Table of Contents – Chapter V

1.0 Bottom Ash Transport Water

Comment V.1.1	AR-1548, PSNH, pp. 177-181

Comment: Much has changed on this regulatory front since EPA issued its 2011 and 2014 Draft Permits. In 2015, the agency issued NELGs establishing uniform, technology-based standards for the steam electric power generating industry.[697] The 2015 NELGs effectively eliminate any BPJ authority the agency may have possessed in this regulatory setting. And, just recently, EPA issued a final rule stating its intent to reconsider certain effluent limitations set out in the 2015 NELGs for the BATW and FGD wastewater streams.[698]

EPA correctly notes in its Statement that it "does not have the discretion to not apply the ELGs" to the final NPDES permit for Merrimack Station.[699] Stated differently, EPA must apply the ELGs to the final permit. PSNH agrees. Set out below is an overview of the latest events pertaining to the 2015 NELGs that impact when and how the BATW and FGD wastewater streams at Merrimack Station should be regulated in the new final NPDES permit for the facility. PSNH then discusses what effluent limitations and other provisions should be included in the Final Permit for the facility for the regulation of the FGD and BATW waste streams. PSNH concludes its comments on this part of the Statement by explaining the myriad reasons why it is arbitrary and capricious for EPA to regulate NCMCWs in the manner proposed in the Statement and in the agency's 2011 Fact Sheet for the Draft Permit.

The Statement's chronology of events since EPA promulgated the ELGs on November 3, 2015, is generally accurate. PSNH limits its discussion to the developments that have occurred since EPA issued its Statement for public notice and comment on August 2, 2017, because these events and actions by the agency dictate the regulation of FGD and BATW in the Final Permit for Merrimack Station.

On June 6, 2017, EPA issued a proposed rule entitled "Postponement of Certain Compliance Dates for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Source Category."[700] In it, EPA proposed for public notice and comment the

stay of the compliance dates for the BAT limitations and PSES for the following wastewater streams: fly ash transport water, bottom ash transport water, flue gas desulfurization wastewater, flue gas mercury control wastewater, and gasification wastewater.[701] This rulemaking was initiated by the agency to buttress its April 25, 2017 Administrative Procedure Act ("APA") § 705 administrative stay of the same compliance deadlines, a temporary measure meant to preserve the status quo that would only remain in effect "pending judicial review" (*i.e.*, only so long as the Fifth Circuit litigation challenging aspects of the final NELGs remained a viable case and controversy).

EPA published its final version of the June 6, 2017 proposed rule in the Federal Register on September 18, 2017.[702] In it, EPA announced its intention "to conduct further rulemaking to potentially revise the new, more stringent BAT limitations and PSES in the 2015 Rule applicable to two wastestreams[:] FGD wastewater and bottom ash transport water[.]"[703] "[T]o preserve the status quo for FGD wastewater and bottom ash transport water until EPA completes its next rulemaking concerning those wastestreams," EPA postponed the earliest compliance dates for the BAT effluent limitations and PSES for these wastewater streams for a period of two years (*i.e.*, moved the earliest compliance date from November 1, 2018 to November 1, 2020).[704] EPA also withdrew its APA § 705 administrative stay of all of the compliance dates that had not yet passed, explaining "there is no longer any need for the Agency to maintain its prior action," given it was a temporary measure to provide EPA time to reconsider the NELGs rulemaking—and that reconsideration process is now complete.[705]

EPA postponed the earliest BAT and PSES compliance date for BATW and FGD wastewater to November 1, 2020, because the agency intends to initiate a new rulemaking to potentially revise the effluent limitations for these wastewater streams and "projects it will take approximately three years to propose and finalize a new rule (Fall 2020)."[706] The agency took this interim action in light of "the substantial investments required by the steam electric power industry to comply with the BAT limitations and PSES" for BATW and FGD wastewaters, recognizing "that certainty regarding the limitations and standards deserves prominent consideration by the Agency when these limitations and standards may change."[707] EPA further noted that "[i]f [it] does not complete a new rulemaking by November, 2020, it plans to further postpone the compliance dates such that the earliest compliance date is not prior to completion of a new rulemaking."[708] EPA did not change the "'no later than' date of December 31, 2023, because EPA is not aware that the 2023 date is an immediate driver for expenditures by plants . . . and EPA plans to take up the appropriate compliance period in its next rulemaking."[709]

Nevertheless, it is clear from the text of the September 18, 2017 final rule that EPA does not intend for the steam electric power industry to dedicate additional resources to planning, designing, procuring, and/or installing any retrofit technologies to comply with the effluent limitations set out in the 2015 NELGs for BATW and FGD wastewaters until the agency issues its revised rulemaking in Fall 2020.

Notably, the BAT "legacy wastewater" provisions in the 2015 NELGs are not stayed or otherwise impacted by EPA's latest regulatory actions and therefore remain in full effect. This means EPA continues to be precluded from developing any BPJ-based effluent limitations for

BATW and/or FGD wastewaters and "does not have the discretion to not apply the ELGs," as EPA aptly notes in the Statement.[710] The 2015 NELGs define "legacy wastewater" as "FGD wastewater, fly ash transport water, bottom ash transport water, [flue gas mercury control ("FGMC")] wastewater, and gasification wastewater generated prior to the date established by the permitting authority that is as soon as possible beginning November 1, 2018 [(now November 1, 2020 for BATW and FGD wastewaters)], but no later than December 31, 2023."[711]

The 2015 NELGs specify that these BAT legacy wastewater limits apply until the applicability date set by the permit writer for the waste stream in question to meet the new, more stringent BAT limits set out in the final rule.[712] And, since the applicability dates for the BATW and FGD wastewater streams now may not apply to any dischargers prior to November 1, 2020, the legacy wastewater BAT limits should be included in any final NPDES permits issued prior to EPA's forthcoming rulemaking to consider the BAT effluent limitations associated with these two waste streams.[713]

The 2015 NELGs provide that "the quantity of pollutants discharged in bottom ash transport [legacy] water shall not exceed the quantity determined by multiplying the flow of bottom ash transport water times the concentration for [Total Suspended Solids ("TSS")] listed in" the following table:[714]

	BPT effluent limitations	
Pollutant or pollutant property	**Maximum for any 1 day (mg/l)**	**Average of daily values for 30 consecutive days shall not exceed (mg/l)**
TSS	100.0	30.0

[697] *See* 80 Fed. Reg. at 67,838.
[698] *See* 82 Fed. Reg. at 43,494.
[699] *See, e.g.*, AR-1534 at 54.
[700] *See* 82 Fed. Reg. 26,017.
[701] *Id.*
[702] *See* 82 Fed. Reg. at 43,494.
[703] *Id.* at 43,496.
[704] *Id.* at 43,494-95.
[705] *See id.* at 43,496.
[706] *Id.* at 43,498.
[707] *Id.* at 43,497.
[708] *Id.* at 43,498, n.6.
[709] *Id.* at 43,496.
[710] AR-1534 at 54.
[711] 80 Fed. Reg. at 67,854.
[712] *See id.*
[713] *See* 40 C.F.R. §§ 423.13(g)(1), (k)(1).
[714] *See id.* § 423.13(k)(1)(ii); *id.* at § 423.12(b)(4).

EPA's Response:

Since Merrimack Station submitted its application for a renewal of its NPDES permit in 1997, the regulations governing the Steam Electric Power Generating Point Source Category have changed. EPA will begin by providing some background on the legal developments related to technology-based effluent limitations for the Steam Electric Category over the past several decades. EPA will then briefly summarize limits developed for bottom ash transport water (BATW) at different phases of permit development, and finally identify the current state of the regulations and the application of such regulations to BATW generated at Merrimack Station in the Final Permit.

Legal and Regulatory History

As EPA explained in its 2017 *Statement of Substantial New Questions,* point source discharges of pollutants into waters of the United States are unlawful unless, among other things, the discharges are authorized by an NPDES permit issued under CWA § 402, 33 U.S.C. § 1342. 33 U.S.C. § 1311(a). NPDES permits set effluent limits based on technology-based standards, except that if technology-based limits are insufficiently stringent to satisfy state water quality standards, then water quality-based effluent limits are applied. CWA § 301(b)(1)(C); 33 U.S.C. § 1311(b)(1)(C). To establish technology-based limitations, the CWA authorizes EPA to promulgate effluent limitations guidelines (ELGs) and new source performance standards pursuant to CWA §§ 301, 304, and 306, 33 U.S.C. §§ 1311, 1314, and 1316. In addition, where EPA has not promulgated national technology-based standards, technology-based effluent limits may be developed for individual permits based on a best professional judgment (BPJ), site-specific application of the pertinent technology standard. *See* 33 U.S.C. § 1342(a)(1)(B); 40 CFR. §§ 125.3(a)(2) and (3).

ELGs are established by EPA regulation for categories of industrial dischargers and are based on the degree of control that can be achieved using two increasingly stringent levels of control. In the first level, the Act requires effluent limits based on application of the best practicable control technology currently available (BPT). 33 U.S.C. § 1311(b)(1)(A); *see also* 40 CFR § 125.3(a)(2)(i). In the second level, the statute requires effluent limits for toxic and non-conventional pollutants that reflect the best available technology economically achievable (BAT). 33 U.S.C. §§ 1311(b)(2)(A) and (F); 40 CFR § 125.3(a)(2)(iii) – (v). For conventional pollutants, the Act requires effluent limits based on the best conventional pollutant control technology (BCT). *See* 33 U.S.C. §1311 (b)(2)(E); 40 CFR § 125.3(a)(2)(ii).

EPA first promulgated ELGs for the Steam Electric Power Generating category of point sources in 1974. *See* 40 CFR Part 423. *See also* 39 Fed. Reg. 36186, *as amended at* 40 Fed. Reg. 7095 (February 19, 1975); 40 Fed. Reg. 23987 (June 4, 1975) (previously codified at 40 CFR Part 423). EPA subsequently amended the regulations in 1977 and 1982. *See* 80 Fed. Reg. 67838; 78 Fed. Reg. at 34438-39 (describing the history of EPA's ELG rulemaking actions). Before 2015 EPA had not promulgated ELGs specifically regulating any toxic pollutants discharged by the electric power industry and the Agency was considering updates to the standards to reflect advancements in wastewater treatment processes.

On November 3, 2015, EPA promulgated new ELGs, establishing new BAT limits for several wastestreams, which became effective on January 4, 2016 (the 2015 Steam Electric ELGs). 80 Fed. Reg. 67838 (Nov. 3, 2015). Numerous parties then challenged the new regulations, and these challenges were consolidated in the Fifth Circuit Court of Appeals. *See Southwestern Electric Power Co., et al. v. EPA*, No. 15-60821 (*SWEPCO*).

Later, in early 2017, EPA received petitions for reconsideration of the 2015 Steam Electric ELGs from the Utility Water Action Group (UWAG) and the Small Business Administration Office of Advocacy (SBA).[1] After reviewing the petitions, EPA Administrator E. Scott Pruitt granted these petitions for reconsideration of the 2015 Rule. AR-1366 (EPA Response to UWAG & SBA Petitions – 2015 Steam Electric ELG Final Rule (April 12, 2017)), *available at* https://www.epa.gov/sites/production/files/2017-04/documents/steam-electric-elg_uwag-sbapetition_epa-response_04-12-2017.pdf.

Additionally, EPA issued a postponement of certain compliance deadlines related to the reconsideration (*i.e.,* compliance dates from the 2015 Rule that have not yet passed for certain new, more stringent effluent limitations), pursuant to Section 705 of the Administrative Procedure Act (APA). 5 U.S.C. § 705. *Postponement of Certain Compliance Dates for Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category*, 82 Fed. Reg. 19005 (Apr. 25, 2017), available at https://www.federalregister.gov/documents/2017/04/25/2017-07811/postponement-of-certaincompliance-dates-for-effluent-limitations-guidelines-and-standards-for-the.[2] This postponement was initially challenged by numerous environmental groups. *Climate Action Network v. EPA*, No. 17- 00817 (May 3, 2017).[3]

Then, on August 11, 2017, the Administrator signed a letter announcing his decision to conduct a rulemaking to potentially revise the new, more stringent BAT effluent limitations and pretreatment standards for existing sources in the 2015 rule that apply to flue gas desulfurization (FGD) wastewater and bottom ash transport water (BATW). The Fifth Circuit subsequently granted EPA's request to sever and hold in abeyance aspects of the litigation related to those limitations and standards that would be revised in the forthcoming rulemaking.

In September 2017, the EPA finalized a rule, using notice-and-comment procedures, postponing the earliest compliance dates for the new, more stringent BAT effluent limitations and PSES for FGD wastewater and BATW in the 2015 Rule, from November 1, 2018 to November 1, 2020. *Postponement of Certain Compliance Dates for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category*, 82 Fed. Reg. 43494

[1] *See* UWAG Petition to Reconsider the Final Rule (March 24, 2017); SBA Petition to Reconsider the Final Rule (April 5, 2017), *available at* https://www.epa.gov/eg/steam-electric-power-generatingeffluent-guidelines-petitions-reconsideration.

[2] The compliance deadlines affected are those identified at 40 CFR §§ 423.11(t), 423.13(g)(1)(i), 423.13(h)(1)(i), 423.13(i)(1)(i), 423.13(j)(1)(i), and 423.13(k)(1)(i), and 40 CFR §§ 423.16(e), 423.16(f) 423.16(g) 423.16(h) 423.16(i), originally published at 80 Fed. Reg. 67838 (Nov. 3, 2015). 82 Fed. Reg. 19006.

[3] Upon final promulgation of the Postponement Rule in 2017, this lawsuit was dismissed.

(Sept. 18, 2017). At the same time, EPA also withdrew its prior action taken pursuant to Section 705 of the APA. The final Postponement Rule received multiple legal challenges, but EPA prevailed, and the courts did not sustain any of them. *See Center for Biological Diversity v. EPA,* No. 18-cv-00050 (D. Ariz. filed Jan. 20, 2018); *see also Clean Water Action. v. EPA*, No. 18-60079 (5th Cir.).

The *SWEPCO* litigation related to provisions of the 2015 Rule that were not subject to the Administrator's reconsideration and were not held in abeyance. The claims that remained active were challenges to the limitations applicable to legacy wastewater and combustion residual leachate (CRL). With respect to these claims, the Fifth Circuit, on April 12, 2019, issued a decision vacating those limitations as arbitrary and capricious under the APA and unlawful under the CWA, respectively. *SWEPCO*, 920 F.3d 999 (5th Cir. 2019). The Court's vacatur and remand impact the regulations applicable to BATW and CRL, which will be discussed in more detail below.

EPA published a proposed regulation to revise the ELGs applicable to FGD wastewater and BATW on November 22, 2019. *Proposed Rule, Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category*, 84 Fed. Reg. 64620 (Nov. 22, 2019) ("2019 Proposed Rule"). The 2019 Proposed Rule revises the BAT limits established for FGD wastewater and BATW; however, it does not address the Fifth Circuit's April 2019 ruling. The Agency stated that it "plans to address this vacatur in a subsequent action." 84 Fed. Reg. at 64625. The public comment period for the 2019 Proposed Rule ended on January 21, 2020, and the Agency is currently reviewing and considering comments received.

Bottom Ash Transport Water (BATW) Limits

The abovementioned regulatory history has affected the manner by which BATW is treated and regulated under the Clean Water Act and within the NPDES permitting program. The following discussion summarizes the regulations and law forming the basis of EPA's permit limits for BATW at each stage of permit development for the renewal of Merrimack Station's NPDES permit.

2011 Draft Permit

In 2011, EPA issued the first Draft Permit for Merrimack Station, and included limits for TSS and oil and grease (O&G) in BATW generated at the facility. These limits were based primarily on the 1982 ELGs, which were the most current version of the ELGs at that time. *See* 40 CFR § 423.12(b)(4). In the 2011 draft permit, EPA Region 1 established BCT limits for TSS and O&G in BATW based on a site-specific, BPJ application of the BCT standard, since they are conventional pollutants and the 1982 rule expressly reserved BCT for future development. 2011 Fact Sheet (AR-608), p. 22; *see also* 47 Fed. Reg. at 52293, 52296-97; *see also* 40 CFR § 423.14. EPA determined that BCT limits would be equal to the BPT limits for those pollutants and would apply at Outfall 003A. *Id.*; *see also* 2017 Statement (AR-1534), pp. 54-55.

2014 Revised Draft Permit

In 2014, EPA opened the public comment period and issued a Revised Draft Permit due to new information indicating that Merrimack Station had installed and was operating evaporation technology to treat its FGD wastewater. Because the regulations remained the same and no new information related to BATW, the effluent limits for BATW at Outfall 003A remained the same for TSS and O&G, based on 40 C.F.R. § 423.12(b)(3) and (4), as those included in the 2011 Draft Permit.

2017 Statement

In 2017, following promulgation of the 2015 Rule, EPA Region 1 reopened the public comment period to accept comment on a number of issues including the applicability and effect of the new ELGs. EPA's 2017 *Statement of Substantial New Questions for Public Comment* (AR-1534) outlined the new BAT limits established for BATW:

> The first (or interim) set of limits place numeric effluent limitations on TSS in bottom ash transport water equal to the TSS limitations in the previous BPT regulations. 80 Fed. Reg. 67837, 67841; 40 C.F.R. §§ 423.13(k)(1)(ii), 423.12(b)(4). These interim BAT limitations apply to any discharge of bottom ash transport water that occurs prior to the final compliance deadline determined by the permitting authority (see discussion of compliance dates below). The second (or final) set of limits applies after the final compliance date that has been set by the permitting authority. 40 C.F.R. § 423.13(k)(1)(i).
> . . .
> The final set of BAT limitations are based on a determination that dry-handling or closed-loop technology is the BAT for treating bottom ash transport water, resulting in a zero discharge effluent limitation for all pollutants in bottom ash transport water. 80 Fed. Reg. 67837, 67841, 67846, 67849 (promulgated at 40 C.F.R. 423.13(k)(1)(i)). The zero discharge limitation must be met by a compliance date determined by the permitting authority that is as soon as possible between November 1, 2018, and December 31, 2023, and applies only to bottom ash discharges generated beginning on the determined compliance date.

2017 Statement, pp. 56-57. The "interim" limits apply to BATW generated prior to the compliance date, also called "legacy wastewater." 84 Fed. Reg. at 67854 ("[T]his preamble uses the term ''legacy wastewater'' to refer to . . . bottom ash transport water . . . generated prior to the date determined by the permitting authority that is as soon as possible . . .."). And, the final or "long-term" limits apply to BATW generated after the compliance date. As mentioned above, EPA has since promulgated a rule that postponed the earliest compliance date, or the "as soon as possible" date, from November 1, 2018 to November 1, 2020. 82 Fed. Reg. 43494. The rule also continues to provide that the compliance date may be no later than December 31, 2023.

In 2017, EPA Region 1 anticipated applying limitations for BATW and legacy BATW consistent with the 2015 ELGs. Specifically, EPA proposed applying the ELG-based TSS and O&G limits

for legacy BATW[4] and then zero-discharge long-term limits for BATW as soon as possible beginning at the earliest compliance date. EPA further stated that it was considering establishing a compliance date of December 31, 2022 or later, based upon information received from the facility and its preliminary analysis of the factors set forth in 40 CFR § 423.11(t). 2017 Statement (AR-1534), pp. 56-61.

2020 Final Permit

As stated above, there have been legal developments since EPA last reopened its public comment period in 2017, which impact the limits applied to BATW in Merrimack Station's Final Permit. In particular, in *SWEPCO*, the Fifth Circuit vacated and remanded to the Agency the BAT limits applicable to legacy BATW, previously codified as 40 CFR § 423.13(k)(1)(ii). *SWEPCO*, 920 F.3d at 1004, 1019. As a result, there is a question as to whether the regulations prior to 2015 required no additional controls on BATW beyond the BPT level of control or whether BATW limits are subject to BPJ decision-making.

The 2015 ELGs' long-term, or final BAT limits applicable to BATW, however, were not affected by the Fifth Circuit's ruling. Therefore, BAT zero-discharge limits will be applied in accordance with the currently effective 2015 ELGs. *See* 40 CFR § 423.13(k)(i). EPA has determined that the appropriate compliance date or "as soon as possible" date, at which time these zero-discharge limits will be required, is December 31, 2023, based on material in the administrative record and assessment of the required factors set forth in 40 CFR § 423.11(t). For EPA's full evaluation of the regulatory factors supporting this determination, see Response to Comment V.1.3 below.

As for the vacated legacy BATW limits, EPA's Final Permit includes limitations for TSS and O&G in legacy BATW. These interim limits, which apply only prior to the compliance date for the long-term limits, December 31, 2023, are consistent with ELGs currently in effect and are equal to limits proposed in previous drafts of the Merrimack Station permit, prior to promulgation of the 2015 ELGs, as well as the limits proposed in the 2017 public notice period.[5]

While EPA Region 1 notes that the question arises as to whether the regulations prior to 2015 required no additional controls on BATW beyond the BPT level of control or whether BATW limits are subject to BPJ decision-making, the Region need not answer this question. The limits included in the Final Permit are both consistent with ELGs currently in effect and would also be consistent with a BPJ determination of BAT limits, if the Agency conducted such BPJ analysis.

In fact, an assessment of the factors required for conducting a case-by-case BPJ analysis for legacy BATW would result in the same TSS and O&G limits based on a determination that BAT is equal to the facility's current practices (i.e., treatment of BATW based on impoundments). *See*

[4] The 2015 ELG-based TSS limits for legacy BATW are equal to the existing BPT limits on TSS, from the 1982 Rule. *Compare* 40 CFR § 423.12(b)(4) *with* 40 CFR § 423.13(k)(1)(ii).

[5] The limits on TSS and O&G include in this Final Permit are also equal to the BCT limits developed pursuant to a site-specific, BPJ assessment and presented in the Region's 2011 Draft Permit and Fact Sheet. 2011 Fact Sheet (AR-608), p. 22.

33 U.S.C. § 1314(b)(2)(B) ("Factors relating to the assessment of best available technology shall take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate"); 40 CFR §§ 125.3(c)(2) and 125.3(d)(3).

Specifically, the Merrimack Station's facility and equipment for treating BATW were installed over four decades ago. 2011 Fact Sheet, p. 4. In order to meet the long-term, zero-discharge limits for BATW by December 31, 2023, GSP will be constructing new infrastructure and implementing many upgrades. AR-1699. The potential treatment technologies applicable to BATW to meet the zero-discharge limits are dry handling and closed-loop technology. Requiring process changes, additional treatment technology, and associated upgrades to address legacy BATW during the temporary period in which *legacy* wastewater is generated could conflict with and hinder these efforts to achieve zero-discharge. Imposing costs associated with implementing anything other than maintaining the status quo for the relatively brief interim period ending in December 2023, would be unreasonable. In this case, it would be unreasonable to require the Permittee to design, construct and install a technology to be used temporarily (i.e., less than three years) while at the same time designing, constructing and installing the closed-looped technology that has been proposed by the Permittee to meet ELG limits by 2023, which could cost up to 14.9 million dollars, as documented by EPRI (AR-1600, p 3). *See* Comment V.1.4 below.

Moreover, requiring additional treatment to address legacy BATW would create challenges and potential conflicts with management and treatment of other wastestreams at the facility since BATW is commingled with low volume waste, metal cleaning waste, and other wastestreams in the slag settling pond. The former owner of Merrimack Station, PSNH, explored viable options and developed a compliance plan involving the modification to a closed-loop recycle system that utilizes a remotely located inclined drag conveyor (or submerged flight conveyor) to separate the boiler's bottom slag solids from the recycled sluice water. Given the complexity and magnitude of the plan, PSNH could not commit to complying with the "no discharge" based limitations any earlier than December 31, 2022, nearly six years from the time the plan was presented to EPA. AR-1699. Other factors considered by PSNH include potential contingencies, intermittent operation of the plant, likely transition time needed by the new owners, as well as other uncertainties described by PSNH. *Id*. Further, PSNH explains that "an overwhelming majority of process wastewater effluent generated at the facility is BATW…" which a considerable volume is "currently recycled elsewhere in the plant. Removing this wastewater stream from Merrimack Station therefore will significantly disrupt current operations. One or more sources of makeup water may need to be utilized to replace the BATW currently recycled elsewhere in the plant." *Id.*, p 7. This process is involved and complex. EPA concludes that requiring the facility to do more work and expend additional resources to achieve competing, temporary, and incremental treatment improvements, at the same time as it is coordinating and executing the work described above, is not reasonable or appropriate.

Finally, the situation facing Merrimack Station is particularly unique due to the two-stage nature of the regulations, the facility's efforts to achieve zero-discharge in the near term, the absence of

only the interim, legacy ELG limits for BATW, and the Agency's forthcoming action to address the vacated legacy BATW provision. *See* 2019 Proposed Rule, 84 Fed. Reg. at 64625 ("The EPA plans to address this vacatur in a subsequent action.").[6]

The limits applied to BATW in the Final Permit are as follows:

- From the effective date of the Final Permit until December 31, 2023 (Outfall 003A):
  - TSS limits (Daily Maximum: 100 mg/l; Monthly average: 30 mg/l) and O&G limits (Daily Maximum: 20 mg/l; Monthly Average: 15 mg/l)
- Beginning on December 31, 2023 (Outfall 003A):
  - Zero discharge limits based on closed-loop or dry handling technology (40 CFR § 423.13(k)(1)(i)).

Comment V.1.2	**AR-1548, PSNH, pp. 186-188**

Comment: EPA correctly concludes in its Statement that it "will apply the [BATW] technology based requirements that are in effect at the time of Final Permit issuance. . . . [and] anticipates including the interim BAT limits for TSS in the Final Permit for Merrimack Station's [BATW] discharges."[730] The agency should include the "legacy wastewater" BAT limits for TSS in the Final Permit for the facility due to the regulatory uncertainty with the more stringent BAT standards set out in EPA's 2015 NELGs. As explained in EPA's September 18, 2017 final rule, the agency intends to revise these more stringent BAT limitations from the 2015 Rule in a rulemaking it intends to complete within the next three years (Fall 2020).[731] EPA postponed the earliest possible compliance date of November 1, 2018, to November 1, 2020, "to preserve the status quo for . . . bottom ash transport water until EPA completes its next rulemaking.[]"[732] EPA explicitly provided in this latest rulemaking it did not change the "'no later than' date of December 31, 2023, because EPA is not aware that the 2023 date is an immediate driver for expenditures by plants . . . and EPA plans to take up the appropriate compliance period in its next rulemaking."[733] The only reasonable interpretation of these collective statements is that EPA does not intend for the steam electric power industry to dedicate additional resources to attempt to comply with the more stringent effluent limitations set out in the 2015 NELGs for BATW at this time or for the BATW "dry handling" BAT effluent limitations to be included in any NPDES permits issued prior to completion of EPA's revised rulemaking.[734] Instead, regulated entities should wait to design, procure, and install whatever appropriate BATW retrofit technologies are necessary once the agency issues its revised rulemaking. Furthermore, permit writers should include only the "legacy wastewater" TSS BAT effluent limitations for BATW set out in the 2015 NELGs in any permits issued prior to EPA's promulgation of its new final rule.[735]

[6] Even if EPA determined that the current or previous ELGs were inapplicable, EPA would exercise its discretion and decline to do a site-specific BPJ analysis to establish BAT limits for legacy BATW at this time. It is appropriate to await a national response to the Fifth Circuit's remand and vacatur before imposing any more stringent requirements in this Permit. EPA notes that the Ninth Circuit has previously upheld EPA's decision not to impose BPJ limits in the case of an anticipated promulgation of a national guideline. *Nat. Res. Def. Council v. EPA*, 863 F.2d 1420, 1424-25 (9th Cir. 1988). EPA would like to have this permit conform to national standards, which are developed using industry-wide cost, availability, and other data.

728 *See* 40 C.F.R. § 423.13(g)(3)(ii).
729 *See* 40 C.F.R. § 423.13(g)(3)(i).
730 AR-1534 at 61.
731 82 Fed. Reg. at 43,498.
732 *Id.* at 43,494-95.
733 *Id.* at 43,496.
734 To the extent EPA believes, based on the current state of the 2015 NELGs, that a justification is required because PSNH seeks a compliance date beyond November 1, 2020 (*i.e.*, the earliest "as soon as possible" date), for the incorporation of the more stringent BATW BAT effluent limitations in the 2015 rulemaking despite EPA's stated intent to overhaul these standards in the foreseeable future, the discussions and points set out in PSNH's February 17, 2017 correspondence to EPA (AR-1378) explain why the Station should be permitted until December 31, 2023 to comply with those effluent limitations. PSNH's February 17, 2017 letter requested a December 31, 2022 deadline to comply with these discharge standards based on the criteria set out in 40 C.F.R. § 423.11(t). However, as explained in April 20, 2017 correspondence, PSNH has suspended work on this compliance initiative due to EPA's decision to reconsider the rulemaking and no additional work will occur on this issue until EPA finalizes its anticipated rulemaking. *See* AR-1362. This lengthy hiatus in PSNH's work was not contemplated in its projected December 31, 2022 compliance schedule and the disruption will result in the need for an additional year (if not longer) if it is ultimately required to comply with the "dry handling" BATW effluent limitations.
One of the issues with the "dry handling" BAT determination in EPA's 2015 ELGs is the disparate costs associated with the technologies capable of eliminating the wastewater discharge compared to the toxic-weighted pound-equivalents removed from the wastewater stream. This issue is particularly relevant to Merrimack Station due to its wet bottom cyclone-fired boilers that produce slag as an end product. Slag, a stable, inert, glass-like solid compound, is created when the molten ash leaving the boiler is quenched in a tank. The associated wastewater contains few pollutants of concern compared to the sluice wastewater utilized in systems with the typical bottom ash targeted in the 2015 NELGs, which means the already disproportionate cost-benefit ratio for the industry as a whole is even worse for the slag wastewater generated at Merrimack Station. Comments will likely be submitted on this issue during the public comment period for EPA's reconsideration of the FGD and BATW effluent limitations to encourage the agency to either exempt wastewater associated with boilers that produce slag from the new BAT effluent limitation or establish a separate BAT standard for such facilities that accounts for the few pollutants of concern in the associated wastewater. Should EPA fail to address this issue, a fundamentally different factors variance (*see* 40 C.F.R. Part 125, Subpart D) for Merrimack Station will likely be sought at the appropriate time due to these unique issues.
735 Although, EPA could again consider use of a "reopener clause" in the Final Permit for Merrimack Station for this BATW regulatory issue to provide it flexibility to modify the Final Permit to address and/or incorporate the requirements of the rulemaking EPA intends to finalize in 2020.

EPA's Response:

See EPA Response V.1 above for a discussion of the regulatory history and the limits applicable to BATW.

EPA additionally notes that while it recognizes that the Steam Electric ELGs are undergoing revisions (*see* 84 Fed. Reg. 64620), the final or long-term limits applicable to BATW (40 CFR § 423.13(k)(1)(i)) are currently in effect. As EPA has consistently stated, EPA must develop permits based on current regulations. *See* 40 CFR § 122.43(b)(1) ("an applicable requirement is a statutory or regulatory requirement (including any interim final regulation) which takes effect prior to the issuance of the permit."); *see also* 2017 Statement (AR-1534), pp. 48, 58, 61. In this case, the current regulations from 2015 require zero-discharge by the compliance date, beginning November 1, 2020 and no later than December 31, 2023. If the limits applicable to BATW

change as a result of the ongoing rulemaking action, the permittee may request a permit modification in accordance with 40 CFR § § 122.62.

Comment V.1.3	**AR-1573, CLF, pp. 21-25**

Comment: ***EPA Must Impose a Compliance Date of November 1, 2020 for Elimination of Bottom Ash Transport Water Discharges at Merrimack Station***

Merrimack Station also discharges bottom ash transport water, which the ELGs require to be eliminated as soon as possible beginning November 1, 2020 and no later than December 31, 2023.[8] The compliance date for any particular facility is to be determined by the permitting authority. As Region 1 correctly explains, the 2015 Rule set out the basic procedure for permitting authorities in determining that compliance date.

First, the presumptive compliance date (or "as soon as possible" date) is November 1, 2018. Next, the permitting authority may determine a later compliance date, but no later than December 31, 2023, and only if it receives information from the discharger justifying the later date. Finally, after receipt of such justification, the permitting authority may set a compliance date later than the presumptive date only after considering the factors set forth above.[9] The factors that a permitting authority is required to consider include:

(a) Time to expeditiously plan (including to raise capital), design, procure, and install equipment to comply with the requirements of the final rule; (b) Changes being made or planned at the plant in response to greenhouse gas regulations for new or existing fossil fuel-fired power plants under the Clean Air Act, as well as regulations for the disposal of coal combustion residuals under subtitle D of the Resource Conservation and Recovery Act; (c) For FGD wastewater requirements only, an initial commissioning period to optimize the installed equipment; and (d) Other factors as appropriate.[10]

EPA seeks comment on the deadline for Merrimack Station to comply with the bottom ash ELG and notes that the current owner and operator of the plant, Eversource, has proposed a compliance date of December 31, 2022. Critically, Eversource's justification for this deadline, contained in a February 17, 2017 letter (AR-1378), is withheld from the public administrative record in this matter as confidential business information.[11]

EPA does not propose a particular compliance deadline nor provide any reasoning as to why any particular compliance date is appropriate, other than to indicate, noncommittally, that "EPA was considering th[e] information [submitted by Eversource] and was contemplating whether to set December 31, 2022, as the final compliance date, taking into account the listed factors."[12]

Eversource's proposed December 31, 2022 compliance date should be rejected by EPA. First, it is more than two full years after the presumptive "as soon as possible" date in the current regulations (and more than four years after the presumptive "as soon as possible" date at the time

that Eversource submitted the information). EPA has cited no reason that Eversource cannot comply by November 1, 2020, much less a justification that stands up to scrutiny. EPA must make an independent determination as to the appropriate compliance date based on an examination of the validity of the information submitted by the permittee and exercising its own judgment.

Even more fundamentally, EPA cannot make a bottom ash compliance date determination based on information withheld from the public. EPA's approach to Eversource's proprietary submission regarding the status of its secondary wastewater treatment system for FGD wastewater was to provide a redacted version in the administrative record, which allows for public review to the greatest extent possible. However, EPA has made no similar attempt to summarize or redact Eversource's justification regarding the bottom ash compliance date justification. The undersigned organizations have collectively reviewed dozens of NPDES permit applications concerning the appropriate ELG compliance dates for various facilities and have never encountered a justification submitted by a permittee being withheld from the public as confidential business information. EPA cannot base a decision on the bottom ash compliance date for Merrimack without any rationale and without publicly disclosing the basis for its decision. As a legal matter, on the present record there is no basis to impose any compliance deadline other than November 1, 2020.

Moreover, there is compelling evidence that Eversource can, in fact, comply by November 1, 2020. As shown in the table below, in 24 other NPDES permit renewals, permitting authorities have proposed or finalized earlier compliance deadlines for bottom ash limits, demonstrating that it is, as a general matter, feasible for plants to achieve earlier compliance.[13]

State	Facility	Permit Number	Status	Date	Bottom Ash Compliance Date
FL	Crystal River North Station Units 4 & 5	FL0036366	Draft	8/26/2016	2/1/2020
IA	George Neal	IA0004103	Draft	10/5/2017	121/1/2020
IA	Ottumwa Generating Station (IP&L)	IA9000101	Draft	9/27/2017	6/1/2021
IA	IPL Lansing Generating Station	IA0300100	Final	6/1/2016	12/31/2021
IL	Hennepin Power Station	IL0001554	Draft	11/9/2016	4/1/2019
IN	A.B. Brown Generating Station	IN0052191	Final	2/28/2017	11/1/2018
IN	Clifty Creek Station	IN0001759	Final	3/28/2017	4/1/2022
IN	Merom Generating Station	IN0050296	Final	8/5/2016	11/1/2018
IN	Michigan City Generating Station	IN0000116	Final	3/30/2016	11/1/2018
IN	Petersburg Generating Station	IN0002887	Final	8/25/2016	11/1/2018
IN	F.B. Culley Generating Station	IN0002259	Draft	1/12/2017	11/1/2018
MI	Belle River Power Plant	MI0038172	Final	1/27/2017	12/31/2021
MO	Sioux	MO0000353	Final	4/1/2017	5/1/2021
NC	Allen Steam Station	NC0004979	Draft	10/28/2016	2/28/2021
NC	Belews Creek Steam Station	NC0024406	Draft	1/15/2017	5/31/2021
NC	Marshall Steam Station	NC0004987	Final	9/9/2016	1/31/2021
NC	Mayo Steam Electric Generating Plant	NC0038377	Draft	8/25/2016	11/1/2018
NC	Rogers Energy Complex (aka Cliffside)	NC0005088	Draft	9/21/2016	12/31/2020
NC	Roxboro Steam Electric Generating Plant	NC0003425	Draft	1/21/2017	4/30/2021
ND	Leland Olds Station	ND-0025232	Final	3/31/2017	11/1/2018
PA	Brunner Island	PA0008281	Draft	4/5/2017	1/1/2022
SC	A.M. Williams Station	SC0003883	Final	11/16/2016	11/1/2018
VA	Chesterfield Power Station	VA0004146	Final	9/23/2016	11/1/2018
WI	Alma Site	WI0040223-08-0	Final	4/1/2017	1/1/2021

In addition, the Statement of Substantial New Questions reveals that Eversource already recycles wastewater from the slag settling pond, which primarily consists of bottom ash transport water, as make-up water in the Facility's FGD scrubber.[14] Because the 2015 Steam Electric ELGs allows for the discharge of bottom ash transport water when it is used in an FGD scrubber,[15] Eversource could potentially capture bottom ash transport water before it is sent to the slag settling pond and use it as FGD makeup water. This potentially provides a pathway for earlier compliance with the bottom ash ELGs compared to installation of a dry or closed-loop handling system for bottom ash. This change in operation could affect the characteristics of the FGD

wastewater and, in turn, the need for water-quality based effluent limits on that wastewater, as noted above.

EPA's Statement of Substantial New Questions also reveals that in a letter dated April 20, 2017, Eversource "indicated to EPA that it will hold off on pursuing that plan [to comply by December 2022] in light of the postponement of the compliance deadline" and that it "plans to wait for the results of EPA's reconsideration of the ELGs before deciding on how to proceed."[16] That letter refers to the April 12, 2017 announcement by Administrator Pruitt that he would administratively stay the deadlines for an indefinite period of time,[17] which EPA has now withdrawn and replaced with a two-year postponement of the deadlines for the FGD and bottom ash standards.[18] In its rulemaking finalizing the two-year postponement, EPA emphasized that the standards for which it delayed the compliance deadlines remain in effect, despite the agency's ongoing reconsideration process.[19] Because the December 31, 2022 deadline that Eversource had already requested is more than two years after the new presumptive "as soon as possible" date of November 1, 2020, that two-year postponement of the compliance deadline does not justify any later compliance date than what Eversource has already proposed, which as we noted above, EPA cannot accept based on the current state of the record.

In the April 20 letter, Eversource asserts that it will delay work toward compliance with the bottom ash standard so long as EPA is reconsidering that standard. EPA must not condone any cessation of efforts to comply with the bottom ash standard, which remains in effect, albeit with a delayed compliance date. To stop work on compliance with a standard that remains in effect, merely because it is being reconsidered, would effectively eliminate that standard before any evidentiary record has been put forward to justify doing so. Moreover, EPA has made clear that the bottom ash and FGD standards may not change at all as a result of the reconsideration process,[20] consistent with its obligation not to predetermine the outcome of its rulemaking process.

[8] EPA's final rule to postpone certain ELG compliance dates moves the presumptive "as soon as possible" date from November 1, 2018 to November 1, 2020. *Postponement of Certain Compliance Dates for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category*, 82 Fed. Reg. 43,494 (Sept. 18, 2017). Several of the undersigned parties have challenged this postponement in federal district court. *See Clean Water Action v. Pruitt*, D.D.C. Civil Action No. 17-cv-00817, Proposed Am. Compl. ¶¶ 104-11.
[9] Statement of Substantial New Questions at 58.
[10] Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 80 Fed. Reg. 67,837, 67,883 (Nov. 3, 2015) (internal footnotes omitted).
[11] Statement of Substantial New Questions at 59.
[12] Statement of Substantial New Questions at 59.
[13] The information in this table is based on data compiled by the Sierra Club.
[14] Statement of Substantial New Questions at 59, n.16.
[15] 40 C.F.R. § 423.13(k)(1)(i).
[16] *See* Statement of Substantial New Questions at 60, citing AR-1362 (Letter from Linda T. Landis, Senior Counsel, Eversource Energy, to Mark Stein, Senior Assistant Regional Counsel, EPA Region 1).
[17] *See Postponement of Certain Compliance Dates for Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category*, 82 Fed. Reg. 19,005 (Apr. 25, 2017) (notice signed by the Administrator on April 12).
[18] 82 Fed. Reg. at 43,496.
[19] 82 Fed. Reg. at 43,496 ("This maintains the 2015 Rule as a whole at this time, with the only change being to postpone specific compliance deadlines for two wastestreams."); see also U.S. EPA, Response to Comment

Document, EPA-HQ-OW-2009-0819, SE06669, at 8 (The only thing the Postponement Rule does is revise the 2015 ELG Rule's new, more stringent compliance dates for two wastestreams discharged from existing sources (bottom ash transport water and flue gas desulfurization wastewater). Otherwise, it leaves the Rule unchanged."); *id.* at 12 ("EPA's action to postpone certain compliance dates in the 2015 rule . . . does not otherwise amend the effluent limitations guidelines and standards for the steam electric power generating point source category.")

[20] *See* Response to Comment Document, *supra*, at 6 ("It is possible that the costs, impacts and benefits of the rule may be unchanged after EPA completes its new rulemaking."); *id.* at 18 (dismissing concerns about negative water quality impacts of the delay as "speculative at this point in time as EPA has yet to alter any of the effluent limitations in the 2015 Rule").

EPA's Response:

The 2015 Rule provides that the long-term zero-discharge limits for BATW must be met "by a date determined by the permitting authority that is as soon as possible beginning November 1, 2020, but no later than December 31, 2023." 40 CFR § 423.13(k)(1)(i). Section 423.11(t) further explains that the phrase "as soon as possible" means November 1, 2020, "unless the permitting authority establishes a later date, after receiving information from the discharger," which reflects a consideration of several factors:

- Time to expeditiously plan (including to raise capital), design, procure, and install equipment to comply with the requirements of this part. 40 CFR § 423.11(t)(1).
- Changes being made or planned at the plant in response to new source performance standards for greenhouse gases from new fossil fuel-fired electric generating units, emission guidelines for greenhouse gases from existing fossil fuel-fired electric generating units, or regulations that address the disposal of coal combustion residuals as solid waste. § 423.11(t)(2).
- Other factors as appropriate. § 423.11(t)(3).

As explained in EPA's 2017 Statement,

> On February 17, 2017, PSNH sent EPA a letter outlining its plan for achieving compliance with the new zero discharge limit for bottom ash transport water through installation of closed-loop recycling technology. AR-1378. PSNH's letter presents information regarding anticipated challenges related to construction and other matters and ultimately suggests December 31, 2022, as the appropriate date for compliance with the zero discharge limitation. . . . PSNH's letter provides information relevant to EPA's determination of the "as soon as possible" date for compliance.

2017 Statement (AR-1534), p. 59. EPA then further noted,

> While PSNH had developed a plan for meeting the zero discharge standard by December 31, 2022, it has now indicated to EPA that it will hold off on pursuing that plan in light of the postponement of the compliance deadline. PSNH indicated that it plans to wait for the results of EPA's reconsideration of the ELGs before deciding on how to proceed. *See* AR-1362 (Letter from Linda T. Landis, Senior

> Counsel, Eversource Energy, to Mark Stein, Senior Assistant Regional Counsel, EPA Region 1 [dated April 20, 2017]).

Id. at 60. Since receiving this letter from PSNH, Merrimack Station transferred its ownership to GSP. This divestiture occurred on January 10, 2018, *see AR-1642*, and the current NPDES permit was transferred to the new owners by letter dated on January 18, 2018. AR-1701. The new owners of the facility met with EPA on several occasions to discuss the NPDES permit process and several Steam Electric ELG and other issues. On November 13, 2018, EPA and GSP discussed the information received from the former owner, PSNH, related to installation of zero-discharge technology and the appropriate compliance date. *See* AR-1705. GSP stated that it assumed PSNH's obligations and choices related to implementing new technology to treat BATW. *Id.* at 3.

With this and other information in mind, EPA is establishing the "as soon as possible" date as December 31, 2023. Compliance with zero-discharge limitations must be achieved by this date. EPA's determination is supported by the following assessment of the regulatory factors set forth in 40 CFR § 423.11(t). As a preliminary note, commenters claim that EPA cannot assess the appropriate compliance date based on confidential business information (CBI) that is withheld from the public and not included in the public record. EPA has since coordinated with PSNH, the author of the CBI letter from February 2017, and received a version of this letter with minimal redactions. This letter is now included as AR-1699 ("February 2017 Letter"). All information assessed in EPA's analysis below is visible and unredacted, thereby resolving any issues the commenters may have had.

Time to expeditiously plan, design, procure, and install equipment

The letter submitted by PSNH, and affirmed by GSP, identifies several important facts that impact the time needed to plan and ultimately be in a position to install and implement a closed-loop system at Merrimack Station. First, the letter explains that the facility (in 2017) was undergoing a divestiture process. PSNH would not be the owner of the facility for much longer (estimated transfer date at the end of 2017), and any new buyer would need time to familiarize itself with the facility, make a financial assessment, and decide whether the approach proposed by PSNH for BATW treatment was the appropriate and desired path forward. *Id*. at 6.

Additionally, the February 2017 Letter explains that the facility's efforts to procure the materials and equipment needed to install a closed-loop system will be affected by "competition within the industry to limited materials and available vendors." *Id.* at 7. EPA agrees that in the years since promulgation of the 2015 Rule, many facilities will have been working toward achieving zero-discharge and installing similar systems, competing to obtain materials and services from the same set of vendors. As noted by PSNH, these supply schedule delays could be up to 17 months for certain materials and equipment. *Id.* at 6-7.

Next, PSNH points to potential interactions between its plan to comply with the BATW limits and other limitations and conditions included in the Final Permit. *Id.* Until the permit is finalized, the Permittee will not be able to fully develop and coordinate its financial planning and

scheduling for all process changes and upgrades needed at the facility. In the same vein, PSNH explains the importance of completing an up-to-date water balance study, and one that accounts for the elimination of BATW as well as all other limits and conditions included in this Final Permit. *I*. PSNH correctly notes that elimination of BATW will be significant because it comprises a majority of the process wastewater at the facility. Moreover, EPA acknowledges that prior to transferring ownership of Merrimack Station, PSNH began conducting the water balance study. *Id.*

Another factor identified in the February 2017 Letter is the impact that Merrimack Station's reduced and intermittent operations has on planning. *See also* Chapter II of this Response to Comment document. Contractor and vendor sampling and data gathering takes longer with reduced operations, and therefore creates longer timelines for engineering plans, designs, and installation plans for the anticipated closed-loop system. AR-1699, p. 7. Additionally, optimizing the new system, once installed, may take longer due to the sporadic, and much more limited operations.

Finally, PSNH identifies the impact that ISO-New England (NE) limitations and requirements will have on the timeline for installing a closed-loop system. The Letter explains that installation of the new system for BATW will require "both units to be offline and unavailable for some periods." *Id.* at 8. Any planned outages to incorporate installation must be coordinated with ISO-NE, and ultimately approved through the organization. This approval process may take time and is subject to some uncertainty in that ISO-NE may not always be able or willing to approve planned outages due to risks to grid reliability and its responsibility to meet regional demand. However, since Merrimack Station has rarely operated during the shoulder months in recent years, it may be easier to coordinate necessary outages with ISO-NE during these months.

Other Regulatory Changes

Information in the administrative record and received in PSNH's February 2017 Letter does not indicate that Merrimack Station has any conflicting obligations under the Clean Air Act (CAA), the Resource Conservation and Recovery Act (RCRA), or their implementing regulations.

EPA has considered the information submitted by PSNH, and reasonably concludes that these facts support a compliance date of at least December 31, 2022. However, the other factors, as discussed below, also affect EPA's assessment and determination of whether this 2022 deadline is still appropriate.

Other Factors

The EPA also considered two other important factors. First, the information submitted by PSNH projected that compliance could be achieved by December 31, 2022. However, as noted above, the company later stated in April of 2017 that, due to the Administrator's decision to reconsider the BAT limits for BATW and FGD wastewater, the company was pausing its efforts to plan for achieving zero-discharge for BATW until the reconsideration was resolved. AR-1362. PSNH's halting of planning and implementation lasted until it transferred ownership of the facility

January 10, 2018. Additionally, the NPDES permit was transferred to the new owner, GSP, who needed time to get up to speed on the issues facing permit development, including the BATW issues. It was not until November of 2018 that GSP confirmed that it was adopting the plan and rationale set forth in PSNH's February 2017 Letter to address BATW. AR-1705. Thus, over a year passed where the facility was pausing its efforts until the new owner adopted a plan for coming into compliance with zero discharge limits. This delay is relevant, and EPA has accounted for such delay in its evaluation of an appropriate compliance date. PSNH's initial estimate of December 31, 2022 is no longer accurate based on the time needed to comply given the transfer of ownership. Additional time added to the timeframe for compliance is therefore reasonable.

Second, while the Agency's reconsideration of the BAT limits applicable to BATW may affect the ELGs applicable to this wastestream, when EPA issues permit limitations it must apply the regulations that are currently in effect. Until the reconsideration and new rulemaking (*see* 2019 Proposed Rule, 84 Fed. Reg. 64620) result in a final rule with effective, applicable limits, EPA will apply the current, effective limits. These limits include zero-discharge limits for BATW to be achieved no later than December 31, 2023. The reconsideration, while it may lead to some uncertainty to the industry, does not impact EPA's assessment of an appropriate compliance date. Furthermore, the facility would like to begin operating under its new permit as soon as possible. AR-1676, 1678.

Ultimately, the above analysis supports December 21, 2023 as the appropriate compliance date or "as soon as possible" date for compliance with the zero-discharge limits for BATW (40 CFR § 423.13(k)(1)(i)) at Merrimack Station.

The commenter, above, makes two additional points in support of its request that EPA require compliance by November 1, 2020. First, the commenter points to numerous other facilities' compliance dates, and concludes that because some of these facilities have compliance dates earlier than November of 2020, then this amounts to a finding that Merrimack Station can achieve compliance in 2020 as well. However, the commenter fails to provide any additional information about these facilities—*e.g.*, existing infrastructure, whether the facilities had already been planning to install closed-loop or dry handling prior to permit issuance, interactions between other outfalls, etc. Without any additional facts, EPA cannot meaningfully compare the compliance dates at these facilities to the compliance date determined for Merrimack Station.[7] Furthermore, the regulations make clear that EPA's determination of a compliance date is a site-specific assessment, based on information and facts specific to each individual facility. Therefore, unless these other power plants are identical to Merrimack, their site-specific compliance deadlines are not relevant to EPA's assessment here. *See* 80 Fed. Reg. at 67854 (articulating the facility-specific assessment of factors).

Second, the commenter suggests that because Merrimack Station recycles some BATW for use as make-up water for its FGD system, that the facility "could potentially capture bottom ash

[7] Even if EPA were to examine dates assigned to these other facilities, many of the compliance dates are included only in *draft*, not final, permits, and EPA has no information about the deadlines included in the final permits.

transport water before it is sent to the slag settling pond and use it as FGD makeup water. This potentially provides a pathway for earlier compliance with the bottom ash ELGs compared to installation of a dry or closed-loop handling system for bottom ash." This, however, is not a viable option at Merrimack Station. At full capacity, upwards of 14 million gallons per day of BATW can be generated while only approximately 1 million gallons per day is needed for FGD system make-up water. Even if the FGD system used only BATW as make-up water, that would leave millions of gallons of BATW to be treated or addressed by other means.

Comment V.1.4	**AR-1600, EPRI, p. 3**

EPRI also conducted an evaluation of the cost effectiveness of bottom ash transport water treatment using remote settling of bottom ash and a closed-loop reuse of the ash/slag transport water. The cost effectiveness calculations were performed by estimating the pollutant removals for each technology and comparing these removals with the costs of the technologies.
The pollutant removals and costs for the closed-loop bottom ash transport water system are included in Table 2.

Table 2. Merrimack Cost Effectiveness for Closed-Loop Bottom Ash Handling System

	Removal (TWPE per year)	Capital Cost (Million dollars in 2017 dollars)	O&M Cost (Million dollars per year)	Total Annualized Cost (Million dollars per year)	Cost Effectiveness Ratio (Dollars per TWPE)	Capital Cost (Million 1981 dollars)	O&M Cost (Million 1981 dollars per year)	Total Annualized Cost (Million 1981 dollars per year)	Cost Effectiveness Ratio (1981 Dollars per TWPE)
Closed-loop bottom ash	192	14.9	0.2	1.6	8,333	5.0	0.06	0.5	2,797

O&M costs estimated by EPRI; all other costs are from PSNH.

The supporting calculation details for bottom ash are provided in Appendix B. The cost/TWPE ratio of closed-loop bottom ash handling system is $2,724 /TWPE (in 1981 dollars). The following table compares this Merrimack site-specific, wastestream specific cost per TWPE to various EPA cost effectiveness values.

Cost Effectiveness Analysis	Cost Effectiveness Ratio (1981 Dollars per TWPE)
EPRI: Merrimack Bottom Ash Closed-Loop System	$2,797
EPA: Electrical and Electronic Components[3]	$404
EPA: 2015 Steam Electric ELG Rule[4]	$136
EPA: 2015 ELG Bottom Ash Closed-Loop, Zero Discharge [5]	$314

The Merrimack site-specific cost effectiveness ratio is more than eight times the cost effectiveness ratio EPA estimated for treatment of the bottom ash transport water wastestream in the 2015 rule. These numbers should be comparable, but because of Merrimack's low pollutant loadings and high costs, retrofitting a closed-loop bottom ash transport water system at Merrimack is not at all cost effective.

[3] Regulatory Impact Analysis for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, USEPA, 2015. Page F-10.
[4] Regulatory Impact Analysis for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, USEPA, 2015. Page F-12.

[5] Regulatory Impact Analysis for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, USEPA, 2015. Page F-12.

EPA Response:

The commenter suggests that retrofitting a closed-loop BATW system at Merrimack Station is not cost effective. Whether EPA-Region 1 agrees or not with this assessment or the underlying calculations and assumptions is of no consequence here because the Region has no authority to not apply the limitations of the current 2015 Steam Electric ELGs, which require that for electric generating units having a capacity greater than 50 MW and that are not oil-fired, such as Merrimack Station, there shall be no discharge of pollutants in bottom ash transport water after a certain compliance date. 40 CFR § 423.13(k)(1)(i).

Comment V.1.5	**AR-1600, EPRI, pp. 4-5**

Comment: ***Bottom Ash Transport Water-Challenges of Closed-Loop Operation***

The term 'bottom ash' is used herein although the type of boiler at Merrimack (cyclone coal-fired boiler) produces a bottom ash material more commonly referred to as slag.
EPRI research at sites that have attempted to operate closed-loop bottom ash handling systems has identified several challenges to implementation and operation. Challenges include balancing the water flows into and out to keep the water balance neutral and maintaining water quality in the closed-loop.

Challenges with closing the water balance to eliminate discharge (i.e., having more flow into a closed-loop bottom ash handling system than flows out) stem from the inclusion of non-transport waters in the closed-loop system, including water from storm events. Several non-transport process waters around the hopper or dewatering system come into contact with ash transport water, forcing these waters to be managed in the closed-loop system. Some of these waters (such as hopper cooling water or hopper seal trough water) can be supplied with recirculated ash transport water, but it may not be feasible for others because of water quality or other reasons.

Examples include pump seal water, which may not be able to use the recirculated ash water due to solids content abrading the pump seals. Rain water entering the loop through floor drains and uncovered tanks also increase the flows into the overall water balance.

Some water uses in the recirculated ash loop may require additional equipment or modifications, such as:

- Heat exchangers if the recirculated water temperature is too high for equipment limitations and personnel safety
- Storage tanks to store excess water from boiler tube leaks, large maintenance events, or stormwater

Going to closed loop typically requires capturing any significant transport water loss to building sumps by modifying and rerouting sumps near the boiler or modifying the ash hopper design. Additionally, modifications typically are needed to prevent non-transport wastewaters from mixing with the ash transport water to prevent further adding of water to the closed-loop bottom ash handling system.

As each transport of ash leads to contaminants from the ash partitioning into the water, and clean water evaporates from the closed loop, the water quality in the loop can worsen. This is partially offset by contaminants leaving the loop in water entrained in the ash, but EPRI has noted through research at numerous sites that there are challenges in controlling water quality conditions, such as:

- Small and/or less-dense particles not removed by the remote dewatering system can cause plugging in pipes and nozzles, or accumulating in sumps and tanks, which increases cleaning and maintenance requirements.
- Scaling can be caused by ion concentrations increasing in the loop.
- Acidity and/or corrosion has been observed in some recirculated systems, which in one instance was attributed to pipe corrosion and failure.

The 2015 Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category allowed for purges from a closed-loop bottom ash handling system only to an FGD scrubber. However, such a purge may not be feasible if the purge volume required is higher than the FGD make-up demand (due to excess water or water quality control), especially if a plant has an evaporative FGD treatment technology that requires all distillate to be returned to the scrubber. Additionally, ash transport water could require storage (i.e., multiple surge tanks) during plant outages (i.e., scrubber is offline) if maintenance is required on the ash dewatering equipment. Further, purge water from a closed-loop system could have negative impacts on a FGD scrubber's gypsum crystallization and gypsum marketability. In some cases, additional treatment may be required for the transport water for it to be used in a FGD scrubber.

EPA's Response:

As previously stated, Region 1, as the permitting authority for New Hampshire, must apply any applicable ELGs that are currently in effect. The Region does not have discretion to not apply effective ELGs.

Furthermore, and while not necessary to the decision for the reason stated above, EPA Region 1 notes that the previous owner of Merrimack Station, PSNH undertook an effort to study and identify the most feasible option for the Station to come into compliance with the no discharge limitations. PSNH determined, after consultation with a number of engineering firms and equipment manufacturers, that the existing boilers' current slag sluice system could be retrofitted with a closed-loop recycle system that utilizes a remotely located inclined drag conveyor (or submerged flight conveyor). *See* AR-1699.

Comment V.1.6	AR-1600, EPRI, Appendix B

Comment: Appendix B - Bottom Ash Sluice Water Treatment Cost-Effectiveness Analysis

Introduction

This appendix provides details on how EPRI estimated cost-effectiveness for a closed-loop bottom ash handling system. Cost estimates are based on information provided by PSNH Merrimack Station.

Pollutant Removals Calculation Methodology

Pollutant removals for bottom ash transport water were defined as the pollutants in bottom ash transport water minus the pollutants in the source water. The estimated contaminants removed were calculated both as concentrations and toxic-weighted pound equivalents (TWPE). TWPE factors are used by the U.S. Environmental Protection Agency (EPA) to express the relative toxicity of pollutants. Calculations use the concentration of contaminants in the water, wastewater flow, and toxic weighting factors (TWF). Data from PSNH Merrimack sampling were used in the calculations.

Summary of Available Data

EPRI's evaluation used data from two sampling episodes at PSNH Merrimack. The bottom ash transport water data were based on one sample taken in July 2013 and an additional sample taken in July 2017. These two data sets were averaged before subtracting out the source water pollutants. The source water data were based on a sample taken in July 2013 corresponding to the bottom ash sample. Analytes that were not included as part of the plant PSNH sampling episodes were estimated with data for source water and bottom ash water based on the following document:

- EPRI Comments on Proposed Effluent Limitations Guidelines Rule (EPRI, 2013)

The source water data was subtracted from the bottom ash transport water and multiplied by the average flow rate on days the plant is operating at Merrimack Station (4 million gallons per day) and TWF to calculate TWPE per year. The flow per year was based on PSNH's estimate of operating roughly 40 percent of the time. The available data are summarized in Table B-1 and Table B-2 summarizes bottom ash transport water minus the source water.
The pollutant removal calculation followed the methodology outlined in the EPRI Comments on Proposed Effluent Guidelines Rule (EPRI, 2013) pollutant removal calculations.
A summary of the estimated benefit calculation for PSNH Merrimack Station is presented in Table B-3.

APPENDIX B – BOTTOM ASH SLUICE WATER TREATMENT COST-EFFECTIVENESS ANALYSIS

Table B-1. Merrimack Station Source Water and Bottom Ash Transport Water Concentrations

Analyte	Source Water 07/22/2013 (mg/L)	Bottom Ash Transport Water 07/22/2013 (mg/L)	Bottom Ash Transport Water 07/19/2017 (mg/L)	Bottom Ash Transport Water Average (mg/L)
Aluminum	0.08	0.23	0.67	0.45
Antimony	0.0005	0.0005	0.0005	0.0005
Arsenic	0.0005	0.0005	0.002	0.00125
Barium	0.008	0.009	0.015	0.012
Beryllium	0.0005	0.0005	0.0005	0.0005
Boron	0.025	0.025	0.025	0.025
Cadmium	0.0005	0.0005	0.0005	0.0005
Calcium	4.2	4.6	4.4	4.5
Chromium	0.0005	0.0005	0.002	0.00125
Cobalt	0.0005	0.0005	0.0005	0.0005
Copper	0.03	0.001	0.005	0.003
Iron	0.42	0.66	1.1	0.88
Lead	0.004	0.0005	0.002	0.00125
Magnesium	0.68	0.73	0.75	0.74
Manganese	0.031	0.03	0.047	0.0385
Mercury	0.000002	3.3E-06	0.00005	2.67E-05
Molybdenum	0.0005	0.0005	0.001	0.00075
Nickel	0.0005	0.0005	0.002	0.00125
Selenium	0.0005	0.0005	0.0005	0.0005
Silver	0.0005	0.0005	0.0005	0.0005
Sodium	9	10	12	11
Thallium	0.0005	0.0005	0.0005	0.0005
Tin	0.005	0.005	0.0025	0.00375
Titanium	0.0025	0.01	0.032	0.021
Vanadium				
Zinc	0.013	0.0025	0.01	0.00625
Chloride				
Sulfate	4	9	8	8.5
Nitrate/Nitrite			0.25	0.25
Ammonia-N				
Fluoride				
Cyanide				
Hexavalent Chromium				

Table B-2. Merrimack Station Bottom Ash Transport Water Minus Source Water

		Bottom Ash Water Minus Source Water	
Analyte	TWF	mg/L	mg/L * TWF
Aluminum	0.0647	0.370	0.0239
Antimony	0.0123	-	-
Arsenic	3.47	0.000750	0.00260
Barium	0.00199	0.00400	7.96E-06
Beryllium	1.057	-	-
Boron	0.00834	-	-
Cadmium	22.8	-	-
Calcium	0.000028	0.300	8.40E-06
Chromium	0.0757	0.000750	5.68E-05
Cobalt	0.1143	-	-
Copper	0.623	-	-
Iron	0.0056	0.460	0.00258
Lead	2.24	-	-
Magnesium	0.000866	0.0600	5.19E-05
Manganese	0.103	0.00750	0.000770
Mercury	110	2.47E-05	0.00271
Molybdenum	0.201	0.000250	5.04E-05
Nickel	0.109	0.000750	8.17E-05
Selenium	1.12	-	-
Silver	16.5	-	-
Sodium	5.49E-06	2	1.1E-05
Thallium	2.85	-	-
Tin	0.301	-	-
Titanium	0.0293	0.0185	0.000542
Vanadium	0.28	0.0199[a]	0.005569
Zinc	0.0469	-	-
Chloride	2.43E-05	1.81[a]	4.39E-05
Sulfate	5.6E-06	4.5	2.52E-05
Nitrate/Nitrite	0.0032	6.25E-03[a]	2.00E-05
Ammonia-N	0.00111	0.00[a]	-
Fluoride	0.035	0.01018[a]	0.000356
Cyanide	1.12	NA[a]	0
Hexavalent Chromium	0.517	NA[a]	0
	Total		**0.0394**

[a] Gap filled with *EPRI Comments on Proposed Effluent Limitations Guidelines Rule*

- Represents no removal, as source water was equal to or greater than bottom ash water data.

Table B-3. Merrimack Station Bottom Ash Treatment System Benefits

	Flow (gpy)	Removal (mg/L * TWF)	Removal (TWPE per year)
Bottom Ash Transport Water Minus Source Water	584,000,000	0.0394	192

TWPE = Toxic Weight Pound Equivalent

Cost Estimate

Capital costs and operating costs were estimated by CH2M. CH2M's estimate was developed using equipment cost quotes, and then adding parametric factors such as piping, contractor profit and engineering. The equipment is primarily the remote submerged flight conveyor (SFC). PSNH has designed a system with one remote SFC. Therefore, the cost is lower than it would be for sites that choose to include redundant systems for reliability. Costs were annualized based on a 20•year plant life span at a 7 percent interest rate. Table B·4 summarizes the annualized cost in current dollars and 1981 dollars.

Table B-4. Merrimack Station Cost for Closed-Loop Bottom Ash Handling System

	Capital Cost, [million dollars]	Operation & Maintenance, [million dollars per year]	Total Annualized, [million dollars per year]	Capital Cost, [1981 million dollars]	Operation & Maintenance, [1981 million dollars per year]	Total Annualized, [1981 million dollars per year]
Bottom Ash Sluice	14.9	0.2	1.6	5.0	0.06	0.5

Note: Capital costs and operating costs estimated assuming one remote submerged flight conveyor needed.

EPA's Response:

See Response to Comment V.1.4 above. While EPA has considered and reviewed the cost estimates and pollutant reductions resulting from the implementation of closed-loop or dry handling technology to treat BATW, this information has no effect on the Agency's application of the current, effective ELGs, which require zero-discharge by the compliance date. 40 CFR § 423.13.(k)(1)(i).

Comment V.1.7	**AR-851, CLF, pp. 50-52**

Comment: ***EPA Must Conduct a BPJ Analysis and Set Technology-Based Effluent Limits for Discharges of Coal Ash Wastewater from Outfall 003A***

EPA failed to conduct a BPJ analysis and set technology-based effluent limits for toxic pollutants in ash landfill leachate and ash wash (i.e. coal ash wastewater) even though EPA has advised state permit writers that this is required under the CWA.[263] The slag settling pond that discharges to the River from Outfall 003A receives a number of waste streams, including coal

ash landfill leachate and slag (bottom ash) transport wastewater.[264]

Based on an extensive multi-year review of power plant discharges, EPA found that power plants discharge toxic pollutants at high levels, and that "most of the toxic pollutant loadings for this category are associated with metals and certain other elements present in wastewater discharges ... associated with ash handling and wet flue gas desulfurization (FGD) systems."[265]According to EPA, the discharge of coal ash wastewater poses a risk to public health and the environment.[266]

EPA has stated that:

> [m]any 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 Contaminant Levels (MCLs)) in discharges and leachate to groundwater and surface waters.[267]

Even relatively small amounts of coal ash pollutants can pose a threat to aquatic ecosystems and human health due to the persistent and bioaccumulative nature of these pollutants.[268] EPA notes that

> [n]umerous studies have shown that the pollutants found in wastewater associated with coal combustion wastes can impact aquatic organisms and wildlife, and can result in lasting environmental impacts on local habitats and ecosystems. Many of these impacts may not be realized for years due to the persistent and bioaccumulative nature of the pollutants released.[269]

EPA recently has confirmed that the existing NELGs do not address discharges of coal ash wastewater.[270] EPA must conduct the BPJ analysis and set technology-based limits for discharges of toxic pollutants in coal ash wastewater discharged from Outfalls 003A.

[263] EPA Letter to Tennessee Dep't of Env't & Conservation regarding TVA Kingston Fossil Plant (Aug. 8, 2011) and EPA Letter to Tennessee Dep't of Env't & Conservation regarding TVA Gallatin Fossil Plant (Aug. 8, 2011) [hereinafter TVA Letters], attached hereto as Exhibits 08 and 09.
[264]AR 608, Draft Permit Fact Sheet at 14-15, 26.
[265] 74 Fed. Reg. 68,599, 68,606 (Dec. 28, 2009).
266 U.S. Envtl. Prot. Agency, Steam Electric Power Generating Point Source Category: Final Detailed Study Report (821-R-09-008) 6-1-6-2 (Oct. 2009), http://water.epa.gov/lawsregs/guidance/cwa/304m/archive/upload/2009 _10 _ 26 _guide_ steam_ finalreport.pdf.
[267] Id. at 6-2.
[268] Id. at 6-1.
[269] Id.
[270] See Exhibits 10 and 11.

EPA Response:

As a preliminary note, much of this comment relates to events and the regulations prior to the 2015 Rule and subsequent legal developments. As described in other parts of this document, EPA is required to apply all applicable ELGs and, in such circumstances where there are applicable ELGs, has no discretion to conduct site-specific BPJ assessments. For the Region's application of technology-based effluent limits for BATW, see Response to Comment V.1.1; for FGD wastewater, see Chapter VIII of this document; for combustion residual leachate, see Introductory Response to Section V.2 below; and for coal pile runoff, see Response to Comment V.3.1 below.

2.0 Combustion Residual Leachate

EPA Introductory Response V.2

Combustion Residual Leachate (CRL), or "leachate from landfills or surface impoundments containing combustion residuals" (40 CFR § 423.11(r)), is another category of waste produced at Steam Electric Generating facilities. The technology-based ELGs which govern the treatment of this waste, like BATW, have evolved over the past decade. The evolution of the applicable ELGs, as outlined above in EPA Response V.1, has impacted how Region 1 has addressed this waste throughout the Merrimack Station permit renewal process. The following discussion summarizes the regulations and law forming the basis of EPA's permit limits for CRL at each stage of permit development for the renewal of Merrimack Station's NPDES permit.

2011 Draft Permit

In 2011, the applicable national technology-based standards for the Steam Electric Power Generating Category were the 1982 ELGs. In 1982, however, CRL was not identified or defined as its own, separate wastestream. Instead, CRL fell within the definition of "low volume wastes":

> The term "low volume waste sources" means, taken collectively as if from one source, *wastewater from all sources except those for which specific limitations are otherwise established in this part*. Low volume wastes sources include, but are not limited to: wastewaters from wet scrubber air pollution control systems, ion exchange water treatment system, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems. Sanitary and air conditioning wastes are not included.

47 Fed. Reg. at 52305 (codified, at that time, as 40 CFR § 423.11(b)) (emphasis added). Because CRL was not a source for which other, specific limitations were established, it was, by the above definition, a low volume waste.

In the 2011 Draft Permit, the Region applied the TSS and O&G limits, based on the limitations established in the 1982 Rule, to all low volume wastes, including CRL.[8] CRL was listed as one of the wastestreams that discharges from Waste Treatment Plant #1 into Outfall 003A with all other sources of low volume wastes:

> Waste Treatment Plant No. 1 treated effluent consists of low volume waste (equipment and floor drains, chemical drains, coal pile runoff from a collection sump, stormwater from a pipe trench, flow from various tank maintenance drains, demineralizer regeneration discharges, polisher regeneration discharges, ***ash landfill leachate***, and flows from the hydrostatic relief line; chemical and non-chemical metal cleaning effluent (MK-1 and MK-2 boilers water side boiler cleaning, gas side equipment ash wash, and precipitators) . . .

2011 Draft Permit (AR-609), p. 5 (emphasis added); *see also* 2011 Fact Sheet (AR-608), pp. 4, 11, 21. EPA also established site-specific BPJ-based BCT limits that were equal to the 1982 BPT limits for low volume wastes, just as it did for BATW. 2011 Fact Sheet (AR-608), p. 22 ("EPA considered all the relevant factors and determined that the most appropriate BCT limits for low volume and ash transport waste streams are the existing BPT limits in 40 C.F.R. 423.12."); *see also* Response to Comment V.1.1 above.

2014 Revised Draft Permit

As stated in Response to Comment V.1.1 above, the 2014 Draft Permit was triggered by information related to the facility's treatment of FGD wastewater. Because the national regulations remained the same and no new information related to CRL or low volume wastes, the effluent limits for CRL remained the same for TSS and O&G as those included in the 2011 Draft Permit.

2017 Statement

In 2015, the Agency promulgated new ELGs applicable to the Steam Electric Generating Category. As part of the 2015 Rule, EPA established "combustion residual leachate" or CRL as a new wastestream, 80 Fed. Reg. at 67848; *see* 40 CFR §§ 423.11(r) (definition of CRL). EPA also promulgated BAT limits, as well as new BPT limits, applicable to the CRL wastestream. The 2015 BAT and BPT limits were equal to each other and both were based on surface impoundment technology and included TSS limits equal to those previously established as BPT limits for low volume wastes. 40 CFR § 423.13(l); 80 Fed. Reg. at 67854.

[8] Merrimack Station's existing, 1992 Permit also treats CRL as a low volume waste. It proceeds through Waste Treatment Plant #1 and discharges into the slag settling pond, where the 1982 BPT limits are applied to all low volume wastes. 1992 Permit (AR-236), p. 10. Water-quality based limits on copper and technology-based limits on iron are also applied to all low volume wastes in the current permit, but, as discussed in Chapter IV of this document, those technology-based limits were incorrectly applied at this location and the water-quality based limit is no longer required.

In 2017, as a result of the 2015 rule and the other information received, EPA Region 1 reopened the public comment period, specifically requesting comment on the implications of the 2015 rule on BATW, FGD wastewater, non-chemical metal cleaning waste, and combustion residual leachate. 2017 Statement (AR-1534), p. 44. At the time, EPA anticipated applying any new ELG that was in effect, as it is required to do under the CWA and its regulations. 40 CFR §122.43(b)(1). Thus, EPA planned to apply 40 CFR § 423.13(l) to CRL in the Merrimack Station permit. Those limits would have been the same as the limits proposed in the previous Draft Permits, though would have been based not in 1982 low volume waste limitations, but instead in new, CRL-specific BAT limits from the 2015 Rule.

2020 Final Permit

After the 2017 public comment period closed, the Fifth Circuit Court of Appeals rendered its decision in *SWEPCO.* Specifically, the Fifth Circuit vacated and remanded to the Agency the BAT limits applicable to CRL, previously codified as 40 CFR § 423.13(l). *SWEPCO*, 920 F.3d 999, 1033 (5th Cir. 2019). As a result there is a question as to whether, for CRL, the steam electric effluent guidelines regulations prior to 2015 required no additional controls beyond the BPT level or whether limits to control CRL are subject to BPJ decision-making.

Until EPA takes action to address the Court's vacatur or propose new national BAT limit(s) for CRL, the Region must determine what limit(s) apply and are appropriate to regulate this wastestream. In this final permit, the Region has applied the CRL limits based on the regulations prior to, or in the absence of, the 2015 Rule. As stated above, these limits are based on the 1982 Rule, which applied TSS and O&G limits to low volume wastes (including CRL). In 1982, EPA *considered* setting BAT limits for low volume wastes but ultimately determined not to establish BAT limits because toxic metals in the wastestream "are present in amounts too small to be effectively reduced by technologies known to the Administrator." 47 Fed. Reg. at 52303; *see also id.* at 52299 ("The remaining 119 pollutants are excluded from regulation.").

BAT requirements for low volume waste are, therefore, no further control beyond BPT. Stated differently, the Agency's decision not to establish BAT limits for low volume wastes in 1982 occupies the field. To the extent that any commenter would suggest the Region conduct a site-specific assessment of BAT limits for CRL, this practice is foreclosed by the existence of applicable ELGs.[9] Thus, the final permit limits are the same as those TSS and O&G limits applied to low volume wastes (including CRL) from the 2011 Draft Permit.

[9] As explained in the NPDES Permit Writer's Manual, site-specific, BPJ-based assessments are appropriate when ELGs are inapplicable. In assessing "applicability," a permit writer "should make sure that the pollutant of concern is not already controlled by the effluent guidelines and *was not considered by EPA* when the Agency developed the effluent guidelines." NPDES Permit Writer's Manual (AR-746), p. 5-46 (emphasis added).

Comment V.2.1	AR-1218, Southern Company, pp. 20-24

Comment: Solids from the VCE/crystallizer system are another concern, since the salts are naturally hygroscopic and will readily absorb moisture from the air. Due to softening, the salts are primarily sodium chloride, which is hygroscopic and soluble. Moreover, due to the fact that softening is incomplete, a fraction of the salt will also be calcium chloride, which is extremely hygroscopic to the point of being deliquescent. These salts will re-liquefy to landfill leachate as rainwater encounters the material in the landfill, thereby creating a situation where pollutants in the salts, such as selenium and mercury, may be released back into the environment. Also, high ionic strength leachate could pose risks to clays in existing landfill liners and jeopardize the integrity of the landfill system. The problem with soluble and hygroscopic salts in the VCE/crystallizer solids is that they may not be allowed in landfills (because they are not able to pass the paint filter test), and even if they are, chlorides and other constituents from the solids may end up in leachate and run-off, causing further environmental problems. Importantly, unlike other wastewater treatment technologies, no chemical transformation of constituents to less harmful forms takes place in the VCE/crystallizer process; it is strictly a volume reduction tool. As a result, any constituents that were in the water entering the VCE/crystallizer system will still be present in the materials exiting the system in the same form, albeit more concentrated. We note that for the systems in operation at the Brindisi and Monfalcone power plants in Italy, the solids have to be bagged and transported out of country to Germany for disposal in a hazardous waste facility.

Comment V.2.2	AR-1222, UWAG, pp. 28-29

Comment: ***Solid Waste Disposal Problems***

VCE system wastes can be challenging to manage for disposal at some sites. *See generally* Ellison (2013), Merrimack No. 981. For instance, some VCE system designs produce a hygroscopic salt that is mainly calcium chloride and magnesium chloride hydrate (Nebrig et al. 2011 at 7-8). Because these salts are hygroscopic, they tend to melt down in a short time (minutes to hours) and, if they are landfilled, the chlorides and other substances may end up in the landfill leachate and runoff. *Id.* While Merrimack apparently avoids the solids stability issues through a full softening step, it is not clear that all plants would be able to stabilize solids through adding softening.

Due to the softening process, the salts produced from the crystallizer are primarily sodium chloride which are also hygroscopic. Some of the salt cake will be made up of calcium chloride due to incomplete softening, as well as other salts such as magnesium chloride and nitrates. These salts have the potential to liquefy in landfills due to rainfall, potentially releasing any of the pollutants in the salts, such as selenium and mercury. Also, high ionic strength leachates could potentially pose risks to clays in existing landfill liners and jeopardize the integrity of the landfill. VCE-plus-crystallization systems do not chemically precipitate constituents like other wastewater treatment technologies. These thermal systems are strictly a volume reduction process. As a result, the constituents entering the system will still be present in

the materials exiting the system in the same form but more concentrated. Very little pollutants are removed with the salts.

Containing the salt-laden leachate may necessitate special equipment or procedures at landfills receiving these wastes. Even with special equipment or procedures, the ability to stabilize chloride salts in a landfill for the long term is questionable. We understand that the VCE wastes generated at the Brindisi and Monfalcone plants in Italy have to be transported to Germany for disposal in a hazardous waste facility.

Assuming that the material can be cost-effectively transported and placed in a landfill, when considering disposal of VCE wastes, the largest unanswered question is the long-term fate of the material. There are few data on whether the VCE solids will remain in place or leach out. This potential environmental impact deserves proper consideration whenever a regulator considers VCE plus crystallizer technology.

Comment V.2.3	**AR-1220, Environmental Organizations, pp. 10-11**

Comment: ***EPA Should Prohibit PSNH from Discharging Leachate Containing Pollutants from Its FGD Wastewater Used to Condition Fly Ash***

Under the draft permit, PSNH could circumvent a zero-liquid discharge limit for FGD wastewater not only by sending the wastewater to a POTW after treatment by its physical/chemical treatment system, but also by using the brine concentrate to condition fly ash rather than running the concentrate through the crystallizer that is the second phase of the VCE and crystallizer system. If instead the wastewater is run through both phases of the secondary treatment system, there is no need to dispose of brine concentrate, as the crystallizer produces a salt cake and the distillate can be reused in the FGD system. Put differently, if PSNH operates both phases of the VCE and crystallizer system, no brine concentrate is produced, thereby eliminating the problem of leachate containing pollutants from brine concentrate applied to fly ash.

As the Clean Water Act requires elimination of discharges if economically and technologically achievable, and EPA has found that eliminating FGD wastewater discharges is achievable at Merrimack Station, EPA must set BAT limits that actually eliminate the discharge of FGD wastewater from Merrimack Station. Thus, limits on the discharge of leachate must be based on a zero-liquid discharge limit of Merrimack's FGD wastewater. The leachate limits should be set at a level that prohibits the addition of pollutants from brine concentrate that comes from FGD wastewater.

EPA can achieve this through two means. First, the final revised NPDES permit for Merrimack should expressly prohibit applying brine concentrate to fly ash destined for a landfill. See generally 40 C.F.R. § 122.45(h). Second, EPA should set effluent limits for landfill leachate based on the characteristics of that leachate when the fly ash is not conditioned with brine concentrate. If EPA does not have data on the composition of the leachate in the absence of fly

ash treated with brine concentrate, EPA should require PSNH to submit the data necessary for EPA to make such a determination, and then EPA can revise the leachate effluent limits. Setting a leachate effluent limit in this fashion will ensure that any addition to the leachate discharges of pollutants from the fly ash treated with brine concentrate would violate the NPDES permit. This would ensure the elimination of the discharge of Merrimack's FGD wastewater, as required by the Clean Water Act.

Comment V.2.4	**AR-1222, UWAG, p. 10**

Additionally, as Region I notes, disposing of fly ash conditioned with purge water in a landfill may give rise to other hurdles (*see* Fact Sheet at p. 49), including securing permits and managing landfill leachate.

EPA Response:

The commenters are concerned with the practice of reusing FGD wastewater to condition fly ash.

First, the practice of recycling wastewater has been specifically identified by EPA as a method for eliminating FGD wastewater. In the 2015 Rule, EPA noted a variety of approaches that "are used to achieve zero pollutant discharge at these plants, including evaporation ponds, complete recycle, and *processes that combine the FGD wastewater with other materials for landfill disposal*." 80 Fed. Reg. at 67850 n.21 (emphasis added); *see also* Technical Development Document (AR-1702), p. 7-2 ("EPA identified several design/operating practices that have been used at some plants to eliminate the discharge of FGD wastewater: . . . conditioning dry fly ash . . .."); *id.* at 7-19 (discussing dry ash conditioning prior to on-site landfill disposal, and noting "[a]nother plant . . . uses an evaporation system to reduce the volume of FGD wastewater and then mixes the concentrated brine slurry with dry fly ash and disposes of it in a landfill to prevent discharging FGD wastewater."); Response to Comments on the 2015 Rule (AR-1706), p. 5-263 Thus, reuse of FGD wastewater to condition fly ash eliminates FGD wastewater and results instead, in a solid material appropriate for deposit in an on-site or off-site landfill.

Since Merrimack Station began operating its FGD VCE system in 2012, the facility has lawfully operated without a permitted discharge of FGD wastewater due, in part, to its reuse to condition its fly ash, and then subsequently depositing this solid into a landfill. AR-1708. Specifically, Merrimack Station generally hauls the conditioned fly ash solids to an off-site landfill. GSP has explained that the facility has only deposited these solids into the *on-site* landfill during one event which occurred within the past year. AR-1708. GSP does not foresee utilizing the on-site landfill in this way very often, if at all, but EPA acknowledges that it remains an option. *See* AR-1708. To the extent that commenters point to potential issues with the on-site landfill containing such solids, this practice is rarely conducted at Merrimack Station.

As explained in Chapter VIII, GSP has withdrawn its request for authorization to discharge FGD wastewater and the final permit does not include discharge limits for FGD wastewater. In order to comply with the CWA's prohibition on unpermitted discharges, the facility must continue to operate its FGD system at zero-discharge, which may include the above practice. If operations at

the facility change in the future, the permittee may request a permit modification to address changes in wastewater management or discharges. *See* 40 CFR § 122.62.

Second, the commenters are concerned about the leachate generated at the facility's landfill, which includes combustion residuals such as the reconditioned fly ash. EPA notes the commenters' concern; however, as discussed above in Section V.2 above, CRL is subject to applicable ELGs, which occupy the field and preclude any site-specific assessment of determination of technology-based effluent limits. EPA contemplated that CRL would include leachate from landfills containing a range of combustion residuals including FGD-conditioned fly ash. The Region does not have discretion to not apply effective ELGs. If, however, the CRL discharge exceeded applicable state water quality standards, then EPA must apply WQBELs to address such discharges. EPA assessed the characteristics of effluent in the slag settling pond, which includes CRL, in 2014 and again prior to finalizing this permit and ultimately determined that no WQBELs are necessary at the end of the slag settling pond. *See* AR-1135; AR-1693 to 1696. See Chapter VIII of this document for a discussion of applicable WQBELs.

3.0 Coal Pile Run-off

Comment V.3.1	**AR-866, Environmental Groups, p. 2**

Comment: As the Clean Water Act makes clear, BAT "effluent limitations shall require the elimination of discharges of all pollutants if the Administrator finds on the basis of information available … that such elimination is technologically and economically achievable." 33 U.S.C. 1311(b)(2)(A) [sic])emphasis added). Here, information provided by PSNH establishes that elimination of all pollutants from the FGD effluent is eminently achievable and may well be feasible for other coal combustion waste waters as well. In this regard, EPA must undertake a BAT analysis for all wastestreams at the plant, particularly ash handling waters and coal pile run-off that are known to be contaminated with significant concentrations of the toxic heavy metals present in coal.

EPA Response:

EPA notes the import of BAT limits under the CWA and the NPDES program. Regarding BAT analysis for BATW, see Section V.1 above, for CRL, see Section V.2 above, and for FGD wastewater, see Chapter VIII, which explains that Merrimack Station is not authorized to discharge FGD wastewater.

The coal pile runoff at the Merrimack Station facility has been reconfigured to drain into a trench system, part of which drains to an old oil tank dike area. This drainage system is not a water of the United States. The coal pile runoff no longer discharges directly to the Merrimack River. AR-1708; AR-1716. The Final Permit does not authorize a discharge of coal pile runoff.

The 2011 and 2014 draft permits had included conditions addressing coal pile runoff based on requirements in the 1992 Permit. *See* 2011 Draft Permit (AR-609).