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October 27, 2009

Via Regular Mail
Plant Washington Comments
Georgia Environmental Protection Division
2 Martin Luther King, Jr. Drive, Suite 1152 –East Tower
Atlanta, GA 30334

Via Electronic Mail and Certified Mail
Kevin Farrell
Georgia Environmental Protection Division
Watershed Protection Branch
4220 International Parkway Suite 101
Atlanta, GA 30354

Re: Draft Groundwater Withdrawal Permit for Power4Georgians, LLC

Dear Mr. Farrell:

The Southern Environmental Law Center and GreenLaw respectfully submit to Georgia Environmental Protection Division ("EPD") the following comments regarding the Draft Permit to Use Groundwater submitted by Power4Georgians, LLC (the "Applicant") on behalf of: Altamaha Riverkeeper; Center for a Sustainable Coast; Eco-Action; Fall-Line Alliance for a Clean Environment; Friends of the Chattahoochee; Georgia Coalition for the People's Agenda[1]; The Georgia Conservancy; Georgia Interfaith Power and Light; Georgia River Network; Georgia Women's Action for New

[1] The Georgia Coalition for the People's Agenda includes among others: American Federation of Labor - Congress of Industrial Organizations; Atlanta Black Agenda; Concerned Black Clergy; Friends of Sweet Auburn; Georgia Association of Black Elected Officials; Georgia Coalition of Black Women; The King Center, Laborers' International Union; MLK March Committee; National Association for the Advancement of Colored People; National Council of Negro Women Southern Christian Leadership Council & SCLC/W.O.M.E.N., Inc.

Directions (WAND); Georgians for Smart Energy; Georgia Youth for Energy Solutions; Mothers and Others for Clean Air; Ogeechee-Canoochee Riverkeeper; Savannah Riverkeeper; Sierra Club – Georgia Chapter; Southern Alliance for Clean Energy; and the Southern Energy Network.

In short, the Applicant's groundwater withdrawal analysis fails to address several key issues necessary in determining whether the permitted withdrawals are in compliance with Georgia's Ground-Water Use Act ("GWUA"), O.C.G.A. § 12-5-90 et seq. Furthermore, the Applicant's estimated groundwater withdrawal amounts and the entire Groundwater Flow Report—which examines the impacts to surface water and groundwater resources in the Washington County area resulting from Plant Washington's groundwater use—are based on erroneous surface water flow calculations. See SELC and GreenLaw Comments on Draft Surface Water Permit concurrently submitted to EPD, dated October 27, 2009. The Applicant's reliance on inaccurate surface water flow calculations has resulted in a significant underestimation of the frequency and amount of groundwater withdrawals necessary for Plant Washington's operation. Given the resulting inaccurate groundwater withdrawal estimates, the Applicant's groundwater withdrawal analysis falls short of addressing all potential adverse impacts of Plant Washington's groundwater withdrawals.

In order to satisfy the regulatory requirements of the GWUA, we urge EPD to require the Applicant to revise its Groundwater Flow Model Report. Moreover, in order to satisfy the GWUA's requirements which address the potential adverse effects of the proposed permitted groundwater use, EPD should require that the Applicant address the additional concerns discussed below. Unless the inaccurate Flow Model Report is not remedied and the additional potential effects are addressed, EPD should not issue the permit. Without additional information required of the Applicant, EPD's issuance of the Draft Permit will constitute an abdication of its regulatory responsibilities under the GWUA.

I. BACKGROUND

a. The Proposed Facility

The Applicant has requested from EPD a permit for the withdrawal of 16.12 million gallons per day ("MGD") for operation of its coal fired power plant, Plant Washington. Draft Permit at 1. The groundwater will be withdrawn from 15 wells located in the Oconee and Ogeechee River basins. Id. The primary source of groundwater in Washington County is the Cretaceous aquifer system, also referred to as the Dublin-Midgeville aquifer. Fourteen wells will withdraw 16 MGD for the purpose of consumptive use for "refilling of storage ponds, backup cooling, and process water for the coal-fired power plant." Id. One well will be located on the plant site and will withdraw 0.12 MGD for the purpose of "a consumptive use for sanitary facilities, boiler water, and other process needs...." Id.

Groundwater withdrawn from the 14 wells will not be the primary water source for the plant. See Washington Cretaceous Aquifer Characterization and Groundwater Flow Model Report, dated June 26, 2009 at ES-1. Plant Washington proposes to withdraw up to 16 MGD of groundwater for plant operation only when the Oconee River's surface flow drops below a designated minimum flow level. The Applicant predicts that Plant Washington "will rely upon groundwater, on average, once every 5 years for a period of 4 months." Id. at ES-1. The Applicant therefore asserts that Plant Washington's groundwater withdrawals will "cause small but reasonable impacts to the groundwater as a result of using this resource for an average of four months once every five years." Id. at ES-3. Moreover, even under extreme drought conditions, "these impacts would increase but are still considered acceptable." Id.

b. Georgia Law on Ground Water Withdrawal Permits

The Applicant's request for a permit to withdraw ground water is governed by Georgia's Ground-Water Use Act ("GWUA"), O.C.G.A. § 12-5-90 et seq. The purpose and intent of the GWUA is stated clearly:

> The general welfare and public interest request that water sources of the state be put to beneficial use to the fullest extent to which they are

> capable, subject to reasonable regulation in order to conserve these resources and to provide and maintain conditions which are conducive to the development and use of water resources. O.C.G.A. § 12-5-91.

In its consideration of a permit application, EPD must consider, inter alia, (1) "[t]he physical and chemical nature of any impairment of the aquifer adversely affecting its ability or fitness for other uses, including public use"; (2) "[t]he probable severity and duration of such impairment under foreseeable conditions"; (3) "the extent of any injury or detriment caused or expected to be caused to other water uses"; and (4) "[d]iversion from or reduction of flows in other watercourses or aquifers...." O.C.G.A. § 12-5-96(d)(3), (4), (7), and (8).

Among the numerous application requirements for a permit under the GWUA, the applicant must provide "sufficient documented evidence" including: (1) "the amount of water withdrawn or proposed to be withdrawn or used," (2) "a statement to indicate the extent to which such use or withdrawal is reasonably necessary to meet the needs of the applicant," and (3) "any present or anticipated ***unreasonable adverse effects or potential unreasonable adverse effects on other water uses or users***...." Ga. Comp. R. & Regs. r. 391-3-2-.04(5)(f), (g) (emphasis added). If the applicant is "unable to furnish accurate information concerning amounts of water being withdrawn or used..., or if there is evidence that this certified statement is false or inaccurate..., the division shall have the authority to require such person to install water meters or some other more economical means of measuring water use acceptable to the division." O.C.G.A. § 12-5-97(e); see also Ga. Comp. R. & Regs. r. 391-3-2-.04(7)-(8).

Additionally, the applicant must submit to the EPD for approval a "water conservation plan" prepared in accordance with GWUA's guidelines. See Ga. Comp. R. & Regs. r. 391-3-2-.04(11). As part of the water conservation plan requirement, the applicant must submit a drought contingency plan that includes "alternative system and resource management strategies to be implemented under drought conditions that may severely reduce the availability of the resource." Id. (11)(d). The applicant must therefore "develop a system for determining drought severity...." Id. (11)(d)(1). Moreover, the applicant should provide "any other information deemed necessary" that will ensure an informed permitting decision by EPD. Id. (13).

II. THE APPLICANT'S GROUND WATER WITHDRAWAL PERMIT FAILS TO MEET STATUTORY REQUIREMENTS

a. The Applicant's Groundwater Flow Report is Based on Erroneous Surface Water Flow Calculations

The aforementioned permitting requirements highlight the importance of accurate and detailed information submitted in support of a draft permit so that EPD can determine whether a permitted groundwater use does not result in "unreasonable adverse effects or potential unreasonable adverse effects on other water uses or users." Ga. Comp. R. & Regs. r. 391-3-2-.04(5)(f), (g). The miscalculations in the Applicant's surface water withdrawal estimates significantly affect the accuracy of the Applicant's groundwater withdrawal calculations. Thus, the Applicant has failed "to furnish accurate information concerning amounts of water being withdrawn or used...." O.C.G.A. § 12-5-97(e).

The Draft Permit and the calculations on which it is based is premised on the Applicant's erroneous surface water flow determinations. The Applicant describes its water use plan as an "integrated approach" whereby the "plant will obtain surface water from the Oconee River and, during low river flows, the plant will switch to groundwater." WCP at D-1. Moreover, the Applicant's flow model report expressly states that the 7Q10 analysis and non-depletable flow established for the surface water withdrawals was "used to establish a reasonable groundwater supply scenario for the groundwater model." Flow Model Report at 3-7.

As discussed in detail in the Comments on the Draft Surface Water Withdrawal Permit, there are significant flaws in three main areas of the analysis, namely: (1) the calculation of 7Q10 flow values; (2) calculation of the non-depeletable flow value; and (3) analysis of river flow volumes data to determine whether flows are adequate for withdrawal by Plant Washington. For example, a correct analysis of river flow volumes based on existing data strongly suggests that that the Oconee River will be sufficient to satisfy Plant Washington's requirements for approximately 3 out of 10 years. See Comments on Draft Surface Water Permit. Contrary to the Applicant's purported "low-rate water use" of the aquifer, the frequency and amount groundwater withdrawals is

significantly higher. Id. at 2-13. As a consequence, revision of the 7Q10 and other surface flow estimates requires the groundwater modeling to be similarly re-evaluated.

The consequences of the Applicant's reliance on flawed surface water flows in determining its groundwater usage cannot be overstated. As the Applicant has clearly stated, the volume and frequency of the groundwater withdrawals is predicated on the surface flow calculations and the ability of the Oconee River to support Plant Washington's operations. The groundwater use predictions are therefore flawed as well, which precludes the Applicant from providing accurate information on the aquifer's capability as a source of water for operation, and determining the potential adverse effects of Plant Washington's groundwater withdrawal. These inaccurate projections prevent EPD from making an informed decision on whether "any present or anticipated ***unreasonable adverse effects or potential unreasonable adverse effects on other water uses or users***." Ga. Comp. R. & Regs. r. 391-3-2-.04(5)(g). The Applicant must conduct a new groundwater flow analysis based on revised surface water flow calculations.

b. Inadequate Drought Contingency Plan

The Drought Contingency Plan must "include[] an alternative system and resources management strategies to be implemented under drought conditions that may severely reduce the availability of the resource." Ga. Comp. R. & Regs. r. 391-3-2-.11(d). The Applicant's response to drought contingency situations is based on the assumption that groundwater will not be used unless the Oconee River drops below the non-depletable flow. The WCP states, "Groundwater withdrawal will continue until flow above the non-depletable flow in the river can be sustained with the intake structure operating for a reasonable time period of time." WCP at D-16. The Drought Contingency Plan, however, is devoid of a plan if, in addition to stream flow levels dropping below the minimum in-stream flow requirement, groundwater levels also experience the effects of a drought and cannot meet the plant's operational needs.

The Applicant must establish a plan for water consumption if groundwater withdrawals must cease during a severe drought when the plant must increase pumping of the Cretaceous aquifer due to the low levels of surface water flow. In order to satisfy the

GWUA's mandate that Applicant provide sufficient evidence of "any present or anticipated unreasonable adverse effects or potential unreasonable adverse effects on other water uses or users[,]" the Applicant must establish a Drought Contingency Plan that addresses water needs for the plant in the event surface water withdrawals *and* groundwater withdrawals are both halted due to reduction in stream base flow. Ga. Comp. R. & Regs. r. 391-3-2-.04(5)(g).

A drought contingency plan that anticipates both insufficient stream flow and groundwater flow is crucial given the Applicant's significant underestimation of days where surface water flow is too low and the plant must switch to groundwater. See Comments on the Draft Surface Water Withdrawal Permit. The Applicant must put in place a Drought Contingency Plan to provide water to the plant during drought periods if the model is not correct and groundwater withdrawals reduce the volume of water in the Oconee River and pumping must cease. Notably, EPD identified this shortcoming in the Applicants Drought Contingency Plan, stating "[t]he water management plan does not address the impacts of groundwater withdrawals on natural streams [and] [t]hese impacts should be carefully assessed to accurately predict cumulative effects on both surface and groundwater withdrawals on natural stream flows in the effected area." EPD Comments on Cretaceous Aquifer Testing and Refinement of Groundwater Model, dated April 14, 2008. If the Applicant does not revise its Drought Contingency Plan, EPD should require the Applicant to offer indisputable proof that increased aquifer production (both volume and duration) will not adversely affect surface water.

Likewise, the Applicant fails to establish a maximum drawdown for Plant Washington's extraction wells. Also, the Applicant does not identify a groundwater drawdown level where further withdrawal of water would impact other water supply wells or surface water such that, if the level is exceeded, would require the pumping rate to be reduced or the well shut down for a period of time to minimize the impact. EPD should also require the Applicant further run the Flow Model with increased withdrawal rates to determine, at least based on the model, what withdrawal rates would create an impact on the overlying aquifer and base flow in the surface water bodies.

c. Failure to Adequately Assess Communication Between Aquifers

Under the GWUA, EPD must consider any "diversion from or reduction of flows in other water courses or aquifers...." Ga. Comp. R. & Regs. r. 391-3-2-.05(h). The Applicant has failed to adequately address potential communication between the Cretaceous aquifer and Huber Formation and Twiggs Clay Formation, and EPD has therefore failed to considered any "diversion from or reduction of flows...." Id. Although the Applicant describes the Twiggs Clay Formation as a "generally impermeable unit[,]" streams in the Washington County have incised the Twiggs Clay Formation in certain areas and, therefore, the Huber Formation is exposed. See Flow Model Report at 2-2. The Huber Formation is described as a "low permeability cover unit overlying the Cretaceous sediments in the Washington County area." Id.

Communication between the aquifers is determined by the presence or absence of confining units or low permeable units. Although the Applicant describes the units above the Cretaceous aquifer as predominantly clay and very low in permeability—making the Cretaceous aquifer confined for the most part—vertical recharge does exist. See Flow Model Report at 4-6. The Applicant's significant underestimation of the volume and frequency of groundwater withdrawals necessary for Plant Washington's operation (see Comments on Surface Water Permit) highlights the need to examine the effect of increasing the withdrawal rates from the Cretaceous aquifer. Running the model with increased withdrawal rates will allow the Applicant and EPD to determine if more frequent withdrawals will increase the vertical recharge from the Huber formation to the Cretaceous aquifer resulting in the reduction of base flow of the surface waters. Only if the Applicant further analyzes the effect of increased groundwater withdrawals on the aquifer and communication between aquifers, will EPD have sufficient information to determine whether the proposed groundwater withdrawals result in a "diversion from or reduction of flows in other water courses or aquifers...." Ga. Comp. R. & Regs. r. 391-3-2-.05(h).

d. Inadequate Monitoring

The Monitoring Plan submitted to EPD mentions that "flow will be monitored at each well location" (Monitoring Plan at 2), however, the Monitoring Plan does not

include the monitoring of aquifer water quality. Given the potential infiltration of polluted water at the Plant Washington site, pre-construction and continuing water quality monitoring of aquifers should be required. See Monitoring Plan at 4 (stating "Non-contact stormwater runoff from the site will be directed to detention ponds where suspended solids will be allowed to settle before being allowed to ***infiltrate or overflow***") (emphasis added).

EPD should require the Applicant to collect groundwater samples and have them analyzed for contaminants prior to Plant Washington's groundwater withdrawals. Moreover, this water quality monitoring should continue during the duration of the Plant Washington's operations. Groundwater samples should be collected from current water supply wells that are located in the general vicinity of the proposed Plant Washington's extraction wells, screened at various intervals of the Cretaceous aquifer, and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, and pesticides and herbicides.

Furthermore, the Applicant has not submitted plans to collect data during pumping to insert into the flow model so that actual conditions can be modeled, the flow model can be verified, and new predictive scenarios can be evaluated. EPD should require—as a condition of the permit—that once wells are installed and pumping commences, water level data is collected from the production wells as well as observation wells (that should be installed at various distances from the production wells) so that withdrawal rates and drawdown information can be inserted into the model for refinement to better understand the relationship between the Cretaceous aquifer and the overlying aquifer(s), as well as the relationship between pumping and stream base flow. Water Management Plan at 2-15. If EPD does not require the Applicant to further analyze surface water stream flow and correct its underestimation of volume and frequency of groundwater withdrawals needed for Plant Washington's operation, post-modeling is even more important.

e. Additional Concerns

Georgia groundwater withdrawal regulations specifically list saltwater intrusion as an item that should be evaluated during the permitting process. See Ga. Comp. R. & Regs. r. 391-3-2-.11. In order to prevent "unreasonable adverse or potential adverse effect on other water users," EPD must "take into consideration the best information available...and shall require the user to take such actions as it deems necessary." Id. Moreover, in order to protect against or abate saltwater encroachment or deterioration of water quality, EPD shall consider "best information on geologic and hydrologic characteristics of the rocks and ground water withdrawals of the area in order to prevent and control salt water encroachment or deterioration of the water quality." Ga. Comp. R. & Regs. r. 391-3-2-.10.

The application materials lack any analysis on potential saltwater encroachment in the Cretaceous aquifer even though the groundwater withdrawals are located southeast of the fall line and within the Coastal Plain physiographic province of the state. EPD should require the Applicant to conduct an analysis on potential saltwater encroachment and require withdrawal modifications in the event of saltwater intrusion. Groundwater samples should be collected from current water supply wells that are located in the general vicinity of the proposed Plant Washington extraction wells and screened at various intervals of the Cretaceous aquifer, and evaluate the groundwater samples for dissolved solids. Fresh water is typically defined as water that contains less than 1,000 milligrams per liter (mg/L) of dissolved solids and anything above 1,000 mg/L is considered slightly saline (1,000 to 3,000 mg/L) to brackish (>35,000 mg/L).[2]

Finally, the Applicant's Flow Model Report does not include a sufficient sensitivity analysis to determine the accuracy of the model predictions and to identify which model values are most sensitive to changes. The Applicant provides a brief discussion of "sensitive" values for the Jacksonian Aquifer (Flow Model Report at 4-7), however, the Flow Model Report lacks a comprehensive discussion of sensitivity for all of the model layers and input values—including but not limited to hydraulic conductivity,

[2] *Ground-Water Resources of the United States and USGS*, available at http://ga.water.usgs.gov/edu/saline.html . This document is provided to EPD in the enclosed CD.

storage coefficients, and recharge. See Flow Model Report at 4-4 to 4-7 (discussing values but no sensitivity analyses). EPD must require the Applicant to provide detailed discussion of selected values and the resulting model sensitivity or, alternatively, if the Applicant has conducted such analysis, this information should be provided for review by the public.

III. CONCLUSION

In order to fully comply with Georgia's law concerning groundwater withdrawals, EPD must require the Applicant to correct and further analyze groundwater flow and potential groundwater usage based on new and corrected stream flow calculations. Moreover, the Applicant must further assess the issues discussed herein in order to determine whether the proposed "amount of water withdrawn or proposed to be withdrawn or used" is accurate and adequate to meet Plant Washington's operational needs. These revisions and additional analyses must be conducted by the Applicant in order for EPD to determine if "any present or anticipated unreasonable adverse effects or potential unreasonable adverse effects on other water uses or users...." Ga. Comp. R. & Regs. r. 391-3-2-.04(5)(f), (g). If the above corrective measures are not taken, we urge EPD to withdraw the Draft Permit.

Thank you for your consideration of these comments. We would be more than willing to discuss this matter in greater detail or answer any questions that you may have. Please do not hesitate to contact Brian Gist at (404) 521-9900 or by email at bgist@selcga.org.

Sincerely,

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