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March 16, 2010

Mr. Robert Alexander  
Division of Water Pollution Control  
Tennessee Department of Environment and Conservation  
L&C Tower, 6<sup>th</sup> Floor  
401 Church Street  
Nashville, TN 37243  
*Via Email and Certified Mail*

***Re: Comments on Draft NPDES Permit No. TN 0005444 for the Tennessee Valley Authority (TVA) Johnsonville Fossil Plant.***

Dear Mr. Alexander:

Please accept these comments from the Environmental Integrity Project (“EIP”), Defenders of Wildlife, Tennessee Clean Water Network, Appalachian Voices, Tennessee Chapter of the Sierra Club, Tennessee Environmental Council, Sierra Club, and Earthjustice (collectively, “Commenters”) on the Tennessee Department of Environment and Conservation’s (“TDEC”) draft National Pollutant Discharge Elimination System (“NPDES”) Permit No. TN 0005444 for the Tennessee Valley Authority (“TVA”) Johnsonville Fossil Plant.

In summary, our comments address the following problems with the draft NPDES permit for the Johnsonville Fossil Plant:

- The Johnsonville Fossil Plant NPDES permit does not contain *any numeric effluent limits* for metals contained in, or whole effluent toxicity caused by, discharges of coal combustion waste (“CCW”) pollutants to the Tennessee River. Although required by the Clean Water Act, TDEC failed to set technology-based effluent limits or water quality-based effluent limits in the Johnsonville Fossil Plant draft permit.
- TDEC has not taken action to stop the unpermitted discharge of pollutants from the Johnsonville Fossil Plant or correct the conditions that created longstanding seepage problems from Johnsonville’s CCW ponds and impoundments in the draft permit.
- TDEC has not performed water quality analysis for pollutants as required, including arsenic, manganese, and aluminum, despite data indicating that these pollutants are present in the Tennessee River at levels that exceed the U.S. Environmental Protection Agency’s (“EPA”) national recommended water quality criteria.
- TDEC has left Johnsonville’s thermal pollution limits unchanged in the draft NPDES permit, over EPA’s objection and absent evidence demonstrating that TVA is still eligible for a thermal variance.

## I. Background

The NPDES permit for TVA's Johnsonville Fossil Plant expired on February 27, 2008. TVA sent its initial renewal application to TDEC over two years ago, on August 20, 2007.<sup>1</sup> TDEC issued a draft NPDES permit for the Johnsonville Fossil Plant in May 2008, but in response to EPA objections, TDEC withdrew the draft permit for revision. In September 2009, the EIP and other organizations requested that TDEC set effluent limits in the NPDES permit renewal to control the discharge of toxic metals and other pollutants into the Tennessee River. On Thursday, December 17, 2009, TVA sent TDEC an amendment to its NPDES renewal application, proposing to discharge CCW leachate, containing high levels of pollutants including aluminum, barium, chromium, lead, manganese, and ammonia from a nearby coal ash landfill into the Tennessee River.<sup>2</sup> Less than two working days later, on Monday, December 21, 2009, TDEC issued the draft NPDES permit for Johnsonville without addressing these additional discharges. TDEC gave the EIP notice of the draft NPDES permit for Johnsonville Fossil Plant on December 30, 2009 and extended the original 30-day comment period by an additional 45 days. These comments are timely submitted in advance of the March 17, 2010 deadline.

The Johnsonville Fossil Plant was built in the early 1950s, and is the oldest coal plant in the TVA fleet, and in Tennessee.<sup>3</sup> The Johnsonville Fossil Plant burns 9,600 tons of coal a day.<sup>4</sup> Over the past sixty years, Johnsonville's operation generated so much coal waste ("CCW") that it became necessary to ship its CCW (comprised of bottom ash and fly ash) to an off-site landfill run by Trans-Ash, Inc.<sup>5</sup> Recently, TVA's CCW production necessitated further expansion of this landfill. While the Trans-Ash landfill waits to receive an NPDES permit, TVA is trucking coal ash leachate (approximate flow of 32,000 gallons per day) from the Trans-Ash landfill, across the Tennessee River, and back into ash ponds at Johnsonville for disposal and discharge into the Tennessee River.<sup>6</sup>

## II. The Clean Water Act and TDEC's draft NPDES Permit for Johnsonville Fossil Plant

Under the Clean Water Act ("CWA") and the Tennessee Water Quality Control Act ("TWQCA"), TDEC is required to prevent water pollution by limiting the discharges of CCW

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<sup>1</sup> Letter from Gordon G. Park, TVA to Joe Holland, TDEC, *TVA-Johnsonville Fossil Plant—NPDES Permit No. TN 0005444, Application for Renewal* (Aug. 20, 2007).

<sup>2</sup> Linden P. Johnson, TVA, to Joe E. Holland, TDEC, *TVA-Johnsonville Fossil Plant—NPDES Permit No. TN 0005444, Amendment to Application for Renewal* (Dec. 17, 2009).

<sup>3</sup> TVA Annual Report (Form 10-K), 13 (2009); *see also*, U.S. EPA, *Clean Air Markets Data and Maps*, Tennessee Coal Plants sorted by year of operation (2010).

<sup>4</sup> TVA, Johnsonville Fossil Plant Fact Sheet, *available at* <http://www.tva.com/sites/johnsonville.htm> (last visited Jan. 8, 2010).

<sup>5</sup> TVA, Supplemental Environmental Assessment, *Johnsonville Fossil Plant Ash Disposal Site Expansion*, Benton, Houston, and Humphreys Counties, Tennessee (May 2009); *see also*, Environmental Integrity Project and Earthjustice, *Out of Control: Mounting Damages From Coal Ash Waste Sites* (Feb. 24, 2010) (TDEC penalized the Trans-Ash landfill for numerous environmental violations in 2005. In 2009, private drinking wells near the Trans-Ash landfill were found to be contaminated with Mercury, requiring emergency removal action by U.S. EPA).

<sup>6</sup> TVA, *Johnsonville Fossil Plant—Amendment to Application for Renewal*, *supra* note 2 (reporting .032 MGD as the anticipated average flow of 'leachate from off-site ash landfill' into Outfall 001).

pollutants, such as arsenic and mercury, from the Johnsonville Fossil Plant.<sup>7</sup> The draft Johnsonville NPDES permit does not contain *any numeric effluent limits* on discharges of CCW pollutants other than total suspended solids, oil and grease, and pH.

As discussed in detail below, the CWA and the TWQCA require that TDEC set technology-based effluent limits (“TBELs”) that reflect the ability of available technologies to reduce or eliminate pollution discharges. In addition, if the discharge of pollutants from Johnsonville could cause or contribute to a violation of water quality standards in the Tennessee River, TDEC must set water quality-based effluent limits (“WQBELs”) to protect the River and prevent exceedances of water quality criteria. The CWA requires NPDES permits to contain effluent limits sufficient both to “restore” and “maintain” water quality in the receiving water body, in this case, the Tennessee River.<sup>8</sup> The CWA requires that permits impose *numeric* water-quality based effluent limits, in addition to appropriate narrative limits, unless it is infeasible to do so.<sup>9</sup> For the reasons discussed below, the Johnsonville Fossil Plant NPDES permit violates the CWA and the TWQCA, and threatens to degrade the quality of the Tennessee River, which is currently classified for at least seven uses, including recreational use, domestic use, and for fish and aquatic life.<sup>10</sup>

### **1) TDEC Must Establish Technology-Based Effluent Limits in the Johnsonville Fossil Plant NPDES Permit**

Under the CWA, NPDES permits, at a minimum, must include TBELs for all discharged pollutants.<sup>11</sup> Pursuant to the CWA and TDEC’s own regulations, TBELs must reflect pollutant controls constituting the “best available technology economically achievable” (“BAT”), and

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<sup>7</sup> See Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§1251 *et seq.*; Tennessee Water Quality Control Act (TWQCA), Tenn. Code Ann. §§ 69-3-101 through 13. The TWQCA specifically requires TDEC to comply with the CWA, in addition to the TWQCA, when issuing NPDES permits. Tenn. Code Ann. § 69-3-108(g)(1) (no permit may be issued that fails to comply with federal laws or regulations); Tenn. Comp. R. and Regs. 1200-4-5-.04(1)(f).

<sup>8</sup> 33 U.S.C. §1251(a).

<sup>9</sup> See 40 C.F.R. § 122.44(d)(1)(k)(3) (“Each NPDES permit shall include conditions meeting . . . any requirements in addition to or more stringent than promulgated effluent limitations guidelines or standards under sections 301, 304, 306, 307, 318, and 405 of CWA necessary to achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality”); *see also*, U.S. EPA, Office of Water, *Technical Support Document For Water Quality-based Toxics Control*, EPA/505/2-90-001, 48 (March 1991) (“Under this regulation [40 C.F.R. § 122.44(d)(1)(vi)], permitting authorities need to investigate for the existence of specific chemicals in effluents for which the State has not adopted numeric criteria, but which may be contributing to aquatic toxicity or impairment of human health. Narrative criteria apply when numeric criteria do not protect all the designated uses”).

<sup>10</sup> See Tenn. Comp. R. & Regs. 1200-4-4-.04 (The Tennessee River is classified for Fish and Aquatic Life, Domestic Water Supply, Industrial Water Supply, Recreation, Livestock Watering and Wildlife, Irrigation, and Navigation).

<sup>11</sup> See 40 C.F.R. § 122.44(a) (“Each NPDES permit shall include . . . technology-based effluent limitations and standards based on: effluent limitations and standards promulgated under section 301 of the CWA, or new source performance standards promulgated under section 306 of CWA, on case-by-case effluent limitations determined under section 402(a)(1) of CWA, or a combination of the three, in accordance with § 125.3 of this chapter”); 40 C.F.R. § 122.44(e) (“Each NPDES permit shall include . . . technology-based controls for toxic pollutants”); 40 C.F.R. § 125.3 (“Technology-based treatment requirements under section 301(b) of the Act represent the minimum level of control that must be imposed in a permit issued under section 402 of the Act”); *see also* Tenn. Comp. R. & Regs. 1200-4-5-.08(1)(a) (“effluent limitations shall be designed to require application of the best practicable control technology currently available and application of the best available technology economically achievable”).

these effluent limitations “shall require the elimination of discharges of all pollutants if the Administrator finds, on the basis of information available to him...that such elimination is technologically and economically achievable.”<sup>12</sup>

Where EPA has not yet promulgated ELGs for particular pollutants discharged by a given point source category, the CWA requires TDEC to stand in the shoes of EPA and use its best professional judgment (“BPJ”) to set case-by-case TBELs for these pollutants in NPDES permits.<sup>13</sup> EPA has not yet established ELGs for metals and other pollutants in CCW wastestreams from steam electric power generators such as the Johnsonville Fossil Plant, but the agency recently announced its intention to revise the ELGs as the Clean Water Act requires.<sup>14</sup> EPA last promulgated ELGs for the steam electric power generation industry in 1982 – nearly 28 years ago – before the agency was fully cognizant of threats posed by waste waters from coal ash handling and air pollution control systems. With respect to these waste streams, the outdated ELGs cover only (1) pH and PCBs, (2) total suspended solids (“TSS”), and (3) oil and grease.<sup>15</sup>

Although EPA has stated it will promulgate new ELGs for coal-fired power plants, the new rules will not be finalized for several years. In the interim, the Clean Water Act requires that TDEC use its best professional judgment to set BAT-based TBELs to limit pollution and protect the Tennessee River.<sup>16</sup>

TDEC can no longer afford to ignore metals pollution from coal ash handling and disposal sites. The Steam Electric Power Generating Industry is the second largest discharger of toxic pollutants, and the toxicity of these discharges is primarily driven by metals associated with CCW handling and wet Flue Gas Desulfurization (“FGD”) systems.<sup>17</sup> EPA recently stated:

An increasing amount of evidence indicates that the characteristics of coal combustion wastewater have the potential to impact human health and the environment. Many of the common pollutants found in coal combustion wastewater (e.g., selenium, mercury, and arsenic) are known to cause environmental harm and can potentially represent a human health risk. Pollutants in coal combustion wastewater are of particular concern because they can occur in large quantities (i.e., total pounds) and at high concentrations (i.e., exceeding Maximum

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<sup>12</sup> 33 U.S.C. § 1311(b)(2)(A); *see also* Tenn. Comp. R. & Regs. 1200-4-5-.08(1)(a).

<sup>13</sup> 33 U.S.C. § 1311(b)(2)(A); 33 U.S.C. § 1342 (a)(1)(B); 40 C.F.R. § 125.3(c), (d); *NRDC v. EPA*, 863 F.2d 1420, 1425 (9th Cir. 1988).

<sup>14</sup> U.S. EPA, *Steam Electric Power Generating Point Source Category: Effluent Limitations Guidelines, Pretreatment Standards and New Source Performance Standards*, Final Rule, 47 Fed. Reg. 52,290 (Nov. 19, 1982); U.S. EPA, News Release, *EPA Expects to Revise Rules for Wastewater Discharges from Power Plants* (Sept. 15, 2009) (“The U.S. Environmental Protection Agency plans to revise the existing standards for water discharges from coal-fired power plants to reduce pollution and better protect America’s water. Wastewater discharged from coal ash ponds, air pollution control equipment, and other equipment at power plants can contaminate drinking water sources, cause fish and other wildlife to die and create other detrimental environmental effects”).

<sup>15</sup> *See* 40 C.F.R. §§ 423.12, 423.13 (also regulating *for cooling tower blowdown waste streams only*: chlorine, chromium, and zinc, in addition to 126 pollutants contained in chemicals added for cooling tower maintenance, and *for metal cleaning wastes and chemical and non-chemical waste streams only*: copper and iron).

<sup>16</sup> 33 U.S.C. § 1311(b)(2)(A).

<sup>17</sup> U.S. EPA, *Notice of Availability of Preliminary 2008 Effluent Guidelines Program Plan*, 72 Fed. Reg. 61,335, 61,342 (Oct. 30, 2007).

Contaminant Levels (MCLs)) in discharges and leachate to groundwater and surface waters. In addition, some pollutants in coal combustion wastewater present an increased ecological threat due to their tendency to persist in the environment and bioaccumulate in organisms, which often results in slow ecological recovery times following exposure.<sup>18</sup>

Specifically, EPA has identified 27 pollutants to analyze in CCW wastewaters, including: aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, selenium, silver, sodium, thallium, tin, titanium, vanadium, yttrium, and zinc.<sup>19</sup>

Using the wealth of data available from EPA and power plants in Tennessee, TDEC can and must use its best professional judgment to set BAT-based numeric effluent limits for heavy metals, such as the 27 pollutants listed above, present in CCW wastewaters.<sup>20</sup> In evaluating BAT, TDEC must consider the same mandatory factors that EPA would consider in setting national effluent limitations, including the age of facilities, the process employed, engineering aspects of various control techniques, process changes, and non-water environmental impacts.<sup>21</sup> While a thorough review of available technologies, including their cost and performance is required, this analysis will not be overly burdensome because EPA has already done the groundwork in its *Steam Electric Power Generating Point Source Category* reports, the most recent of which was issued in October 2009. EPA has made extensive materials available to state permit writers, and over the course of its multi-year study of the Steam Electric Industry, it has coordinated directly with state and regional permit writers.<sup>22</sup> For example, EPA hosted a webcast seminar in December 2008 to review information on wastewater discharges from coal-fired power plants for NPDES permitting and pretreatment authorities.<sup>23</sup> The webcast provided an update on EPA's review of the current effluent guidelines (40 C.F.R. Part 423) and presented information on pollutant characteristics and treatment technologies for wastewater from FGD scrubbers.<sup>24</sup> During the webcast, state and interstate approaches for managing steam electric power plant wastewaters were shared by representatives from Wisconsin, North Carolina, and the Ohio River Valley Water Sanitation Commission (ORSANCO).<sup>25</sup>

Even though the resources needed to set BPJ limits are readily available from EPA, TDEC has ignored CWA and TWQCA requirements and declined to complete any analysis to set TBELs for pollutants entering the Tennessee River from the Johnsonville Fossil Plant. Before

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<sup>18</sup> U.S. EPA, *Steam Electric Power Generating Point Source Category: Final Detailed Study Report*, EPA 821-R-09-008, 3-19 (October 2009).

<sup>19</sup> *Id.* at 3-34; *see also* U.S. EPA, *Notice of Final 2008 Effluent Guidelines Program Plan*, 73 Fed. Reg. 53,218 (Sept. 15, 2008).

<sup>20</sup> 33 U.S.C. § 1342 (a)(1)(B); 40 C.F.R. § 125.3; Tenn. Comp. R. & Regs. 1200-4-5-.08(1)(a) (“effluent limitations shall be designed to require application of the best practicable control technology currently available and application of the best available technology economically achievable”).

<sup>21</sup> *NRDC v. EPA*, 859 F.2d 156, 183 (D.C. Cir. 1988) (*per curiam*); 33 U.S.C. §1314(b)(2)(B).

<sup>22</sup> U.S. EPA, *Steam Electric Report*, *supra* note 18.

<sup>23</sup> *Id.*

<sup>24</sup> *Id.*

<sup>25</sup> *Id.*

TDEC can issue a final permit, it must undertake the required BAT analysis and use BPJ to set TBELs reflecting state-of-the-art pollutant controls that are currently in use around the country.

## 2) TDEC Must Establish Water Quality-Based Effluent Limits in the Johnsonville Fossil Plant NPDES Permit

Whenever a discharge of a pollutant has the reasonable potential to cause or contribute to an exceedance of a water quality standard, the CWA and the TWQCA require imposition of water quality-based effluent limitations (“WQBELs”) to ensure protection of water quality.<sup>26</sup> TDEC must set effluent limits to control all pollutants which may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above Tennessee water quality standards, in the Johnsonville NPDES permit renewal.<sup>27</sup> When feasible, these limits should be in numeric form.<sup>28</sup> Therefore, TDEC is obligated to establish WQBELs for the Johnsonville Fossil Plant if necessary to prevent unlawful degradation of water quality.

In light of existing water quality problems in the Tennessee River, pollution discharged by the Johnsonville plant will exacerbate ongoing exceedances of water quality standards for mercury, aluminum, arsenic, and manganese, and perhaps cause additional violations of water quality standards for other pollutants. For example, TDEC found that background mercury levels currently exceed Tennessee Water Quality Criteria (“WQC”), and aluminum, arsenic, and manganese levels in the Tennessee River, as measured at Johnsonville Fossil Plant’s water intake point exceed EPA recommended national water quality criteria (“EPA WQC”).<sup>29</sup>

Pollutant	TN River Background Concentration <sup>30</sup>	TN WQC	EPA WQC	Effluent Limit in draft permit?
Mercury	0.385 µg/L	Human health: 0.051 µg/L and 0.05 µg/L		No
Arsenic	2 µg/L		Human health: 0.018 µg/L and 0.14 µg/L	No
Manganese	79 µg/L		Human health: 50 µg/L and 100 µg/L	No
Aluminum	1040 µg/L		Freshwater Aquatic Life: 87 µg/L (chronic) and 750 µg/L (acute)	No

<sup>26</sup> 40 C.F.R. § 122.44(d); Tenn. Code Ann. § 69-3-108(g)(1); Tenn. Comp. R. & Regs. 1200-4-5.04(1)(g).

<sup>27</sup> 40 C.F.R. § 122.44(d); Tenn. Comp. R. & Regs. 1200-4-5.04(1)(g); *see also* 33 U.S.C. 1323(a)(permitting agencies must set effluent limits that are stringent enough “to ensure the appropriate water quality of the receiving water body”); Tenn. Code Ann. § 69-3-108(g)(1).

<sup>28</sup> *See* 40 C.F.R. § 122.44(d)(1)(k)(3).

<sup>29</sup> TVA Johnsonville Fossil Plant, *Annual Monitoring of Facility Intake Water*, NPDES Discharge Monitoring Report (DMR) (2008 and 2009) (showing exceedances of U.S. EPA Recommended National Water Quality Criteria for arsenic (2 µg/L), aluminum (730 µg/L), and manganese (79 µg/L)); *see also*, U.S. EPA Recommended National Water Quality Criteria (2009) *available at* <http://www.epa.gov/waterscience/criteria/wqctable/nrwqc-2009.pdf>.

<sup>30</sup> As measured at Johnsonville intake point (2007, 2008, and 2009 Discharge Monitoring Reports), except for Mercury, which was reported by TDEC in Appendix 5d, R-35 (date and location of sample(s) unknown).

Therefore, at a minimum, TDEC must set WQBELs in the Johnsonville NPDES permit to control the discharge of all other pollutants that may contribute to water quality violations in the Tennessee River. These limits appear to be required for mercury, aluminum, arsenic and manganese, as pollution levels in the Tennessee River already exceed state or federal WQC for each of these parameters. Yet the draft permit contains no WQBELs. This violates both the CWA and the TWQCA.

TDEC reports that the background concentration of mercury in the Tennessee River is 0.385 µg/L—a level that exceeds Tennessee WQC for recreational waters (0.051 µg/L and 0.05 µg/L) by an order of magnitude.<sup>31</sup> TDEC established that mercury levels of 0.051 µg/L and 0.05 µg/L limit are the upper limit, past which point waters could be rendered “unsafe or unsuitable for water contact activities including the capture and subsequent consumption of fish and shellfish, or will propose toxic conditions that will adversely affect man, animal, aquatic life, or wildlife.”<sup>32</sup> However, TDEC failed to place an effluent limit in the draft Johnsonville NPDES permit for mercury to protect human health and the environment. Commenters suggest that the mercury limit should be zero, given that the receiving waters contain mercury concentrations well above the applicable water quality criterion. Based on TDEC’s own calculations, any discharge of mercury would cause or contribute to a condition of pollution.

In addition to setting WQBELs for mercury, aluminum, arsenic, and manganese, TDEC must evaluate whether pollutants, such as those listed below, have a reasonable potential to cause or contribute to an excursion above state water quality standards.<sup>33</sup> The CWA requires that TDEC analyze these pollutants, and although TDEC analyzed these pollutants in the previous Johnsonville NPDES permit, it failed to analyze these pollutants again to ensure protection of the Tennessee River in the draft NPDES permit for Johnsonville.<sup>34</sup>

Water Quality Based Calculations for Outfall 001		
Pollutant	December 2009 Draft Permit	April 2005 Permit
Cadmium	X	X
Copper	X	X
Lead	X	X
<b>Iron</b>		X
<b>Thallium</b>		X
<b>Selenium</b>		X
<b>Manganese</b>		X
<b>Aluminum</b>		X
<b>Antimony</b>		X
<b>Arsenic</b>		X
<b>Barium</b>		X
<b>Beryllium</b>		X

<sup>31</sup> See TDEC, Draft NPDES Permit No. TN 0005444, Johnsonville Fossil Plant, R-35(Dec. 30, 2009); *see also*, Tenn. Comp. R. & Regs 1200-4-3-.03(4)(j).

<sup>32</sup> See Tenn. Comp. R. & Regs 1200-4-3-.03(4)(j).

<sup>33</sup> See Draft Johnsonville NPDES Permit, *supra* note 31; *see also*, 40 C.F.R. §§ 122.44(d)(1)(i) & (ii), and 123.25.

<sup>34</sup> See 40 C.F.R. §§ 122.44(d)(1)(i) & (ii), and 123.25; *see also*, TDEC, Tennessee Valley Authority Johnsonville Fossil Plant, Permit No. TN 0005444 (issued Feb. 28, 2005).

Specifically, TDEC must conduct a reasonable potential analysis, for the pollutants listed in the chart above and other CCW pollutants discharged into the Tennessee River.<sup>35</sup> If TDEC finds that the discharge of CCW pollutants will cause, have the reasonable potential to cause, or contribute to an excursion above water quality standards, TDEC can rely on its narrative criteria for water quality,<sup>36</sup> as required by Clean Water Act regulations,<sup>37</sup> or use EPA WQC to provide sound scientific rationale to establish water quality-based effluent limits for discharges of CCW pollutants from Johnsonville Fossil Plant to the Tennessee River.<sup>38</sup>

TDEC should have analyzed all of the pollutants listed above, as well as EPA's list of 27 pollutants analyzed in CCW wastewaters.<sup>39</sup> TDEC's water-quality analysis must include accurate calculations, based on current background levels of CCW pollutants in the Tennessee River, the hardness of the water (at the time of data collection), existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, or the dilution of the effluent in the receiving water.<sup>40</sup> Based on the current permitting record, it appears that TDEC has conducted little if any water quality modeling, upstream or downstream water monitoring, or reasonable potential analysis for CCW pollutants to support this permit issuance.

As discussed further in outfall-specific comments (Part III); recent discharges from Johnsonville CCW outfall 001 exceed EPA and Tennessee water quality criteria. In addition, EPA recently reported that Johnsonville Fossil Plant ranked among the highest dischargers of arsenic and arsenic compounds in the U.S.<sup>41</sup> Specifically, EPA examined discharge data from over 4,400 facilities across the U.S. and ranked Johnsonville Fossil Plant among the top two for

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<sup>35</sup> Reasonable Potential is defined by EPA as where an effluent is projected or calculated to cause an excursion above a water quality standard based on a number of factors, and federal NPDES regulations (40 C.F.R. § 122.44) require permitting authorities to conduct a *reasonable potential analysis* to make this determination. *See e.g.*, U.S. EPA, *Technical Support Document*, *supra* note 9 at 93 (“The regulations at 40 C.F.R. § 122.44(d)(1) require that regulatory authorities first determine whether a discharge causes, has the reasonable potential to cause, or contributes to an excursion above water quality standards (narrative or numeric). In making these determinations, regulatory authorities must use a procedure that accounts for effluent variability, existing controls on point and nonpoint sources of pollution, available dilution, and (when using toxicity testing) species sensitivity”).

<sup>36</sup> TDEC has adopted narrative criteria for “other pollutants” applicable to several uses designated for the receiving waters covered by this permit. *See* Tenn. Comp. R. & Regs. 1200-4-3-.03(1)(k), (2)(j), 3(h), 4(k), 5(g), 6(g), and 7(b).

<sup>37</sup> 40 C.F.R. § 122.44(d)(1).

<sup>38</sup> *See* 40 C.F.R. §§ 122.44(d)(1)(vi) (“Where a State has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits”); *see also*, U.S. EPA, *Technical Support Document*, *supra* note 9 at 1 (“Where States have not developed chemical specific numeric criteria, States may interpret their narrative standards for specific chemicals by using EPA criteria updated with current quantitative risk values”).

<sup>39</sup> *See* U.S. EPA, *Steam Electric Report*, *supra* note 18 (pollutants include, aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, selenium, silver, sodium, thallium, tin, titanium, vanadium, yttrium, and zinc); *see also* U.S. EPA, *Notice of Final 2008 Effluent Guidelines*, *supra* note 19.

<sup>40</sup> 40 C.F.R. §§ 122.44(d)(1)(ii).

<sup>41</sup> U.S. EPA, *Technical Support Document for the Annual Review of Existing Effluent Guidelines and Identification of Potential New Point Source Categories*, EPA 821-R-09-007 (October 2009), available at <http://epa.gov/guide/304m/2010/tsdexisting.pdf>.



arsenic discharges.<sup>42</sup> The high levels of CCW pollutants discharged from Johnsonville Fossil Plant, combined with high levels of CCW pollutants in stream background data suggests that TDEC should take steps to limit the discharge of CCW pollutants into the Tennessee River from Johnsonville Fossil Plant.

Pollutant	Johnsonville Outfall 001	U.S. EPA Water Quality Criteria (2009) <sup>43</sup>	Tennessee Water Quality Criteria (2008) <sup>44</sup>
Arsenic	45 µg/L <sup>45</sup>	<ul style="list-style-type: none"> <li>• .018 µg/L (Human Health for Consumption of Water + Organism)</li> <li>• .14 µg/L (Human Health for Consumption of Organism)</li> </ul>	<ul style="list-style-type: none"> <li>• 10 µg/L (Domestic Water Use)</li> </ul>
Cadmium	149 µg/L <sup>46</sup>	<ul style="list-style-type: none"> <li>• 2 µg/L (Freshwater Criterion Maximum Concentration)</li> <li>• .25 µg/L (Freshwater Criterion Continuous Concentration)</li> </ul>	<ul style="list-style-type: none"> <li>• 2 µg/L (Freshwater Criterion Maximum Concentration)</li> <li>• .25 µg/L (Freshwater Criterion Continuous Concentration)</li> </ul>
Selenium	22 µg/L <sup>47</sup>	<ul style="list-style-type: none"> <li>• 5 µg/L (Freshwater Criterion Continuous Concentration)</li> </ul>	<ul style="list-style-type: none"> <li>• 5 µg/L (Freshwater Criterion Continuous Concentration)</li> </ul>
Aluminum	1950 µg/L <sup>48</sup>	<ul style="list-style-type: none"> <li>• 750 µg/L (Freshwater Criterion Maximum Concentration)</li> <li>• 87 µg/L (Freshwater Criterion Continuous Concentration)</li> </ul>	

Finally, in addition to setting WQBELs in the Johnsonville Fossil Plant NPDES permit, TDEC should consider adding the Tennessee River to the state’s 303(d) listing of impaired waters for mercury, aluminum, arsenic, and manganese, as levels of these pollutants exceed the protective WQC set by Tennessee and/or EPA near the Johnsonville Fossil Plant.

### 3) TDEC Must Stop Unpermitted Sources from Discharging into Waters of the United States at Johnsonville Fossil Plant

Under the CWA and the TWQCA, any discharge of pollutants from a point source into the navigable waters is prohibited unless authorized by a NPDES permit.<sup>49</sup> The CWA defines “point source” broadly, and it includes landfill leachate, and discharges from wastewater

<sup>42</sup> *Id.* EPA examined data reported to the U.S. EPA Toxics Release Inventory (TRI) from companies across the U.S., and measured arsenic and arsenic compounds in toxic-weighted pound equivalents (TWPE).

<sup>43</sup> U.S. EPA, National Recommended Water Quality Criteria, *supra* note 29.

<sup>44</sup> Tennessee Water Quality Criteria, Tenn. Comp. R. & Regs 1200-4-3.

<sup>45</sup> TVA, Johnsonville NPDES Permit Renewal Application, *supra* note 1.

<sup>46</sup> *See* Draft Johnsonville NPDES Permit, *supra* note 31 at R-36.

<sup>47</sup> TVA, Johnsonville NPDES Permit Renewal Application, *supra* note 1.

<sup>48</sup> TVA, Johnsonville Fossil Plant DMR Report (December 2008). Aluminum discharges are above EPA WQC in the previous year as well. *See* TVA Johnsonville Fossil Plant DMR (December 2007) (Aluminum 1050 µg/L). Commenters note that aluminum discharges from Outfall 003 are also above EPA WQC, and TDEC should consider the cumulative effect of aluminum discharges from both Outfall 001 and 003, as well as accurate stream background concentrations, when setting WQBELs to protect the Tennessee River.

<sup>49</sup> 33 U.S.C. §§ 1311(a), 1342; Tenn. Code Ann. 69-3-108(b)(6).

ponds.<sup>50</sup> Pollutants include toxic metals typical of CCW discharges, such as arsenic, mercury, and selenium. TDEC cannot allow seepage from CCW disposal ponds or any other unpermitted CCW discharges to enter waters of the United States without an NPDES permit. Where TDEC is aware of unpermitted CCW discharges and seepage, it must act to eliminate unpermitted discharges through enforcement action and expressly prohibit these discharges from the active ash disposal area and the abandoned ash disposal area in the Johnsonville NPDES permit.<sup>51</sup>

For years, TVA has reported multiple seepage points of CCW wastewater from the Johnsonville Fossil Plant in annual surface impoundment inspection reports submitted to TDEC. TDEC has long required TVA to submit annual inspection reports<sup>52</sup> and placed similar requirements in the Johnsonville Fossil Plant draft NPDES permit.<sup>53</sup> Although TDEC recently indicated it would address problems at TVA's CCW ponds in future NPDES renewals,<sup>54</sup> TDEC failed even to acknowledge seepage problems at the Johnsonville Fossil Plant in this draft permit, much less require additional monitoring, the installation of new outfalls, or remedial action to stop the discharge of pollutants. In fact, neither TDEC nor TVA mentions the fact that multiple seepage points exist at Johnsonville Fossil Plant in its NPDES permit application or draft permit renewal.

The urgent need for TDEC to regulate CCW pollutant discharges is underscored by a recent TVA report, prepared by the Stantec engineering consulting firm, which prioritized Johnsonville Fossil Plant as being of "primary concern" for corrective action to prevent water pollution from CCW ponds.<sup>55</sup> Specifically, the report notes problems at, "Johnsonville Ash Disposal Areas 2 and 3 (Active Ash Disposal Area) due to inadequate freeboard, observed seepage, steep slopes, and tall, unsupported weir spillways with history of sinkholes."<sup>56</sup> Stantec recently recommended complete closure of the active ash pond at Johnsonville.<sup>57</sup> Despite these

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<sup>50</sup> See 33 U.S.C. § 1362(14); 40 C.F.R. § 122.2; see also *Northern California River Watch v. City of Healdsburg*, 496 F.3d 993 (9th Cir. 2007) (pond wastewaters that seeped into river through groundwater, significantly affecting physical, biological, and chemical integrity of river are subject to regulation under the Clean Water Act).

<sup>51</sup> Technology based effluent limits cannot be set for leaks, and leaks or seepage cannot be authorized by a NPDES permit. 33 U.S.C. §§ 1311(b)(1), 1311(b)(2)(A).

<sup>52</sup> TDEC, NPDES Permit No. TN 0005444, *supra* note 34.

<sup>53</sup> See TDEC, Draft NPDES Permit No. TN 0005444, *supra* note 31 at 26 (TVA must "submit an annual report to the division summarizing findings of all monitoring activities, inspections, and remediation measures pertaining to the structural integrity, design, construction, and operation and maintenance of all impoundments").

<sup>54</sup> Letter from James H. Fyke, TDEC Commissioner, to Kimberly Wilson, Environmental Integrity Project, 2-4 (Nov. 16, 2009) ("TDEC will carefully evaluate TVA permit applications, consult with our field office staff, and discuss these permit issues with TVA water compliance staff as each renewal process unfolds...As appropriate, site specific requirements for ash pond management will be included in the renewed NPDES permits").

<sup>55</sup> Stantec Consulting Services Report to TVA, *Assessment of Coal Combustion Product Impoundments and Disposal Facilities Various Locations, Tennessee*, 5-6 (June 24, 2009), available at <http://www.tva.gov/power/stantec/index.htm>.

<sup>56</sup> *Id.*

<sup>57</sup> U.S. House of Representatives, Comm. on Transportation and Infrastructure, Subcomm. on Water Resources and Environment, *Hearing on The One Year Anniversary of the Tennessee Valley Authority's Kingston Ash Slide: Evaluating Current Cleanup Progress and Assessing Future Environmental Goals*, Testimony of John S. Montgomery, Stantec Engineering Consultants, 6 (Dec. 9, 2009) available at <http://transportation.house.gov/Media/file/water/20091209/Montgomery%20Testimony.pdf>.

concerns, TVA proposed accepting additional CCW leachate into the active ash pond at Johnsonville from an offsite CCW disposal area.<sup>58</sup>

TVA's most recent annual inspection report mentions seepage at numerous locations at the Johnsonville Fossil Plant.<sup>59</sup> Stantec Engineering reports also document seepage in multiple locations, for example, from "Area A," an abandoned CCW disposal area built by TVA in the early 1950s.<sup>60</sup> In the mid-1970s, Area A was closed and covered with soil to establish vegetation, and the perimeter dikes were also covered with soil and flattened.<sup>61</sup> TVA maintains ownership and control of Area A, outside the neighboring Dupont property fence line.<sup>62</sup> TVA routinely inspects this area, and in the 1990s, excavated ditches along the inner dike slope of Area A to direct runoff. In addition, TVA installed a new 36-inch Corrugated HDPE outlet pipe near the Dupont fence line in the 1990s to drain the interior runoff ditch in Area A.<sup>63</sup>

In 2009, Stantec inspected Area A and noted that "seepage along the west perimeter dike along the bank of Kentucky Lake has been reported for years" in this area.<sup>64</sup> The Stantec report noted that seepage appears to be ongoing, stating that, "seepage has been reported along the west banks of Pond A for several years. The seepage was also observed during the assessments by Stantec personnel. Continued monitoring of these seepage areas will be required."<sup>65</sup> Stantec also observed seepage on the exterior of the abandoned impoundment, and "along the toe of the west dike in several areas. This seepage has been reported for several years and appears unchanged from previous inspections."<sup>66</sup>

In addition to these reports from TVA and Stantec, an independent review of TVA's coal ash management practices by TVA's Office of Inspector General ("OIG") found "legacy problems" at Johnsonville Fossil Plant.<sup>67</sup> Specifically, the OIG report found that:

The presence of multiple uncontrolled seepage points or seepage outbreaks is one of the main problems at the JOF [Johnsonville Fossil Plant] Active Ash Impoundment Area. These apparently have existed for many years. They have been documented by TVA representatives and/or their consultants in various inspection reports; however, no actions have been taken to resolve the conditions.<sup>68</sup>

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<sup>58</sup> TVA, *Johnsonville Fossil Plant—Amendment to Application for Renewal*, *supra* note 2.

<sup>59</sup> TVA, Johnsonville Fossil Plant (JOF) 2009 Annual Dike Stability and Seepage Report (Sept. 23, 2009).

<sup>60</sup> Stantec Consulting Services Report to TVA, TVA Disposal Facility Assessment, Phase 1 Coal Combustion Product Disposal, Facility Summary, Johnsonville Fossil Plant (JOF), North Abandoned Ash Disposal Area 1 (CDA1) (2009) [hereinafter "Stantec Phase 1 Johnsonville Area A Report"], *available at*: [http://www.tva.gov/power/stantec/tn/rpt\\_009\\_appndx\\_g\\_jof\\_171468118.pdf](http://www.tva.gov/power/stantec/tn/rpt_009_appndx_g_jof_171468118.pdf).

<sup>61</sup> *Id.*

<sup>62</sup> *Id.*

<sup>63</sup> *Id.*

<sup>64</sup> *Id.*

<sup>65</sup> *Id.*

<sup>66</sup> *Id.*

<sup>67</sup> TVA, Office of the Inspector General (OIG), Inspection 2008-12283-02, *Review of the Kingston Fossil Plant Ash Spill Root Cause Study And Observations About Ash Management*, 33-34 (July 23, 2009).

<sup>68</sup> *Id.* at 34.

TDEC has enough information, based on Stantec inspections, Stantec recommendations, and TVA's own reports, from which to take enforcement action or expressly prohibit the seepage of CCW wastewater from Johnsonville Fossil Plant in the final Johnsonville NPDES permit. According to TVA's own inspection, "water was observed entering the river [from Area A] during the first quarter inspection...there appears to be no change in the size of the seep and cattail growth when compared to last year."<sup>69</sup> Similar seepage problems exist at Johnsonville's Active Ash Disposal Area, and recent TVA inspection reports note that seeps "appear to be somewhat larger since the last inspection, and possibly have merged into one large seep. A significant amount of water was ponding at the bottom of the slope with some spilling over the bank."<sup>70</sup>

Where TDEC is aware of unpermitted discharges at Johnsonville Fossil Plant, it can use its authority to establish a permitted outfall or take enforcement action to eliminate the unpermitted discharge of CCW wastewaters from Johnsonville Fossil Plant into the Tennessee River and Kentucky Reservoir.<sup>71</sup>

#### **4) TDEC Should Set Enforceable Terms, Including a Timeline and Remedial Action Plan for the Closure of Johnsonville Fossil Plant Ash Ponds in its NPDES Permit**

TDEC is proposing to require TVA to submit an ash closure plan for the Johnsonville Fossil Plant within 180 days from the effective date of the draft NPDES permit.<sup>72</sup> Commenters agree that TVA should phase out its aging wet impoundments and CCW ponds, stop the seepage of CCW wastewaters from the Johnsonville Fossil Plant, and protect the Tennessee River from further discharges of CCW pollutants. However, commenters urge TDEC to use its authority to stop the seepage of CCW pollutants into the Tennessee River immediately, and put enforceable terms, deadlines and conditions in this draft permit to ensure that TVA does indeed close the wet CCW disposal areas at the Johnsonville Fossil Plant. Specifically, TDEC can require remedial actions, impose increased monitoring, or take enforcement action to ensure that TVA eliminates seepage of CCW pollutants in accordance with a mandatory and enforceable timeline.

In August 2009, after the Kingston coal ash spill heightened public and regulatory scrutiny of TVA's wet coal combustion waste disposal practices, TVA announced it would

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<sup>69</sup> TVA, Johnsonville Fossil Plant (JOF) 2008 Annual Dike Stability and Seepage Report (Aug. 26, 2008).

<sup>70</sup> TVA, Johnsonville Fossil Plant (JOF) 2009 Annual Dike Stability and Seepage Report (Sept. 23, 2009).

<sup>71</sup> See T. C. A. § 69-3-107 (The commissioner has the power, duty, and responsibility to...Bring suit in the name of the department for any violation of the provisions of this part, seeking any remedy provided in this part, and any other statutory or common law remedy available for the control, prevention, and abatement of pollution); see 33 U.S.C. § 1319 (U.S. EPA may also step in when States fail to take enforcement action. "Whenever, on the basis of any information available to him, the Administrator finds that any person is in violation of any condition or limitation which implements section 1311, 1312, 1316, 1317, 1318, 1328, or 1345 of this title in a permit issued by a State under an approved permit program under section 1342 or 1344 of this title, he shall proceed under his authority in paragraph (3) of this subsection or he shall notify the person in alleged violation and such State of such finding").

<sup>72</sup> See Draft Johnsonville NPDES Permit, *supra* note 31 at 19.

transition its wet coal waste disposal systems into dry systems within eight years.<sup>73</sup> However, TVA proclaimed this same intention *over 20 years earlier* to avoid federal regulation, stating, “because of concerns about groundwater contamination, TVA is moving away from wet ash disposal techniques to dry stacking.”<sup>74</sup> TVA’s most recent announcement may be another empty promise. The details of TVA’s plan are still evolving,<sup>75</sup> and TVA’s actions, for example, TVA’s proposal to increase the amount of CCW pollutants disposed of in the active ash disposal area, do not convey an intent to move towards pond closure.

To ensure that TVA will take steps to eliminate discharges of CCW pollutants to the Tennessee River, TDEC should include an ash pond closure plan, with an enforceable timeline, in the NPDES permit for Johnsonville Fossil Plant.

### **5) TDEC Should Correct and Revise Permit Condition D**

TDEC has changed language in the draft NPDES permit conditions (Condition D, page 8) to state “Outfall 001 shall not contain materials other than those naturally occurring in the intake water.” The outfall should be “010” instead of “001” and, since industrial pollutants are not “naturally occurring,”<sup>76</sup> this phrase should be replaced with previous permit language. Commenters recommend the following language for Johnsonville NPDES Permit condition D, page 8:

The intake screen backwash discharged through Outfall 010 should not contain pollutants other than those previously present in the intake water. The discharge should not have a visible oil sheen.

### **6) TDEC Should Add a Permit Condition to Protect Water Quality**

TDEC should protect the Tennessee River by adding the following language as a permit condition applicable to all outfalls, at page 8 in the draft NPDES Permit for Johnsonville Fossil Plant:

The discharge activity shall not cause or contribute to violations of water quality criteria as stated in the TDEC Rules, Chapter 1200-4-3-.03.

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<sup>73</sup> See TVA, Press Release, *TVA Coal Combustion Products Remediation Plan Proposed* (Aug. 20, 2009) available at [http://www.tva.gov/news/releases/julsep09/ccprp\\_other.htm](http://www.tva.gov/news/releases/julsep09/ccprp_other.htm); see also, Dave Flessner, *TVA Going Dry for Disposal of Fly Ash*, CHATTANOOGA TIMES FREE PRESS (Aug. 10, 2009).

<sup>74</sup> TVA, Office of the Inspector General (OIG), Inspection 2008-12283-02, *Review of the Kingston Fossil Plant Ash Spill Root Cause Study And Observations About Ash Management*, (July 23, 2009) Appendix C, 15 (citing W.M. Bivens, Vice President of Power Engineering and Construction, to Morris G. Herndon, Manager of Dam Safety Program, December 29, 1988, Archived TVA files, Tennessee).

<sup>75</sup> TVA has proposed some initial plans to convert wet CCW disposal systems to dry disposal systems. See TVA, Draft Environmental Assessment, *Kingston Dry Fly Ash Conversion* (March 2010).

<sup>76</sup> See Draft Johnsonville NPDES Permit, *supra* note 31 at R-5 (Noting that “multiple industrial facilities are located along the Tennessee River within 4 miles upstream of the facility”).

This language is adapted from the Tennessee General NPDES Permit for Discharges of Stormwater Associated with Construction Activities, TNR100000, § 4.3.2, and preserves TDEC’s authority to protect water quality in the event the permit’s numeric effluent limits and monitoring requirements prove to be insufficient during the permit term. Given that very similar language is included in TDEC’s construction general permit, which applies to numerous point-source dischargers around the state, it is reasonable to include this provision in the Johnsonville Fossil Plant NPDES permit.

## **7) TDEC Should Revise Permit Condition K (Dike Inspections)**

As drafted, Permit Condition K(3)(page 25) states that “the Director *may* re-open this permit to incorporate more stringent requirements or any applicable standards pertaining to the operation and maintenance of coal combustion waste impoundments.”

As state and national regulations regarding coal ash evolve, Commenters request that TDEC affirmatively state that it will re-open those NPDES permits which regulate coal ash disposal sites in Tennessee to incorporate new rules and regulations. For example, EPA will soon propose national regulations for coal ash disposal,<sup>77</sup> and these rules will likely be finalized during the upcoming permit period for Johnsonville Fossil Plant. Commenters request that TDEC change the language in Permit Condition K(3) to state, “the Director *will* re-open this permit to incorporate more stringent requirements or any applicable standards pertaining to the operation and maintenance of coal combustion waste impoundments.”

In addition, Permit Condition K should include the recommendations and findings in TDEC’s Advisory Committee Report on the Kingston Disaster.<sup>78</sup> Namely, the TDEC Advisory Committee recommended that:

- TVA should provide site-specific quarterly reports of coal ash impoundment activity and analysis to TDEC;
- Ash Closure Plans and wet to dry transitions of coal ash ponds be conducted under the supervision of the TVA Dam Safety Group;
- All reports and analyses for TVA wet storage facilities, dry storage facilities and landfills should be submitted to TDEC, including reports prepared by consultants and relevant to permits (such as stability or geotechnical reports, and inspection reports and recommendations);
- Calculations and Reports must be signed and sealed by a Registered Professional Engineer, registered in the State of Tennessee;
- Through the permitting process, TVA should prepare a detailed inspection regimen for each phase of operation, construction or closure, and inspections must be conducted by Registered Professional Engineers that have qualified training and experience;

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<sup>77</sup> U.S. EPA, News Release, Statement on Coal Ash (Dec. 17, 2009) (Announcing that EPA will propose new regulations within a “short period” of time).

<sup>78</sup> TDEC, *Lessons Learned from the Kingston Dredge Cell Containment Facility Failure: TDEC Advisory Board Recommendations for Safe Performance*, (Nov. 30, 2009) available at [http://www.tennessee.gov/environment/kingston/pdf/adv\\_board/11\\_30\\_09\\_rpt\\_lessons\\_learned.pdf](http://www.tennessee.gov/environment/kingston/pdf/adv_board/11_30_09_rpt_lessons_learned.pdf).

- TDEC should develop criteria for impoundments and use criteria in permit approval.

In addition, TDEC should require TVA to implement the National Incident Management System (“NIMS”), required by Homeland Security Presidential Directive (HSPD -5) and recommended by the TDEC Advisory Committee on the Kingston Disaster, to improve communications with other agencies in the event of an emergency.<sup>79</sup> Any emergency plan for the Johnsonville plant developed by TVA in conjunction with the NIMS should be included in this condition or otherwise as a permit requirement. Specifically, this emergency plan should include emergency management personnel at the plant and a complete comprehensive hazardous analysis and risk assessment for the Johnsonville plant as recommended by the Advisory Committee. The preparedness plan should consider a boundary for potentially affected topographic features based on mud flow and flood wave propagation for any coal ash impoundment over 25 feet from adjacent ground (and lower if adjacent risks are identified) in order to minimize life threatening effects due to failure.

### **III. Outfall-Specific Comments**

#### **1) Outfall 001 and 011 – TDEC Must Impose QBELs for CCW Pollutants (Including Aluminum, Manganese, Arsenic, and Mercury)**

In addition to the TBELs required at Outfall 001 and discussed above, commenters request that TDEC establish numeric effluent limits for the pollutants listed in the NPDES permit for Outfall 001, including aluminum, arsenic, cadmium, copper, iron, lead, mercury, nickel, selenium, silver, thallium, and cyanide. In addition, TDEC should require monitoring and effluent limits for the additional pollutants EPA identified in CCW wastewaters, including antimony, barium, beryllium, boron, calcium, chromium, cobalt, magnesium, manganese, molybdenum, tin, titanium, vanadium, yttrium, and zinc<sup>80</sup> at Outfall 001 and 011.

Although TDEC calculated QBELs for some pollutants discharged from Johnsonville CCW Outfall 001 (e.g., mercury and cadmium), it did not actually place these limits in Johnsonville’s NPDES permit. Water quality criteria are usually not enforceable at the end of pipe unless they are incorporated into a permit. Commenters urge TDEC to calculate QBELs for the Johnsonville Fossil Plant and place these numeric effluent limits in the permit.

In addition, TDEC calculated QBELs for some pollutants and not others. For example, in the current (expired, but administratively extended) NPDES permit for Johnsonville, TDEC conducted water quality based effluent calculations for thallium, selenium, manganese, aluminum, antimony, arsenic, barium, and beryllium. In this draft NPDES permit TDEC did not conduct even the most basic water quality calculations for thallium, selenium, manganese, aluminum, antimony, arsenic, barium, and beryllium, despite data from Johnsonville’s intake

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<sup>79</sup> U.S. Department of Homeland Security, *National Information Management System* (December 2008), available at [http://www.fema.gov/pdf/emergency/nims/NIMS\\_core.pdf](http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf).

<sup>80</sup> See, U.S. EPA, Steam Electric Report, *supra* note 18 at 3-34; see also U.S. EPA, *Notice of Final 2008 Effluent Guidelines*, *supra* note 19.

point showing that several of these pollutants are present in Tennessee River at levels that exceed EPA WQC. Water sampling data from TDEC and TVA show that levels of aluminum, arsenic, mercury, and manganese currently exceed state and/or EPA water quality criteria.<sup>81</sup>

TDEC's water quality calculations for aluminum in the current (expired, but administratively extended) NPDES permit for Johnsonville suggest that the allowable aluminum limit is 87 µg/L (chronic) and 750 µg/L (acute) at outfall 001.<sup>82</sup> Yet, Johnsonville Fossil Plant reports aluminum discharges well in excess of this limit. In fact, TDEC did not even perform water quality based effluent calculations for aluminum despite stream background concentrations, and known discharges above EPA WQC from Outfall 001 and 003.

The chart below presents recent discharges at Johnsonville CCW Outfall 001 that exceed water quality criteria:

Pollutant	Johnsonville Outfall 001	U.S. EPA Water Quality Criteria (2009) <sup>83</sup>	Tennessee Water Quality Criteria (2008) <sup>84</sup>
Arsenic	45 µg/L <sup>85</sup>	<ul style="list-style-type: none"> <li>• .018 µg/L (Human Health for Consumption of Water + Organism)</li> <li>• .14 µg/L (Human Health for Consumption of Organism)</li> </ul>	<ul style="list-style-type: none"> <li>• 10 µg/L (Domestic Water Use)</li> </ul>
Cadmium	149 µg/L <sup>86</sup>	<ul style="list-style-type: none"> <li>• 2 µg/L (Freshwater Criterion Maximum Concentration)</li> <li>• .25 µg/L (Freshwater Criterion Continuous Concentration)</li> </ul>	<ul style="list-style-type: none"> <li>• 2 µg/L (Freshwater Criterion Maximum Concentration)</li> <li>• .25 µg/L (Freshwater Criterion Continuous Concentration)</li> </ul>
Selenium	22 µg/L <sup>87</sup>	<ul style="list-style-type: none"> <li>• 5 µg/L (Freshwater Criterion Continuous Concentration)</li> </ul>	<ul style="list-style-type: none"> <li>• 5 µg/L (Fish and Aquatic Life, Freshwater Criterion Continuous Concentration)</li> <li>• 20 µg/L (Fish and Aquatic Life, Criterion Maximum Concentration).</li> </ul>
Aluminum	1950 µg/L <sup>88</sup>	<ul style="list-style-type: none"> <li>• 750 µg/L (Freshwater Criterion Maximum Concentration)</li> <li>• 87 µg/L (Freshwater Criterion Continuous Concentration)</li> </ul>	

<sup>81</sup> See e.g., TVA Johnsonville Fossil Plant, Annual Monitoring of Facility Intake Water, DMR (2008) (showing exceedances of U.S. EPA Recommended National Water Quality Criteria for arsenic (2 µg/L), aluminum (450 µg/L), and manganese (79 µg/L)); see also, Draft Johnsonville NPDES Permit, *supra* note 31.

<sup>82</sup> TDEC, NPDES Permit No. TN 0005444, *supra* note 34.

<sup>83</sup> U.S. EPA, National Recommended Water Quality Criteria, *supra* note 29.

<sup>84</sup> Tennessee Water Quality Criteria, 1200-4-3 (June 2008).

<sup>85</sup> See TVA, Johnsonville NPDES Permit Renewal Application, *supra* note 1.

<sup>86</sup> See Draft Johnsonville NPDES Permit, *supra* note 31 at R-36.

<sup>87</sup> See TVA, Johnsonville NPDES Permit Renewal Application, *supra* note 1.

<sup>88</sup> TVA, Johnsonville Fossil Plant DMR Report (December 2008). Aluminum discharges are above EPA WQC in the previous year as well. See TVA Johnsonville Fossil Plant DMR (December 2007) (Aluminum 1050 µg/L).



At a minimum, TDEC should conduct water quality based effluent calculations for thallium, selenium, manganese, aluminum, antimony, arsenic, barium, and beryllium based on accurate data from Tennessee River and use these calculations to set effluent limits in the Johnsonville Fossil Plant permit.

## **2) Outfall 003**

The Johnsonville Fossil Plant operates two condenser cooling water pumps to force water drawn from the Tennessee River through the main cooling condensers to absorb heat from its boilers. Then, Johnsonville discharges this “once-through” cooling water (“OTCW”) from Outfall 003 into the Tennessee River at elevated temperatures. For example the Johnsonville Draft Permit allows discharges from Outfall 003 up to temperatures of 38.9°C (102°F). OTCW systems require massive amounts of water,<sup>89</sup> and virtually all flow from Outfall 003, approximately 1188 MGD, is comprised of OTCW.

As discussed below, OTCW discharges are regulated by the CWA, and TDEC must include all CWA effluent limits for OTCW in the Johnsonville Fossil Plant NPDES permit. In addition, TDEC stated that Outfall 003 discharges pollutants that have “a reasonable potential to be detrimental to fish and aquatic life,”<sup>90</sup> and TDEC should therefore seek to reduce or eliminate this detrimental impact by establishing grounds for a thermal variance as EPA has requested, or discarding the variance in favor of thermal pollution limits and monitoring requirements that are protective of the Tennessee River.

### **a) TDEC Must Place Clean Water Act Effluent Limits and Monitoring Requirements for OTCW in the NPDES Permit for Johnsonville Fossil Plant at Outfall 003**

Clean Water Act regulations set effluent limits for Free Available Chlorine and Total Residual Chlorine in OTCW. TDEC should require Johnsonville Fossil Plant to use the best practicable control technology currently available (“BPT”) to limit the discharge of free available chlorine (“FAC”) from OTCW units. These BPT effluent limits apply to an individual generating unit at the discharge point of the individual generating unit, prior to combination with the OTCW from other units.<sup>91</sup>

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<sup>89</sup> See, Kenny, J.F., Barber, N.L., Hutson, S.S., Linsey, K.S., Lovelace, J.K., and Maupin, M.A., 2009, *Estimated use of water in the United States in 2005*: U.S. Geological Survey Circular 1344, 38, available at <http://pubs.usgs.gov/circ/1344/pdf/c1344.pdf> (noting that power plants withdrew an estimated 201 billion gallons of water per day in 2005); see also, U.S. EPA, Steam Electric Report, *supra* note 18 at 3-19 (Once-through cooling water is the largest volume wastewater discharge at coal-fired power plants).

<sup>90</sup> See Draft Johnsonville NPDES Permit, *supra* note 31 at R-14.

<sup>91</sup> See Draft Johnsonville NPDES Permit, *supra* note 31.

**Current Effluent Guidelines and Standards for the Steam Electric Power Generating Point Source Category – Once Through Cooling Water (OTCW)**

<b>Best practicable control technology currently available (BPT)<sup>92</sup></b>	<b>Best available technology economically achievable (BAT)<sup>93</sup></b>	<b>New source performance standards (NSPS)<sup>94</sup></b>
Free Available Chlorine: 0.5 mg/L; 0.2 mg/L	Total Residual Chlorine: If > 25 MW: 0.20 mg/L instantaneous maximum	Total Residual Chlorine: If > 25 MW: 0.20 mg/L instantaneous maximum

However, TDEC is using WQBELs for total residual chlorine (“TRC”) at Outfall 003 (please note there are two errors on Page R-13: both the reference to Appendix 6c and the Water Quality TRC calculations are incorrect) instead of using BPT, BAT or NSPS effluent limits, as required by CWA regulations. TDEC should choose the most stringent limit for FAC and TRC, and provide clear rationale for the decision, including reasoning to explain why TDEC is not legally required to meet CWA standards.<sup>95</sup>

**b) TDEC Must Require Compliance with Clean Water Act Regulations for OTCW**

The Johnsonville Fossil Plant Draft NPDES permit does not ensure compliance with Clean Water Act Effluent Guidelines and Standards at Outfall 003. Specifically, TDEC allows TVA to discharge Chlorine more than 2 hours per day in accordance with a Biocide/Corrosion Treatment (“B/CTP”) plan, as of yet unwritten by TVA.

TDEC must require TVA to monitor and limit FAC from OTCW units to meet BPT effluent standards, and should ensure, as BPT regulations require, that TVA discharge chlorine for no more than two hours per day per OTCW unit and prohibit simultaneous chlorine discharge from multiple units. In the permit requirements for Outfall 003, TDEC notes that chlorine application beyond 2 hours a day “will be allowed...according to the B/CTP plan” yet on page 24, states that TVA has 8 months after the permit effective date to create a B/CTP plan. TDEC should ensure that terms and plans which are subject to CWA requirements are completed, reviewed, explained fully in the Permit Rationale, before issuing an NPDES permit.

**c) TDEC Must Decide Whether Outfall 003 Effluent is “Raw River Water” And Impose Monitoring and Effluent Limits for Pollutants Accordingly**

As discussed previously in Section II, TDEC should set BAT-based effluent limits where EPA has not set ELGs for CCW pollutants from steam electric power generators such as the Johnsonville Fossil Plant. At Outfall 003, Johnsonville discharges aluminum, arsenic, barium, chromium, copper, iron, magnesium, manganese, nickel, selenium, titanium, and other pollutants

<sup>92</sup> 40 C.F.R. § 423.12(b)(6).

<sup>93</sup> 40 C.F.R. § 423.13(b)(1).

<sup>94</sup> 40 C.F.R. § 423.15(h)(1).

<sup>95</sup> See U.S. EPA, *Technical Support Document*, *supra* note 9 at 110 (“The fact sheet and supporting documentation accompanying the permit must clearly explain the basis and the rationale for the permit limits. When the permit is in the draft stage, the supporting documentation will serve to explain the rationale and assumptions used in deriving the limits to the permittee and the general public in order to allow public comment on the draft permit”).

into the Tennessee River.<sup>96</sup> TDEC states that the discharge of OTCW, “from Outfall 003 may contain several different pollutants, the combined effect of which has a reasonable potential to be detrimental to fish and aquatic life.”<sup>97</sup> In addition, EPA noted in the 2009 Steam Electric Power Generating Point Source Category Report that OTCW:

may contain the following pollutants . . . chlorine, iron, copper, nickel, aluminum, boron, chlorinated organic compounds, suspended solids, brominated compounds, and nonoxidizing biocides. Although the pollutants present in cooling water-related wastewaters are often at low concentrations, the overall pollutant mass discharge may be significant due to the large flow rates of cooling water discharges at steam electric power plants.<sup>98</sup>

Given the large flow rate of discharges from Johnsonville Outfall 003 and the possibility that overall pollutant mass discharge could be significant, TDEC should set effluent limits and monitoring requirements in the draft NPDES permit for Johnsonville Outfall 003.

However, TVA claimed that “no pollutants other than heat are added to the cooling water flow” and requested that TDEC remove pH monitoring requirements at Outfall 003.<sup>99</sup> TVA claimed that further monitoring Outfall 003 was unnecessary and “very burdensome” because effluent from Outfall 003 is “raw river water.” If Outfall 003 effluent, as TVA contends, is “raw river water,” then Outfall 003 effluent data indicates alarmingly high levels of pollutants in the Tennessee River.

Accordingly, TDEC should either reject TVA’s assertion that Outfall 003 effluent is “raw river water” and require pH testing (often administered with chlorine tests) as well as effluent limits and monitoring for CCW pollutants mentioned above, or accept TVA’s assertion and immediately calculate and place water quality-based effluent limits in the Johnsonville NPDES permit at all outfalls to prevent further degradation of the Tennessee River.

No matter the source of the pollutants, effluent from Outfall 003 currently exceeds EPA WQC.<sup>100</sup> For example, manganese (measured at 62 µg/L) is higher than EPA WQC of 50 µg/L for Human Health from Water and Fish Consumption.<sup>101</sup> Similarly, iron (measured at 430 µg/L) exceeds EPA WQC of 300 µg/L for Human Health from Water & Fish Consumption.<sup>102</sup> Arsenic in the effluent from Outfall 003 was measured at 1.9 µg/L which exceeds EPA WQC both for Human Health from Fish Consumption *and* Human Health from Water & Fish Consumption.<sup>103</sup>

In addition, aluminum levels (measured at 710 µg/L) from Outfall 003 exceed the chronic EPA WQC for Aquatic Life of 87 µg/L and approach the acute EPA WQC for Aquatic Life of

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<sup>96</sup> See TVA, Johnsonville NPDES Permit Renewal Application, *supra* note 1.

<sup>97</sup> See Draft Johnsonville NPDES Permit, *supra* note 31 at R-14.

<sup>98</sup> See U.S. EPA, Steam Electric Report, *supra* note 18.

<sup>99</sup> See Draft Johnsonville NPDES Permit, *supra* note 31 at AR-6.

<sup>100</sup> U.S. EPA, National Recommended Water Quality Criteria, *supra* note 29.

<sup>101</sup> See TVA, Johnsonville NPDES Permit Renewal Application, *supra* note 1.

<sup>102</sup> *Id.*

<sup>103</sup> *Id.*

750 µg/L.<sup>104</sup> Although Tennessee has not yet adopted water quality criteria for aluminum, TDEC can look to EPA's currently-recommended national water quality criteria as providing a sound scientific rationale for setting WQBELs protective of Aquatic Life.<sup>105</sup>

#### **d) Thermal Pollution from Outfall 003**

The 38.9° Celsius limit (102° F) in the Johnsonville draft NPDES permit is an unacceptably high limit for river temperature. Tennessee's General Water Quality Criteria forbid water temperatures from exceeding 30.5° Celsius (86.9° F). *See* Rule 1200-04-3-.03(3)(e). The draft permit's proposed effluent temperature of 38.9° C (102° F) at a volume of 1188 million gallons per day (MGD) violates Tennessee's own water quality criteria, and poses risks to aquatic life, specifically fish eggs and larvae.

Based on biological studies conducted in 1973-1975, the Johnsonville Fossil Plant was granted a CWA §316(a) thermal variance. However, on June 30, 2009, EPA objected to TDEC's continued use of a thermal variance based on studies more than thirty years old, stating: "The CWA 316(a) Demonstration lacks detail, and in its current form is not likely to generate information sufficient to support a Section 316(a) variance determination for the next permit cycle."<sup>106</sup>

Yet TDEC has not altered the Johnsonville draft permit despite EPA's objection or undertaken further study to justify a continuance of the CWA 316(a) thermal variance. In fact, the Johnsonville draft permit appears to extend the variance to the next permit cycle:

Within 60 days of the permit effective date, the permittee shall prepare and submit for review by the division a study plan which outlines how the permittee will conduct assessments that will generate information sufficient to support a determination of whether the Johnsonville Plant's alternative thermal limit under Section 316(a) can be continued in its next NPDES permit. The proposed study plan shall be designed to supplement information previously provided by the permittee. The permittee shall implement provisions of the plan within 60 days of its approval by the Division.<sup>107</sup>

This appears to be inconsistent with EPA's statements to TDEC regarding the need for new biological studies to justify the continuation of a 316(a) thermal variance in the draft permit for Johnsonville Fossil Plant. Specifically, EPA stated:

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<sup>104</sup> *Id.*

<sup>105</sup> *See* discussion, *supra* part II.

<sup>106</sup> Letter from James Giattina, EPA Region IV, Director, Water Protection Division, to Paul E. Davis, TDEC, Director, Division of Water Pollution Control, Subject: Draft Permit Review, Tennessee Valley Authority (TVA) Johnsonville Fossil Power Plant, NPDES Permit No. TN 0005444 (June 30, 2009).

<sup>107</sup> *See* Draft Johnsonville NPDES Permit, *supra* note 31 at 26.

After examining the record of prior 316(a) variance determinations for the Johnsonville Plant, EPA has concerns regarding the need for a more thorough examination and definition of the Balanced Indigenous Population (“BIP”), the identification of Representative Important Species (“RISs”), and a closer examination of whether the variance is protective. Given the thinness of the available record for prior variance determinations, EPA believes a more focused study is needed.<sup>108</sup>

Although TDEC had six months after EPA’s objection in which to require TVA to provide a rationale for the continuation of a thermal variance before issuing a new draft NPDES permit, TDEC left the Johnsonville Fossil Plant permit terms unchanged. TDEC’s draft permit asserts that “Because on [sic] (Note this must be a typo and presumably should be read as “no”) significant changes have been made since that time this determination continues to support that the condenser cooling water intake structure reflects the best technology available therefore, no changes to the intake or additional biological studies are proposed at this time.”<sup>109</sup>

Commenters object to TDEC’s proposal to allow the Johnsonville plant to delay completing the study EPA requested for several years. Commenters do not believe that the draft permit contains sufficient information to support continuation of the 316 (a) thermal variance. TVA should immediately be required to propose the specifics of a study as outlined in EPA’s letter of June 30, 2009, and to provide documentation for the continuation of a variance *before* TDEC issues the final NPDES permit for Johnsonville Fossil Plant. It does not appear that TDEC addressed EPA’s concerns regarding the need for protective standards and a more thorough examination and definition for a BIP study and RISs.

Continuation of this dangerously high thermal variance, over EPA objection and based on information over thirty years old, is not justified. As TDEC is aware, “data in TVA’s own environmental studies and environmental reports, as well as scientific literature, show that the health of the Tennessee River ecosystem is severely damaged, fragile, and quite vulnerable to the impacts from the large quantities of thermal and chemical discharge from a growing number of energy and industrial facilities.”<sup>110</sup> TDEC should withhold renewal of the Johnsonville thermal variance until a new detailed and EPA-approved thermal variance study is complete, and should, at a minimum, create a permit term obligating TDEC to re-open the permit to reassess thermal limits at Johnsonville should new information regarding thermal discharges become available during the upcoming permit term.

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<sup>108</sup> See Letter from James Giattina, U.S. Environmental Protection Agency Region IV, *supra* note 106.

<sup>109</sup> See Draft Johnsonville NPDES Permit, *supra* note 31 at R-15.

<sup>110</sup> See Comments by Blue Ridge Environmental Defense League, Sierra Club, Southern Alliance for Clean Energy, Tennessee Environmental Council, and We the People submitted to TDEC regarding the draft NPDES permit for TVA Watts Bar Nuclear Power Plant, Unit 1 (Jan. 11, 2010).

### 3) Outfall 005 (Metal Cleaning Wastes)

Johnsonville Fossil Plant reports “No Discharge” for most months from Outfall 005 (Metal Cleaning Wastes), but when Johnsonville Fossil Plant has discharged from Outfall 005, it has violated NPDES permit effluent limits.<sup>111</sup> Since metal cleaning wastes are generated infrequently, they can often contain high pollutant concentrations.<sup>112</sup> TDEC should address TVA’s violation of permit effluent limits at Outfall 005 using its enforcement authority under the CWA,<sup>113</sup> and should explain in the draft NPDES permit rationale what measures TVA is taking to correct these permit violations and ensure they do not occur again during the upcoming permit term.

Effluent from the Metal Cleaning Pond is pumped to the Active Ash Disposal area at Johnsonville. If pumping occurs more frequently than Johnsonville’s discharge monitoring reports suggest, TDEC must also ensure that all discharges, no matter how infrequent, are accurately monitored and reported to TDEC.

In addition, TDEC has failed to include some BPT effluent limitations in the Outfall 005:

<b>Current Effluent Guidelines and Standards for the Steam Electric Power Generating Point Source Category – Metal Cleaning Wastes<sup>114</sup></b>		
<b>Pollutant</b>	<b>Maximum for any 1 day (mg/L)</b>	<b>Average of daily values for 30 consecutive days shall not exceed (mg/L)</b>
Total Suspended Solids (TSS)	100.0	30.0
Oil and grease	20.0	15.0
Copper, total	1.0	1.0
Iron, total	1.0	1.0

TDEC should require TVA to monitor for TSS and oil and grease in addition to flow, pH, total copper, and total iron. TDEC claims that it does not have to impose TSS and Oil & Grease limits at Outfall 005 because, “limits specified at Outfall 001 for TSS and Oil & Grease are more stringent than those specified in §423.12(b)(5) and will therefore assure compliance with these regulations.” However, TVA must demonstrate compliance with CWA Metal Cleaning Waste regulations at the Metal Cleaning Wastes outfall (Outfall 005), not Outfall 001.

#### IV. Miscellaneous Comments

Commenters have several additional concerns, as follows:

- TDEC should clearly define the geographic boundaries of the mixing zone, if any, applicable to the discharges authorized pursuant to this permit. The 25% stream

<sup>111</sup> See e.g., TVA Johnsonville Fossil Plant, Outfall 005, DMR (April 2008) (violating permit limits for iron).

<sup>112</sup> See, U.S. EPA, Steam Electric Report, *supra* note 18 at 3-21.

<sup>113</sup> 33 U.S.C. § 1319.

<sup>114</sup> 40 C.F.R. §423.12(b)(5) and §423.13(e).

allocation and the mass balance equation that TDEC has used in this draft permit appear to assume the existence of a mixing zone. Without a clear description of the boundaries of the mixing zone, it is difficult to determine precisely where full compliance with WQC is required. TDEC should provide a reasoned justification for this mixing zone.

- TDEC should explain why it is using a very simplified mass balance equation on page R-6 rather than a more precise CORMIX (or equivalent) model given that the Johnsonville Fossil Plant discharges very significant amounts of CCW pollutants.
- The addition of CCW leachate to the Active Ash Disposal Area may decrease the free volume in the area and affect TVA's ability to maintain the Ash Pond Free Volume levels required by its NPDES permit. Since Stantec Engineering firm recently recommended complete closure of the active ash disposal area, TDEC should require TVA to certify annually, *based on annual tests*, that the ash pond free volume meets permit requirements and reflects current CCW disposal practices.
- Several commenters have received complaints that TVA sometimes discharges leaking turbine lubrication and seal oil at its fossil plants. At other TVA facilities, this oil is reportedly discharged to the ash pond, and is sometimes pumped back to the cooling water intake, and then discharged without being reported. TDEC should explain how such oil leaks should be handled at the Johnsonville plant, and describe the reporting requirements for such leaks.

**V. Conclusion**

For the foregoing reasons, commenters respectfully request that TDEC revise the draft NPDES permit for Johnsonville Fossil Plant to meet all requirements of the CWA and to protect the Tennessee River by establishing stringent permit effluent limits and increased permit monitoring requirements.

Sincerely,



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