements for the testing of HAP emissions from the auxiliary boiler, which must be included in the monthly total of HAP emissions for the facility pursuant to Condition 8.27(h).

COMMENTS REGARDING CONDITION 4.1(n)

Greenlaw's Comment (p. 23):

(1) Condition 4.1.n. of the draft permit amendment requires Method 29 to be used for the determination of emission rates of lead and other non-mercury metal HAPs, and also requires the percent removal of selenium to be calculated based on the results of the test. This permit condition fails to definitively require determination of metal HAP emission rates during all types of coal combustion combinations, when fuel oil is used for startup, or when clarifier sludge is burned. It does not even specify whether PRB or CAPP coal is to be burned in the initial test. As is clear from the company's own projections, the metal HAP emissions when burning PRB coal could vary greatly from the metal HAP emissions when burning CAPP coal.

LEA's Response:

As noted above, LEA does not expect the small amount of clarifier sludge that it is permitted to burn to affect the facility's overall emission rates of HAPs for several reasons, and thus Greenlaw's suggestion that the burning of clarifier sludge at the Longleaf facility will affect HAP emissions is not well-taken. Nevertheless, as set forth in more detail in its response to previous comments, in the event the facility fired any clarifier sludge, LEA agrees to sample any such sludge and analyze the sample pursuant to Condition 8.3 of the Permit Amendment, and also use the results of any such analysis in the emissions calculations required pursuant to Condition 8.27.

As set forth in more detail in LEA's December 22, 2009 letter to EPD, to the extent HAP emissions during startup events deviate from HAP emissions during normal operating conditions, such HAP emissions will be lower than the HAP emissions during normal operating hours.³¹ Rather than conduct calculations during startup events, LEA proposed, and EPD accepted, Permit Amendment conditions that would utilize normal operation condition HAP emission estimates even during periods of startup. Accordingly, no separate provision regarding testing of fuel oil during startup is required.

Finally, LEA disagrees with Greenlaw's comment that the Permit Amendment fails to specify which type of coal will be fired when performance tests are conducted to determine emission rates of non-mercury HAP metals, including selenium. Condition 4.2 requires LEA to conduct the required performance tests "not later than 180 days after the initial startup of each boiler *for each coal type*." As LEA has repeatedly indicated, the conditions in the Permit Amendment will severely limit the amount of CAPP coal that the facility may burn. Nevertheless, in the event any CAPP coal is fired at the facility, the language of Condition 4.2 will require LEA to conduct a performance test while firing CAPP coal to determine, among other things, the emission rates of non-mercury HAP metals, including selenium. Additionally, because Condition 4.1(n) requires the percent removal of selenium to be computed at the time of each performance test, the calculation will also be conducted while firing both PRB and CAPP (again, to the extent any CAPP coal is burned at the Longleaf facility).

³¹ See December 22, 2009 Letter from K. French to J. Capp at Attachment A, 10-11.

Greenlaw’s Comment (p. 23):

Regarding the requirement to determine the removal efficiency of selenium, this permit condition is totally silent as to how removal efficiency is to be determined and across what control equipment. The utter lack of an explanation for determining selenium removal efficiency would allow Longleaf to use whatever approach it chooses and thus makes the provision not replicable. Replicable procedures for determining compliance with emission limits are necessary to ensure enforceability of emission limitations.

LEA’s Response:

As stated above, LEA disagrees with Greenlaw’s suggestion that every detail of compliance testing must be prescribed in the permit. Nevertheless, if EPD was inclined to specify a particular percent removal calculation in the Permit Amendment in response to Greenlaw’s comment, LEA proposes the following methodology. LEA believes that the key to calculating accurate removal efficiencies is to obtain representative coal samples during the initial performance tests. The initial performance test will consist of three independent sampling runs of the various required stack sampling methods (e.g., EPA Method 26A for acid gases, Method 29 for metals including selenium). Accordingly, LEA proposes to collect three independent and representative coal samples to pair with the three individual stack tests. A short proximate analysis will be performed on each coal sample, which will measure ash, moisture, sulfur content, and heating value, among other characteristics. Each sample shall also be analyzed for selenium, in addition to chlorine and fluorine. Since the laboratory results are reported in parts per million (ppm) by weight, the analytical results (e.g., ppm selenium) can be divided by the heating value to yield selenium in the units of lbs/MMBtu. The following equation illustrates how coal sampling results will be combined with stack testing results to calculate removal efficiency:

$$\eta = \frac{HAP_{Coal} - HAP_{Stack}}{HAP_{Coal}} \times 100\%$$

Where:

η = Removal efficiency, %

HAP_{Coal} = Concentration of the HAP in coal, lb/MMBtu

HAP_{Stack} = Concentration of the HAP as determined by stack test, lb/MMBtu

COMMENTS REGARDING CONDITION 4.1(v)

Greenlaw Comment (p. 23):

(2) Condition 4.1 v. requires Method 0031 to be used for determination of volatile organic HAPs, Method 0010 is to be used to determine emission rates of semi-volatile organic HAPs, Condition Test Method (“CTM”) 033 is to be used for the determination of hydrogen cyanide emissions, and Method 29 is to be used for the determination of phosphorus emissions. A minimum one-hour sampling time is required.

With respect to CTM 033, EPRI has indicated that this method can have significant negative biases when CO₂, SO₂, or other acid gases are present in the flue gas.

LEA Response:

Greenlaw’s citation to comments submitted by EPRI to EPA fails to discuss how EPA has addressed the potential for negative bias in CTM-033 test results due to acid gases. EPA does understand the potential for low bias due to the presence of acid gases, and to address that specific concern, EPA requires the impinger solutions that contain the sodium hydroxide (NaOH) to be monitored and maintained at a pH of not less than 12.³²

³² See CTM-033 at Section 8.6.7 (available at <http://www.epa.gov/ttn/emc/ctm/ctm-033.pdf>).

COMMENTS REGARDING CONDITION 4.2(j)

Greenlaw's Comment (p. 24):

(3) Draft permit condition 4.2.j. states “[p]erformance tests on each PC-fired boiler, SO1 and SO2, for volatile organic HAPs, semi-volatile organic HAPs, hydrogen cyanide, and phosphorus to verify compliance with Condition 2.25. The tests shall be conducted every five years or as requested by the Division.”

This provision is wholly inadequate to ensure enforceability with the HAP emission limits in Condition 2.25. First, there are no HAP limits in Condition 2.25 specific to volatile organic HAPs, semi-volatile organic HAPs, hydrogen cyanide, or phosphorus. There is only a limit on total HAPs of less than 25 tpy. Second, there are other HAPs that will be emitted from the Longleaf boilers that must be included in determining whether emissions exceed 25 tpy, including metal HAPs, mercury, HCl, HF, particulate organic compounds such as polynuclear aromatic compounds and dioxins. None of these will be accounted for in the performance testing required in Condition 4.2.j. of the draft permit.

LEA's Response:

Greenlaw's comment incorrectly characterizes Condition 2.25 of the Permit Amendment. Condition 2.25 contains a 10 tons/year limit on *any single HAP*. Thus, contrary to Greenlaw's statement, there is in fact a HAP limit specific to each and every HAP the Longleaf facility will emit. Greenlaw also incorrectly characterizes which HAPs will be accounted for in the testing required by Condition 4.2(j). Condition 4.2(j) is a catch-all provision that effectively requires testing for every HAP that facility will emit *other than* HCl (covered by Conditions 4.2(g) and (h)); HF (covered by Condition 4.2(d)); mercury (covered by Condition 4.2(i)); and non-mercury metal HAPs (covered by Condition 4.2(c)). The test methods prescribed for the performance tests required by Condition 4.2(j) are set forth in Condition 4.1(v): Method 0031 for volatile organic HAPs, Method 0010 for semi-volatile organic HAPs, CTM 033 for hydrogen cyanide emissions, and Method 29 for phosphorus emissions. Methods 0031 and 0010 are capable of sampling for all organic HAPs, including polynuclear aromatic compounds and dioxins. The breadth of the testing requirements for all HAPs that may be emitted from the Longleaf facility is further underscored by Condition 8.27(e), which requires LEA to calculate the monthly emissions of “all other substances included in section 112 of the Clean Air Act.”

When computing the total tons per year of all HAPs, the Permit Amendment employs specific performance testing requirements, test methods, and emission calculation equations for HCl, HF, mercury, selenium, other non-mercury metal HAPs, and all other HAPs that may be emitted by the facility. The sum of these pollutant-specific emission calculations is used to demonstrate compliance with the total 25 tons/year limit in Condition 2.25. *See* Conditions 8.27(h), 8.28, 8.29, and 8.30.

Greenlaw Comment (p. 24):

This provision is also inadequate to ensure enforceability with the HAP emission limits in Condition 2.25 because you cannot determine compliance with a limit on total tons of HAPs emitted in one year based on a stack test conducted once every five years. A once every five years stack test does not provide sufficient information to determine whether emissions of all HAPs in a year equal or exceed 25 tpy.

LEA's Response:

LEA disagrees with Greenlaw's comment regarding the frequency of stack tests required by Condition 4.2(j). There are several reasons why a performance test once every 5 years will be more than sufficient to accurately measure emissions of the HAPs covered by Condition 4.2(j). First, emissions of the HAPs subject to Condition 4.2(j) are not fuel dependent like HCl, HF, and HAP metals. Rather, emissions of the subject HAPs will largely depend on the efficiency of the boiler. The efficiency of the boilers is expected to have much less variability than any variability in the content of certain HAPs in the coal, and thus there is less need for frequent testing. Furthermore, EPD will have the ability to monitor the efficiency of the boilers on a continuous basis through the results of the required CO CEMS device.³³ Second, the emissions of those HAPs subject to Condition 4.2(j), both individually and collectively, are expected to be minimal, to the extent they can be detected at all. Finally, Condition 4.2(j) affords EPD the flexibility to require more frequent testing should the agency deem more frequent testing necessary. For all these reasons, EPD has more than enough tools to ensure that LEA's emission calculations for the HAPs subject to Condition 4.2(j) provide accurate measurements of HAP emissions.

³³ See Permit Condition 5.2(b).

COMMENTS REGARDING CONDITION 8.27

Greenlaw's Comment (p. 24):

(4) Condition 8.27 of the draft permit amendment provides equations for Longleaf to use to calculate the monthly total HAP emissions from the Longleaf boilers. With respect to non-mercury metal HAPs, the monthly emissions are based on actual heat input measured by CEMs and actual hours of operation, along with emission factors for the metal HAPs that are calculated based on data from the daily coal sampling required pursuant to draft permit condition 8.3. These equations are inadequate to accurately quantify the metal HAPs emitted by the Longleaf facility.

Specifically, the metal HAP emission factors are based on the content of metal HAPs in the coal determined from the daily sampling required in draft permit condition 8.3. As discussed above, draft permit condition 8.3 fails to specify adequate requirements to ensure representative coal sampling and also fails to specify the test method for determining metal HAP content of the coal. Thus, the permit as currently drafted will not ensure that the metal HAP contents of the coal are accurate or ensure replicable results.

Further, draft permit condition 8.27.c. allows the use of monthly averages of metal HAP content and ash content from the daily coal sampling and monthly averaging of the PM emission rates from the CEMs in determining the metal HAP emission factors. Such averaging is wholly inadequate to determine actual emissions of metal HAPs, as the averaging will allow Longleaf to discount the days when coal with higher metal HAP content is burned.

LEA's Response:

See previous responses regarding coal sampling methodologies and LEA's proposed use of daily coal analyses (which are required pursuant to Condition 8.3) to derive daily emission rates of HCl, HF, and non-mercury metal HAPs. Additionally, see LEA's prior response regarding revised HAP emission calculations for non-mercury metals.

Greenlaw's Comment (p. 25):

Permit condition 8.27.d. provides an equation for determination of selenium emissions. This provision is flawed because it is based on the monthly average of the selenium content and the monthly average of the heat values of the coal from the daily sampling required in Condition 8.3. Such averaging ignores the days with higher selenium coal and thus would not result in an accurate accounting of selenium emissions. Further complicating an accurate determination of selenium emissions, the draft permit condition 8.27.d. then takes into account the selenium removal efficiency determined pursuant to permit condition 4.1(n). As stated above, this permit condition does not define or describe how percent removal is to be calculated, and it does not require determinations of percent removal across the various types of fuels allowed by the permit to be burned or blended. Further, although it is not clear, it appears the test to determine selenium control efficiency is a one time test for the life of the source. Condition 4.1(n) does not specify a frequency for testing. EPD has provided no justification to show that the selenium

control efficiency collected during the one time performance test will accurately reflect control efficiencies throughout the year. Stack tests are typically conducted during optimum conditions with much advance notice. So, the control efficiencies determined during the once-per-year stack tests may not reflect the selenium control efficiencies that are achieved day in and day out at each unit.

Further, the control efficiencies during the stack test would not be reflective of the selenium control efficiency that is achieved during startup and shutdown. Thus, the equations in Condition 8.27 and the associated testing requirements in the permit do not account for HAP emissions during startup and shutdown. Yet all emissions of HAPs from Longleaf must be accounted for in determining whether the facility is major.

LEA's Response:

See previous responses concerning monitoring and reporting requirements for selenium on pages 19-22, 27, and 28.

Greenlaw's Comment (p. 25):

Permit condition 8.27. provides an equation for "all other substances that are listed in Section 112 of the Clean Air Act" from the main boilers. This permit condition is vague and unenforceable. The permit must identify all of the other HAPs that are emitted from the boilers. The equation in Condition 8.27.e. is based on emission factors from the performance testing requirement in Condition 4.1(v), but as stated above, this provision does not require testing for all other HAPs even if we exclude those for which there are specific testing requirements (i.e., metal HAPs, HCl, HF). Specifically, Condition 4.1(v) requires testing for the volatile organic HAP, semi-volatile organic HAP, and selenium. But no condition of the permit requires testing of particulate organic compounds such as polynuclear aromatic compounds or dioxins. So these will be completely unaccounted for in determining total HAP emissions.

For those HAPs that Condition 4.1(v) does require testing for, compliance with the total HAP emissions limit will be based on the results of those one time tests. Such infrequent test results are not adequate to accurately account for all emissions of organic HAP, especially because testing is not required across all of the various fuel options that Longleaf is allowed and because it is not required across varying levels of operation including startup and shutdown. Given that the organic HAP are often products of incomplete combustion, it is a major oversight for EPD to not require the testing and development of emission rates at various loads and during startup and shutdown.

LEA's Response:

Greenlaw has no basis on which to claim that the Permit Amendment will not require testing of all HAPs that may be emitted from the Longleaf facility. As explained above, Condition 4.1(v) does in fact require testing of polynuclear aromatic compounds and dioxins, in the event those substances are ever emitted from the Longleaf facility. Further, as previously explained, these other HAPs will not be tested once during the life of the facility. The frequency

of the performance tests for these other HAPs is set forth in Condition 4.2(j), not Condition 4.1(v). Condition 4.2(j) requires performance tests “once every 5 years or as requested by the Division.”

The remainder of Greenlaw’s comments on Condition 4.1(v) largely re-hash previous comments regarding startup/shutdown, and testing when different fuels are fired. As previously explained, LEA does not believe a separate testing requirement for those events, if any, when clarifier sludge is added to the fuel is necessary. Nevertheless, in the event LEA fired any clarifier sludge at the Longleaf facility, LEA agrees to sample any clarifier sludge that it may burn and analyze the sample pursuant to Condition 8.3 of the Permit Amendment, and also use the results of any such analysis in the emissions calculations required pursuant to Condition 8.27. LEA has also previously explained how Condition 4.2 does, in fact, require LEA to conduct performance tests “for each coal type.” Finally, LEA has previously explained how the facility will account for HAP emissions during those few startup events that are expected to occur during any given year of operation. Greenlaw suggests that performance testing must be performed during startup and shutdown, yet has failed to offer any reliable means of conducting such a test. A reliable stack test depends on a steady velocity of flue gas exiting the stack, as is expected during normal operations. EPA test methods are designed for such steady state operation. During startup, the velocity of the flue gas exiting the stack constantly changes, preventing the operator from acquiring a representative sample. EPA has yet to approve a test method that would enable an operator to conduct a reliable stack test during startup.³⁴ In any event, LEA is required to operate its CO CEMS during periods of startup. CO is surrogate for organic HAP emissions, as it is an indicator of good combustion.

³⁴ EPA’s Environmental Appeals Board rejected a very similar challenge in *In re Newmont Nevada Energy Investment, LLC, TS Power Plant*, PSD Appeal No. 05-04, 2005 WL 3626598, at 33 (Dec. 21, 2005), and held as follows:

[W]e agree that there is no legal requirement that stack testing be conducted under worst-case conditions that would necessarily include periods of startup, shutdown, and/or soot blowing, contrary to [the Petitioners’] belief. In one of our prior cases, EPA’s Office of Air and Radiation explained that the Agency “traditionally does not allow representative stack testing during non-representative time periods, such as startup periods, because facilities have fluctuating emission characteristics during these non-representative periods.” [Citation omitted]. That does not mean, of course that BACT limits are waived during those periods; it simply means that the Agency is interested in ensuring that sources are operating at normal representative operating levels during performance tests and that startup/shutdown periods generally do not provide such levels.

Greenlaw’s Comment (p. 26):

In Condition 8.27.f., there is an equation for determination of HAP emissions from auxiliary boiler. This provision is seriously flawed and unenforceable. First, the equation is based on a lb/MMBtu emission factor multiplied by gallons of fuel oil fired, with the result to be in tons per year. The units do not match up for this calculation, and thus the equation makes no sense.

Further, the equation in Condition 8.27.f. relies on emission factors from “Longleaf’s auxiliary boiler MACT application.” It is not clear what that application is – there is no date of the application and it was not attached to the permit. Further, use of emission factors to show compliance with a synthetic minor HAP permit limit provides no assurance of Longleaf’s actual compliance with the HAP emission limits. In addition, EPD has provided no analysis of Longleaf’s assumed HAP emission factors to show they are conservative. Thus, reliance on emission factors from an undated document that is not part of this permit and for which EPD has provide no review or assurances to the public that these emission factors are conservative, is not adequate to demonstrate that the Longleaf facility’s HAP emissions in total will not exceed the major source HAP emission thresholds.

LEA’s Response:

LEA agrees that the units in the equation set forth in Condition 8.27(f) need to match, and thus proposes substituting the “FO” in the equation with “HI.” HI would equal sum total of heat input in MMBtu for the month at issue. This revision would ensure that the units in the equation match. There are several ways in which “HI” could be measured for the auxiliary boiler calculations, but the most likely means LEA will utilize will be to take the heat input for the fuel oil (as provided by the fuel oil vendor) and multiply that values times the number of gallons of fuel oil fired in the month at issue. The revised Condition 8.27(f) would read as follows:

- f. Calculation of monthly emissions of all HAPs that are listed in Section 112 of the Clean Air Act from the auxiliary boiler:

$$AB_j = (EF)_j \times HI$$

Where,

AB_j = Monthly emissions of the j^{th} HAP of all HAPs listed in section 112 of the Clean Air Act from the auxiliary boiler in tons per month.

EF = Emission Factor in lbs/MMBtu from factors presented in Longleaf’s auxiliary boiler MACT application.

HI = Total heat input in MMBtu for the month at issue.

Additionally, for clarity's sake, LEA reproduces below the specific emission factors that will be utilized to run the calculations contained in Condition 8.27(f) of the Permit Amendment.

Pollutant	Emission Factor	Units	Notes	lb/hr	tons/year
Arsenic	4.00E-06	lb/MMBtu	A	7.0E-04	1.8E-04
Beryllium	3.00E-06	lb/MMBtu	A	5.3E-04	1.3E-04
Cadmium	3.00E-06	lb/MMBtu	A	5.3E-04	1.3E-04
Chromium	3.00E-06	lb/MMBtu	A	5.3E-04	1.3E-04
Lead	9.00E-06	lb/MMBtu	A	1.6E-03	3.9E-04
Mercury	3.00E-06	lb/MMBtu	A	5.3E-04	1.3E-04
Manganese	6.00E-06	lb/MMBtu	A	1.1E-03	2.6E-04
Nickel	3.00E-06	lb/MMBtu	A	5.3E-04	1.3E-04
Selenium	1.50E-05	lb/MMBtu	A	2.6E-03	6.6E-04
HCl	9.00E-04	lb/MMBtu	B	1.6E-01	3.9E-02
HF	9.00E-04	lb/MMBtu	B	1.6E-01	3.9E-02
Benzene	1.54E-06	lb/MMBtu	C	2.7E-04	6.7E-05
Ethylbenzene	4.58E-07	lb/MMBtu	C	8.0E-05	2.0E-05
Formaldehyde	2.38E-04	lb/MMBtu	C	4.2E-02	1.0E-02
Napthalene	8.14E-06	lb/MMBtu	C	1.4E-03	3.6E-04
1,1,1-Trichlorethane	1.70E-06	lb/MMBtu	C	3.0E-04	7.4E-05
Toluene	4.47E-05	lb/MMBtu	C	7.8E-03	2.0E-03
o-Xylene	7.85E-07	lb/MMBtu	C	1.4E-04	3.4E-05
Acenaphthene	1.52E-07	lb/MMBtu	C	2.7E-05	6.6E-06
Acenaphthylene	1.82E-09	lb/MMBtu	C	3.2E-07	8.0E-08
Anthracene	8.79E-09	lb/MMBtu	C	1.5E-06	3.8E-07
Benz(a)anthracene	2.89E-08	lb/MMBtu	C	5.1E-06	1.3E-06
Benzo(b,k)fluoranthene	1.07E-08	lb/MMBtu	C	1.9E-06	4.7E-07
Benzo(g,h,l)perylene	1.63E-08	lb/MMBtu	C	2.8E-06	7.1E-07
Chrysene	1.71E-08	lb/MMBtu	C	3.0E-06	7.5E-07
Dibenzo(a,h) anthracene	1.20E-08	lb/MMBtu	C	2.1E-06	5.3E-07
Fluoranthene	3.49E-08	lb/MMBtu	C	6.1E-06	1.5E-06
Fluorene	3.22E-08	lb/MMBtu	C	5.6E-06	1.4E-06
Indo(1,2,3-cd)pyrene	1.54E-08	lb/MMBtu	C	2.7E-06	6.7E-07
Phenanthrene	7.56E-08	lb/MMBtu	C	1.3E-05	3.3E-06
Pyrene	3.06E-08	lb/MMBtu	C	5.4E-06	1.3E-06
OCDD	2.23E-11	lb/MMBtu	C	3.9E-09	9.8E-10
				TOTAL	0.094

A = Emission factor source: AP-42 Table 1.3-10 (9/98) for distillate oil converted to MMBtu from Tbtu

B = Emission rate in Longleaf permit for HCl

C = Emission factor source: AP-42 Table 1.3-9 (9/98) for distillate oil converted from 1000 gallons by dividing by a density of 7.23 lb/gal and a heating value of 19,200 Btu/lb.

COMMENTS REGARDING ALLEGATIONS OF A “SHAM” PERMIT

Greenlaw Comments (pp. 26-30):

The Draft Longleaf Synthetic Minor HAP Permit Appears to be a “Sham” Permit.

LEA’s Response:

Greenlaw’s comments regarding EPA’s “sham” permit policy again seek to apply EPA guidance that is over 20 years old as if it were binding under Georgia law. The “sham” permit guidance suggests how EPA might approach enforcement actions if the agency could demonstrate that the permittee pursued a minor source designation in a bad faith attempt to circumvent preconstruction review requirements. Greenlaw suggests that LEA has acted in bad faith by pursuing a HAP minor source designation. These comments are both offensive and entirely baseless.

The facts do not lie — recent stack test results demonstrate that large coal-fired power plants operating with state-of-the-art pollution control technologies and coal types similar to those to be utilized and combusted at the Longleaf facility emit HAPs at rates that fall below major source thresholds. This trend is supported by the very data upon which Greenlaw’s August 4, 2009 comment letter was based. In response to the information contained in Greenlaw’s August 4, 2009 comment letter, along with additional research and investigation, LEA learned that that its HAP emissions would also fall below major source thresholds. LEA recognized, however, that in order to restrict its potential to emit under Georgia law, it would be required to submit to a suite of permit conditions that would allow EPD to verify LEA’s compliance with its minor source status through provisions that are enforceable as a practical matter. The conditions contained in the Permit Amendment satisfy this standard, and do so through the imposition of rigorous monitoring and reporting provisions that, to LEA’s knowledge, are unrivaled. In sum, there is absolutely no evidence in the permitting record that Greenlaw can point to that would undermine the good faith upon which LEA proposed its minor source permitting approach to EPD in December 2009.

Indeed, to find otherwise would undermine the entire permitting process, and would discourage permit applicants from heeding the comments of the interested public and revising their applications to reflect the most up-to-date information, even if that information resulted in more stringent permit conditions. Throughout the lengthy permitting process for the Longleaf facility, Greenlaw has, at every turn, argued that EPD should impose lower limits with a narrower margin of compliance. Greenlaw has urged LEA to assume greater risk, and to rely on recent stack testing data as the best evidence of what emission rates the Longleaf facility will achieve. By agreeing to HAP minor source permit conditions, LEA has listened to the approach advocated by Greenlaw. LEA readily concedes that its minor source approach to HAPs requires the company to assume greater risk, accept a narrower margin of compliance, and operate pursuant to HAP emission limitations that are lower than what would be required had the facility maintained its major source status. LEA agreed to do so, in part, in response to comments and information provided by Greenlaw. It is disingenuous of Greenlaw to argue that LEA must lower its emission limits, but then once such limits are lowered (as they have been here), to turn

right around and claim that revised limits are too low. Greenlaw's comments ignore the fact that the public notice and comment provisions of Georgia law have fulfilled their intended purpose — by allowing the interested public to supply EPD and the applicant with additional information and comments, the Permit Amendment has evolved throughout the permitting process to be more stringent and to allow for greater ease of enforcement by EPD than LEA originally proposed. For all these reasons, Greenlaw's suggestion that the Permit Amendment is a "sham" permit, as that concept is described in EPA's 1989 guidance, is without merit.

COMMENTS REGARDING MACT

Greenlaw's Comment (pp. 30-31):

The Draft Longleaf Permit Does Not Require Emission Limitations that Reflect MACT for the HAPs to be Emitted from Longleaf.

LEA's Response:

The Longleaf facility will be a minor source of HAPs, and thus the facility is exempt from the case-by-case MACT requirements set forth in Section 112 of the Clean Air Act and incorporated by reference in Georgia law. The question of whether the emission limits in the Permit Amendment are "reflective of MACT" is therefore irrelevant and deserves no response.

COMMENTS REGARDING PROFESSIONAL ENGINEERING

Greenlaw's Comment (pp. 31-32):

The Application Must Be Submitted and Reviewed by a Professional Engineer Licensed in Georgia.

LEA's Response:

LEA incorporates by reference its December 22, 2009 response to Greenlaw's professional engineering comment.³⁵

³⁵ See Dec. 22, 2009 Letter from K. French to J. Capp, Attachment B at 6.